Research Proceedings by Postgraduate Saudi Arabian Students in Canada

بحوث الدراسات العليا للمبتعثين السعوديين في كندا

2015

الملحقية الثقافية السعودية في كندا
Saudi Arabian Cultural Bureau in Canada

وزارة التعليم
Ministry of Education

مقدمة

بسم الله الرحن الرحيم

« إِنَّمَا يَخْشَى اللَّهَ مِنْ عِبَادِهِ الْعُلَمَاء إِنَّ اللَّهَ عَزِيزٌ غَفُورٌ (٢٨)»
الحمد لله رب العالمين، والصلاة والسلام على أشرف المرسلين سيدنا ونبينا محمد وعلى آله وأصحابه والتابعين ومن تبعهم بإحسان إلى يوم الدين وجعلنا منهم... آمين

يعتبر برنامج خادم الحرمين الشريفين للابتعاث الخارجي ركيزة أساسية ورافدا من روافد مسيرة التنمية والعطاء التي تشهدها المملكة العربية السعودية والتي تتمثل في المساهمة في بناء مجتمع يحمل ثقافة معرفية جديدة تحاكي التفاعل مع الثقافات الآخرى ورؤى حديثه في البناء والتطوير ؛ كما أن برنامج الابتعاث جاء لتحقيق رؤية خادم الحرمين الشريفين الملك عبدالله بن عبدالعزيز (المغفور له بإذن الله) وليجسد رؤية خادم الحرمين الشريفين الملك سلمان بن عبدالعزيز (حفظه الله)
ولقد عملت وزارة التعليم على بناء منظومة عمل متكاملة انعكست إيجابا على تحقيق اهداف البرنامج ليس على مستوى تحقيق المبتعث للدرجة العملية فحسب بل في خلق فرص خلاقة ومناسبة للارتقاء بالمهارات المعرفية والعلمية والبحثية للمبتعثين وفتح آفاق جديدة أمام قطاع الأعمال بالمجتمع السعودي.
شهد برنامج خادم الحرمين الشريفين للابتعاث الخارجي ومنذ انطلاقة ٢٠٠٥ نقله نوعية في زيادة عدد المبتعثين وتنوع التخصصات والبرامج الدراسية الأمر الذي انعكس بشكل ايجابي على المكون المعرفي والمهني للمجتمع السعودي و وايجاد مناخ بحوث ودراسات تتوافق وحجم الخبرات العلمية والمعرفية المستقاه من ابرز المؤسسات التعليمية والبحثية العالمية ؛ وتقوم الملحقية الثقافية في كندا بالتعاون مع وزارة التعليم ببذل المزيد من الجهود في سبيل تحقيق هذه الأهداف والرؤى وتشجيع وتكريم المبدعين في مختلف مجالات البحث العلمي.
ونظرا لأهمية النتاج البحثي للمبتعثين قامت الملحقية بإعداد هذا الدليل البحثي بغية توثيق الأبحاث العلمية التي انجزها الطلبة المتميزين والدارسين ضمن برنامج خادم الحرميين الشريفين للابتعاث الخارجي، حيث يشمل هذا الدليل المشاريع البحثية المنجزه من قبل الطلبة في عام ٢٠١٥م في مرحلة الدكتوراه، والماجستير، ومرحلة الزمالة في المجالات الطبية المتنوعة. ولقد بلغ عدد البحوث العلمية لهذا العام، سواء كانت بحوثاً منشورة في مجلات علمية أو بحوث مقدمة في مؤتمرات علمية، بواقع ٥٧٢ بحثاً.
متأملين أن يكون هذا الدليل محفزاً للطلبة المبتعثين ومشجعاً لهم للتوجه نحو الإنتاج البحثي وزيادة المنشورات العلمية، وأن يكون مرجعا علميا للقارئ في الاطلاع على الإنتاج البحثي للطلبة السعوديين في الجامعات الكندية. ونيابة عن الطلبة المبتعثين والمبتعثات ومنسوبي الملحقية الثقافية في كندا، تتوجه الملحقية الثقافية بوافر الشكر والتقدير لخادم الحرميين الشريفين وسمو ولي العهد الأمين على رعايتهم الكريمة ودعمهم اللامحدود لأبنائهم وبناتهم المبتعثين والمبتعثات، واشكر موصول لمعالي وزير التعليم في تنفيذ برنامج الابتعاث وتسهيل المهام المنوطة بها ونشكر كذلك أبنائنا المبتعثين والمبتعثات على التزامهم بقوانين الابتعاث وحرصهم على تمثيل بلدهم المملكة العربية السعودية خير تمثيل .

والله ولي التوفيق.

د. علي بن محمد البشري
الملحق الثقافي بسفارة المملكة العربية السعودية في أوتاوا

Foreword

In the Name of Allah the Most Gracious the Most Merciful

"Only those of His servants who possess knowledge fear Allah. Verily, Allah is Mighty, Most Forgiving.(28)"

Praise be to Allah, and peace and blessings be upon our Prophet and Master Muhammad, his companions and those follow until the Day of Judgment. Amen.

The Custodian of the Two Holy Mosques International Scholarship Program is fundamental to the development taking place in the Kingdom of Saudi Arabia in so far as it contributes to creating a diverse, educated and developed society, a society endowed with a positive vision and able to interact positively with the international community. The Custodian of the Two Holy Mosques King Salman bin Abdul Aziz (May Allah protect him) built his vision of the sponsoring program following in the footsteps of the late Custodian of the Two Holy Mosques King Abdullah bin Abdul Aziz (May Allah Bless his soul), who was the source of inspiration for the program to bear fruit.

Upon King Abdullah's visionary recommendations, the Ministry of Education (MOE) built an integrated system, the results of which were twofold: achieving higher goals and obtaining academic credentials by scholarship recipients and creating opportunities and improving students' scientific and research skills, thus opening new horizons and enriching the private sector with qualified and skilled professionals.

Since its inception in 2005, the International Scholarship Program of the Custodian of the Two Holy Mosques has witnessed an increased number of scholarships in a diversity of disciplines, which gave a thrust to scientific research in various research areas within the academia and the society at large. This could not have happened without the encouragement of distinguished scientific researchers and the continuing collaborative efforts between the Saudi Arabian Cultural Bureau in Canada (SACB) and the Ministry of Education.

This document is an accumulative reference prepared by SACB that highlights the multi-faceted nature of the research conducted by distinguished Saudi scholars sponsored by the Two Holy Mosques Scholarship Program. It includes research projects for the year 2015 at the master's, doctoral, and postgraduate fellowship levels, which amounted to 572 publications and presentations in scientific journals and scientific conferences.

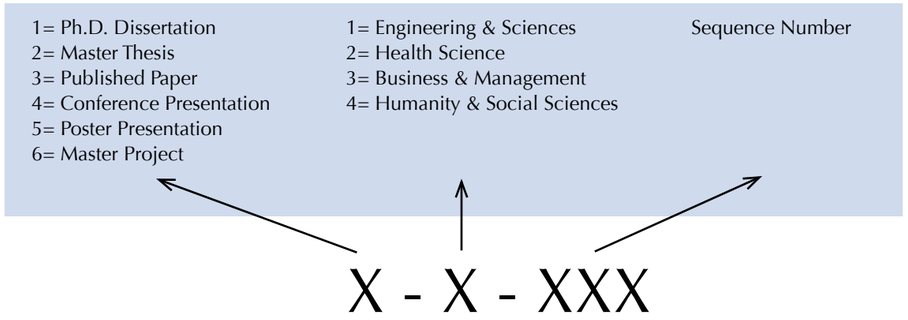
We hope that this guide will encourage scholarship holders to pursue excellence in their respective fields of study and strive to conduct and publish scientific work and research in the Canadian universities and research centres that house their aspirations. Thus, their hard work will remain an inspiring legacy for future students and researchers.

On behalf of the scholarship holders and the SACB staff in Canada, the Cultural Bureau extends its sincere thanks and appreciation to the Custodian of the Two Holy Mosques and His Royal Highness the Crown Prince for their unwavering support to all scholarship holders. Furthermore, we extend our thanks to His Excellency the Minister of Education for overseeing the overall operation of the scholarship program. Finally, we thank all scholarship holders for their commitment and sense of responsibility through their exemplary respect of scholarship policies and for being good ambassadors of the Kingdom of Saudi Arabia.

Dr. Ali Albishri
Saudi Arabian Cultural Attaché in Canada

Editorial Note

The following graph shows the key for the numbering code that will be used throughout this proceeding.



It has to be noted that this Research Proceeding contains multiple research submitted to the Saudi Arabian Cultural Bureau during 2015 only. Any work not received by the Bureau before the end of 2015 has not been included in this summary. This is the second annual Proceeding book that documents research achievements for Saudi scholarship students in Canada. Forany related comments or suggestions please contact Dr. Jamil A. Makhadmi at the Saudi Arabian Cultural Bureau by email at: jmakhadmiésaudibureau.org.

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Statistical Summary

Table 1:
Dissertation, Thesis, Published Papers, and Presentations for Saudi Scholarship Students in Canada, 2015

	Business & Management		Engineering & Sciences		Health Sciences		Humanity & Social Sciences		Total
	Male	Female	Male	Female	Male	Female	Male	Female	
Dissertation			13	6	4	2	1	1	**27**
Thesis	1	4	22	28	15	20	3	8	**101**
Published Paper	1		90	18	134	19	2	5	**269**
Conference Presentation			11	4	35	8	6	5	**69**
Poster Presentation			3	6	69	20	2	4	**103**
Master Project		1	1		1				**3**
Total	**7**		**202**		**326**		**37**		**572**

Figure (1): Dissertation, Thesis, Published Papers, and Presentations for Saudi Scholarship Students in Canada 2015.

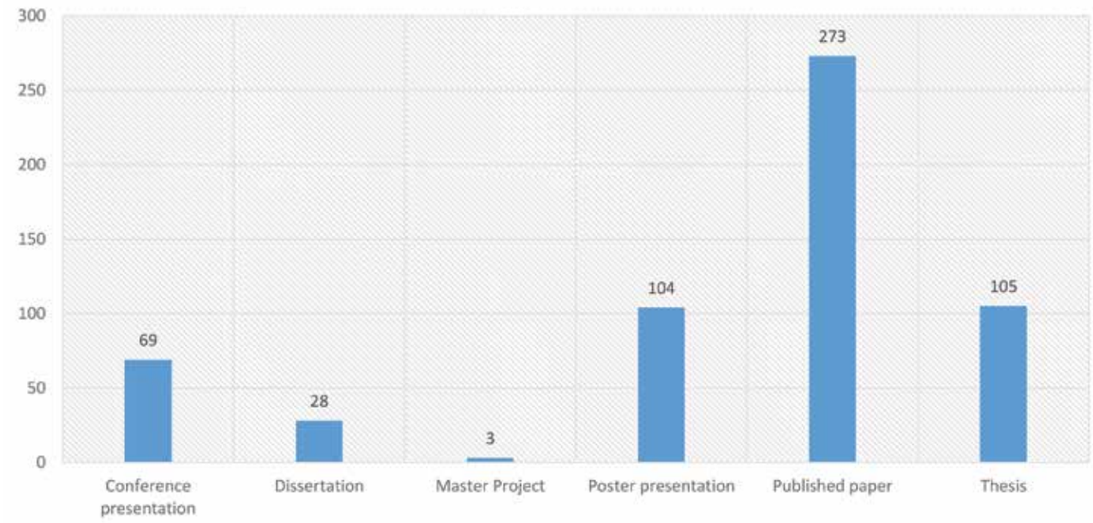


Figure (2): Research Proceedings by Saudi Scholarship Students in Canada 2015 with respect to gender.

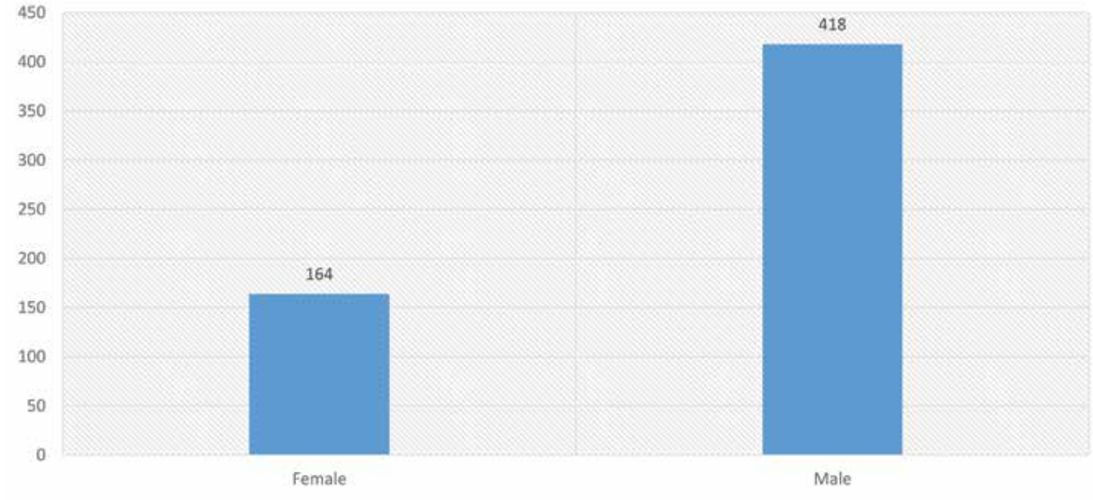


Figure (3): Dissertation, Thesis, Published Papers, and Presentations for Saudi Scholarship Students in Canada 2015 with respect to gender.

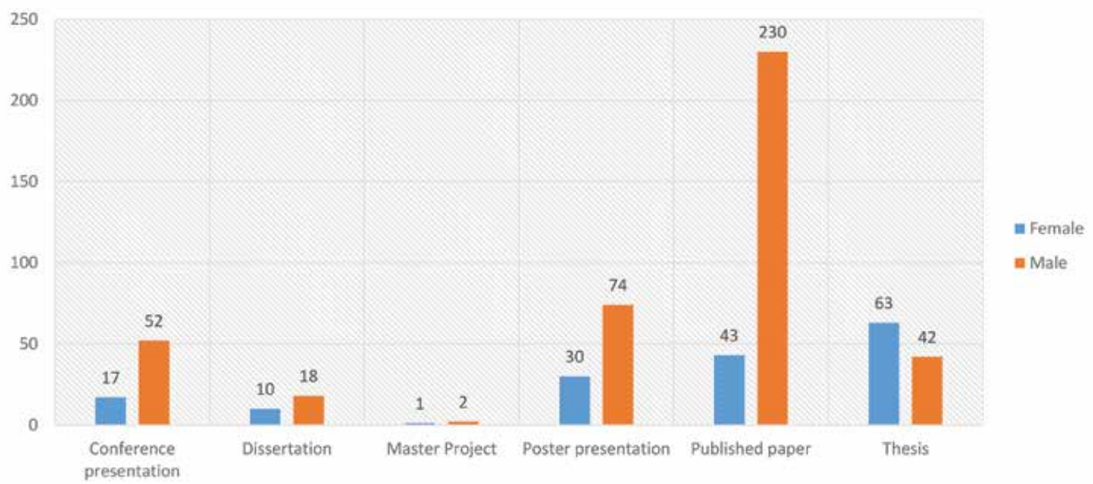


Figure (4): Research Proceedings by Saudi Scholarship Students in Canada 2015 with respect to gender and area of study.

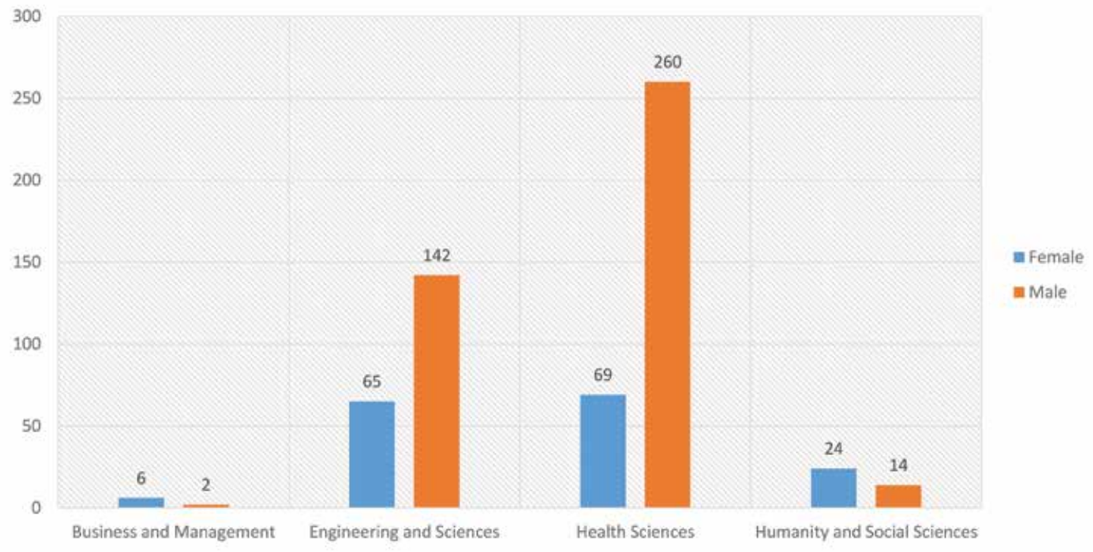


Figure (5): Research Proceedings by Saudi Scholarship Students in Canada 2015 with respect to level of study.

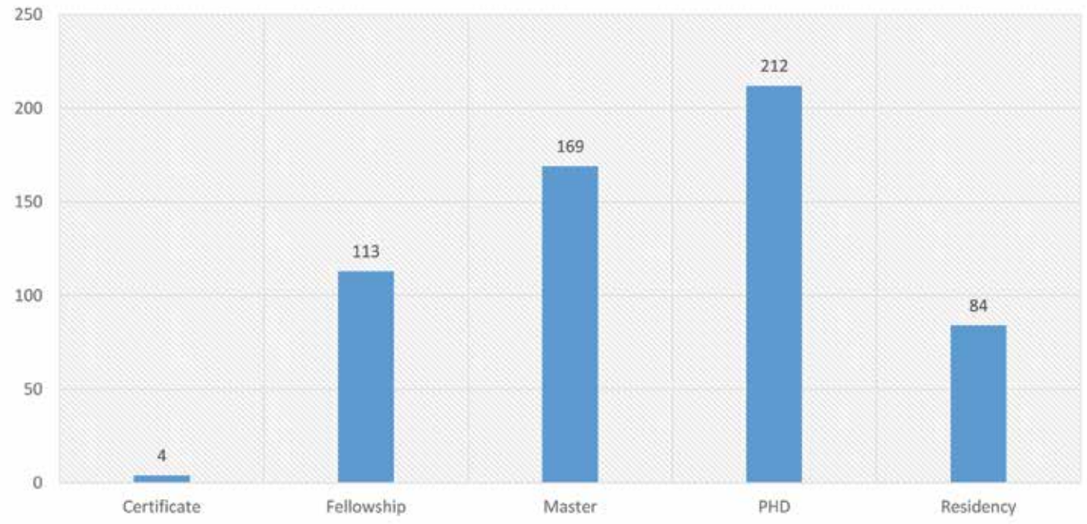


Figure (6): Research Proceedings by Saudi Scholarship Students in Canada 2015 with respect to gender and level of study.

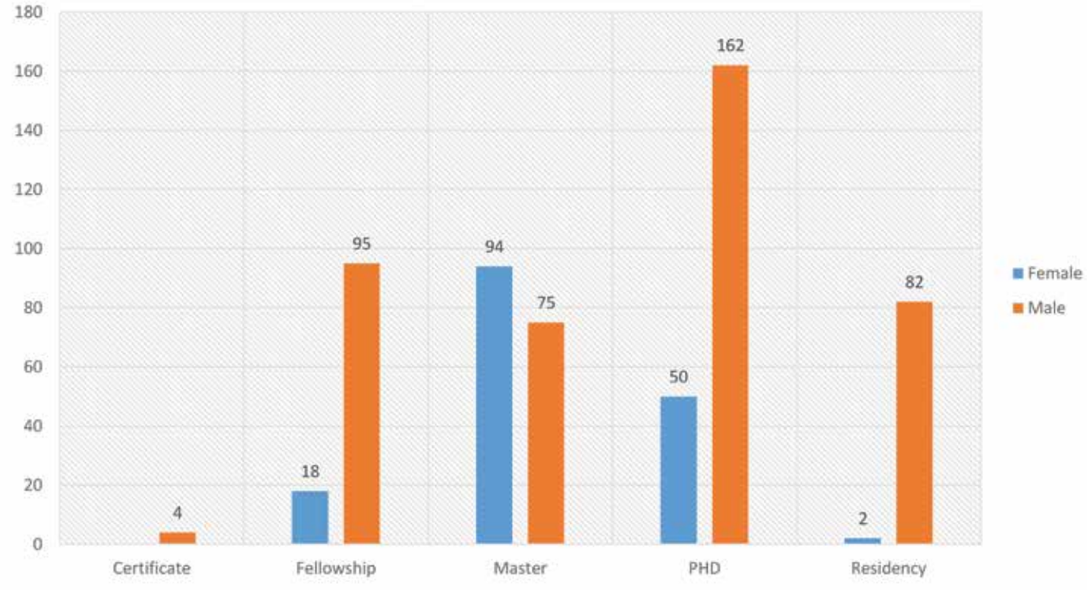
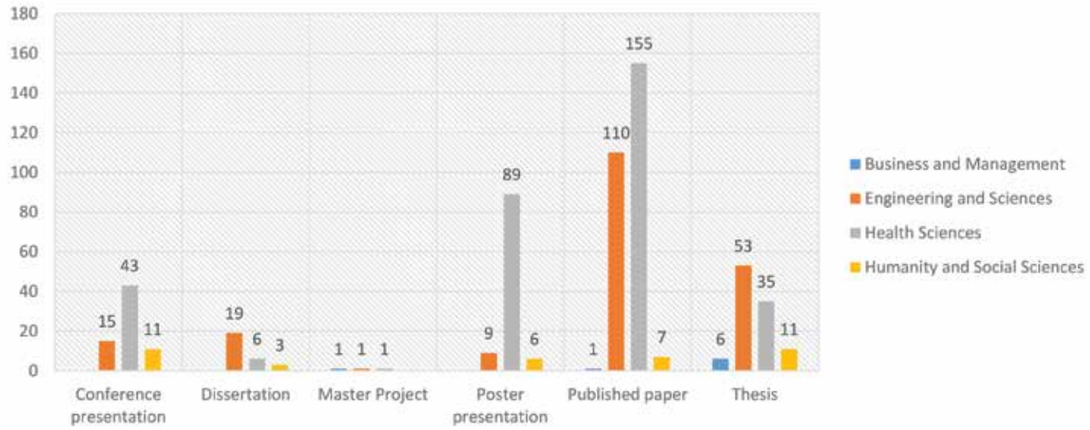


Figure (7): Research Proceedings by Saudi Scholarship Students in Canada 2015 with respect to area of study and type of Proceedings.



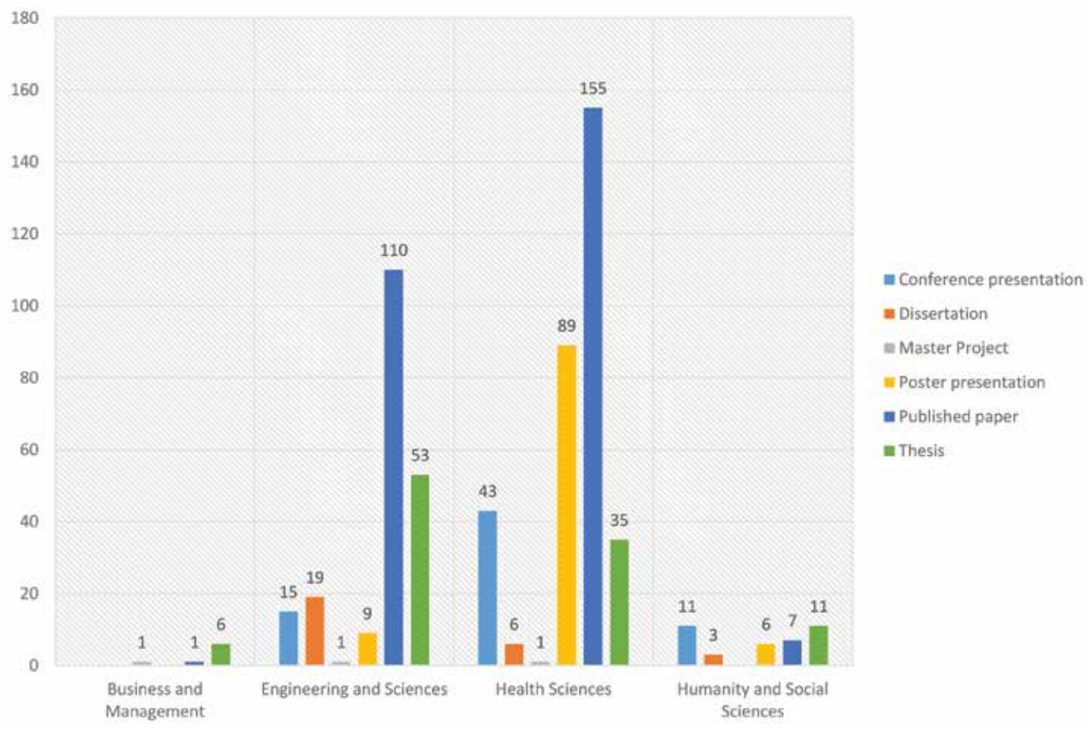
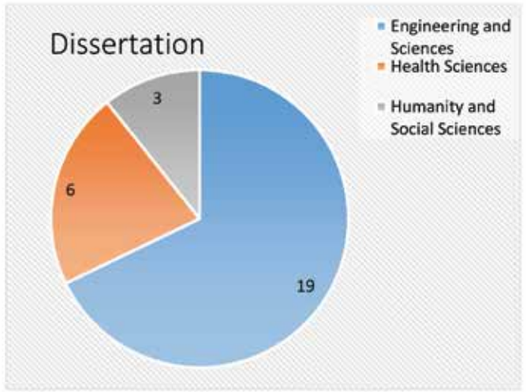
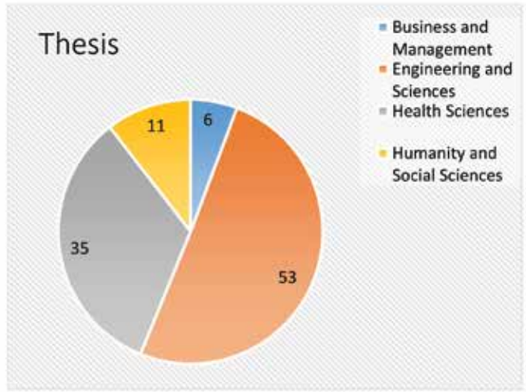
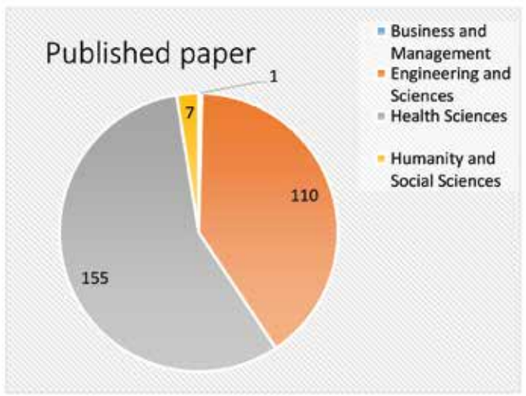
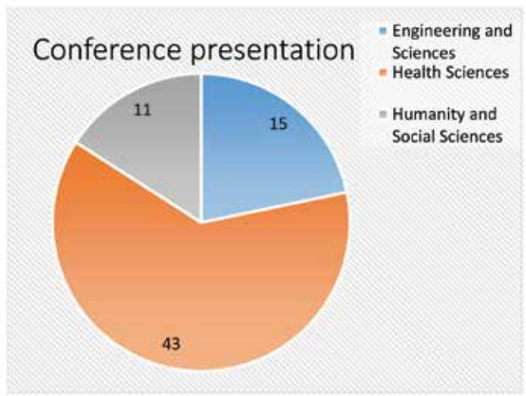


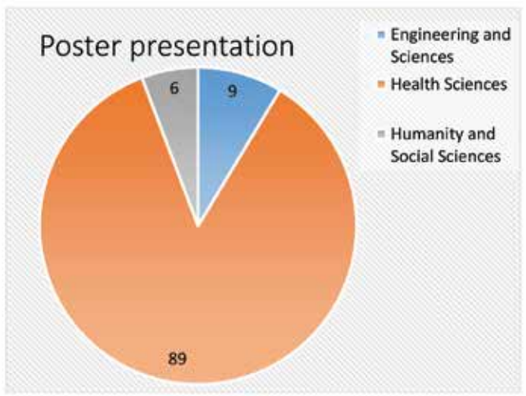
Figure (8): Number of PhD Dissertations, Master Thesis, Published Papers, Conference Presented papers, Conference Posters and Masters Projects by Students Graduated in 2015 according to their Area of Study.











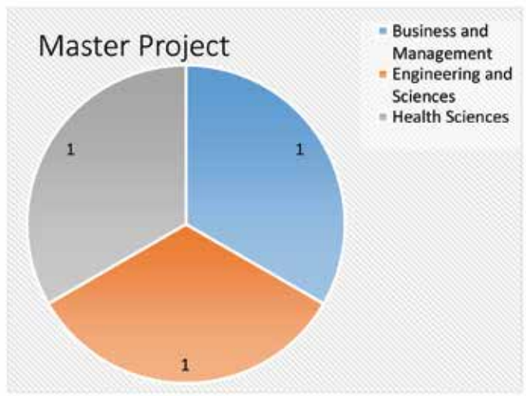
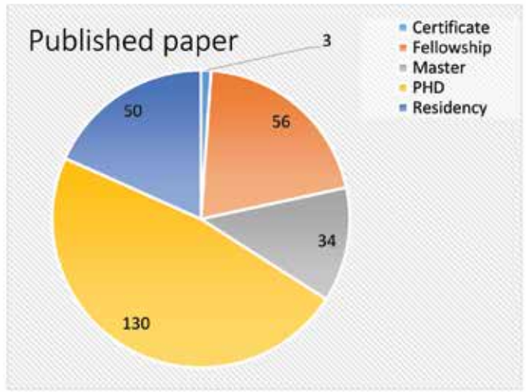
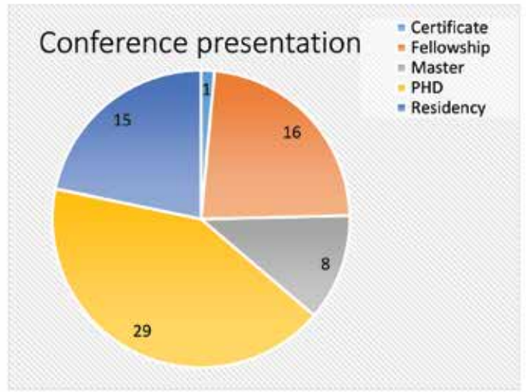
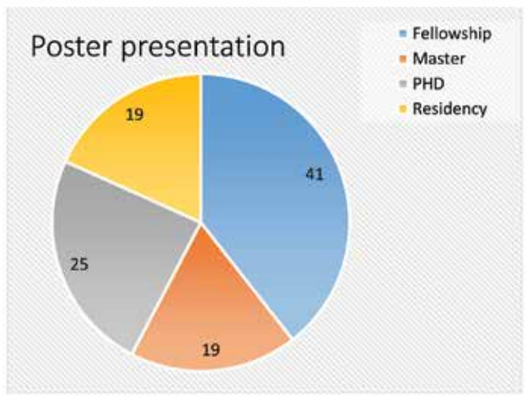
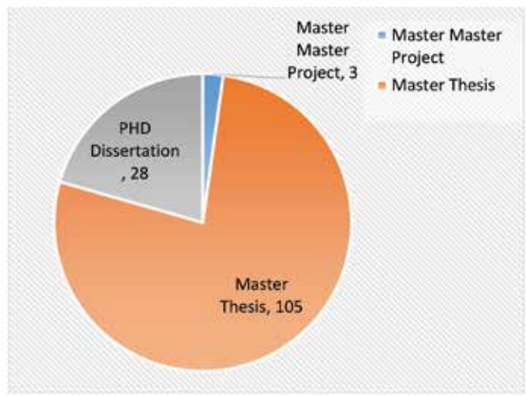


Figure (9): Number of PhD Dissertations, Master Thesis, Published Papers, Conference Presented papers, Conference Posters and Masters Projects by Students Graduated in 2015 according to their Level of Study.









CHAPTER 1
Ph.D. Dissertations

Engineering & Sciences

1-1-001	
Title	**Automating and Optimizing a Transportation Mode Classification Model for Use on Smartphone Data**
Author	Akram Omar J Nour
Program	Architecture and Construction
University	University of Waterloo-non Medical
Date of Publication	January 01, 2015

Abstract

As transportation engineering and planning evolve from "data poor" to "data rich" practices, methods to automate the collection and translation of data to information become increasingly important. Advances in wireless communications and technologies provide the opportunity to collect detailed data on travel trajectories using smartphones equipped with GPS and accelerometers. These types of smartphones are ubiquitous and, as such, present an opportunity to conveniently collect spatial and temporal data at regular time intervals. This can be useful to utilize as a method to document trip attributes of interest, namely origin, destination, departure time, route choice, trip purpose, and mode choice. Though some of these attributes can be relatively easily extracted from the smartphone data, inferring transportation mode(s) used by the trip maker remains a challenging problem. This research presents a data-driven classification model to infer the transportation mode(s) used by trip makers on the basis of data collected with GPS equipped smart phones. Rather than making a priori assumptions, we instead employ an optimization method to objectively produce the following classifier components and methods: A ranked feature vector based on the power of differentiation between different modes; the classification technique between the range of candidate classifiers; the number of ranked attributes to include in the feature vector; data formatting; and optimal model parameters. The model is trained and tested using labelled trip data. The calibrated model is evaluated by testing its ability to classify travel mode correctly for GPS data at a different level of disaggregation than the one used in the model training step. The model provides an accuracy of approximately 86% at the disaggregated level (e.g., Walk, Bike, Transit, and Private Automobile) and approximately 94% at aggregated level (e.g., Non-Motorized and Motorized.) the results obtained from the optimized model are supplemented with a GIS based model to improve the identification of transit trips. The method employed integrates GIS data such as the locations of transit stops and signalized intersections with observed travel patterns from the GPS embedded smartphone data. The combination of these two data sources generates new classification features that, when applied to the collected data, demonstrate that this technique vastly improves the accuracy of the classification model for identifying transit mode usage.

1-1-002	
Title	**Resource Allocation and Interference Management in Heterogeneous Wireless Networks**
Author	Ali Yahya a Alzahrani
Program	Engineering and Engineering Industries
University	Carleton University
Date of Publication	January 01, 2015

Abstract

Heterogeneous networks (HetNet) are a promising solution to improve network performance in terms of spectrum efficiency and energy efficiency. Nevertheless, HetNets suffer from two main sources of interference: mutual interference between macrocells and small cells (called cross-layer interference), as well as inter-cell interference among small cells themselves (called co-layer interference). In this thesis, we study the resource allocation and interference issues of HetNets. First, in HetNet systems with a moderate number of small cells, we integrate two popular approaches: spectrum avoidance and spectrum sharing, using optimization and game theory. In this solution, small base stations (SBSs) opportunistically avoid the parts of the spectrum that are used by macro BS (MBS), thereby controlling cross-layer interference, while the co-layer interference is controlled using a spectrum sharing technique. We then exploit recent advances in the mean-field game theory in order to control the co-layer interference between a large number of small cells. Meanwhile, a spectrum avoidance technique is applied to control the cross-layer interference. Next, we design a full spectrum sharing technique based on the mean-field game theory for interference management in hyper dense HetNet systems. The joint cross-layer and co-layer interference management issue is formulated as two nested problems, which are solved via distributed algorithms. Furthermore, tools from the optimization theory are employed to enhance the performance of cell edge users in open access HetNets. Simulation results are presented to show the effectiveness of the proposed schemes.

1-1-003	
Title	**Local Calibration of Aashtoware® Using Ontario Pavement Management System Data Pms2**
Author	Amin Sami a Hamdi
Program	Architecture and Construction
University	University of Waterloo
Date of Publication	January 01, 2015

Abstract
Well designed built and maintained pavements will sustain the safe and comfortable transportation of people and goods. Effective monitoring requires information about evolving pavement condition, including details about factors such as pavement distresses, climate conditions and traffic pattern which are important factors impacting the pavement conditions. Keeping track of the degree of distress over time can help extending the pavement life by applying the suitable maintenance and rehabilitation at the right time. Pavement management systems (PMSs) were originally created to archive this kind of data so that decision makers could predict future pavement performance. The Ministry of Transportation of Ontario (MTO) employs an advanced PMS tool, entitled PMS2, to record, store, and analyze data about the current and past pavement performance conditions of its network of 16,500 centre-lane kilometers of freeways, collectors, arterials, and local roads. The research presented in this thesis was focused on the use of PMS2 data for the calibration of flexible pavement performance models coefficients for Ontario as a case study Performance model coefficients were created for application with the Mechanistic-Empirical Pavement Design Guide (MEPDG), now known as AASHTOWare®, and were calibrated using statistical tools through a series of analyses of historical pavement condition data that were collected in the field. The data were classified according to pavement type and annual average daily traffic. Forthis study, three categories were examined and calibrated: low traffic volume (AADT < 10,000), high traffic volume (AADT > 10,000), and overall network. The spilt in data was Eighty-five percent to be used in calibration development of the performance model calibration coefficients and the remaining fifteen percent of the data were employed for validating the performance models using a variety of statistical tools. Acomparison of the results with the field measurements revealed that rutting model coefficients should be locally calibrated for each category. Forthe low-volume, high-volume, and overall network categories, local calibration produced significant reductions in the rutting root-mean-square error (RMSE) of 30, 37, and 37 %, respectively, and in the IRI showed there was no significant correlation. The procedure and analysis methodology used in the calibration of the performance model coefficients provide a framework for the local calibration of AASHTOWare® based on a comparison of the predicted pavement distress and that documented in the PMS. This work will have important benefits to the transportation agencies as it will enable them to evaluate the feasibility of using the ASHTOWare® Design system to improve pavement management and to enhance future design and construction strategies.

1-1-004	
Title	**Gamma-radiation Induced Redox Reactions and Colloidal Formation of Chromium and Cobalt Oxide Nanoparticles**
Author	Leena Mohammed S Alrehaily
Program	Physical Sciences
University	The University of Western Ontario
Date of Publication	January 01, 2015

Abstract
The main goal of this thesis research is to develop a mechanistic understanding of radiation-induced chromium oxide and cobalt oxide nanoparticle formation in aqueous solutions containing initially dissolved metal ions. When exposed to ionizing radiation, water decomposes to form a range of chemically reactive radical and molecular products. These redox agents can readily change the oxidation state of dissolved metal ions. The solubility of a transition metal ion can vary by several orders of magnitude depending on its oxidation state and the solution pH. Thus, reactions that can alter the oxidation state of a dissolved ion can lead to the condensation of insoluble species and the formation of solid particles. The formation of Co3O4 nano-scale colloid particles by gamma irradiation of CoSO4 solutions was investigated as a function of pH, initial CoII concentration and radical scavenger environment. Particle formation was observed only in aerated solutions. Analysis of the particle formation as a function of irradiation time and information from the scavenger studies shows that the particles evolve from Co(OH)2 to CoOOH and then to Co3O4 with oxidation of Co2+ to Co3+ by •OH being the most important process. Transmission electron microscopy (TEM) images show that the final particle sizes depend on the initial conditions of the solution. The formation of chromium oxide nanoparticles by gamma radiolysis of CrVI solutions was investigated as a function of pH, initial CrVI concentration and scavenger environment. The results show that CrVI is easily reduced to CrIII by a homogeneous aqueous reaction with $\bullet e_{aq}^-$, but, due to the stability of CrIII colloids, the growth of the Cr(OH)3 particles is very slow. However, after some time the Cr(OH)3 is converted to Cr2O3. Again for this system, the sizes of the particles formed depend on the solution conditions.

1-1-005	
Title	**Su(2) -irreducibly Covariant Quantum Channels and Some Applications**
Author	Muneerah Saad S Al Nuwairan
Program	Mathematics and Statistics
University	University of Ottawa
Date of Publication	January 01, 2015

Abstract
In this thesis, we introduce EPOSIC channels, a class of SU(2)-covariant quantum channels. Foreach of them, we give a Stinespring representation, a Kraus representation, its Choi matrix, a complementary channel, and its dual map. We show that these channels are the extreme points of all SU(2)-irreducibly covariant channels. As an application of these channels to the theory of quantum information, we study the minimal output entropy of EPOSIC channels, and show that a large class of these channels is a potential example of violating the well-known problem, the additivity problem. We determine the cases where their minimal output entropy is not zero, and obtain some partial results on the fulfillment of their entanglement breaking property. We find a bound of the minimal output entropy of the tensor product of two SU(2) -irreducibly covariant channels. We also get an example of a positive map that is not completely positive.

1-1-006	
Title	**Characterization and Applications of Paper Spray Ionization Mass Spectrometry**
Author	Wejdan Taha M Alsaggaf
Program	Physical Sciences
University	University of British Columbia
Date of Publication	February 01, 2015

Abstract
A survey of literature indicates an increased interest in developing direct analysis of samples with minimum preparation. Paper spray ionization mass spectrometry (PSI/MS) was developed for this purpose over the last four years. More than 50 manuscripts have been published describing this technique but several aspects remain to be characterized and optimized. The overall objectives of this work are as follows: (i) to construct a lab-made PSI/MS set up and optimize parameters for the orientation of the paper substrate, (ii) to develop new achievement to understand the ionization mechanism, (iii) to understand the chemistry on the paper using different papers, (iv) to distinguish between solubility and micro-flow of the sample across PSI and liquid extraction surface analysis (LESA), (v) to demonstrate the potential of PSI as a metabolites fingerprinting technique (vi) to develop new approach for direct analysis of solid tissues without sample preparation, and (vii) to develop new achievement to understand the interaction between analyte and surface of the paper. Silica nanoparticles were used in this study. The orientation of the paper substrate and the optimal type of paper was determined. Interestingly, when the paper was dried in an oven to reduce a water content and non-polar solvents were used, the ionization was inhibited. When non-polar solvents were used on paper acclimatized to normal lab humidity, ionization was observed. These results indicate that residual water on the paper surface plays a role in the ionization mechanism. The results showed the hydrophilic properties of the paper leads PSI to be utilized as a separation/ionization technique at one-step. The sensitivity was compared over two instruments and two surface ionization techniques. The results showed better peak response in the MS/MS system. It was demonstrated that PSI has low accuracy to obtain a profile for complex samples such as saffron. Mechanical press extraction and paper substrate coated with silica nanoparticles were developed as potential improvements for the PSI method. Together, the data in this study demonstrate the potential of PSI as an alternative technique for direct analysis.

1-1-007	
Title	**Branched Nanostructured Anodes for Dye-sensitized Solar Cells**
Author	Wissal Mahdi a Alayashi
Program	Physical Sciences
University	Queen's University
Date of Publication	March 01, 2015

Abstract
The high relative efficiency demonstrated in dye-sensitized solar cells (DSSCs) arises from a combination of light scattering within, and photo-generated electron transport through, the porous structure of a TiO2 anodes. However, the convoluted conduction path for extracting photo-generated electrons through the sponge-like structure of conventional DSSC anodes has limited further improvement. This thesis is an investigation of thin film deposited TiO2 anodes with branched tree-like structures that mimic the highly-efficient natural flow structures of trees, rivers, and the human vascular system, which can providing uninterrupted paths for photo-generated electron transport through the hierarchical branches. The main goal has been the development of a robust fabrication process for the study of DSSCs with anodes deposited with glancing angle deposition (GLAD) as it is a new area of research and the first DSSCs produced in our lab. The anodes are deposited as thin films using electron-beam evaporation with two different source of material: metallic Ti and TiO2. Ti films are shown to exhibit highly branched characteristics, with distinct branches when deposited at rate of 15˚A/s versus 5˚A/s (i.e. rate dependence). Athermal oxidation study for

these films is performed using H2/ O2 at 450ºC-520ºC. ForTiO2 films, post deposition annealing is performed in O2 at 450ºC. Two methods are explored to create defined active areas of the films: dilute hydrofluoric acid (HF) wet etching, and lift-off lithography. DSSCs are constructed using standard components (N719 dye, I–/I3– electrolyte, and Pt cathode) paired with the photoanodes. The films are characterized by scanning electron microscopy (SEM) and x-ray diffraction (XRD). The properties of DSSCs are investigated with current density-voltage measurements (J-V). Annealed TiO2 films with thickness ranging from 1 µm-3.3 µm exhibit power conversion efficiency of DSSC of 0.5% -3.7%, respectively, which are higher efficiency than GLAD DSSCs reported in the literature for coatings of this thickness. The high fill factors (0.82) indicate good shunt and series resistances forthe cells, which are also higher than DSSCs reported in the literature. The enhancement in efficiency and thus in short-circuit current is attributed to good cell performance (i.e. uniform active area), increase in the specific surface area for dye adsorption, and continuous electron transport in the interconnectivity structures.

1-1-008	
Title	**Performance of Micropiled Raft in Sand and Clay-centrifuge and Numerical Studies**
Author	Ahmed Mohamed a Alnuaim, Dr. M.h.el Naggar, Dr. Hany El Naggar
Program	Engineering and Engineering Industries
University	The University of Western Ontario
Date of Publication	May 01, 2015

Abstract

A micropile is a small diameter “cast-in-place” pile, which was initially used to repair deficient foundations. The overall performance of a micropiled raft (MPR) foundation system is similar to a piled raft foundation where the load is transmitted through both the raft and the micropiles. This thesis explores using micropiled rafts (MPR) as a new highly efficient foundation system that combines the advantages of the piled raft system and the efficient installation of micropiles and associated ground improvement. Currently, there is no guidance available regarding the performance of MPR foundations. Therefore, the main objectives of this research are to evaluate the behaviour of MPRs in sand and clay soils and examine the effects of different parameters on their performance. The research methodology comprised of three primary aspects: performing a series of geotechnical centrifuge tests on MPRs and comprehensive soil characterization in order to obtain experimental results and necessary soil parameters for numerical modeling, developing, calibrating and verifying a three-dimensional finite element model (3D FEM); and conducting a comprehensive parametric study on the behaviour of MPRs in sand and clay soils using the FEM. Four MPRs centrifuge tests were conducted: three tests in sandy soil and one test in clay soil. In addition, single micropile and isolated raft foundation centrifuge tests were carried out in both sand and clay soils. The results of the centrifuge tests were used to calibrate and verify the non-linear three-dimensional finite element models for both the sand and clay soils. Subsequently, the verified models were employed to conduct a comprehensive parametric study. The iii parametric study focused on providing additional insights regarding the performance of micropiled raft system that should be helpful for the design engineers. The physical dimensions of MPR structural components and parameters considered in the parametric study are within the range used in the current practice. The results of the centrifuge tests and numerical parametric study were analyzed to establish design guidelines for micropiled rafts. It was found that the tolerable bearing pressure of MPRs increased by as much as 191% and 101% compared to isolated rafts in sand and clay, respectively. In addition, the load carried by the raft in a MPR depends primarily on the micropile spacing and ranges between 20% and 80% of the applied load. Equations are proposed to evaluate the percentage increase in tolerable bearing pressure (PIBP) and the load carried by the components of MPR for different types of soils due to change in the micropile spacing and raft thickness. The Poulos-Davis-Randolph (PDR) method was found to be able to evaluate the performance of a MPR system with relatively stiff rafts. However, the error margin increases up to 28% for a MPR with a flexible raft. An adjustment factor is proposed to account for the raft flexibility in the PDR method, which reduces the error in estimating the axial stiffness of MPRs with a flexible raft to only 3%.

1-1-009	
Title	**Con-info: A Context-based Methodology for Designing and Assessing the Quality of Adaptable Muis in Healthcare Applications**
Author	Reem Abdulaziz Alnanih
Program	Computer Science
University	Concordia University
Date of Publication	June 10, 2015

Abstract

Mobile technology is an integral part of the modern healthcare environment. The mobile user interface (MUI) serves as the bridge between the application and healthcare professionals. It is important that the physician be able to easily express his needs on the MUI and correctly interpret the information displayed. However, there are many challenges that face the designer in designing and developing context-sensitive MUIs in this environment. The adaptability of the MUI is considered to be one of the most important issues to address. In this thesis, we propose a new methodology for designing a context-based adaptable MUI for healthcare applications. This methodology offers a new approach to automated MUI context adaptation, and provides a solution for both the provider (designer) of the healthcare application and the consumer (physician). The proposed methodology is based on research contributions in four areas: (1) a new quality-in-use measurement model for evaluation purposes; (2) user stereotype modeling with a set of context descriptors, which formalize the domain expertise of the users; (3) context information modeling; and (4) use of the decision table technique to adapt the MUI features based on the context and the user stereotypes. The results of the formal studies reveal that our CON-INFO methodology for designing an adaptable MUI led to improvements to the current application and allowed researchers to test successive versionsof the ‘final’ application.

1-1-010	
Title	**Recognition, Modeling and Pricing of Flexibility in Construction of Cave Mining Systems**
Author	Haitham Magdi Ahmed
Program	Mining Engineering-doctor of Philosophy
University	University of British Columbia (Vancouver Campus)
Date of Publication	June 22, 2015

Abstract

Mass caving systems require significant capital expenditure and long-term commitment of resources before production commences. Cave mining projects are confronted with numerous challenges in maintaining their construction schedule expectations. Any delay in construction impacts on the production schedule and, in turn, reduces the project value. In order to increase the expected economic value, the construction schedule needs to be accelerated through strategic flexibilities. It is hypothesized that construction acceleration (crashing) can be achieved by prioritizing the construction schedule or changing the construction strategy. This thesis seeks to expand current knowledge on three interrelated domains for decision making in engineering systems—(i) recognition, (ii) modeling and (iii) pricing of flexibility in cave mining construction. An objective of this study was to provide state-of-the-art project formulation techniques employed in planning that can be used to support decision-making processes in cave mining systems. The first domain requires identifying construction strategies that allow the mine management to implement construction crashing in multiple heading development. Three independent and interrelated flexibilities are considered. The second domain requires development of a methodology suitable for investigating and forecasting through modeling the development and construction rates enabling implementation of flexible strategies. Amethod capable of modeling the development and construction processes with respect to the advance undercut mining strategy is developed, which integrates the geotechnical and equipment-related uncertainties, using the framework of discrete event simulation. Several models are developed to investigate the impact of implementing these flexibilities on the development and construction rates. The results from the flexible models compared to the benchmark models confirmed that significant construction benefits can be achieved. The third domain requires development of an algorithm suitable for evaluating the cost of implementing a construction crashing option that can accommodate delays. Amethod that is able to respond to schedule uncertainties in construction projects by incorporating the decision-making strategy of project crashing into the budget, including the cost contingency valuation, is developed using the framework of real options and Monte Carlo simulation from a contractor’s perspective. The results indicated that significant change in costs stems from the variation in risk perceptions and confidence levels.

1-1-011	
Title	**A Maturity Model for Mobile Learning**
Author	Muasaad Alrasheedi
Program	Electrical and Computer Engineering / Software Engineering Program
University	The University of Western Ontario
Date of Publication	July 27, 2015

Abstract

Higher education is becoming increasingly interested in adopting innovative and modern technologies as a mode of imparting education. Mobile technologies are considered to be the next frontier of educational platforms as they have the capability to provide high-quality learning experiences and to satisfy the increasing demand for mobility and flexibility. In view of the ubiquitous nature of mobile technology and the immense opportunities it offers, there are favorable indications that the technology could be introduced as the next generation of learning platforms. The present research aims to develop a comprehensive framework based on the well-known Capability Maturity Model (CMM) and to empirically evaluate the maturity of mobile learning (m-Learning) initiatives in universities. The objective is to first identify key factors that affect m-Learning adoption, then classify these factors into target groups, and eventually use this as a theoretical basis for proposing a maturity model for m-Learning. In doing so, the research focuses on three major stakeholders in post-secondary education, namely students, instructors, and university management. The proposed Mobile Learning Maturity Model (MLMM) is based on a framework that outlines an adoption rate using five maturity levels. The measuring instrument for the model contains nine critical success factors selected from three of our empirical studies that examined the perspectives of students, instructors, and academic management. The model uses assessment questionnaires, a rating methodology, and two case studies. All data has been collected from five universities in Saudi Arabia.

1-1-012	
Title	**Additive Manufacturing of Porous Titanium Structures for Use in Orthopaedic Implants**
Author	Ahmad Basalah
Program	Ph.d in Mechanical Engineering
University	University of Waterloo
Date of Publication	August 04, 2015

Abstract
This dissertation explores additive manufacturing of porous titanium structures for possible use as scaffolds in orthopaedics. Such scaffolds should be tailored in terms of mechanical properties and porosity to satisfy specific physical and biological needs. In this thesis, powder metallurgy was combined with additive manufacturing to successfully fabricate porous Ti structures. This study describes physical, chemical, and mechanical characterizations of porous titanium implants made by the proposed powder bed inkjet-based additive manufacturing process to gain insight into the correlation of process parameters and final physical and mechanical properties of the porous structure. Anumber of processing parameters were investigated to control the mechanical properties and porosity of the structure. In addition, a model was developed based on the microstructural powder compaction to predict the porosity as a function of the developed sinter neck among the particles during the sintering process. The produced samples were characterized through several methods including porosity measurement, compression test, Scanning Electron Microscopy (SEM), Energy- dispersive X-ray spectroscopy (EDX), and shrinkage measurements. Additionally, a new method for manufacturing Ti implants includes encapsulated networks of macro-sized channels was introduced. Also, the influence of different orientations and numbers of channels within the additive-manufactured structures were investigated. The characterization test results showed a level of porosity in the samples in the range of 12-43%, which is within the range of cancellous and cortical bone porosity. The compression test results showed that the porous structure's compressive strength is in the range of 56-1000 MPa, yield strength is in the range of 27-383 MPa, and Young's modulus is in the range of 0.77-11.46 GPa. This technique of iv manufacturing porous Ti structures demonstrated a low level of shrinkage with the shrinkage percentage ranging from 1.5-12%. Also, the experimental results demonstrated excellent agreement with the developed model. Moreover, the novel method of fabricating the encapsulated channel show a reduction in the shear strength to 24-30% that is advantageous for bone implants. The results demonstrate that the channel orientation in the structure affect the shrinkage rate in the parts with vertically orientated channels, in which a relatively isotropic shrinkage in vertical and horizontal directions is achieved after sintering.

1-1-013	
Title	**Performance of Protective Perimeter Walls Subjected to Explosions in Reducing the Blast Resultants on Buildings**
Author	Dr. Ashraf El Damatty and the Alternate Dr. Greg Kopp
Program	Civil and Environmental Engineering
University	The University of Western Ontario
Date of Publication	August 12, 2015

Abstract
The existing methods to predict the blast effects on structures located behind blast walls are based on plane rigid walls and the results of small-scale studies, which are not validated by the results of full-scale experiments. Hence, they are only valid for a very limited range of scaled parameters. Also, they do not account for the impact of non-spherical charges or for different ignition points; they also put their emphasis on mid- and far-field overpressures. The current thesis investigates blast wave propagations created by cuboid charges and their effects on structural members at close-in and nearby ranges. First, a preliminary numerical study using the ProSAir finite element program is performed to investigate the effectiveness of a plane and canopied rigid blast wall, which is subjected to a close-in explosion. It was found that, when a canopy was used with the wall, the wall was more effective in reducing the blast wave resultants on the building located behind the wall. As a part of this study, a High Speed Data Acquisition System was developed along with an in-house LabVIEW program to test the response of reinforced concrete and reinforced masonry walls, which were subjected to blast loading, and to measure the blast wave parameters. Half-scale blast experiments are conducted to investigate the effectiveness of reinforced concrete perimeter walls of different shapes in reducing the blast wave resultants along the height of a target building located behind a blast wall a wall as well as to determine the maximum damage that the wall could suffer without fragmentation. The effectiveness of reinforced concrete and walls coupled with a reduction in the street elevation adjacent to a wall's perimeter in reducing the blast wave resultants along the height of a target building located behind the wall was also investigated. It was found that changing the shape of the RC walls or erection of a plane blast wall combined with the lowering of adjacent street elevation could markedly reduce the blast wave resultants on structures located behind the walls. Full-scale blast experiments were also conducted to investigate the effectiveness of reinforced canopied walls as well as the effectiveness of double fully-grouted reinforced masonry walls infilled with polyurethane foam. The walls were tested both with and without aluminum foam retrofitting and tested using both close-in and nearby explosions. In addition, the reduction level of the blast wave resultants along the height of a target building located behind these walls was investigated. It was found that in addition to adding a canopy to the top of a reinforced concrete wall, or using a double reinforced masonry wall infilled with polyurethane foam, and retrofitting the walls with aluminum foam reduced the blast wave resultants on structures located behind these walls.

1-1-014	
Title	**Multi-attribute Performance Models for Small Manufacturing Enterprises**
Author	Madani Alomar
Program	Industrial and Manufacturing Systems Engineering
University	University of Windsor
Date of Publication	September 30, 2015

Abstract
Nowadays, there are huge environmental changes in the business world. These changes have resulted in tremendous growth and opportunities for new markets but also in challenges that threaten the operations and survival of firms. These competitive pressures are driving firms to re-evaluate their competitive strategies, supply chains, and manufacturing technologies in order to improve performance and survive long term. Small and medium-sized enterprises also face these challenges, which influence their operations and existence. They are significantly constrained by remarkable limitations in terms of financial resources as well as non-financial factors, such as informal strategic decisions and actions. Reports have revealed that small enterprises are vulnerable to failure. Only around 50% of them in Canada and the United States survive for more than five years. Focusing on financial measures alone is not a good strategy for guaranteeing the long term success of a business. The absence of objective and formal strategic decisions and performance measurement systems in small enterprises increase their chances of failure. Therefore, models have been developed that assess and translate informal and qualitative in small enterprises into measurable, quantitative data. This allows for the evaluation and measurement of decisions and actions, which increases the chances of success for a small enterprise. Using the multi-criteria decision methodology (MCDM) allows for the following: integrating and linking various levels of decision-making and processes, converting subjective information into objective decision making, executing individual business preferences, and ranking strategic attributes and business processes. iv an analytical hierarchy process approach was first used to develop a simple model. Using the case of a small manufacturing enterprise, it was found that the business did not emphasize financial measures alone; they also paid attention to non-financial measures, such as reliability and responsiveness. It was observed that the business was willing to rank strategic attributes and supporting business processes each time there was a change in the external environment. Finally, an analytical network process approach to express the links and effects among the supply chains of a small business were established, and an overall business performance formula was created.

1-1-015	
Title	**End-shape Analysis for Automatic Segmentation of Arabic Handwritten Texts**
Author	Amani Jamal
Program	Computer Science
University	Concordia University
Date of Publication	October 13, 2015

Abstract
Word segmentation is an important task for many methods that are related to document understanding especially word spotting and word recognition. Several approaches of word segmentation have been proposed for Latin-based languages while a few of them have been introduced for Arabic texts. The fact that Arabic writing is cursive by nature and unconstrained with no clear boundaries between the words makes the processing of Arabic handwritten text a more challenging problem. In this thesis, the design and implementation of an End-Shape Letter (ESL) based segmentation system for Arabic handwritten text is presented. This incorporates four novel aspects: (i) removal of secondary components, (ii) baseline estimation, (iii) ESL recognition, and (iv) the creation of a new off-line CENPARMI ESL database. Arabic texts include small connected components, also called secondary components. Removing these components can improve the performance of several systems such as baseline estimation, and skew correction. Thus, a robust method to remove secondary components that takes into consideration the challenges in the Arabic handwriting is introduced. The methods reconstruct the image based on some criteria. The results of this method were subsequently compared with those of two other methods that used the same database. The results show that the proposed method is effective. Baseline estimation is a challenging task for Arabic texts since it includes ligature, overlapping, and secondary components. Therefore, we propose a learning-based approach that addresses these challenges. Our method analyzes the image and extracts baseline dependent features. Then, the baseline is estimated using a classifier. Algorithms dealing with text segmentation usually analyze the gaps between connected components. These algorithms are based on metric calculation, finding threshold, and/or gap classification. We use two well-known metrics: bounding box and convex hull to test metric-based method on Arabic handwritten texts, and to include this technique in our approach. To determine the threshold, an unsupervised learning approach, known as the Gaussian Mixture Model, is used. Our ESL-based segmentation approach extracts the final letter of a word using rule-based technique and recognizes these letters using the implemented ESL classifier. To demonstrate the

benefit of text segmentation, a holistic word spotting system is implemented. Forthis system, a word recognition system is implemented. Aseries of experiments with different sets of features are conducted. The system shows promising results.

1-1-016	
Title	**Sustainable Conflict Resolution: Modelling, Analysis, and Strategic Insights**
Author	Yasser Talal M. Matbouli
Program	Department of Systems Design Engineering
University	University of Waterloo
Date of Publication	October 30, 2015

Abstract
New methodological contributions for modelling and analyzing conflicts evolving over time are developed to provide strategic insights into the sustainability of equilibria. More specifically, key characteristics of evolving conflicts are identified in order to recognize a long-term conflict. Aunique procedure for assessing robustness of equilibria is introduced to measure the possibility of deviation from these potential resolutions. By considering partial achievement of an option or course of action, attempts for a decision maker to improve an equilibrium situation can be formally taken into account. As a consequence of these advancements, certain challenges found in an ongoing Canadian energy conflict can be formally investigated, better understood, and eventually resolved. There have been many successes in the modelling and analysis of strategic conflicts using the Graph Model for Conflict Resolution. But, as illustrated by the re-occuring Great Canadian Hydroelectric Power conflict, many important obstacles remain. This conflict, between the Canadian province of Newfoundland and Labrador (NL) and the province of Qu´ebec (QC), continued for over half a century, passing through several distinct stages and raising questions that are difficult to answer using the standard graph model approach. These questions are addressed in this thesis, and the new models and techniques developed are then demonstrated using the NL-QC conflict. Aframework for conflict characterization is suggested to help analysts understand the different stages of a conflict that evolves over time. Particularly problematic are instances when a conflict reaches an equilibrium, maintains it for some time, and then re-starts and shifts to another equilibrium. Traditional conflict resolution models, which analyze only a single round of a conflict during a specific period of time, cannot explain such observations. The conflict characterization is specifically designed to provide input parameters for models of conflicts that evolve over time. Anew representation, the enhanced preference graphmodel, includes decision makers' preferences, allowing for an expeditious and intuitive interpretation of some stability questions. One major issue is the sustainability of equilibrium. In a conflict that continues for half a century, it is possible for an equilibrium to be reached, maintained for a few decades, but then to fall apart. Can the resolution of strategic conflicts be made sustainable? The concept of Level of Freedom is introduced to provide a measure of equilibrium robustness that facilitates the ranking of equilibria based on their relative robustness and offers insight into this form of long-term stability. In a graph model, a decision maker's strategy is a selection of his or her options. Hence, an option is either taken or not selected within a given state. To make a graph model easier to link to reality, a modelling structure is proposed that allows binary (two-level) options to be replaced by options with more than two levels. This new structure facilitates the representation of preference in the modelling stage and the understanding of conflict evolution within the analysis stage. Combined with concepts relating to the robustness of equilibria, the utilization of multi-level options makes a graph model more expressive of reality and easier to understand.

1-1-017	
Title	**Topology-varying Shape Matching and Modeling**
Author	Ibraheem Alhashim
Program	Computing Science
University	Simon Fraser University
Date of Publication	November 10, 2015

Abstract
The automatic creation of man-made 3D objects is an active area in computer graphics. Computer-assisted mixing and blending of components or subcomponents from existing example shapes can help users quickly produce interesting and creative designs. Akey factor for automating this task is using algorithms that can match compatible parts between objects of different shape and structure. However, due to the coarse correspondence computed by current matching algorithms, automatic shape blending is mainly limited to the substitution of large compatible part sets. In this thesis, we address the problem of relating 3D shapes of different geometry and topology, with applications in shape synthesis. Our goal is to compute a fine-grained mapping between two shapes differing in the geometry, cardinality, and connectivity of their parts, and to use this mapping for continuous shape interpolation. First, we propose a framework for shape matching using a joint geometric and topological transformation. The framework follows the assumption that the best mapping for a pair of shapes is one that results from a shape transformation that minimally distorts the structural properties of a shape. We establish meaningful correspondences between shapes with large topological discrepancy by going beyond shape deformations and incorporating topological operations such as part split, duplication, and merging. We evaluate our correspondence algorithm on a diverse set of shape classes and compare the results to state-of-the-art methods. Second, we propose an algorithm for synthesizing interpolations between structurally different 3D shapes. Our algorithm produces a continuous and plausible shape transformation that gradually morphs the geometry of the individual parts, as well as performs any necessary topology-changing operations. We further demonstrate the utility of our framework by developing intuitive shape creation tools. We show how these tools can allow novice users to synthesize new 3D models from continuous blends of topologically different shapes.

1-1-018	
Title	**Joint Ventures in the Oil and Gas Industry**
Author	Abdulmohsen Almohsen, Phd Janaka Ruwanpura, Phd
Program	Civil Engineering/project Management
University	University of Calgary
Date of Publication	December 14, 2015

Abstract
The oil and gas industry is considered one of the largest economic drivers in the world. This industry is responsible for the employment of millions of people and revenues of billions of dollars. These facts indicate the importance of this industry and its impact on the world. Oil and gas projects, especially unconventional ones, encounter a great deal of obstacles that organizations and companies are not willing to face alone. Joint ventures can, therefore, be utilized to execute projects and overcome these problems; and, joint ventures have become a crucial part of oil and gas industry. Joint ventures, however, are complex and contain many risks that can result in their failure. Assessing major risk factors that can impact the success of a joint venture before entering into a deal would allow organizations and companies to make informed decisions. The main objective of the study; therefore, was the development of a framework that supports oil and gas companies in making decisions to successfully executive joint venture projects by evaluating the involved strategic risk factors. Joint ventures in the oil and gas industry were examined, joint venture success measures were established, and the risk factors that affect the likelihood of joint venture success were investigated. As a result, a tool has been developed that can help participants evaluate a potential joint venture. This research followed a robust research approach which consisted of both qualitative and quantitative methods. Many steps were involved in the research methodology, including a pilot study, document examination, interviews, questionnaires and analysis. These steps were done to obtain more information regarding the risks and their implications upon entering into joint venture deals. As a result, two success measures were established and verified: 1) financial measures and 2) a sustainability measure. The statistics extraction method then was used to generate three major risk components from 23 risk factors: 1) joint venture boundary, 2) governance and management, and 3) external issues. These outcomes and their relationships were utilized to develop the final model.

1-1-019	
Title	**On the Potential of Intent-based Access Control (ibac) in Preventing Insider Threats**
Author	Abdulaziz Almehmadi
Program	Computer Science
University	University of Ontario Institute of Technology (uoit)
Date of Publication	December 18, 2015

Abstract
Existing access control mechanisms are based on the concepts of identity enrollment and recognition, and assume that recognized identity is synonymous with ethical actions. However, statistics over the years show that the most severe security breaches have been the results of trusted, authorized, and identified users who turned into malicious insiders. Therefore, demand exists for designing prevention mechanisms. Anon-identity-based authentication measure that is based on the intent of the access request might serve that demand. In this thesis, we test the possibility of detecting intention of access using involuntary electroencephalogram (EEG) reactions to visual stimuli. This method takes advantage of the robustness of the Concealed Information Test to detect intentions. Next, we test the possibility of detecting motivation of access, as motivation level corresponds directly to the likelihood of intent execution level. Subsequently, we propose and design Intent-based Access Control (IBAC), a non-identity-based access control system that assesses the risk associated with the detected intentions and motivation levels. We then study the potential of IBAC in denying access to authorized individuals who have malicious plans to commit maleficent acts. Based on the access risk and the accepted threshold established by the asset owners, the system decides whether to grant or deny access requests. We assessed the intent detection component of the IBAC system using experiments on 30 participants and achieved accuracy of 100% using Nearest Neighbor and SVM classifiers. Further, we assessed the motivation detection component of the IBAC system. Results show different levels of motivation between hesitation-based vs. motivation-based intentions. Finally, the potential of IBAC in preventing insider threats by calculating the risk of access using intentions and motivation levels as per the experiments shows access risk that is different between unmotivated and motivated groups. These results demonstrate the potential of IBAC in detecting and preventing malicious insiders.

Health Science

1-2-020	
Title	**Process of Care and Outcome of Critically Ill Patients with Traumatic Brain Injury**
Author	Abdulaziz Alali
Program	Institute of Health Policy, Management and Evaluation
University	University of Toronto
Date of Publication	June 30, 2015

Abstract

This thesis used clinical epidemiology methods to examine the relationship between process of care and outcome of critically ill patients with traumatic brain injury (TBI). First, I evaluated the association between intracranial pressure (ICP) monitoring use and mortality after severe TBI at the patient-level and at the hospital-level. ICP monitoring use was associated with lower mortality at the patient-level [adjusted odds ratio (OR) was 0.44; 95% confidence interval (CI): 0.31-0.63] and at the hospital-level (adjusted or for death in the quartile of hospitals with highest use compared to the lowest was 0.52; 95% CI: 0.35-0.78). The main implication is that wider utilization of ICP monitoring in managing severe TBI appears warranted pending further studies. Second, I evaluated whether decompressive craniectomy or barbiturate coma provides better value, in terms of health effects and costs, for the management of refractory intracranial hypertension following TBI. Decompressive craniectomy resulted in greater quality-adjusted life expectancy relative to barbiturate coma [average gain was 1.5 quality-adjusted life years (QALYs)] but at higher costs (incremental cost-effectiveness ratio was $9,565/QALY gained). The main implication is that decompressive craniectomy, for this indication, is a more attractive strategy relative to barbiturate coma at commonly accepted willingness-to-pay thresholds. Third, I examined the relationship between tracheostomy timing and outcomes of TBI patients. Early tracheostomy (<8 days) was associated with fewer mechanical ventilation days (rate ratio 0.70; 95% CI: 0.66-0.75), shorter ICU stay (rate ratio 0.70; 95% CI: 0.66-0.75), shorter hospital stay (rate ratio 0.80; 95% CI: 0.74-0.86), but not mortality (OR 1.25, 95% CI: 0.80-1.96). The main implication is that clinicians may consider performing early tracheostomy among TBI patients as a mechanism to reduce certain components of in-hospital morbidity but not mortality. Overall, the studies comprising this thesis have demonstrated how multiple health services research methods and analytical approaches can be used to understand the relationship between processes of care and outcome of patients with TBI.

1-2-021	
Title	**Mentoring As a Knowledge Translation Intervention to Inform Clinical Practice: A Multi-methods Study**
Author	Ghadah Abdullah
Program	Nursing/health Science
University	University of Ottawa
Date of Publication	July 02, 2015

Abstract

Background Mentoring is an intervention for implementing evidence into practice, but little is known about this intervention. The overall aim of this dissertation was to examine mentoring as a knowledge translation (KT) intervention to inform clinical practice. Methods 1. Asystematic review was used to determine the effectiveness of mentoring as a KT intervention. 2. An interpretive descriptive qualitative study was conducted to explore the use of mentoring in the Registered Nurses' Association of Ontario's Best Practice Guidelines Implementation/ Knowledge Transfer Fellowship program. Findings 1. Of 10,669 citations from 1988 to 2012, 10 studies were eligible. Findings showed that mentoring alone (n = 1 study) improved one behavioral outcome. When mentoring was used as part of a multi-faceted intervention (n = 9), there were various effects on knowledge, beliefs/attitudes, use of research evidence in clinical practice, and the impacts on healthcare professionals, patients and organizations. 2. Qualitative interviews with 6 fellows, 8 mentors and 4 program leaders revealed that mentoring involved building relationships, establishing a learning plan, and using teaching and learning activities. Mentors were described as accessible, dedicated, and having expertise; fellows were described as dedicated, self-directed, and having mixed levels of expertise. Mentoring was described as positively impacting upon mentoring relationships, fellows, mentors, and organizations. Participants reported no negative outcomes. Conclusion Mentoring was used as a KT intervention to support the implementation of evidence into clinical practice. The systematic review and qualitative study findings informed the Mentoring for Guideline Implementation model. Mentoring involved mentees selecting more experienced mentors who provided individualized support based on mentees' learning needs, which resulted in mutual benefits for mentees and mentors. Future research is required to validate this new mentoring model, develop an instrument to measure the mentor-mentee relationship, and evaluate the effectiveness of mentoring as a KT intervention for guideline implementation in nursing.

1-2-022	
Title	**Smad2 Overexpression and the Progression of Periodontal Disease**
Author	Mazen Kitab Alotaibi
Program	Combined Diploma in Periodontics and Phd in Craniofacial Science
University	University of British Columbia (vancouver Campus)
Date of Publication	July 15, 2015

Abstract

Periodontitis is a chronic inflammatory disease, characterized by destruction of the periodontal attachment apparatus including the alveolar bone. Previous studies have provided evidence for the involvement of transforming growth factor beta (TGF-β) signaling in periodontitis progression. TGF-β signaling is responsible for a variety of cellular processes including proliferation, differentiation and apoptosis. The SMAD2 transcription factor lies at the heart of TGF-β intracellular mediators. Previous authors have reported the effect of Smad2 overexpression on multiple mouse tissues (Ito et al 2001), but did not report the role of Smad2 overexpression on the progression of periodontal disease. We hypothesized that Smad2 overexpression alters apoptosis, cell proliferation, and inflammatory cytokine secretions in the junctional epithelium (JE), leading to periodontal attachment loss. Amouse model that overexpresses Smad2 in epithelial cells driven by the cytokeratin 14 promoter (K14) was used to test the hypotheses. The K14-Smad2 mice findings were compared to those observed in wild type (WT) mice that served as controls. The results of the study showed that Smad2 overexpression reduced the histological surface area of JE when compared to WT mice. The reduction of the JE surface area in K14-Smad2 mice was attributed to an increased apoptotic index and a reduced proliferation rate. The overexpression of Smad2 increased the apoptotic index by down regulating Bcl2, an antiapoptotic molecule. Smad2 overexpression also reduced the proliferation rate of the JE cells in K14-Smad2 mice by upregulating c-Myc, which in turn upregulates phosphorylated retinoblastoma P15, and P27. The overexpression of Smad2 resulted in severe alveolar bone loss in the K14-Smad2 mice when compared to the WT controls. Smad2 overexpression resulted in a reduction in the bone density and bone volume in the K14-Smad2 mice when compared to their WT counterparts. The severe alveolar bone loss in K14-Smad2 mice was attributed to an upregulation in tumor necrosis factor alpha (TNF-α) , RANKL and increased osteoclast numbers. In summary the overexpression of Smad2 reduced the histological surface of JE and resulted in severe bone loss that follows a chronic disease pattern in K14-Smad2 mice.

1-2-023	
Title	**The Role of Pax2 in the Aetiology and Progression of Ovarian Cancer**
Author	Alhujaily, Ensaf M.
Program	Cellular and Molecular Medicine/faculty of Medicine
University	University of Ottawa
Date of Publication	July 17, 2015

Abstract

PAX2 is a transcription factor that is essential for development. Aberrant expression of PAX2 in adult tissues is associated with carcinogenesis and experimental evidence shows that PAX2 generally exhibits oncogenic properties. Although PAX2 is not expressed in normal ovaries, it is highly expressed in low malignant potential and low-grade epithelial ovarian tumors, suggesting that PAX2 induction in ovarian surface epithelium (OSE) may contribute to transformation. Herein, we provide evidence that expression of PAX2 in normal murine OSE (mOSE) cells enhances their proliferation and survival and, when combined with loss of P53, induces tumorigenicity. In addition, OSE cells are known to gain an epithelial phenotype and express epithelial markers prior to their transformation. This study revealed that PAX2 induction in mOSE cells results in an enhanced epithelial phenotype associated with reduction of the epithelialmesenchymal transition markers, SMA-α and COX-2. Furthermore, PAX2 inhibits the mesenchymal phenotype induced by TGF-β and reverses the TGF-β-mediated induction of both SMA-α and COX-2, in mOSE cells. Toward tumor progression, we found that when PAX2 was expressed in murine ovarian cancer cells, it enhanced or inhibited their aggressiveness, depending on the model system. In OSE cells transformed by K-RAS and MYC, PAX2 inhibited P53 accumulation and increased the level of pERK1/2 and COX-2. In addition, PAX2 inhibited apoptotic induction in these tumors, while increasing angiogenesis, both of which are enhancers of tumor aggressiveness. However, in a murine model of high-grade serous ovarian cancer, PAX2 expression reduced tumor mass and improved animal survival, likely via reduced proliferation and metastasis. Mechanistic studies showed that PAX2 increased Htra1 and decreased COX-2 in those tumors. Both HTRA1 and COX-2 are novel downstrream targets for PAX2 that are identified in the current study. These results suggest that PAX2 may not act as a classical oncogene or tumor suppressor in ovarian cancer; rather, it modulates tumorigenesis differently, depending on the tumor context. The observation that PAX2 targets distinct biological and molecular pathways might help to guide future studies to different therapeutic targets in low-grade vs. high-grade cancers.

1-2-024	
Title	**Older Workers with Musculoskeletal Injuries: Characteristics and Prognostic Factors**
Author	Fahad Saad Algarni
Program	Rehabilitation Science
University	University of Alberta
Date of Publication	September 11, 2015

Abstract

ABSTRACT Background: Older workers often require more recovery time than younger workers due to various considerations such as comorbidities, which may result in prolonged work disability. Work disability and its negative consequences may be reduced by identifying injured workers who are at increased risk of developing work disability. The question of whether older injured workers have the same characteristics and prognostic factors as younger injured workers, however, requires more investigation. Objectives: This thesis aimed to determine the characteristics and prognostic factors for occupational disability following musculoskeletal (MSK) injuries among older workers, and to determine whether these characteristics and prognostic factors are significantly different than those for younger injured workers. Methods: The present investigation comprises three studies: one cross-sectional study and two cohort studies. All studies utilized a dataset containing administrative and clinical data for claims from the Workers' Compensation Board of Alberta. This database provides information about injured workers who had incurred work-related MSK injuries in Alberta and underwent a comprehensive return to work (RTW) assessment, and includes many variables (i.e. demographic and social, occupational, health/injury, and health care utilization). The dataset also includes information on whether the claimant continued to receive compensation payments 3 months following the RTW assessment or after discharge from subsequent rehabilitation programs (i.e. Functional Restoration). The study's participants consisted of three age groups: younger and middle-aged working adults (25-54 years), adults nearing retirement (55-64 years), and adults past retirement age (65 years and older). Variables were compared between the age groups. In the two cohort studies, logistic regression analysis examined the relevant variables as prognostic factors for work disability, as indicated by the receipt of wage replacement benefits. In addition to identifying prognostic factors, regression analysis determined whether these factors were the same in the younger and older age groups by considering the interaction between each predictor variable and a dichotomous variable indicating age group. Results: All three studies revealed differences in the characteristics of injured employees among the age groups. Injured workers aged 65 years or older had a greater likelihood of lower educational attainment, working in trades and labour occupations, and not having rehabilitation recommended despite incurring more severe injuries. Furthermore, six factors – SF-36 Role Physical, modified work availability, number of health care visits, time period between accident and comprehensive RTW assessment, sex, and age – appear to be important in predicting work disability. In the second study, interactions between health care factors and the categorized age variable were statistically significant, with more physician and physical therapy visits predictive of delayed recovery only in younger workers. In the third study of workers discharged from rehabilitation programs, no significant interactions were observed between age group and any of the prognostic factors. However, age was a predictor of work disability, with older workers more likely to receive wage replacement. Conclusions: The study results indicate the need for researchers, healthcare workers, and employers to distinguish younger and older employees with respect to RTW considerations. As a group, workers aged 65 or older with MSK injuries appear to experience disadvantages from a vocational rehabilitation perspective. The research also revealed significant differences in prognostic factors for wage replacement across different age groups, especially related to the number of physician and physical therapy visits. More primary health care visits were associated with increased risk of prolonged occupational disability in younger, but not older age groups, implying that different treatment and prevention approaches should be considered for the younger group, such as early referral to multidisciplinary health services and rehabilitation. Finally, despite significant disparities between the traits of younger and older workers, these two groups did not display major differences in prognostic factors for wage replacement after undergoing occupational rehabilitation. However, the negative prognostic factor of age indicates that older employees had a greater likelihood of experiencing prolonged occupational disability; this result emphasizes the need to examine other as yet unmeasured prognostic factors.

1-2-025	
Title	**The Role of Cytochrome P450 and Their Associated Arachidonic Acid Metabolites in the Initiation and Progression of Cardiac Hypertrophy**
Author	Hassan Nasser Althurwi
Program	Pharmaceutical Sciences
University	University of Alberta
Date of Publication	December 15, 2015

Abstract

Heart failure (HF) is the leading cause of mortality and disability in adults worldwide. Cardiac hypertrophy is an independent risk factor and one of the major hallmarks of HF. Research in cardiac hypertrophy is considered as a research into the early events in the development of HF. The expression of cytochrome P450 (CYP) and soluble epoxide hydrolase (sEH) enzymes has been identified in the heart and their levels have been reported to be altered during cardiac hypertrophy and HF. The role of CYP enzymes in cardiac hypertrophy emerge from their ability to metabolize arachidonic acid to the cardioprotective epoxyeicosatrienoic acids (EETs) and the cardiotoxic 20-hydroxyeicosatetraenoic acid (20-HETE) metabolites. Therefore, the objective of the present work was to investigate the role of CYP enzymes, sEH, and CYP-derived arachidonic acid metabolites in the pathogenesis of cardiac hypertrophy. Our results show that cardiac hypertrophy was initiated after 72 hours and 6 hours of isoproterenol treatment in rat and human fetal ventricular cell line, RL-14, respectively. Studies performed at the prehypertrophy phase showed decreases in the expression of CYP epoxygenases and an induction of sEH activity. Consequently, lower EET and higher dihydroxyeicosatrienoic acid (DHETs) levels were observed prior to cardiac enlargement. On the other hand, isoproterenol caused an induction of CYP1A1, CYP1B1, CYP2B1, CYP2B2, CYP4A3 and CYP4F4 expression during the established phase of cardiac hypertrophy, which consequently led to lower levels of EETs and higher levels of 20-HETE. Interestingly, inhibition of sEH by 1-(1-methanesulfonyl-piperidin-4-yl)-3-(4-trifluoromethoxy-phenyl)-urea (TUPS) attenuated the progression of cardiac hypertrophy and fibrosis induced by isoproterenol. Moreover, TUPS significantly inhibited the isoproterenol-mediated effects on CYP enzymes and their associated metabolites. Furthermore, we showed that fenofibrate significantly induced the cardiac expression of CYP epoxygenases such as CYP2B1, CYP2B2, CYP2C11, and CYP2C23, whereas it decreased the expression of the cardiac ω-hydroxylase CYP4A3. Consequently, fenofibrate significantly increased the formation of cardiac EETs whereas it decreased the cardiac level of 20-HETE. Interestingly, fenofibrate significantly decreased the hypertrophic markers and the increase in heart-to-body weight ratio induced by isoproterenol. Finally, we showed that increasing EET levels by induction of CYP epoxygenases, sEH inhibition, or exogenous administration of EET prevented the initiation of cardiac hypertrophy through a nuclear factor-kB-mediated mechanism. Taken together, these findings reveal a crucial role of CYP, sEH, and CYP-mediated arachidonic acid metabolism in the initiation and progression of cardiac hypertrophy, which may lead to discovery of novel targets for the prevention of HF at an early stage.

Humanity & Social Sciences

1-4-026	
Title	**Understanding the Relationship Between Oncolytic Ad5 Deleted E1b 55kda Lytic Infection and P53 in Mammalian Cells**
Author	Basma Abbas
Program	Biotechnology
University	Brock University
Date of Publication	April 10, 2015

Abstract

Adenoviruses are the most commonly used in the development of oncolytic therapy. Oncolytic adenoviruses are genetically modified to selectivity replicate in and kill tumor cells. The p53 molecule is a tumor suppressor protein that responds to viral infection through the activation of apoptosis, which is inhibited by adenovirus E1B55kDa protein leading to progressive viral lytic cycle. The non-specificity of replication has limited the use of wild type adenovirus in cancer therapy. This issue was resolved by using an E1b deleted Ad that can only replicate in cells with a deficiency in the p53 protein, a common feature of most cancer cells. Although demonstrating a moderate success rate, E1b55kDa deleted Ad has not been approved as a standard therapy for all cancer types. Several studies have revealed that E1b deleted Ad replication was independent of p53 status in the cell, as the virus replicated better in some p53 deficient cancers more than others. However, this mechanism has not been investigated deeply. Therefore, the objective of this study is to understand the relationship between p53 status, levels and functional activity, and oncolytic Ad5dlE1b55kDa replication efficiency. Firstly, five transient p53 expression vectors that contain different regulatory elements were engineered and then evaluated in H1299, HEK293 and HeLa cell lines. Data indicated that vector that contains the MARs and HPRE regulatory elements achieved the highest stability of p53 expression. Secondly, we used these vectors to examine the effect of various p53 expression levels on the replication efficiency of oncolytic Ad5dlE1b55kDa. We found that the level of p53 in the cell had an insignificant effect on the oncolytic viruses' replication. However, the functional activity of p53 had a significant effect on its replication, as Ad5dlE1b55kDa was shown to have selective activity in H1299 cells (p53-null). In contrast, a decrease in viral replication was found in HeLa cells (p53-positive). Finally, the effect of p53's functional activity on the replication efficiency of oncolytic Ad5dlE1b55kDa was examined. Viral growth was evaluated in H1299 cells expressing number of p53 mutants. P53-R175H mutant successfully rescued viral growth by allowing the virus to exert its mechanism of selectivity. The mechanism entailed deregulating the expression of specific

genes, cell cycle and apoptosis, in the p53 pathway to promote its production leading to efficient oncolytic effect. These results confirmed that oncolytic Ad5dlE1b55kDa sensitivity is mutation-type specific. Therefore, before it is applied clinically as cancer therapy for p53 deficient tumors, the type of p53 mutation must be determined for efficient antitumor effect.

1-4-027	
Title	**An Investigation of Knowledge Transfer in a High School Inquiry-based Project: Transferring Students' Experiential Knowledge in the Form of Lessons Learned and Stories**
Author	Dhary Hamed Abuhimed
Program	Information Studies
University	Mcgill University
Date of Publication	May 20, 2015

Abstract
The process of knowledge transfer (KT) is an important factor in minimizing the loss of productivity and increasing performance in various organizations. This study adopts the view of a high school as a knowledge-based organization and responds to calls for research at the intersection of education and knowledge management. The postulation is that students will benefit from KT. In order to verify this postulation, the study's framework is based on the adaptation and use of an empirically tested model put forth by Szulanski (1996). The study's purpose is to investigate the transfer of experiential knowledge from past student cohorts to a new cohort, who are engaged in an inquiry-based project. To achieve this objective, a website was developed as a channel to transfer lessons learned and stories as text-based knowledge artefacts (KAs). Three questions are posed to verify if experiential knowledge is transferred, to uncover facilitators and barriers to the process, and to determine if KT improves students' grades and research processes during the inquiry-based project. The study took place in a high school in Montreal, Canada. Based on three years of observations and data collection, lessons learned and stories were collected from grade eight students engaged in an inquiry-based history project. These knowledge artefacts were then stored and structured in the website, which was accessible to a new cohort of students, who had to complete a similar inquiry-based history project. Qualitative data collection included documenting 30 hours of classroom observation from March-June 2013, analysing 66 grade eight students' projects, and conducting eight individual interviews. Quantitative data was analysed using bivariate tests to determine correlations among the survey responses of 65 participants. Results show that 27 participants were the recipients of KT. By triangulating data, and analysing both successful and unsuccessful cases of KT, evidence was found to support the adaptation of Szulanski's framework. Findings revealed the stages of KT when students experienced the most difficulty, the most significant barriers to overcome, as well as facilitators to consider in future studies. In conclusion, findings show that students were able to leverage the benefits of KT. Future research should further explore this study's original approach to knowledge management using a website as a KT channel.

CHAPTER 2
Master Theses

Engineering & Sciences

2-1-028	
Title	**Development of Climate Change Scenarios for the South Nation Watershed**
Author	Abdullah Sulaiman Hamad Alodah
Program	Engineering and Engineering Industries
University	University of Ottawa
Date of Publication	January 01, 2015

Abstract
Climate change studies are crucial to assist decision-makers in understanding future risks and planning adequate adaptation measures. In general, Global/Regional Climate Models (GCMs/RCMs) achieve coarse resolutions, and are thus unable to provide sufficient information to conduct local climate assessments. Downscaling, defined as a method that derives local to regional-scale (10 to 100 km) information from larger-scale models or data analyses, is used to address this deficiency. In this thesis, a particular downscaling technique, known as the Quantile-Quantile transformation, was used to adjust the statistical distribution of RCM variables to match the statistical distribution of the observed variables generated by two RCMs: The Canadian Regional Climate Model version 3.7.1 and the ARPEGE model, on the historical period (1961-2001). The analyses presented in this study were applied to daily precipitation as well as maximum and minimum temperatures in the South Nation watershed in Eastern Ontario, Canada. The two-sample Kolmogorov–Smirnov test indicated that the Quantile-Quantile transformation improved the shape of the PDF of RCM-simulated climate variables. The results suggest that, under the A1B scenario, temperatures in the watershed would rise significantly and there would be an increment in precipitation occurrence and intensity. Trend analysis was performed on the 1961 to 2001 and 2041 to 2081 timeframes, using the Mann-Kendall test and the Sen's slope estimator. Discernible, often significant, increases of maximum and minimum temperatures were found for the 1961 to 2001 period, and stronger ascending slopes for the 2041 to 2081 period. However, there was marginal evidence of changes in the time series of maximum and accumulated annual precipitation for both periods. The study also outlined how the frequency and intensity of some extreme weather events will evolve in the 2041-2081 period in response to the rise in atmospheric GHG concentrations. Projected impacts were investigated by tracking future changes in four extreme temperature indices and three precipitation indices. It was predicted that heavy precipitation events and warm spells will occur more frequently and intensely, while extreme cold events will be weaker, and some will be hardly observed.

2-1-029	
Title	**The Local Buckling Response of Corroded Pipelines Under Combined Loads**
Author	Ahmad Mfarreh M. Alenezi
Program	Engineering and Engineering Industries
University	Carleton University
Date of Publication	January 01, 2015

Abstract
A broad parametric study has been conducted using the finite element analysis (FEA) technique to investigate the local buckling response of pipelines with an axial groove corrosion defect under combined loads. The developed model used in the analyses has been validated against experimental tests. Alarge number of influential parameters such as the diameter to thickness ratio (D/t), axial load ratio (σa/σy), internal pressure ratio (p/py), defect circumferential length ratio (lc/D), defect depth ratio (d/t) and material properties (stress-strain curves) have been evaluated. Utilizing results from the parametric study, non-dimensional equations for predicting the critical local moment (Mlc), critical compressive strain (εlc) and critical local curvature (Φlc) for pipes with an internal axial groove corrosion defect as a ratio to that of plain pipes have been developed through a multi-variable non-linear regression. Good agreement has been achieved between the predicted buckling (failure) limits (Mlc/Mlp, εlc/εlp and Φlc/Φlp ratios) using the developed equations and the finite element analyses.

2-1-030	
Title	**Crt Based Somewhat Homomorphic Encryption Over the Integers**
Author	Ali Saeed Abdullah Alzahrani
Program	Engineering and Engineering Industries
University	University of Victoria
Date of Publication	January 01, 2015

Abstract
Over the last decade, the demand for privacy and data condentiality in communication and storage processes have increased exponentially. Cryptography can be the solution for this demand. However, the critical issue occurs when there is a need for computing publicly on sensitive information or delegating computation to untrusted machines. This must be done in such a way that preserves the information privacy and accessibility. Forthis reason, we need an encryption algorithm that allows computation on information without revealing details about them. In 1978 Rivest, Adleman and Dertouzos [RAD78] raised a crucial question: can we use a special privacy homomorphism to encrypt the data and do an unlimited computations on it while it remains encrypted without the necessity of

decrypting it? Researchers made extensive eorts to achieve such encryption algorithm. In this paper, we introduce the implementation of the CRT-based somewhat homomorphic encryption over the integers scheme. The main goal is to provide a proof of concept of this new and promising encryption algorithm.

2-1-031	
Title	**Survival Analysis Approaches for Prostate Cancer**
Author	Eman Ahmed Ali Alhasawi
Program	IT
University	Laurentian University
Date of Publication	January 01, 2015

Abstract
Survival time has become an essential outcome of clinical trial, which began to emerge among the latter half of the 20th century. Apresent study was carried out on the survival analysis for patients with prostate cancer. The data was obtained from Memorial Sloan Kettering where each sample was collected from the recipients of the treatment of radical prostatectomy. The Kaplan-Meier method was used to obtain and estimate the survival function and median time among the primary and metastatic tumor of prostate cancer. Results showed that the metastatic tumor has a poor survival rate compared to the primary tumor, which give us a hint that primary tumor has a higher probability of surviving. The log-rank test was used to test the differences in the survival curves. The results showed that the difference in survival rate between the patients of the two groups of tumor was significant with a p-value of 4.44e-15. The second approach was based on the efficiency of cox proportional hazards model and parametric model. Some criteria of residuals were used for judging the goodness of fit among the candidate models. The cox proportional hazard (PH) model provided an effective covariate on the hazard function. As a result of cox PH model, the influence of standard clinical prognostic factors is based on the hazard rate of prostate cancer patients. These prognostic factors are: prostate specific antigen (PSA) level at diagnosis, tumor size, Secondary Gleason grade, and Gleason score which is helpful to determine the treatment. The Gleason score [HR 4.835, 95% CI 2.7847- 8.3937, p=2.20E-08] has the most significant progression-associated prognosticators and reveal to be an effective criteria leading to death in prostate cancer. The Accelerated Failure Time (AFT) was applied to the data with four distortions. AFT with Weibull distortions was chosen to be the best model for our data by testing the AIC.

2-1-032	
Title	**Optimal Planning and Scheduling of Battery Energy Storage Systems for Isolated Microgrids**
Author	Hisham Abdulrahman N Alharbi
Program	Engineering and Engineering Industries
University	University of Waterloo
Date of Publication	January 01, 2015

Abstract
Balancing the energy demand in isolated microgrids is a critical issue especially in the presence of intermittent energy sources. Battery Energy Storage Systems (BESS) can be installed in such circumstances to supply the demand and support the reserve requirements of the isolated microgrid. However, due to the high installation costs of BESS, there is a need for proper mechanisms to select such systems and size them optimally. Furthermore, since BESS are often installed to serve multiple applications, these should be properly modeled to coordinate their different functionalities. In this thesis, a multi-year operational planning model is developed to determine the BESS optimal power rating and energy capacity along with the year of installation taking into account its coordinated operation. The model includes unit commitment formulation with renewable energy and BESS operational constraints. The optimal planning decisions are obtained for different BESS technologies under several scenarios of ownerships. The uncertain patterns of solar and wind resources and system demand are considered and several microgrid operational scenarios are created. Astochastic optimization model is developed to determine the optimal BESS size and installation year including the different states of the uncertain microgrid variables. The stochastic optimization model is solved using a decomposition based two-stage iterative approach to cope with the large computational burden of such problems.

2-1-033	
Title	**Classification Approaches for Microarray Gene Expression Data Analysis**
Author	Makkeyah Mousa Z Almoeirfi
Program	IT
University	Laurentian University
Date of Publication	January 01, 2015

Abstract
The technology of Microarray is among the vital technological advancements in bioinformatics. Usually, microarray data is characterized by noisiness as well as increased dimensionality. Therefore, data, that is finely tuned, is a requirement for conducting an analysis of microarray data. Biological samples classification represents the most performed analysis on microarray data. This study is focused on the determination of the confidence level used for the classification of a sample of an unknown gene based on microarray data. Asupport vector machine classifier (SVM) was applied, and the results compared with other classifiers including K-nearest neighbor and neural network. Four datasets of microarray data including leukemia data set, prostate dataset, colon dataset, and breast dataset were used in the research. Additionally, the study analyzed two different kernels of SVM. These were radial kernel and linear kernels. The analysis was conducted by varying percentages of dataset distribution coupled with training and test datasets in order to make sure that the best positive sets of data provided the best results. The 10-fold cross validation method (LOOCV) and the L1 L2 techniques of regularization were used to get solutions for the over-fitting issues as well as feature selection in classification. The ROC curve and a confusion matrix were applied in performance assessment. K-nearest neighbor and neural network classifiers were trained with similar sets of data and comparison of the results was done. The results showed that the SVM exceeded the performance and accuracy compared to other classifiers. Foreach set of data, support vector machine was the best functional method based on the linear kernel since it yielded better results than the other methods. It showed the highest accuracy as well as the area under curve compared to k-nearest neighbor and neural network in the three different tests.

2-1-034	
Title	**Mössbauer Spectroscopy and Magnetic Studies of Eupdge3, Al13fe4, and Fenisn**
Author	Mohammed Abdulaziz B Albedah
Program	Physical Sciences
University	University of Ottawa
Date of Publication	January 01, 2015

Abstract
In this thesis the result x-ray diffraction, magnetic susceptibility, magnetization, and Mössbauer spectroscopy measurements of EuPdGe3, Al13Fe4, and FeNiSn are reported. The compound EuPdGe3 crystallizes in the BaNiSn3-type tetragonal structure (space group I4mm) with the lattice constants a = 4.4457(1) Å and c = 10.1703(2) Å. The results are consistent with EuPdGe3 being an antiferromagnet with the Néel temperature TN = 12.16(1) K and with the Eu spins S = 7/2 in the ab plane. The temperature dependence of the magnetic susceptibility above TN follows the modified Curie-Weiss law with the effective magnetic moment of 7.82(1) μB per Eu atom and the paramagnetic Curie temperature of −5.3(1) K indicative of dominant antiferromagnetic interactions. The M(H) isotherms for temperatures approaching TN from above are indicative of dynamical short-range antiferromagnetic ordering in the sample. The temperature dependence of the hyperfine magnetic field follows a S = 7/2 Brillouin function. The principal component of the electric field gradient tensor is shown to increase with decreasing temperature and is well described by a $T32/$ power-law relation. The Debye temperature of EuPdGe3 determined from the Mössbauer data is 199(2) K. The compound Al13Fe4 crystallizes in the monoclinic space group C2/m, in which Fe atoms are located at five inequivalent crystallographic sites, with the lattice parameters a = 15.503(2) Å, b = 8.063(2) Å, c = 12.464(2) Å, and β = 107.71(2)°. It is demonstrated that zero-field Mössbauer spectra can be decomposed into three quadrupole doublets. With the aid of the calculated electric field gradient (EFG) parameters we show that the first doublet results from one Fe site, the second doublet is due to two other Fe sites, and the third doublet originates from the last two Fe sites. We find that the shape of the Mössbauer spectrum of Al13Fe4 measured in an external magnetic field of 90 kOe can be accounted for with five component subspectra generated using the calculated II EFG parameters at five inequivalent Fe sites. The quadrupole splittings corresponding to three component doublets are shown to increase with decreasing temperature and are well described by a $T32/$ power-law relation. The Debye temperature of Al13Fe4 is found to be 383(3) K. We find a pseudogap in the density of states (DOS), with a width of ∼ 0.2 eV, that is centered 0.1 eV above the Fermi energy. The finite DOS at the Fermi energy confirms good metallicity of Al13Fe4. The 1/T-like dependence of the magnetic susceptibility shows that Al13Fe4 is a paramagnet. The compound FeNiSn crystallizes in the ZrBeSi-type crystal structure (space group P63/mmc) with the lattice constants a = 4.1329(1) Å and c = 5.1912(2) Å. It is a ferromagnet with the Curie temperature TC = 1024(10) K. Evidence is provided for a possible phase separation in the studied compound, into a majority magnetic phase and a minority, nanoscale, disordered phase with the corresponding iron magnetic moments at 4.6 K of 2.39(1) and 1.17(1) μB. It is demonstrated that FeNiSn decomposes at a temperature significantly below TC when it is annealed in vacuum for about 30 hours. The Debye temperature of FeNiSn is found to be 445(6) K.

2-1-035	
Title	**Block Copolymer and Graphene Dry Etching**
Author	Wadha Abdullah a Alyalak
Program	Engineering and Engineering Industries
University	University of Waterloo
Date of Publication	January 01, 2015

Abstract
This thesis focuses on interpreting the use of block copolymer self-assembly in nanolithography. Block copolymers are attractive materials for nanofabrication due to their ability to phase separate into ordered and chemically distinct domains of 10s nm size. In order to utilize the

self-assembled structure in lithography applications like pattern transfer, the structure has to be perpendicular to the substrate. This thesis presents an effective way to deliver a perpendicular self-assembled PS-b-PMMA using 3-MPTS to neutralize the surface. This method depends on vapor deposition of 3-MPTS at room temperature for two hours prior to deposition of PS-b-PMMA. This thesis also presents an easy and effective way to control the number of graphene layers based on RIE process using oxygen plasma. The etching process was preformed on multi and single layer graphene prepared by (CVD). Raman spectrometer was used to characterize the samples before and after RIE process. The number of layers was identified form Raman spectrum by calculating the ratio I2D/IG, and the results show that bi-layer and single layer were achieved from multi-layer graphene, and the graphene was etched when using RIE process on a single-layer graphene. The RIE process was successfully used to pattern-transfer on a graphene-oxide film. This presents an effective solution to pattern and etch graphene for different applications.

2-1-036	
Title	**Bootstrapping Trust Evaluation Using a Trust Certificate Model**
Author	Basmah Mohammed Abdullah Almoaber
Program	IT
University	University of Ottawa
Date of Publication	February 01, 2015

Abstract
Trust plays a vital role in the decisionto initiate any interaction. Rational agents may use past experiences and other agents' opinions to decide to trust, but due to the nature of open multi-agent systems, where agents can dynamically join and leave the system at any time, agents may find themselves dealing with complete strangers whom neither they nor their friends have encountered before. This situation forces the agents to choose partners randomly, which significantly increases the risk of encountering unreliable agents. Forinstance, service requesters may become reluctant to initiate communication with newly-joined service providers. And when the newcomers are service requesters, who are willing to exploit the environment, service providers may also hesitate to start any connection with them. As a result, newcomers are excluded from the competition and old agents lose the possibility of interacting with better agents. In this thesis, we address that issue by creating a Trust Certificate (TC) model in which each agent is equipped with a certificate that works as a reference by providing information about its holder. The information is obtained and stored by the agent itself and is available to other agents who request it to evaluate the holder's trustworthiness for a potential interaction. The stored information is about the agent's role in the society and its performance in past interactions. The TC model allows agents to retrieve reputation information and make initial trust evaluations when evidence is unavailable. It also helps agents to avoid the need to make random partner selection due to the information scarcity. We show how this model enhances the interaction process between agents by evaluating it in the context of a simulated multi-agent system.

2-1-037	
Title	**Validation of Counting Methods in Coccolithophores Studies**
Author	Majed Nasser M Turkistani
Program	Physical Sciences
University	University of Toronto
Date of Publication	February 01, 2015

Abstract
The auto ecology of s ingle sp ecies and the interpretation of paleo environmental changes require attaining an accurate enumeration of co ccolith as semblage. The current study is carrying out a validation investigation of the differe nt counting metho ds in co ccolithophores researches. The 135 samples were prepared using a spraying te chnique, and an automated SEM image acquisition (Bollmann et al., 1999, 2004). Atotal of 29 co ccolith taxa were identified based on qualitative analysis; statistical analysis was applied on the data se ts from different exp eriments, and the results were plotted using line graphs. Among the co ccoliths were identified Emiliania huxleyi, Gephyrocapsa oceanica and Florisphaera profunda were the most dominant species in all experiments, and they were used to conduct comparisons in order to examine any difference between the data sets. The results of the comparisons show significant and astonishing differences in the data, and these differences were related to several factors including the coccoliths morphology, broken species, borderer species and equipment

2-1-038	
Title	**An Intelligent Multi-agent Based Model for Collaborative Logistics Planning**
Author	Manal Khayyat, Anjali Awasthi
Program	Quality Systems Engineering
University	Concordia University
Date of Publication	February 25, 2015

Abstract
Efficient freight distribution is indispensable for sustaining customer demand in modern times. In recent years, there has been a steady growth in the use of information systems in the logistics domain towards facilitating an agile distribution process. This study investigates the problem of collaboration planning in logistics and proposes an agent based approach for better management of collaborative logistics. Based on the approach, a decision support system is designed that utilizes RFID technology for ensuring inventory accuracy and monitoring carriers' delivery movements. The proposed approach involves three steps. In the first step, a conceptual framework is designed. Afterwards, a simulation agent based model is developed including six autonomous agents namely (RFIDG, Supplier, Retailer, Carrier, Network, and City Administrator) interacting with each other, as well as, with the surrounding environment. In the second step, game theory is utilized to study and analyze suppliers' collaboration and carriers' collaboration behavior in detail. Modeled games are solved using Nash Equilibrium. Finally, correctness of the games is verified by formulating them mathematically. Developed optimization equations are fundamental to the operations research field. They employ the simplex and goal algorithms of linear programming. Results prove that there are plethora of advantages such as automatism and real time response, cost reduction, increased suppliers' profits, time management, and a collaborative framework for implementing the proposed agent based model where suppliers, retailers, and carriers will receive immediate benefits. Major contributions of the thesis stems from considering future technologies such as RFID and agent oriented strategies to provide fast quality services to customers.

2-1-039	
Title	**Design and Characterization of Polymeric Strain Gauges for Biomedical Applications**
Author	Maan Naim a Almarghalani
Program	Engineering and Engineering Industries
University	University of British Columbia
Date of Publication	March 01, 2015

Abstract
The market need for organic materials to be used in sensor design has increased with the growing interest in organic printed electronics. Therefore, it is important to find and investigate the piezoelectric and piezoresistive properties of organic materials through the use of alternative rapid fabrication techniques. Poly(3,4- ethylenedioxythiophene) poly(styrenesulfonate), commonly known as PEDOT:PSS, a conductive polymer widely used in organic electronics, can be possibly used as piezoresistive element to measure the strain on flexible substrate electronics. Using PEDOT:PSS and other metallic inks such as silver, the goal of this work is use alternative microfabrication technologies to deposit PEDOT:PSS on flexible substrates and then to use these methods to design strain gauges. The targeted biomedical applications of the designed strain gauges vary from rehabilitation devices to smart biomedical monitoring systems. In this work, PEDOT:PSS strain gauges are initially designed using aerosol jet deposition on a flexible polyamide substrate. The technology has proved to be very powerful in depositing lines with thickness less than 1um. In order to reduce the initial resistance of the strain gauges, it is desirable to increase the thickness of the structure. Forthis reason, laser micromachining etching is used to fabricate PEDOT:PSS strain gauges. The designed structures have been tested mechanically and electrically in order to measure their gauge factors to longitudinal and transversal mechanical strains. The resultant longitudinal gauge factor varied in the range of -1 and 2, while little change in the resistance was noticed for transversal characterization. Using the same fabrication method, silver paint strain gauges are designed and characterized to have a high longitudinal gauge factor approximated to be higher than 10. The silver paint gauge factor barely responded to transversal actuation. While the variability of the PEDOT:PSS strain gauges results seemed to be an issue, the reproducibility of silver ink strain gauges proved the viability of the technological fabrication process presented in this work.

2-1-040	
Title	**Proximity Table: Exploring Tabletop Interfaces That Respond to Body Position and Motion**
Author	Mohammed Abdulhamid Mohammed Alnusayri
Program	IT
University	Dalhousie University
Date of Publication	March 01, 2015

Abstract
This thesis presents the ProximityTable framework, an interactive tabletop system that uses a top-down tracker to track users around the display. Based on this tracking data it generates a number of proxemics events that can be used by developers to generate application-based responses. The main goal of this thesis is to apply Hall's proxemics theory to the design of interactive tabletops in order to support the work of multiple groups around a single interactive tabletop display. Aset of proxemics-based interactions were designed using the core features of ProximityTable, and evaluated in three focus group sessions. From our evaluation, we found that the majority of our participants also agreed that adapting the workspace according to group size allows for better interaction with the display, where users can directly interact with the display or have a better view of the contents in the workspace. Even when the majority of our participants chose to work on joined workspaces, there were some instances where they split the workspace in the middle of the task to complete tasks in parallel. We also found that users preferred to have a balance between user and system control, which will allow them to have manual control of the responses to proxemics events that is supported by system's detection.

2-1-041	
Title	**A Visual Spreadsheet Using Html5 for Whole Genome Display**
Author	Nada Abdullah Mohammed Alhirabi
Program	IT
University	Concordia University
Date of Publication	March 01, 2015

Abstract
Modern sequencing technology has enabled the cheap, rapid production of whole genomes. There is a need for visualization tools to show the data collected about a whole genome such as genes, proteins, annotations, and expression data. Many common approaches are developed such as the genome browser where sequence features are displayed as visual elements in tracks and features are aligned with their genome coordinates, visual networks where the data elements represented as nodes and relationship as edges, and traditional spreadsheet where each row captures the information about a gene/genome where the information is textual in nature, such as identifiers, descriptions, or sequences. Our study is focusing in the last approach with introducing some advanced features. To build the system, the common used similar systems are reviewed, and during the implementation some software artifacts are reused such as reusing some JavaScript libraries to reduce the complexity of software development. Generally, an incremental method is used to develop the webpage starting from collecting the data from AspGD database, analyzing them, coding then testing them once at time. Our research group studies fungal genomes, so the spreadsheets are tested by displaying each of the Aspergilli genomes in the AspGD database (www.aspgd.org). We have developed CGene and CGenome, pronounced See-Gene and See-Genome respectively, as a HTML5 web-based spreadsheets that can incorporate visual displays, as well as text, within the spreadsheet cells. Current displays use Scalable Vector Graphics (SVG) to present these spreadsheets which are generated from standard GFF3 files, standard output files from InterProScan, aspgd files from AspGD Gene Ontology Annotations File, and Chromosomal Feature File. All these files are analyzed to present them in a visual way that requires less effort to understand. The main aim of our study is to take the advantages of the ability of humans to recognize patterns. The user can see the gene/genomes of interest as row-by-row of visualization. This can play powerful roll to ease the understanding of quantitive data by replacing them by graphical figures that make the comparison easier.

2-1-042	
Title	**Synthesis and Characterization of Reduced Graphene Oxide Films**
Author	Fatimah Alussail
Program	Mechanical Engineering (nanotechnologgy)
University	University of Waterloo
Date of Publication	March 11, 2015

Abstract
The discovery of graphene properties in 2004 has replaced the need for indium titanium oxide on many applications. Alarge amount of research has focused on the advantages of using synthesis graphene as an inexpensive and clean process. In spite of a variety of synthesis methods which are able to produce high quality graphene sheet, Hummers method in synthesis graphene oxide has received the most attention due to its simplicity. This research illustrates the reduction method of graphene oxide and the restored conjugation structure of graphene sheet. Since using graphene oxide materials before reduction acts as an insulator, reduction process can improve electronic structure as well as electrical property. There are several methods used to fabricate reduced graphene oxide, including thermal reduction, chemical reduction, and photo reduction. Using one method is insufficient in producing a complete reduction of oxygen functional group. However, multi-step reduction is a new approach which relies on using two methods. Percentage of defect and surface morphology are factors that must be considered in preferring one method over another. Future research is needed to understand the mechanism of reduction, the increase and decrease defect ratio during reduction, the removable of oxygen atoms, and the rearrangement of carbon atoms.

2-1-043	
Title	**Isolation of an Astaxanthin Dye from Nudibranchs and an Anti-campylobacter Peptide from Dairy Sources**
Author	Khadra Alomari
Program	Chemistry
University	St. Francis Xavier University
Date of Publication	March 11, 2015

Abstract
Nature is a rich source of novel compounds that may have interesting biological activity and is an attractive source of new therapeutic candidates as a tremendous chemical diversity is found in millions of species of plants, animals, marine organisms, and microorganisms. Natural products remain an important source of new drugs, new drug leads, and new chemical entities. This thesis involved two main projects, both of which are in the area of natural products and had the goal of isolating and identifying chemical compounds from natural sources. The first project involved the study of an intriguing biological system involving nudibranchs and their hydroid prey that are found in the Bras d'Or Lakes, Cape Breton, Nova Scotia. Nudibranchs are well known to eat hydroids and are able to incorporate entire stinging cells, reusing them for their own defense. This study focused on determining the structure and properties of chemical compounds, particularly pigments, which are also transferred between these marine organisms. It was established that astaxanthin is a primary carotene pigment common to the nudibranch species and their prey. Afeeding experiment gave strong evidence supporting the prediction that these nudibranchs sequester and potentially modify their pigmentation from their diet. The second project involved the identification of novel antimicrobial compounds from organic food sources found in Nova Scotia. This study aimed to identify and characterize compounds that are found in locally produced organic cheese and yogurt products capable of inhibiting the growth of Campylobacter iv species responsible for gastroenteritis. It was found that one bacterial cheese isolate has potent inhibitory activity against multiple strains of Campylobacter spp. The active component being secreted is a peptide that may be synthetically derived from beta casein.

2-1-044	
Title	**Nfc-enabled Smartphone Application for Theme Park Safety and Control**
Author	Shuruq Abed Alsaedi
Program	Master of Computer Science
University	Dalhousie University
Date of Publication	March 30, 2015

Abstract
The U.S. Consumer Product Safety Commission has stated that the number of children who experience accidents and injuries inside theme parks increases yearly. Adults also face difficulties inside theme parks and suffer from ride-related injuries. In order to avoid such problems, theme park visitors should be aware of the importance of reading the warnings and instructions and ensure that the ride regulations are met. However, these instructions are largely ignored. This thesis presents a novel theme park mobile application that aims to decrease theme park accidents and increase safety by ensuring that theme park visitors meet the requirements of the chosen ride. The NFC-based smartphone approach ticket system aims to minimize the waiting time for purchasing tickets, reduce the time spent waiting for ticket collecting, and provide a more secure electronic ticketing system by using the advantages of NFC technology. Moreover, the smartphone application provides theme park statistics for theme park management teams, and immediate updates for the number of theme park visitors inside a theme park. The system features enhance the entire theme park experience for visitors while ensuring that they have a safe experience. The application has been implemented on an Android platform and tested for different use cases, reliability, and performance.

2-1-045	
Title	**Testing the Reliability of Predictive Models on Three Different Devices**
Author	Basim Alsalmi
Program	Math & Computer Science
University	Laurentian University
Date of Publication	April 07, 2015

Abstract
Abstract Nowadays, the first sources of information are websites on the Internet with its categories. Some users find certain websites' layout and design not always user friendly. This may lead to poor performance, ambiguity and loss of potential customers. Websites designs' use the principles of user interface (UI) laws and usability guidelines to be consistent and convenient to users. Due to the evolution of technology, society now uses various devices with a wide range of features like screen size, in order to obtain their information. Examples include personal computers (PC), smartphones (SP,) and tablets (TB). Since user interface laws were founded in the 20th century and most were applicable for the PC's websites, this thesis tests and investigates the reliability of predictive models on three devices: PC, SP and TB. User interfaces were designed with five tasks, and each task represented one of the user interface laws. Human-Computer Interaction (HCI) techniques, user interface design and evaluation methods were followed to test the reliability of predictive models on different devices.

2-1-046	
Title	**Queued and Pooled Semantics for State Machines in the Umple Model-oriented Programming Language**
Author	Aliaa Ali Ahmed Alghamdi
Program	IT
University	University of Ottawa
Date of Publication	May 01, 2015

Abstract
This thesis describes extensions to state machines in the Umple model-oriented programming language to offer queued state machines (QSM), pooled state machines (PSM) and handing of the arrival of unexpected events. These features allow for modeling the behavior of a system or protocol in a more accurate way in Umple because they enable detecting and fixing common design errors such

as unspecified receptions. In addition, they simplify the communication between communicating state machines by allowing for asynchronous calls of events and passing of messages between state machines. Also, a pooled state machine (PSM) has been developed to provide a different policy of handling events that avoid unspecified receptions. This mechanism has similar semantics as a queued state machine, but it differs in the way of detecting unspecified receptions because it helps handling these errors. Another mechanism has been designed to use the keyword 'unspecified' in whatever state of a state machine the user wants to detect these errors. In this thesis, the test-driven development (TDD) process has been followed to first modify the Umple syntax to add 'queued,' 'pooled,' and 'unspecified' keywords to Umple state machine's grammar; and second, to make a change to the Umple semantics in order to implement these extensions in Umple. Then, additional modifications have been made to allow for Java code generation from those types of state machines. Finally, more test cases have been written to ensure that these models are syntactically and semantically correct. In order to show the usefulness and usability of these new features, an example is shown as a case study that is modeled using the queued state machine (QSM) besides other small tests cases.

2-1-047	
Title	**The Use of Items Personality Profiles in Recommender Systems**
Author	Haifa Huraymis Thuayl Alharthi
Program	IT
University	University of Ottawa
Date of Publication	May 01, 2015

Abstract
Due to the growth of online shopping and services, various types of products can be recommended to an individual. After reviewing the current methods for cross-domain recommendations, we believe that there is a need to make different types of recommendations by relying on a common base, and that it is better to depend on a target customer's information when building the base, because the customer is the one common element in all the purchases. Therefore, we suggest a recommender system (RS) that develops a personality profile for each product, and represents items by an aggregated vector of personality features of the people who have liked the items. We investigate two ways to build personality profiles for items (IPPs). The first way is called average-based IPPs, which represents each item with five attributes that reflect the average Big Five Personality values of the users who like it. The second way is named proportion-based IPPs, which consists of 15 attributes that aggregate the number of fans who have high, average and low Big Five values. The system functions like an item-based collaborative filtering recommender; that is, it recommends items similar to those the user liked. Our system demonstrates the highest recommendation quality in providing cross-domain recommendations, compared to traditional item-based collaborative filtering systems and content-based recommenders.

2-1-048	
Title	**Dft Study of the Interaction Between Single-walled Carbon Nanotubes and Organic Conjugated Oligomers**
Author	Suad Saad Humud Aljohani
Program	Physical Sciences
University	Memorial University of Newfoundland
Date of Publication	May 01, 2015

Abstract
Using dispersion corrected density functional theory (DFT) methods, we study the interaction between oligo(phyenylene ethynylene)s (OPEs) having different end groups: aldehyde (ALD) and dithiafulvene (DTF) (abbreviated as OPE-ALD and OPE-DTF respectively) with single-wall carbon nanotube (SWCNT). We investigate the structure and electronic properties of isolated OPEs and OPE/SWCNT molecular combinations. This research is important for developing of more effective linear conjugated oligomer-based dispersants for SWCNTs. In particular, we focus on understanding of the role of the end groups in the dispersion of nanotubes. We consider a number of dispersion corrected DFT methods: B97D, wB97XD, and CAM-B3LYP and employ the 6-31G* basis set in all of our calculations. We obtain geometries, dipole moments, binding energies, and intermolecular distances for the oligomer and nanotube combinations. The comparison of results obtained using different DFT approximations is also made. Our results show that OPE-DTF interact more strongly with the nanotube than OPE-ALD.

2-1-049	
Title	**Privacy-preserving Public Auditing with Data Deduplication in Cloud Computing**
Author	Naelah Abdulrahman a Alkhojandi
Program	IT
University	Ryerson University
Date of Publication	May 02, 2015

Abstract
Storage represents one of the most commonly used cloud services. Data integrity and storage eciency are two key requirements when storing users' data. Public auditability, where users can employ a Third Part Auditor (TPA) to ensure data integrity, and ecient data deduplication which can be used to eliminate duplicate data and their corresponding authentication tags before sending the data to the cloud, oer possible solutions to address these requirements. In this thesis, we propose a privacypreserving public auditing scheme with data deduplication. We also present an extension of our proposed scheme that enables the TPA to perform multiple auditing tasks at the same time. Our analytical and experimental results show the eciency of the batch auditing by reducing the number of pairing operations need for the auditing. Then, we extend our work to support user revocation where one of the users wants to leave the enterprise.

2-1-050	
Title	**Tandem Mass Spectrometric Analysis of Bacterial Lipid a of Aeromonas Salmonicida (sj-112)**
Author	Dr. Joesph Banoub, Dr. Travis D. Fridgen
Program	Chemistry
University	Memorial University of Newfoundland
Date of Publication	June 01, 2015

Abstract
This study will present an interpretation of the mass spectrometry gas-phase fragmentation patterns of the extracted Lipid a that is obtained from the native LPS extracts isolated from the marine Gram-negative bacteria Aeromonas Salmonicida (SJ-112). It is known that the surface antigen lipopolysaccarides (LPS) SJ-112 infect various fish species (Atlantic salmon and cod) which are cultivated in aquaculture ventures. The exact molecular structure of the Lipid a has not yet been precisely established. This thesis will present the mass spectrometric fingerprint identification and structural elucidation of the Lipid a from A. Salmonicida, which are carried out by using mass spectrometry techniques namely, electrospray ionization tandem mass spectrometry (ESI-MS/MS) using an FT-ICR instrument and matrix assisted laser desorption ionization tandem mass spectrometry (MALDI-MS/MS) using a TOF/TOF instrument. The concomitant uses of high-energy (CID-MS/MS) and low-energy collision induced dissociation (CID-MS/MS) analysis were also used to elucidate the MS/MS fingerprints of this complex biomolecule and can be effectively used for any quantitative or qualitative studies.

2-1-051	
Title	**Source Water Protection Planning in Metropolitan Canada: Barriers and Opportunities**
Author	Azhar Al Ibrahim
Program	Geography and Planning
University	University of Saskatchewan
Date of Publication	June 24, 2015

Abstract
Source Water Protection (SWP) is recognized as the first barrier in the multi-barrier approach to reduce the risk of drinking water contamination. In Canada, provincial water agencies and municipalities lead most of the water management responsibility based on provincial regulations. However, SWP planning and implementation is variable across jurisdictions and influenced by different factors related to local capacity. Much of the water resources literature is focused on capacity-building limitations faced by small and rural water system operators. The purpose of this research is to investigate capacity-building limitations faced by metropolitan water system operators. Information from a questionnaire and document review in four selected Canadian metropolitan areas was gathered and analysed in this study. The results of this study show variability of SWP planning uptake as well as variability in approach toward SWP implementation. While large metropolitan areas may appear to possess ready access to financial capital, technical capability, and other forms of capacity to undertake SWP, the results of this research indicate the opposite. Metropolitan areas in Canada remain reliant on advanced water treatment and other engineering solutions to provide safe drinking water as opposed to SWP planning that invests in preventative measures through land use planning mechanisms. The results of this research contribute to the knowledge and understanding of SWP particularly as applied to metropolitan Canada.

2-1-052	
Title	**Modeling Elevator System with Coloured Petri Nets**
Author	Mohammed Saad Mohammed Assiri
Program	Computing and Software
University	Mcmaster University
Date of Publication	June 29, 2015

Abstract
A fairly general model of the elevator system is presented. Coloured Petri Nets (CPN) and CPN tools are adopted as modeling tools. The model, which is independent of the number of floors and elevators, covers different stages of the elevator system in substantial detail. The model assists simulation-based analysis of different algorithms and rules which govern real elevator systems. The results prove the compatibility and applicability of this model in various situations and demonstrate the expressive power and convenience of CPN.

2-1-053	
Title	**A Mixed Model for Pairwise Comparisons and Its Applications**
Author	Abeer Rashad Mirdad
Program	Computing and Software Engineering
University	Mcmaster University
Date of Publication	July 02, 2015

Abstract
The method of Pairwise Comparisons was first described by Ramon Llull in the end of XIII century [45] . At present, this method is identified with the controversial Saaty's Analytic Hierarchy Process [52] that was first proposed in 1977. The Analytic Hierarchy Process is a formal method to derive ranking orders from pairwise comparisons and it is used around the world in a wide variety of decision making, in fields such as education, industry, and government. However many researchers consider it as a flawed procedure that might produce arbitrary rankings [14]. It the last two decades alternative models, also based on pairwise comparisons paradigm, that appear to work better in many cases and have better theoretical fundamentals. One of them is 'qualitative pairwise comparisons based ranking', first proposed in [29] and later developed and refined in [26, 32], the other one is a quantitative pairwise comparisons ranking but based on the concept of 'distance-based consistency', proposed in [35], refined and used relatively often in the last decade (c.f. [8, 20, 36]). In this thesis we will substantially refine 'mixed model', roughly proposed in [28, 30], and then apply this model for several 'real world' cases. The 'mixed model' is a systematic composition of the quantitative model of [35, 20, 36] and the qualitative model of [26, 32]. In this thesis we clarify and provide some formal foundations for scales and assignment of numerical values for qualitative factors and based on these we provide a formal process to iv be followed. Seven applications in such fields as software evaluation, software quality in use, quality in use in video games, software reuse, smart grid analysis, healthcare quality and quality analysis of medical devices are provided and analysed. They show the mixed method to be useful and appreciated by users.

2-1-054	
Title	**Enhancing Load Balancing Efficiency Based on Migration Delay for Distributed Virtual Simulations**
Author	Turki Alghamdi
Program	Electrical and Computer Engineering
University	University of Ottawa
Date of Publication	July 17, 2015

Abstract
Load management is an essential and important factor for distributed simulations running on shared resources due to load imbalances that can caused considerable performance loss. High Level Architecture (HLA) -based simulation is a framework that works to facilitate the design and management of distributed simulations. HLA coordinates the interaction between simulation entities (federates). However, HLA-based simulation standards do not present the ability to manage resources or help detect load imbalances that could directly cause decrease of performance. Focusing on this constraint, a migration-aware dynamic balancing system has been designed for HLA simulations to offer an efficient load-balancing scheme that works in large-scale environments. This system presents some limitations on estimating costs and benefits, so we propose an enhancement to this existing load balancing system, which improves the accuracy of estimating the number of migrations for the next load redistribution. The proposed scheme detects the load imbalances by evaluating the recourses overhead. The scheme classifies the recourses based on the overhead as overloaded and underloaded, followed by matching the highest overloaded recourses with the lowest underloaded recourses. Furthermore, the proposed scheme aims to precisely estimate the number of migrations by evaluating and analyzing the recourses to obtain the best number of migrations. Therefore, certain migrations that do not contribute to an improvement in the simulation performance are avoided. This avoidance is based on comparing time delay and time gain. Moreover, to be considered for migration, the overall sum of the time gains should be larger than the overall sum of the time delays. The proposed scheme has shown an improvement on decreasing the execution time.

2-1-055	
Title	**Assessing Early-stage Research Results: An Application of Characteristics of Innovation Frameworks**
Author	Enas Alhassan
Program	System Science
University	University of Ottawa
Date of Publication	July 22, 2015

Abstract
The aim of this study is to identify characteristics that can be used to assess early-stage research results by research users and research producers of the advanced biofuel sector. Mainly, it qualitatively explores the perceptions of both research users and research producers regarding their experiences with research results. The study builds on the models of Diffusion of Innovation (DoI), Technology Acceptance Model (TAM) and Perceived Characteristics of Innovation (PCI). The findings of this study suggest that the investigated dimensions of DoI, PCI and TAM are applicable to the context of assessing research results with the extra dimension of risk reduction. In particular, some of the criteria used to assess the usefulness of research results are through its originality, scalability and relevance. The findings also suggest that documentation and publication are important to research users: Research users assess ease of use based on the presentation of the research results in their documentation; and they assess the quality of research results based on publications and the reputation of researchers. The findings of this study can be used to tailor research results to research users' needs, which in turn can be expected to improve the uptake and further development of research results. This will not only permit the push of scientific research results to research users only put also permit research users to inform research needs.

2-1-056	
Title	**Mobile Application Based Parking Reservation System**
Author	Ammar Baitalmal
Program	Systems Science
University	University of Ottawa
Date of Publication	July 23, 2015

Abstract
Finding a suitable parking space in busy cities is a time consuming and challenging task. During the searching process, drivers become frustrated and distracted. Motor vehicle drivers might not initially find a free spot, and will leave the area by making a loop to find another spot close to their destination. As a result, there is increased congestion on the road, sometimes causing accidents, and wasting valuable time. To address this problem, we believe that a parking reservation system is necessary and will help reduce the high volume of congestion that might otherwise lead to accidents and have many other environmental and health impacts. The objective of our research is to propose a mobile-based reservation system. The process of finding a free parking space shall be made easy and fast; customers will only be a few taps away from guaranteed and paid parking, based on their preferences. The model presented considers all nearby parking service providers' ability to satisfy customers' requirements and will reserve the best parking for the user.

2-1-057	
Title	**Implementation and Performance Analysis of 3d Cone and Frustum Filters**
Author	Hussam Shubayli
Program	Department of Electrical and Computer Engieering
University	University of Victoria
Date of Publication	July 30, 2015

Abstract
ABSTRACT in this thesis, new effective and efficient implementation structures of three- dimensional (3D) spatio-temporal (ST) Finite Impulse Response (FIR) uniform and non-uniform cone and frustum filters using well-known filter banks are investigated. The performance of the proposed implementation structures for 3D ST FIR uniform and non-uniform cone and frustum filters are investigated for 3D broadband beam- forming in radio astronomy applications. First, implementations of two 3D ST uniform FIR cone filters are investigated. The 3D cone filters are designed by cascading either the well-known uniform quadrature mirror cosine-modulated (QM-CM) filter bank or directly designed filter banks (DDFBs), with 2D low-pass circularly-symmetric spatial filters. In addition, two 3D ST uniform FIR frustum filters are derived from the cone filters by implementing partial bands of the filter banks with corresponding 2D spatial filters. The performance of the proposed implementation structures for 3D ST uniform QM-CM and DDFBs cone and frustum filters are evaluated using broadband beamforming signals in radio astronomy applications. The performance of the QM-CM and DDFBs cone and frustum filters shows improvement in terms of Signal-to-Interference-plus-Noise ratio (SINRs) over existing 3D ST cone and frustum filters. In addition to their effective performance, these cone and frustum filters can be efficiently implemented with equivalent or less computational complexity compared to existing methods. Second, implementations of two 3D ST non-uniform cone and frustum filters are explored. These cone and frustum filters are obtained by cascading either QM-CM or DDFBs non-uniform filter banks, with 2D low-pass circularly-symmetric spatial filters. The motivation for the 3D ST non-uniform cone and frustum filters is to achieve better approximation at low temporal frequencies than using the uniform ones. The performance of the 3D ST non-uniform cone and frustum filters is evaluated and compared with the performance of the uniform 3D ST cone and frustum filters. Results indicate that the performance of the proposed 3D ST non-uniform QM-CM and DDFBs cone filters shows some improvement in selective filtering compared to the performance of 3D ST uniform cone filters.

2-1-058	
Title	**Follow Your Neighbours and Engage in a New Culture**
Author	Meshary Almeshary
Program	Master of Computer Sciences
University	Ryerson University
Date of Publication	August 11, 2015

Abstract
Twitter is one of the popular social media websites. It has more than 400 million active users. They post a huge number of tweets daily to share their opinions and knowledge in different languages and locations. Twitter has been used to distribute news, politics and more. This thesis proposes an approach to recommend new followees to Twitter users who just moved to a new place where the local language is different. Arecommender system is developed that provides Twitter users the ability to adjust and engage in a new culture and helps them adapt to a new environment. This recommender system finds users' interests from his historical tweets in his mother language and looks for followees who have the same interests in the local language. This proposed system uses Twitter APIs to fetch local tweets after finding the location of the user and recommends similar local followees to the system user.

2-1-059	
Title	**Phenolic Compounds and Antioxidant Activity of Blackberry, Black Raspberry and Blueberry Seed Meals**
Author	Feredion Shahidi, Maha Ayoub
Program	Food Science/ Biochemistry
University	Memorial University of Newfoundland
Date of Publication	August 22, 2015

Abstract
ABSTRACT Berries are highly valued crops due to their unique flavour, texture, colour and phytochemicals. They are rich in phenolic compounds which have been recognized as having beneficial health effects in humans. Phenolic compounds are present in the free, soluble ester and insoluble-bound forms; these were extracted using four different solvents {methanol–acetone–water (7:7:6, v/v/v), acetone-water (80: 20, v/v), methanol-water (70: 30, v/v), and water}. The insoluble-bound phenolics were procured after alkaline hydrolysis and subsequent extraction into diethyl ether-ethyl acetate. Phenolic extracts of each fraction were separately assayed for their antioxidant activity using several methods, namely oxygen radical absorbance capacity (ORAC), the reducing power capacity, as well as iron (II) chelation capacity, among others. There were significant differences in the total content of phenolics, flavonoids, and anthocyanins between blackberry, black raspberry, and blueberry seed meals. The bound phenolics contributed the highest proportion to the total contents of different classes of phenolics. Furthermore, blackberry seed meals had higher total antioxidant activity compared with black raspberry and blueberry seed meals in all assays employed. High-performance liquid chromatography–diode array detection–electrospray ionization multistage mass spectrometry (HPLC-DAD-ESI-MSn) was used to identify and quantify the phenolic compounds. Hydroxybenzoic and hydroxycinnamic acids, anthocyanins, flavonols, flavan-3-ols, and proanthocyanidins were identified and quantified in the aforementioned fractions. Extracts were found to contain various levels of phenolic compounds that were specific to each berry seed meal type.

2-1-060	
Title	**Swarm Intelligence Movement Control in a Manet Based on Awareness of Traffic Condition**
Author	Hanin Almutairi
Program	Computer Science
University	University of New Brunswick (fredricton Campus)
Date of Publication	August 24, 2015

Abstract
Mobile Ad-hoc Networks (MANETs) are a set of dynamic wireless mobile nodes that perform without any centralized control or fixed infrastructure. Each mobile node in a MANET moves unpredictably, which causes rapid changes in the network topology. Frequent changes in the topology affect network performance, resulting in continuous disconnection between communication nodes. The proposed algorithms Slow Down Speed (SDS) and Ant System Node Control (ASNC) aim to control the movement of the mobile nodes based on awareness of traffic conditions. SDS is a simple self-organization algorithm, while ASNC is a complex self-organization algorithm adapted from ant swarming behavior in nature. The new proposed algorithms are simulated using Network Simulator 2 over Ad-hoc On-Demand Distance Vector (AODV) and Destination Sequenced Distance-Vector (DSDV) routing protocols. The results of SDS and ASNC show significant improvement in the performance of a MANET. In general, the reactive routing protocol, AODV, shows the best results for both SDS and ASNC.

2-1-061	
Title	**Silver Nanowire Coated Threads for Electrically Conductive Textiles**
Author	Yahya Atwa
Program	Electrical and Computer Enginnering
University	University of Waterloo
Date of Publication	August 24, 2015

Abstract
The emerging area of e-textiles requires electrically conductive threads. In this thesis it is demonstrated that nylon, polyester, and cotton threads can be made conductive by coating their surfaces with random networks of solution-synthesized silver nanowires. Achemical pre-treatment was used on the nylon and polyester threads to improve the adhesion of the nanowire coating. Aresistance per unit length of 0.8 $\Omega \cdot cm$!! was achieved and can be varied through the density of the nanowire coating. Because the nanowires are 35 nm in diameter, and the mesh structure does not cover the entire surface like a thin-film, less metal is used compared to conventional silver-coated conductive threads. This leads to a much lower weight and mechanically flexible coating. The resistance of the nanowire-coated thread did not degrade after washing. The functionality of the thread as a heater is also demonstrated.

2-1-062	
Title	**A Numerical Modelling Comparison Between Steady and Transient State Permeability Measurement Methods for Gases**
Author	Mohamed Alnouri
Program	Mechanical Engineering
University	University of Manitoba
Date of Publication	August 26, 2015

Abstract
This project report presents and documents the work completed and results obtained from a numerical modelling study comparing different experimental permeability gas flow measurement methods. The experiments evaluated are the steady state experiment and the transient state draw-down experiment. Acomputer program was written in Fortran 95 to model the experiments. It was found based on the results obtained that the steady state gas flow permeability measurement experiment is consistently at least 3 times faster than the transient state experiment under the same conditions. Moreover, it was determined that the upstream tank of a transient state experiment should be optimized for each sample based on the pore volume as it can greatly affect the accuracy of the experiment. Finally, it was shown how accounting for slippage and inertial effects can contribute to the accuracy of the experiments when analyzing the data.

2-1-063	
Title	**Score Tests for Testing Homogeneity of Recurrent Event Times Using Frailty Models**
Author	Alia Alkhathami
Program	Probability and Statistics
University	Carleton University
Date of Publication	August 28, 2015

Abstract
This thesis presents an overview of frailty models in survival analysis for modelling unobserved heterogeneity in survival times. The frailty model is a generalization of Cox's proportional hazard model, where a shared unobserved quantity called frailty describes a positive correlation among the survival times. The frailty term describes the common risks, acting as a factor on the hazard function. In this thesis, we investigate a score test based on the mixture of chi-square distributions for testing homogeneity of individuals in recurrent event data using a shared frailty model, which is equivalent to testing whether the variance component in a frailty model is zero. Simulation studies are conducted to assess the empirical level and power of the score test under correctly specified and misspecified random effects, and to study the finite-sample properties in terms of biases and mean squared errors of the estimators under both correctly specified and misspecified frailty models. The simulation results indicate that when the sample size is small, the empirical levels of the score tests are generally lower than the nominal 5 level. But they tend to get closer to the nominal level when the sample size is large. Also, for estimating the model parameters, the ML method appears to provide roughly unbiased estimates of the regression parameters and variance components under correctly specified frailty models. However, under misspecified models, the ML method appears to provide estimators with large biases and mean squared errors. An application of the score test for frailty variance component is illustrated by using a data set of recurrent events of tumours referred to as the bladder cancer data.

2-1-064	
Title	**Qos-based Data Analytic Service Selection: A Comparative Study of Different Learning Models**
Author	Bayan Alghofaily
Program	Computer Science
University	Ryerson University
Date of Publication	September 09, 2015

Abstract
QoS-based web service selection has been studied in the service computing community for some time; however, data characteristics are not considered. In this work, we have studied the use of different machine learning algorithms as meta-learners in predicting the performance of data analytic services for the given dataset. We used a meta-learning algorithm to incorporate meta-features in the selection process and we used clustering services as an example of data analytic services. We have also investigated the impact of the number of data features on the performance of the meta-learners. We found that, out of the 5 classification models, SVM showed the best results in predicting the recommended service for the given dataset with an accuracy of 78%. When it comes to regression models, MLP was the best regressor. We recommend considering only simple meta-features that can be collected for most datasets, as those proved to be sufficient to achieve good prediction accuracy.

2-1-065	
Title	**Representation by Quaternary Quadratic Forms Whose Coefficients Are 1, 2, 7 or 14**
Author	Jamilah Alanazi
Program	School of Mathematics and Statistics
University	Carleton University
Date of Publication	September 11, 2015

Abstract
We determine explicit formulae for the number of representations of a positive integer n by the quaternary quadratic forms a1x21 + a2x22 + a3x23 + a4x24 , where a1; a2; a3; a4 2 f1; 2; 7; 14g which satisfy the simplifying assumptions a1 a2 a3 a4 and gcd(a1; a2; a3; a4) = 1. We use a modular form approach. We then extend our work to determine explicit formulae for the number of representations of n by the octonary quadratic forms x21 +x22 +x23 +x24 +7(x25 +x26 +x27 +x28), x21 +x22+7(x23 +x24 +x25 +x26 +x27 +x28) and x21 + x22 + x23 + x24 + x25 + x26 + 7(x27 + x28).

2-1-066	
Title	**Economical and Environmental Impacts of Emission Mitigation in Petroleum Refineries**
Author	Amani Alnahdi
Program	Master/chemical Engineering
University	University of Waterloo
Date of Publication	September 21, 2015

Abstract
Despite the large number of products produced by oil refineries, they are considered to be one of the main source of air contaminants including, sulphur oxides SOx, hydrocarbons, nitrogen oxides NOx and carbon oxide CO2, which are primarily caused by fuel burning. Gases emanated from fuel burning in oil refinery need to be tumbled down as they create a critical environmental issue in the developed world. Anumber of control strategies can be applied in order to mitigate emissions and meet certain environmental regulations. This thesis addresses the development of a mathematical model for an oil refinery with consideration to multiple pollutants reduction alternatives. The objective of this study is to help decision makers of oil refineries to select the best pollution control strategies for a given emission reduction target. The model is demonstrated by an industrial scale refinery with three emissions including nitrogen oxides (NOx), sulphur dioxide (SOx) and carbon dioxide (CO2). Furthermore, this research studies the dispersion of air pollutants that are potentially released from oil refinery. As a test case, we used a potential site for oil refinery in the northern area of Toronto, Ontario, Canada. In order to predict pollutants concentrations, dispersions and transports, we used a screening model (SCREEN3), and a non-steady state Lagrangian puff model (CALPUFF), which use topographical and meteorological conditions on concentration of pollutant emissions to examine the impacts at receptor locations.

2-1-067	
Title	**Synthesis of Substituted 6,6a-dihydroisoindolo[2,1-a]quinolin-11(5h)-ones**
Author	Zainab Ahmad Al-jaroudi
Program	Chemistry
University	Acadia University
Date of Publication	September 29, 2015

Abstract
Fused heterocycles have received significant attention because of their diverse biological and pharmaceutical properties. Forexample, (±)-nuevamine, which is the first known isoindoloisoquinoline alkaloid. Isoindolo[2,1-a] quinoline derivatives have attracted much interest because of their structural similarities with (±)-nuevamine. In this study, diverse substituted 6,6a-dihydroisoindolo[2,1-a]quinolin-11(5H)-ones were successfully synthesized from N-aryl-3-hydroxyisoindolinones and substituted acetophenones including alkyl aryl cyclic ketones such as indanone and tetralone in three steps involving Lewis-acid-catalyzed C-C bond formation, NaBH4 reduction, and Lewis-acid-catalyzed intramolecular cyclization. First, 3-substituted-(2-oxo)-2-arylisoindolin-1-ones were obtained from fair to very good yields using Cu(OTf)2. The reaction involved Nacyliminium ion as the electrophile. To the best of our knowledge, acetophenones were used for the first time as nucleophiles for the reactions with N-acyliminium ions. Subsequent NaBH4 reduction afforded the corresponding 3-substituted-(2-hydroxy)-2- arylisoindolin-1-ones in excellent yields. Finally, BF3.OEt2-catalyzed intramolecular cyclization afforded substituted 6,6a-dihydroisoindolo[2,1-a] quinolin-11(5H)-ones from poor to excellent yields.
All the products were well characterized by NMR and HRMS techniques. Some of the final products were unambiguously characterized by X-ray diffraction analysis. Pure diastereomers of the final products were obtained by recrystallization. Novel interesting tetracyclic and hexacyclic isoindoloquinolines were achieved by this method. The products have been submitted for biological activity as they have shown close structural resemblance with biologically active natural products.

2-1-068	
Title	**Marine Oil Pollution in the Bay of Fundy**
Author	Huryyah Alamer
Program	Chemistry
University	Acadia University
Date of Publication	September 30, 2015

Abstract
The Bay of Fundy is a popular fishing ground with the highest tides in the world. Lubricating waste oil from marine vessels and on-land discharges may pose risks to this marine environment. This project was designed to investigate the degree of oil contamination in the Bay of Fundy by measuring n-alkanes and polycyclic aromatic hydrocarbons (PAHs), two major classes of compounds in petroleum. In this project, both high and low tidal water samples as well as sediment samples were collected at 20 sites along the coast of the Bay of Fundy. Sample preparation methods were developed for both water and sediment samples. Alkanes and PAHs were analyzed using gas chromatography - mass spectrometry (GC-MS). Other important water quality parameters were also tested including, chemical oxygen demand (COD). Oil pollution was found at most sites. Average concentrations of total n-alkanes were determined to be 324 ng/L, 123 ng/L and 83 ng/g for seawater, freshwater and sediment samples, respectively. The highest levels of total n-alkanes in water and sediment samples were found at Margaretville, NS (2,210 ng/L in seawater) and the Little River across from the Bayside Dr. In Saint John, NB (717 ng/g in sediment). Average concentrations of total PAHs were determined to be 9.86 ng/L, 26.6 ng/L and 82 ng/g for seawater, freshwater and sediment samples, respectively. The highest levels of total PAHs in water and sediment samples were found at Tiverton, NS (50.4 ng/L in seawater) and the Little River across the Bayside Dr. In Saint John, NB (501 ng/g in sediment). Although the enormous tide in the Bay of Fundy diluted oil pollution, differences between high and low tidal seawater samples were observed at some sites but not for averages of all sites.

2-1-069	
Title	**An Approach to Defend Against Black Hole Attacks in Ad Hoc Networks: Node Clustering Aodv Protocol (caodv)**
Author	Mnar Saeed Alnaghes
Program	Electrical and Computer Engineering
University	University of Victoria
Date of Publication	October 29, 2015

Abstract
The flexibility of Mobile Ad hoc networks (MANET) and its characteristics introduce new security risks. One possible attack is the Black Hole attack which received recent attention. In the Black Hole attack, a malicious node uses the routing protocol to declare itself as having the shortest path to the node whose packets it wants to intercept. It is needed to understand this risk with a view to extract preventive and corrective protections against it. We introduce an approach that could stop this attack from happening in such a network by using an algorithm which controls the communications between nodes and let each node becomes identified and authorized in a group of nodes. In this algorithm, stable nodes, which called leaders, are responsible for routing and forwarding packets from source to destination nodes. This research reviews the black hole attack, and, explains the algorithm that helps throughput to be increased as a consequence.

2-1-070	
Title	**Interactive System for Scientific Publication Visualization and Similarity Measurement Based on Citation Network**
Author	Hanadi Humoud a Alfraidi
Program	Master of Computer Science
University	University of Ottawa
Date of Publication	November 03, 2015

Abstract

Online scientific publications are becoming more and more popular. The number of publications we can access almost instantaneously is rapidly increasing. This makes it more challenging for researchers to pursue a topic, review literature, track research history or follow research trends. Using online resources such as search engines and digital libraries is helpful to find scientific publications, however most of the time the user ends up with an overwhelming amount of linear results to go through. This thesis proposes an alternative system, which takes advantage of citation/reference relations between publications. This demonstrates better insight of the hierarchy distribution of publications around a given topic. We also utilize information visualization techniques to represent the publications as a network. Our system is designed to automatically retrieve publications from Google Scholar and visualize them as a 2-dimensional graph representation using the citation relations. In this, the nodes represent the documents while the links represent the citation/reference relations between them. Our visualization system provides a better view of publications, making it easier to identify the research flow, connect publications, and assess similarities/differences between them. It is an interactive web based system, which allows the users to get more information about any selected publication and calculate a similarity score between two selected publications. Traditionally, similar documents are found using Natural Language Processing (NLP), which compares documents based on matching their contents. In the proposed method, similar documents are found using the citation/reference relations which are iii represented by the relationship that was originally inputted by the authors. We propose a new path based metric for measuring the similarity scores between any pair of publications. This is based on both the number of paths and the length of each path. More paths and shorter lengths increase the similarity score. We compare our similarity score results with another similarity score from Scurtu's Document Similarity [1] that uses the NLP method. We then use the average of the similarity scores collected from 15 users as a ground truth to validate the efficiency of our method. The results indicate that our Citation Network approach yielded better scores than Scurtu's approach.

2-1-071	
Title	**Microwave-assisted Dehydration of Fructose Into 5-hydroxymethylfurfural (5-hmf) Over Acidic Porous Catalysts**
Author	Walaa Baslyman
Program	Department of Chemistry
University	University of Ottawa
Date of Publication	November 24, 2015

Abstract

Extensive consumption of carbon resources has led to decreasing reserves of fossil fuels and growing concern about global warming. This dilemma has promoted a shift in the economy to develop new long-term, environmentally friendly, and sustainable sources for fuels and chemicals to replace fossil fuel-based sources. Renewable biomass is an ideal alternative, as it is abundant, and relatively cheap. Among current biofuel resources, 5-hydroxymethylfurfural (5-HMF) is a versatile intermediate between biomass-based carbohydrate chemistry and fossil fuel-based industrial organic chemistry, which can be used to synthesize a broad range of chemicals that are currently derived from fossil fuel-based resources. Carbohydrates became the preferred feedstock for high yield production of 5-HMF, and the most convenient route for the synthesis of 5-HMF is the acid-catalyzed dehydration of hexose. Within this context, a variety of processes were developed for the synthesis of 5-HMF from dehydration of fructose involving various solvents, including water, organic solvents, and biphasic systems. Likewise, a range of catalysts were employed, such as homogeneous acid catalysts and metal chlorides, which showed high catalytic activity. Heterogeneous catalysts have also been receiving attention due to their advantages such as easy recovery and recyclability. In the current research, microwave-assisted synthesis of 5-HMF by dehydration of fructose over various acidic porous catalysts, such as periodic mesoporous organosilica (PMO), carbon materials, and metal organic frameworks (MOFs), was investigated. The results showed that the obtained 5-HMF yields were satisfactory, and more importantly highlighted some of the properties of porous heterogeneous catalysts that may improve the production of 5-HMF.

2-1-072	
Title	**Modelling the Power Cost of Application Software Running on Servers**
Author	Omar Alghamdi
Program	Electrical and Computer Engineering
University	University of Waterloo
Date of Publication	November 25, 2015

Abstract

One of the most important aspects of managing data centres is controlling the power consumption of applications running on servers. Developers, in particular, should evaluate each of their applications from a power consumption point of view. One can conduct an evaluation by creating models that predict power usage while running applications on servers. Forthis purpose, this study creates a non-exclusive test bench that can collect data on subsystem utilization by using a performance counter tool. Based on the selected subsystem performance, various models have been created to estimate the power consumption of applications running on servers. The author's models are created based on collecting the performance on four subsystems (i.e. The CPU, Memory, Disk and Interface) by Collectd tool, and the actual power consumption of a machine using a TED5000 power meter. These subsystems have been chosen because they are the components of the server that consume the most power. In addition, as the experiments in this study demonstrate, using these subsystems as the model's input is the most efficient selection across different hardware platforms. The accuracy of the models is affected by the model inputs selection. Creating the model requires several steps: (i) connect the power meter to the server and install all the required packages such as Collectd; (ii) perform workloads on the selected subsystems; (iii) collect and simplify the data (subsystems counters and actual power) that has been stored during performing the workloads; and (iv) train the data by a modelling technique in order to create the model. This work has seven dimensions; (i) collection of the performance counters and the actual power consumption of a system, and simplification of the collected data; (ii) introduction of a simple test bench for modelling and estimation of the power consumption of an application; (iii) introduction of two modelling techniques: Neural Network and Linear Regression; (iv) design of two types of workloads; (v) use of three real servers with different configurations; (vi) use of four scenarios to validate the models; (vii) proof of the importance of the subsystems selection; and (viii) automation of the test bench. With these models, power meter devices will no longer be necessary in measuring power consumption. Instead, the models can be used to predict power consumption. Generally, Neural Network models have fewer errors than Linear Regression models, and all the models (Neural Network or Linear Regression) perform better with long time workload design.

2-1-073	
Title	**Solvent Extraction Antioxidants,phenols and Flavonoids from Saudi Arabia Dates**
Author	Rasha Al Udhaib
Program	Department of Process Engineering and Applied Science
University	Dalhousie University
Date of Publication	December 11, 2015

Abstract

Cultivated dates are a stable food source in many countries, playing significant roles the people's nutrition and their economy. The date palm fruit is the most important crop in the Kingdom of Saudi Arabia and is cultivated in nearly all regions of the Kingdom. Saudi Arabia is the world's second-largest producer of dates, growing 16% of global date production. Saudi Arabia has more than 23.7 million date palm trees cultivated on more than 156,000 hectares and producing about 992,000 tonnes of dates annually. However, there has been a significant interest in recent years regarding the properties of antioxidants, phenols and flavonoids found in dates. These compounds have been found to neutralize free radicals inside the body which originate from metabolic. Free radicals are dangerous because they trigger chemical chain reactions within the body that damage or kill cells and as such they have been linked to a number of diseases. The aim of this study was to optimize extraction conditions of antioxidants, phenols and flavonoids from dates. First, the effects of sample: solvent ratio (1:20, 1:40 and 1:60), reaction temperature (25, 35, 45, 55 and 65°C), reaction time (1, 2, 3 and 4 h), solvent concentration (0, 50 and 75%) and solvent type (acetone and ethanol) on the yield of these compounds from ajwa date were investigated. The optimum extraction condition was used to compare the yields of these compounds from freeze dried ajwa date and fresh ajwa date as well as from 5 dates (Ajwa. Khalas, sukkari, red sukkari and sofry). The three hours reaction time at 55°C with a sample: solvent ratio of 1:20 and 75% ethanol were the optimum extraction conditions for antioxidants yield while 3 h reaction time at 65°C with a sample: solvent ratio of 1:20 and 75% acetone were the optimum conditions for phenols and flavonoids extraction from fresh ajwa date. Freeze drying procedure obtained higher yields for antioxidants (84.60%), phenols (55.70%) and flavonoids (29.99%) than those obtained from fresh ajwa date. Ajwa dates had the highest antioxidants, phenols and flavonoids (73.10 mg/g, 355.24mg/g and 57.52mg/g), followed by khalas (62.85 mg/g, 252.01 mg/g and 52.47 mg/g), sukkari (62.45 mg/g, 204.65 mg/g and 43 mg/g), red sukkari (61.10 mg/g, 200.59 mg/g and 41.65 g/mg) and sofry (60.39 mg/g, 184.05 mg/g and 41.22 mg/g).

2-1-074	
Title	**Effects of a Northern Contaminant Mixture, Diet, and Body Weight on Glucose and Cholesterol Metabolism and Lipoprotein Signaling in Jcr Rat Liver.**
Author	Abdulrahman Almohaisen
Program	Biology
University	Carleton University
Date of Publication	December 15, 2015

Abstract

Northern Canadian populations (specifically the Inuit) display higher prevalence of diabetes and cardiovascular diseases. It is believed that diet and lifestyle contribute to the development of these disease; however, recent epidemiological studies suggest that persistent organic pollutants and heavy metals may also contribute to the development of these diseases. Northern populations are exposed to these chemicals that bioaccumulate in the environment through food consumption. In this study, we outline the effects of these chemicals and the consumption of high fat/sugar food on glucose and cholesterol metabolism and lipoprotein signaling in JCR rat liver. Using gene profiler arrays, we have identified four genes that are affected mainly by these contaminants and/or diet. Our results indicate that these mixtures alter the expression of genes in gluconeogenesis pathway (fructose 1,6-bisphosphatase and pyruvate carboxylase), a protein involved in cholesterol transport (apolipoprotein A1), and a transcription factor that is responsible for the expression of proteins in lipogenesis pathway (sterol regulatory element binding transcription factor 1). These proteins could also play an important role in insulin resistance and atherosclerosis; therefore, it is important to follow up our experiment in order to understand the increased risk of diabetes and cardiovascular diseases found in Northern Canadian populations.

2-1-075	
Title	**Human Performance and Cognitive Workload in Haptic, Audio and Visual Environements**
Author	Mortaja Alqassab
Program	Electrical and Computer Engineering
University	University of Waterloo
Date of Publication	December 16, 2015

Abstract

The ability to efficiently perform a task in a human-in-the-loop system and in multi-sensory virtual environments is highly dependent on the type of sensory feedback the operator is receiving and the amount of workload the operator is exposed to. Despite the vast amount of research on Collaborative Virtual Environments (CVEs) and Human Machine Interactions (HMIs), little is known about what type of feedback increases the performance of a human operator and what type of sensory feedback minimizes the amount of workload the operator is exposed to. While individual differences influence human performance outcomes, the physiological processes a human being set the fundamental guidelines for assessing human performance. The purpose of this study is to evaluate the performance of participants for a combination of sensory two feedback modes (audio-visual, haptic-visual or audio-haptic) in a primary task to find the optimum feedback model for CVE and HMI applications. Aconcurrent secondary task is also designed to evaluate workload of each feedback mode (audio, haptic or visual) and the effect of different levels of workload on task completion time and task accuracy. Forexample, a car driver performs a primary task by steering the car in the correct direction. Asecondary task, in the same context, would be monitoring the fuel level or checking the speed limit. In the primary task, participants are required to press a virtual button from a set of three (right button, left button or up button). The secondary task evaluates the amount of workload the participant is exposed to in three different feedback modes (haptic, audio or visual). Each participant is required to recognize a Morse code. In this study, participants perform three trials. In first trial, participants perform one task the primary task alone. In the second and third trials, participants perform the primary task and the secondary task concurrently. The primary task evaluates human performance and includes combined sensory modalities as a feedback mode (audio-visual, haptic-visual or audio-haptic). The time it takes the participant to press the virtual button (primary task response time), the number of correct button presses (primary task accuracy), the time it takes the participant to recognize the Morse code (secondary task response time) and the number of the correct codes (secondary task accuracy) are all collected. In addition, NASA Task Load Index (TLX) questionnaire is used after each trial to assess the subjective performance and subjective workload of participants. The data collected is tested for normality using Lilliefors test, filtered using Grubb's test to eliminate outlying data and analyzed using one-way ANOVA and multiple two-sample t-tests. ATukey HSD is also used to show the differences between experimental conditions. The result of this study indicate that the hypothesis that all combinations of feedback provide the same performance can be rejected for the primary task response time. Forinstance, the results show that the there is a difference in response time between the audio-haptic and the audio-visual feedback modes in the first, second and third trials. The results of this study also indicate that the hypothesis that all sensory feedback modes provide the same workload can be rejected for the secondary task accuracy. Results show that there is a difference between haptic and auditory conditions and shows that visual condition has a lower accuracy than the other feedback modes.

2-1-076	
Title	**Slope Stability Enhancement of an Upstream Tailings Dam: Laboratory Testing and Numerical Modelling**
Author	Yazeed Alsharedah
Program	Civil and Environmental Engineering
University	The University of Western Ontario
Date of Publication	December 16, 2015

Abstract

Mine tailings are the byproduct of mining activities, which need to be disposed of once the ore is extracted. They can be disposed of in either dry or wet forms. The latter is most common with the tailings being disposed of in the form of slurry inside retention structures. The retention structure may be a natural, manmade, or built dam, which is the case in most current mining locations. In this thesis, improving the stability of an upstream tailings dam using soil additives is investigated. The experimental phase of this study involved laboratory tests conducted to characterize mine tailings and to investigate any change in their properties upon stabilization with non-traditional and traditional additives; namely, emulsified polymer and a mixture composed of Cement Kiln Dust, CKD, and re-cycled Gypsum. Afterwards, the soil modified parameters are used to establish a finite element model employing the commercial code PLAXIS 2D to simulate the behavior of the improved soil when a tailings dam is formed. The numerical model demonstrated that utilizing a CKD: B mix increased the overall stability of the tailings impoundment and indicated it is very useful to construct robust dams, yet is still environmentally friendly.

2-1-077	
Title	**Modeling Power Consumption of Applications Software Running on Servers**
Author	Fadwa Abdulhalim
Program	Electrical and Computer Engineering
University	University of Waterloo
Date of Publication	December 18, 2015

Abstract

Reducing power consumption in computational processes is important to software devel- opers. Ideally, a tremendous amount of software design efforts goes into considerations that are critical to power efficiencies of computer systems. Sometimes, software is designed by a high-level developer not aware of underlying physical components of the system architecture, which can be exploited. Furthermore, even if a developer is aware, they design software geared towards mass end-user adoption and thus go for cross-compatibility. The challenge for the soft- ware designer is to utilize dynamic hardware adaptations. Dynamic hardware adaptations make it possible to reduce power consumption and overall chip temperature by reducing the amount of available performance. However these adaptations generally rely on input from temperature sensors, and due to thermal inertia in microprocessor packaging, the detection of temperature changes significantly lag the power events that caused them. This work provides energy performance evaluation and power consumption estimation of applications running on a server using performance counters. Counter data of various performance indicators are collected using the CollectD tool. Simultaneously, during the test, a Power Meter (TED5000) is used to monitor the actual power drawn by the computer server. Furthermore, stress tests are performed to examine power fluctuations in response to the performance counts of four hardware subsystems: CPU, memory, disk, and network interface. Aneural network model (NNM) and a linear polynomial model (LPM) have been developed based on process count information gathered by CollectD. These two models have been validated by four different scenarios running on three different platforms (three real servers.) Our experimental results show that system power consumption can be estimated with an average mean absolute error (MAE) between 11% to 15% on new system servers. While on old system servers, the average MAE is between 1% to 4%. Also, we find that NNM has better estimation results than the LPM, resulting in 1.5% reduction in MAE of energy estimation when compared to the LPM. The detailed contributions of the thesis are as follows: (i) develop a non-exclusive test bench to measure the power consumption of an application running on a server; (ii) provide a practical approach to extracting system performance counters and simplifying them to get the model pa- rameters; (iii) a modeling procedure is proposed and implemented for predicting the power cost of application software using performance counters. All of our contributions and the proposed procedure have been validated with numerous measurements on a real test bench. The results of this work can be used by application developers to make implementation-level decisions that affect the energy efficiency of software applications.

Health Science

2-2-078	
Title	**The Regulation of P53 by E3 Ligases Mdm2 and Chip in Breast Cancer: Analysis of the Role of Hsp70 and Hsp90**
Author	Hadeel Ebrahim M Alyenbaawi
Program	Medical Services
University	University of Alberta
Date of Publication	January 01, 2015

Abstract

Tumor suppressor p53 is commonly mutated in breast cancer. Mutant p53 protein is highly stable and oncogenic. This study aims to understand the underlying mechanism of the regulation and stabilization of mutant p53 protein particularly folded mutant p53 R280K. The data showed a possible association between the levels of mutant p53 and the E3 ligases CHIP and MDM2 in various breast cancer cell lines. The data also showed that p53 R280K could be induced in response to 5-FU induced stress in manners similar to the WT p53. Afterward, this study analyzed the role of Hsp90 and Hsp70 in the stabilization of p53 (R280K) through the siRNA-mediated-depletion of Hsp90 and Hsp70. The decrease of HSP90 expression revealed a significant degradation of mutant p53 protein, yet failed to affect the protein levels of CHIP and MDM2. Similar observations found upon depletion of Hsp70 concerning mutant p53 and CHIP. However, Hsp70 depletion activated the expression of MDM2. In contrast, the suppression of Hsp90 rather than Hsp70 elevated the expression of both WT p53 and MDM2. These findings confirm the importance of Hsp70 and Hsp90 in the stabilization of mutant p53 and suggest a mechanism in which Hsp70 mediates the stabilization of folded mutant p53 through the inactivation of MDM2 expression.

2-2-079	
Title	**Role of Mirna-126 in Hepatocellular Carcinoma and Cholangiocellular Carcino**
Author	Samar Abdullah A Zailaie
Program	Medical Services
University	University of Alberta
Date of Publication	January 01, 2015

Abstract

Hepatocellular carcinoma (HCC) and Cholangiocellular Carcinoma (CCA) represent the most common malignant tumor of the liver accounting about 90 % of all liver malignancies. The overall prognosis of HCC and CCA is very poor due to the lack of effective treatment. MicroRNAs (miRNAs) represent a small endogenous non-coding RNAs that play a significant role in the regulation of gene expression post-transcriptionally. Altered expression of miRNAs has been observed in many malignancies including liver cancer. However, the expression level of miR-126 in HCC and CCA and its role in hepatic-carcinogenesis remains unclear. This thesis aimed to study the expression level, localization and biological significance of miRNA-126 in HCC and CCA. In an effort to distinguish the expression pattern of miR-126 in HCC and CCA tissues and cell lines, two expression analysis has been used: Insitu hybridization (ISH) and quantitative real time polymers chain reaction (QRT-PCR). Our ISH analysis has shown a significant reduction in miR-126 level in HCC and CCA tissues relative to their corresponding normal tissues. Moreover, an intensive expression of miR-126 in normal hepatocyte, blood vessels and sinusoid cells has been observed. Our qRT-PCR data demonstrated a lower expression level of miR-126 in HCC and CCA cell lines relative to a normal kidney cell line. By using several gain of functions analysis, this study demonstrated the effect of miR-126 in HCC and CCA cell lines. The over-expression of miR-126 in HepG2 and HuccT1 has significantly inhibited cell proliferation and growth. On the other hand, our data has shown that miR-126 overexpression inhibited cell ability to migrate. Taken together, this study indicted that miR-126 could play a critical role in hepatic carcinogenesis. Indeed, miR-126 may serve as a novel suppressive miRNA in liver cancer. Furthermore, miR-126 may serve as potential therapy, diagnostic and prognostic biomarker.

2-2-080	
Title	**The Impact of Vitamin D on Disease Activity in Crohn's Disease**
Author	Dania Ahmed Said Alrefai
Program	Medical Services
University	University of Saskatchewan
Date of Publication	February 01, 2015

Abstract

Canada has the highest rate of Inflammatory Bowel Disease (IBD) in the world with approximately 0.67%. One of the primary nutritional health issues faced by Crohn's disease (CD) patients is vitamin D deficiency, which can subsequently lead to more serious health complications. Vitamin D is shown to act as a modulator for the autoimmune system among CD patients. Phase I study aimed to determine vitamin D concentrations and disease activity among CD cases in Canada and Saudi Arabia, and evaluate the impact of higher doses of vitamin D compared to EAR on disease activity among CD patients. This pilot study was a double blind, randomized, control trial involving approximately 60 recent, active CD patients engaged in induction therapy. The sample size includes patients in Saskatoon, Saskatchewan, Canada (n=30) and Riyadh, Saudi Arabia (n=30). The patients have been divided into three groups to receive different oral doses of vitamin D including: 1: 400 IU/day (Control group, EAR level) 2: 2,000 IU/day 3: 10,000 IU/day. Data were collected at baseline (0), end of 9 weeks (end of intervention), and at 2 months follow-up. Along with anthropometric measurements participants undergo laboratory examinations such as, WBC, HGB, Hct, platelets, ferritin, vitamin D, hsCRP and calprotection, undertake the Health related quality of life (HRQOL), and fill out socio-demographic and physical activity questionnaires. We also assessed their dietary intake at the baseline and Week 9 using two sets of three 24-hour dietary recalls. Due to a small sample size (n=9 cases) we have recruited, we presented Phase I as a case series. Phase II study determined the association between vitamin D concentrations and disease activity among CD cohort in Saskatoon, Canada. In a retrospective cohort design, we studied 201 CD patients; 116 participants had vitamin D data. We extracted data from medical records over three years at IBD clinic, Royal University Hospital, Saskatoon, Canada. I evaluated the association between vitamin D status (serum 25OHD) and indicator of disease activity (hsCRP) as well as Harvey-Bradshaw index (HBI) in CD patients. The analyses conducted in the presence of other potential factors in three-time points (baseline, midpoint, last visit) using generalized estimating equation (GEE). Vitamin D concentrations was improved significantly from baseline to the last visit (p=0.005). At the baseline, mean 25OHD was 58.2±30.0 nmol/L; 26% of patients had optimal, 30% had adequate, 26% had insufficient, and 18% patients had deficient vitamin D levels. At the midpoint, mean serum vitamin D concentrations was 60.1±31.2 nmol/L; 31.3% had optimal level, 31,3% patients had insufficient level, 22.1% patients had adequate level, and 15.2% patients were vitamin D deficient. At final visit, mean vitamin D was 74.5±42.6 nmol/L; 43.9% patients had optimal and 24.2% patients had adequate levels of vitamin D, while 18.1% patients were vitamin D insufficient and 13.6% patients had vitamin D deficiency. Vitamin D concentrations showed significant inverse association with hsCRP level over 15 months. Compared to vitamin D deficient category, patients in other categories (including insufficient, adequate and optimal levels of vitamin) had significantly lower hsCRP level over time ($p < 0.05$). Vitamin D deficiency was associated with higher disease activity in Crohn's disease patients. Higher vitamin D (25OHD) concentrations was associated with lower D disease activity levels in Crohn's patients over 15 months.

2-2-081	
Title	**Estimating Hemodynamics in Skeletal Muscle Arteriolar Networks Reconstructed from in Vivo Data**
Author	Amani Saleem, Baraa Al-khazraji, Dwayne Jackson, and Daniel Goldman
Program	Medical Biophysics
University	The University of Western Ontario
Date of Publication	February 23, 2015

Abstract

The objective of this work was to develop a computational model that could accurately predict blood flow in skeletal muscle arteriolar trees in the absence of complete boundary data. We used arteriolar trees in the rat gluteus maximus muscle (GM) that were reconstructed from montages obtained via intravital videomicroscopy, and incorporated a recently published method for approximating unknown boundary conditions into our existing steady-state model of two-phase blood flow. Forvarying numbers of unknown boundary conditions, we used the new flow model and GM arteriolar geometry to approximately match red blood cell (RBC) flows corresponding to experimental measurements. We showed that this method gives errors that decrease as the number of known boundary conditions increases. We also showed that specifying total blood flow into the arteriolar tree decreases the mean RBC flow error and its variance. By varying the target values of pressure and wall shear stress required by the model, we showed that results are less sensitive to the target pressure and, in addition, proposed a method for estimating the optimal target shear stress. Key words: Mathematical Model, Skeletal Muscle, Arteriolar Tree, Intravital Videomicroscopy, Blood Flow, Fry Method, Streak Method.

2-2-082	
Title	**Osteotomy Healing in Children with Osteogenesis Imperfecta Receiving Zoledronic Acid**
Author	Emad a Anammd; Frank Rauch, Md; Francis H Glorieux, Md, Phd; François Fassier, Md; Reggie Hamdy, Md
Program	Master of Science
University	Mcgill University
Date of Publication	February 28, 2015

Abstract

Abstract a decade ago our group had reported that osteotomy healing was commonly delayed in children with moderate to severe osteogenesis imperfecta (OI) who were treated with intravenous pamidronate infusions. We subsequently maintained a bisphosphonate infusion-free

interval of four months following osteotomy and changed the surgical approach (use of an osteotome instead of a power saw). In addition, zoledronic acid has become the standard intravenous bisphosphonate for treatment of OI at our institution. In the present study, we compared osteotomy healing before and after these changes were instituted. We evaluated bone healing post-osteotomy on standard radiographs after 261 intramedullary rodding procedures involving osteotomies (139 femur, 112 tibia) in 110 patients (age at surgery 1.2 to 20.4 years). Delayed healing was diagnosed when the osteotomy line was at least partially visible 12 months after the event. We observed delayed bone healing after 48 of the 114 osteotomies (42%) performed with the new approach, and in 106 of the 147 osteotomies (72%) using the previous approach (P 0.001). The odds for delayed osteotomy healing were significantly lower with the new approach even after adjustment for age, gender, height z-score, weight z-score, OI type and bone involved (odds ratio, 0.17; 95% confidence interval, 0.16-0.47). Thus, delayed osteotomy healing occurred less frequently in the past ten years than in the decade before that. It is likely that this improved result is due to the implemented changes in both medical and surgical management.

2-2-083	
Title	**An in Vivo Study of a Novel Composite Hyaluronic Acid and Gelatin Hydrogel to Improve Healing of Vocal Fold Scars in a Rat Model**
Author	Yazeed Ahmed a Alghonaim
Program	Medicine
University	Mcgill University
Date of Publication	March 01, 2015

Abstract

Objectives/Hypothesis: The primary objective of this study was to investigate the healing potential of a novel hierarchically micro-structured Hyaluronic Acid (HA)-gelatin (Ge) hydrogel in the treatment of acute vocal fold injury using a rat model. Asecondary objective was to evaluate the feasibility of the rat vocal fold for scar and injection studies. Study Design: Experimental Randomized Prospective Study Methods: Vocal fold injury was performed unilaterally in 36 rats. The animals were stratified into three groups. Each group had 25 !Jl of either saline, HA bulk or HA-gelatin hydrogel injected into the lamina propria five days after injury. Vocal folds were then harvested at 56 days after injection and were analyzed using immunohistochemistry. Results: No major reaction to the injectable material was observed. When comparing protein densities between the right injured and left uninjured vocal fold; Type I collagen densities was higher in the saline and HA-Ge groups relative to the uninjured samples (p=0.31 and 0.917 respectively). Collagen type Ill densities, on the other hand, were greater than in the uninjured controls in both HA-bulk and HA-GE groups (p=0.012 and 0.028 respectively). The density of elastin was higher in the HA-bulk and HA-GE groups when compared to the uninjured vocal folds but statistically significant in only the HAGE group (P=0.128 and 0.036 respectively). On the other hand, when comparing protein densities on the right vocal fold between the treatment groups; we found the relative densities of elastin and collagen III were greater in the HA-bulk group than in the saline group (p = 0.032 and 0.07, respectively). Likewise, elastin and collagen type Ill were of greater densities in the HAGE group than in the saline group (p =0.014 and 0.004, respectively). Conclusions: Local HA-gelatin injection shows some potential tissue remodeling and did not cause any inflammatory response during the course of this study. The rat vocal fold is an excellent model for laryngeal studies.

2-2-084	
Title	**Assessing the Potential of Raav9 Systemic Gene Therapy for Gm2 Gangliosidoses Using a Sandhoff Mouse Model**
Author	Naderah Altaleb
Program	Biochemistry and Medical Genetics
University	University of Manitoba
Date of Publication	March 03, 2015

Abstract

The infantile GM2 gangliosidoses are severe neurodegenerative disorders, caused by a defect in the β-hexosaminidase system. They are characterized by lysosomal accumulation of the substrate, GM2 ganglioside, which results in severe neuronal damage and death in the early years of life. Sandhoff mice deficient in both major hexosaminidase isozymes, Hex a and Hex B, mimic the disease severity in the human condition including the motor deterioration, histopathological findings, and premature death. To investigate the utility of systemic adeno-associated virus 9 (AAV9)-based gene delivery in treating GM2 gangliosidoses, we evaluated the therapeutic outcome of a single intravenous injection of recombinant AAV9 encoding the complementing Hexb gene in a Sandhoff mouse model. We showed prolonged survival, preserved motor function, and reduced GM2 ganglioside accumulation as well as inflammation when systemic AAV9 therapy was administered to 1-2 days old mice. However, the formation of liver or lung tumours accompanied the positive therapeutic effect.

2-2-085	
Title	**Oxidative Stress and Neuronal Changes Associated with Prenatal Ethanol Exposure in Human and Monkey Brains**
Author	Duaa Ali Basalah
Program	Pathology
University	University of Manitoba
Date of Publication	March 25, 2015

Abstract

Background: Prenatal ethanol exposure (PNEE) causes irreversible intellectual and behavioral disabilities, clinically known as fetal alcohol spectrum disorder. Few neuropathologic studies of human brain exist. Hypotheses: First, markers of oxidative stress persist following PNEE. Second, PNEE is associated with inhibitory and excitatory neuron changes. Methods: Human brain autopsies (153) with known PNEE were reviewed; 18 cases (fetus to adult) and controls were selected. Oxidative stress and neuronal differentiation markers were used for immunohistochemistry. Results: There were no obvious differences between control and PNEE brains using oxidative stress markers. In human PNEE brains, glutamatergic neurons were reduced 15.96 % and 18.03% in dentate gyrus and temporal cortex, respectively. GABAergic neurons reactive for parvalbumin were reduced in all hippocampal regions (CA1= 57.86%, CA3= 65.15%, and DG= 53.39%) and temporal cortex (44.13%) in all age groups. Conclusion: GABAergic neuron reduction in human following PNEE could explain motor and behavior distractibility in FASD individuals.

2-2-086	
Title	**An in Vivo Study of a Novel Composite Hyaluronic Acid and Gelatin Hydrogel to Improve Healing of Vocal Fold Scars in a Rat Model**
Author	Yazeed Alghonaim, Sam Daniel, Luc Mongeau
Program	Otolaryngology
University	Mcgill University
Date of Publication	April 12, 2015

Abstract

Abstract Objectives/Hypothesis: The primary objective of this study was to investigate the healing potential of a novel hierarchically micro-structured Hyaluronic Acid (HA)-gelatin (Ge) hydrogel in the treatment of acute vocal fold injury using a rat model. Asecondary objective was to evaluate the feasibility of the rat vocal fold for scar and injection studies. Study Design: Experimental Randomized Prospective Study Methods: Vocal fold injury was performed unilaterally in 36 rats. The animals were stratified into three groups. Each group had 25 µl of either saline, HA bulk or HA-gelatin hydrogel injected into the lamina propria five days after injury. Vocal folds were then harvested at 56 days after injection and were analyzed using immunohistochemistry. Immunofluoresence staining was performed on collagen type I, collagen type III and elastin Results: No major reaction to the injectable material was observed. When comparing protein densities between the right injured and left uninjured vocal fold; Type I collagen densities was higher in the saline and HA-Ge groups relative to the uninjured samples (p=0.31 and 0.917 respectively). Collagen type III densities, on the other hand, were greater than in the uninjured controls in both HA-bulk and HA-GE groups (p=0.012 and 0.028 respectively). The density of elastin was higher in the HA-bulk and HA-GE groups when compared to the uninjured vocal folds but statistically significant in only the HA-GE group (P=0.128 and 0.036 respectively). On the other hand, when comparing protein densities on the right vocal fold between the treatment groups; we found the relative densities of elastin and collagen III were greater in the HA-bulk group than in the saline group (p = 0.032 and 0.07, respectively). Likewise, elastin and collagen type III were of greater densities in the HA-GE group than in the saline group (p =0.014 and 0.004, respectively). Conclusions: Local HA-gelatin injection shows some potential tissue remodeling and did not cause any inflammatory response during the course of this study. The rat vocal fold is an excellent model for laryngeal studies.

2-2-087	
Title	**Relations Between Psychological Needs Satisfaction, Motivation, and Self-regulated Learning Strategies in Medical Residents**
Author	Mukhtar, F., Elizov, M., & Muis, K
Program	Educational and Counselling Psychology-Health Profession Stream
University	Mcgill University
Date of Publication	April 26, 2015

Abstract

Residents in the medical field work to fulfil their clinical duties and study to pass exams at the same time. Thus, they need to continuously learn and acquire knowledge in a self-regulated manner that accommodates their busy work schedule. The importance of self-regulated learning (SRL) and its relation to motivation is widely recognised in educational literature, yet it is still not sufficiently explored in medical education literature. The current study was conducted to examine relations between residents' satisfaction of their psychological needs at work, their motivation to learn, and their reported use of different SRL strategies. Atotal of 160 residents from different medical departments at McGill University were asked to complete a questionnaire about their psychological needs satisfaction, motivation to learn, and use of SRL strategies. Path analysis

showed that satisfaction of the perceived competence promotes more use of different SRL strategies through achieving intrinsic motivation. Results were discussed in terms of their impact on medical education practice as well as their theoretical implications.

2-2-088	
Title	**Respiratory Therapy Faculty' Perceptions of Effective Teaching Characteristics of Clinical Instructors in the State of Georgia, Rayan Siraj**
Author	Rayan Siraj, Msc, Rrt-nps Douglas S. Gardenhire, Ed.d, Rrt-nps, Faarc Robert B. Murray, Ms, Rrt Ralph D. Zimmerman, Msm, Rrt-nps
Program	Rehabilitation Science
University	Mcgill University
Date of Publication	April 27, 2015

Abstract

Abstract Background: Clinical instructors are expected to be excellent practitioners with great teaching skills. They play a vital role in teaching the next generation of respiratory therapists (RTs). Because clinical instructors impact the learning process of teaching the next generation, it is important to identify the effective teaching characteristics that contribute to the clinical success of the student from the perspective of RT faculty. PURPOSE: The aim of this study was to identify effective behavioral teaching characteristics of clinical instructors that are deemed most and least important by RT faculty in the State of Georgia. METHODS: Data were collected through a descriptive survey. The survey was adapted and emailed to all RT faculty members listed on the Georgia Society for Respiratory Care (GSRC) website. The survey consisted of three main domains: professional competence, relationship with students, and personal attributes. Thirty-five behavioral teaching characteristics were presented on a five-point Likert scale according to importance. RESULTS: Nineteen responses were received out of forty emailed surveys, with a response rate of 47.5%. The majority of participants indicated a master degree as their highest degree. Almost 58% of the participants teach at programs that offer associate degree. The study findings indicated faculty members' perceptions ranking of the most important behavioral teaching characteristics hold a lot of similarities and some differences. Among all provided teaching characteristics, "Facilitate critical thinking in clinical practice was perceived as the most important behavioral teaching characteristic with mean scores and S.D of (M 4.89, S.D ±0.31), respectively. In the domain of relationship with students, "Encourage students to feel free to ask questions or ask for help" was ranked the highest by the participants with a mean of 4.57 and S.D of ±0.50. In the personal attributes domain, "Able to collaborate with other disciplines" was ranked as the most important characteristic with mean scores and S.D respectively (M 4.68, S.D ±0.47). CONCLUSION: Faculty from different program levels (associate, baccalaureate and master) agreed that "Facilitate critical thinking in clinical practice" was the most important characteristic. Based on these findings, it is highly recommend that clinical instructors strive to improve their attitudes toward students as the best way to achieve the goals of clinical teaching. They also showed the need for respiratory therapy programs to foster and to promote uniformly identified effective behavioral teaching characteristics.

2-2-089	
Title	**Influence of Cyclic Torsional Loading on the Fatigue Resistance of K3xf Instruments**
Author	Abdulmohsen Alfadley
Program	Dentistry
University	The University of British Columbia
Date of Publication	May 12, 2015

Abstract

Objective: to evaluate the torsional and cyclic fatigue behavior of post-machining heat-treated K3XF and conventional K3 nickel titanium (NiTi) instruments. Methodology: New K3XF and K3 files size 25/0.04 (n = 15) were tested in torsion and fatigue tests until fracture to determine the mean number of cycles to failure (NCF) and torque to failure. The cyclic torsional loading experiment was conducted; K3XF and K3 files (n = 30 in each group) were programmed to repeatedly rotate from zero angular deflection to 180° and then return to zero torque. Each rotation was defined as one cycle. Each file was subjected to 10 cycles of torsional loading. Fifteen files from each group were subsequently tested in torsion until fracture. Also, fifteen files subjected to cyclic torsional loading were examined using a three-point bending apparatus to obtain the mean number of cycles to failure. The fracture surface was examined with a scanning electron microscope. The crack-initiation sites and the percentage of dimple area of the whole fracture cross-sectional area were recorded. Results: There was no statistically significant difference between the new K3 and K3XF instruments in the maximum torque or maximum angular deflection. Forthe previously cycled files, K3XF demonstrated higher torque at fracture values than K3 Instruments ($P < .05$). The fatigue resistance of K3XF was significantly higher than K3 in both the new and previously cycled groups ($P < .05$). The NCF value of K3XF with torsional loading was even higher than that of K3 files without torsional loading, although there was no significant difference. New K3XF files demonstrated a significantly higher NCF than previously cycled files ($P < .05$). Conclusions: Cyclic torsional loading decreased the cyclic fatigue resistance of K3XF and K3 instruments although it did not affect their torsional properties. K3XF demonstrated better cyclic fatigue resistance than K3 for both new and previously torqued files.

2-2-090	
Title	**The Effect of Systemic Administration of Sclerostin Antibodies in a Mouse Model of Distraction Osteogenesis**
Author	Thesis by Asim Makhdom
Program	Experimental Surgery
University	Mcgill University
Date of Publication	May 13, 2015

Abstract

Distraction osteogenesis (DO) is a surgical technique widely used to treat complex orthopaedic conditions. One limitation of this technique is the long period the external fixator needs to be left in place until the newly form bone is completely consolidated. This might lead to significant morbidities in terms of persistent pain, risk of pin tracts infection and negative psychological impact on patients and their families. Although the use of sclerostin antibodies (Scl-Ab) has shown promising results to enhance bone repair in various animal models, its effect in DO remains to be determined. We hypothesized that the systemic administration of Scl-Ab can accelerate bone regeneration in a mouse model of DO. Atotal of 110 mice were randomized to saline versus Scl-Ab injection groups. After DO surgery in the right tibiae, mice were injected intraveously once weekly with Scl-Ab (100mg/kg) versus saline (0.1 ml). Mice were sacrificed at four time points, day 11 (mid-distraction phase), day 17 (end of distraction), day 34 (mid-conslidation) and day 51 (end of conslidation). Radiographic (Faxitron), microstructural (μCT), and qualitative histological analysis were performed for the lengthened tibiae at all time points. In addition, biomechanical testing was performed at day 34 and 51. Micro-CT results showed an increase of bone volume in the Scl-Ab treated group at day 11 ($P=0.009$) when compared to the saline group. Atrend toward increase bone volume was observed in the Scl-Ab groups at day 17, 34 and 51 ($P>0.05$). Histological results showed predominately presence of chondrocytes and fibrocartilages in Scl-Ab group at day 11 when compared to the saline group. Radiographic bone scores were higher in the Scl-Ab treated groups at all time points with $P=0.04$ at day 11. Biomechanical analysis revealed a trend toward higher values of ultimate force and work to ultimate point in Scl-Ab treated groups at day 34 and 51 ($P>0.05$) when compared to the saline groups. In conclusion, our data demonstrate the benefits of Scl-Ab on acceleration of bone regeneration and suggest its potential utility in clinical situations to reduce the treatment period with an external fixator during DO procedures.

2-2-091	
Title	**Effect of Semaphorin 3e on Airway Smooth Muscle Cell in Chronic Obstructive Pulmonary Disease (copd)**
Author	Duaa Alsubait, Abdelilah Soussi Gounni
Program	Medicine/immunology
University	University of Manitoba
Date of Publication	May 26, 2015

Abstract

ABSTRACT Introduction: Chronic Obstructive Pulmonary Disease (COPD) is a life-threatening lung disease characterized by airflow limitation, which is poorly reversible and progressive. Current therapeutic strategies for COPD fail to minimize various features of airway remodeling particularly airway smooth muscle (ASM) mass hyperplasia. Semaphorin-3E (Sema3E) is a member of the semaphorin family proteins that were initially discovered as axon guidance molecule. Previous studies indicated a prominent role of Sema3E in cell migration and proliferation. However, the role of Sema3E in COPD is not known. The objective of this study is to investigate whether Sema3E regulates ASM cell proliferation, a key feature of airway remodeling in COPD patients. Methods. Human ASM cells were isolated from COPD patients with different severity. Sema3E and PlexinD1 expression was studied using quantitative real-time PCR, flow cytometry and western blotting. Lung tissues from COPD patients were stained for Sema3E expression by immunohistochemistry. Cell proliferation was evaluated using flow cytometrybased EdU incorporation assay and cell count. Results: HASM cells express Sema3E at mRNA and protein level and in lung tissue obtained from COPD and healthy subjects. PlexinD1, the high affinity receptor for Sema3E is constitutively expressed in HASM cells from COPD compared to healthy subjects. Exogenous treatment with recombinant Sema3E inhibits HASM cell proliferation mediated by platelet-derived growth factor (PDGF) in healthy but not in COPD in vitro. Interestingly, HASM cells obtained from COPD patient express p61KDa-Sema3E isoform, which is known to have proliferative function. Furthermore, HASM cells from COPD patient display abundant expression of the endogenous Sema3E binding to its receptor on cell surface. Conclusion. Collectively, the data suggest that endogenous Sema3E p61kDa, produced by HASMCs, occupy plexinD1 receptor in autocrine manner thus contributing to airway smooth muscle remodeling.

2-2-092	
Title	**Detecting Uterine Cervical Cancer Cells Using Molecular Biomarkers**
Author	Ahmed Mousa, Francis Rodier, Vanessa Samouëlian
Program	Département De Sciences Biomédicales, Faculté De Médecine
University	Université de Montréal
Date of Publication	May 28, 2015

Abstract
Background: Circulating tumor cells (CTCs) have been detected in many cancers and are used in multiple clinical applications including disease prognosis, tumor recurrence prediction and prediction of tumor sensitivity to chemotherapeutic drugs. Studies in most major solid cancer(s) (breast, lung, colon and prostate) are progressing rapidly, but there has been very little progress concerning uterine cervical cancer (UCC).Objective: our aim is to optimize enrichment processes and the molecular biomarker-based detection of human circulating tumor cells (CTCs) in uterine cervical cancer (UCC). Material & Methods: to mimic CTCs in patients, we designed an experimental spiking model where the CaSki HPV16-positive UCC cell line was serially diluted and spiked into human blood collected from healthy volunteers. CaSki CTCs were enriched using either Ficoll density centrifugation, red blood cell (RBC) lysis or RBC lysis combined with cell surface markers negative or positive enrichment. CTCs were detected using real-time quantitative reverse-transcription polymerase chain reaction (qRT-PCR) to measure the gene expression of human papillomavirus (HPV) viral oncogenes (E6 and E7), cytokeratin 19 (CK19), or the cyclin dependent kinase inhibitor p16INK4A. Finally, ten HPV16- positive UCC patients and six healthy controls were recruited to validate CTCs detection in vivo. Result: Inthe spiking model, RBC lysis alone or combined with negative or positive enrichment suggests detection limits close to 1 CTC per mL of blood for all molecular biomarkers used. The sensitivity of detection increased when using positive and negative enrichment probably by reducing the peripheral blood mononuclear cell-derived RNA background. Unlike HPV oncogenes, CK19 and p16INK4A were detected in normal individuals, thus appropriate basal expression levels need to be accurately determined compared to cancer patients. Alternatively, Ficoll density gradient had a detection limit of only about 1000 cells per mL of blood. Finally CTCs were detected in 2/10 patients using CK19. None of the patients had E6/E7 transcripts and p16INK4A was expressed at similar level across all samples (cancer and healthy). Conclusion: qRT-PCR of HPV16 E6 and E7 is the most sensitive and specific biomarker used to detect CTCs in the spiking model. In early disease UCC patients, only CK19 revealed the presence of CTCs suggesting that these cells are rare at that stage of the disease. Keywords: uterine cervical cancer, circulating tumor cells, qRT-PCR, E6 and E7 oncoprotein, CK19, p16INK4A, immune-magnetic enrichment, molecular detection.

2-2-093	
Title	**The Effect of Insulin Sensitivity on Corticolimbic Responses to Metabolic and Visual Food Cues**
Author	Hanin Alsaadi
Program	Physiology/biomedical and Molecular Sciences
University	Queen's University
Date of Publication	June 02, 2015

Abstract
Insulin is one of several molecules that signals the energy balance state to the brain. This study examined the effect of insulin sensitivity on the responsiveness of appetite regulatory brain regions to visual food cues. Nineteen participants diagnosed with polycystic ovary syndrome (PCOS) were studied. Subjects were divided into insulin-sensitive (n=8) and insulin-resistant (n=11) groups based on the homeostatic model assessment of insulin resistance (HOMA2-IR). Subjects underwent functional magnetic resonance imaging (fMRI) while viewing food pictures following water or dextrose consumption. The corticolimbic Blood Oxygen Level Dependent (BOLD) responses to high-calorie (HC) or low-calorie (LC) food pictures were compared within and between groups. BOLD responses to food pictures were reduced during a glucose challenge in numerous corticolimbic brain regions of insulin-sensitive subjects, but not in insulin-resistant subjects. In addition, a positive interaction was detected between insulin sensitivity and condition. Furthermore, the degree of insulin resistance positively correlated with the corticolimbic BOLD response in the medial prefrontal cortex (mPFC), orbitofrontal cortex (OFC), anterior cingulate and ventral tegmental area (VTA) in response to HC pictures and in the dorsolateral prefrontal cortex (DLPFC), mPFC, anterior cingulate, and insula in response to LC pictures following a glucose challenge. The activity in the OFC, midbrain, hippocampus, and amygdala was positively correlated with HOMA2-IR in response to HC>LC pictures following a glucose challenge. We conclude that the normal inhibition of corticolimbic brain responses to food pictures during a glucose challenge is compromised in insulin-resistant subjects. The increase in brain responsiveness to food pictures during postprandial hyperinsulinemia may lead to greater nonhomeostatic eating and perpetuate obesity in insulin-resistant subjects. Understanding how insulin sensitivity affects appetite-regulating brain regions responses to food pictures is necessary for the iii development of prevention strategies and effective therapeutic targets for the treatment of obesity, particularly obesity related to insulin resistance in PCOS.

2-2-094	
Title	**Utilization of Poly(a)-binding Protein in Monitoring the Formation of Mrnp Granules in Toxoplasma Gondii**
Author	Emad Manni
Program	Chemistry and Biochemistry
University	University of Windsor
Date of Publication	June 26, 2015

Abstract
Toxoplasma regulates its gene expression throughout its complex life cycle to survive and confront different kind of stresses. Here I aimed to gain a better understanding of how this regulation is maintained in Toxoplasma at the post-transcriptional level and in the aspect of the formation of messenger ribonucleoprotein complex (mRNPs). I chose to study the poly(A) binding protein (PABP). Metazoans usually encode multiple isoforms of PABP to function in nucleus and/or cytoplasm but in Toxoplasma there is only one predicted PABP. In this thesis, I studied the localization of the only predicted PABP in Toxoplasma (TgPABP). It was detected that TgPABP is predominantly localized in the cytoplasm under treatment with actinomycin D. Second, we also found that TgPABP aggregates into microscopically visible granules, as an indicative of mRNPs. Upon salubrinal treatment, mRNPs were formed in both extracellular and in intracellular parasites whereas cycloheximide can diffuse these granules in less than one hour.

2-2-095	
Title	**Mitochondria-targeted Hydrogen Sulphide Donors Protect Renal Cells from Hypoxia Re-oxygenation Injury**
Author	Ghaleb Anas Aboalsamh
Program	Surgery
University	The University of Western Ontario
Date of Publication	June 26, 2015

Abstract
Abstract Introduction: Hypoxia re-oxygenation in kidney transplantation affects the outcome. Hydrogen sulphide (H2S), (the newest Gasotransmitter), showed significant protective effect on renal transplantation induced IRI. Our objective was to determine if new mitochondria targeted H2S donor molecule (AP39) would be more efficacious in protecting renal cells against IRI compared to the non-specific H2S donor molecule GYY4137. We hypothesized that AP39 would be more potent. Methods: Invitro porcine kidney tubular epithelial cells (LCC-PK1) were exposed to warm hypoxia, without treatment (Control), with AP39 or GYY4137 followed by re-oxygenation. Results: 200nM of AP39 protected the cells and maintained a high viability. AP39 was superior to GYY4137. Significant reduction of Apoptosis and ROS were noted in AP39 samples when compared to control. Both BCL2 and BID genes did not show any significant changes, compared to the control and GYY4137 samples. Conclusion: AP39 is protective and superior to GYY4137 in renal IRI.

2-2-096	
Title	**Quality, Phytonutrient and Antioxidant Properties of Wholegrain Bread Baked with Different Methods**
Author	Seham Sahli Elsayed Abdelaaal Sanaa Ragaee
Program	Food Science
University	University of Guelph
Date of Publication	June 26, 2015

Abstract
Wholegrain foods are recognized sources of dietary fiber and antioxidants. This study investigated the effect of using different bread-making methods and subsequent storage on the quality, phytonutrient contents and antioxidant properties of wholegrain bread. The wholegrain breads were prepared by three methods, straight dough, sponge dough, and sourdough (15%–35% starter) and stored at room temperature for 7 days. Quality of wholegrain bread was significantly influenced by the bread-making method with the highest loaf volume and better crumb softness was obtained in bread made by sourdough method with 15% starter. In addition, 15% sourdough breads exhibited the least changes during storage as compared to straight and sponge dough breads (yeast-leavened). Significant increases were found in free ferulic acid for all the bread products, whereas slight increases were observed in the bound form particularly in sourdough breads. Sourdough fermentation also increased total carotenoid content but reduced total flavonoid content. All wholegrain bread products had significant increases in antioxidant properties as measured by the DPPH, ABTS and ORAC assays, compared with the wholegrain flour. During storage, the sponge dough and sourdough methods were more effective in preserving phytonutrients compared to straight dough method. The results suggest that the sourdough method would be a useful tool in producing high-quality wholegrain breads rich in phytonutrients that would satisfy consumer needs and boost health benefits.

2-2-097	
Title	**An Immune Modulatory Role for the Fes Proto-oncogene**
Author	Faizah Alotaibi
Program	Pathology and Molicular Medicine
University	Queen's University
Date of Publication	July 01, 2015

Abstract
The Fes protein tyrosine kinase is abundantly expressed in phagocytic immune cells, including tumor associated macrophages. In addition to the C-terminal kinase and central SH2 domains, Fes contains an N-terminal F-BAR domain that confers unique membrane binding and bending properties which implicate it in the regulation of dynamic membrane-cytoskeletal remodeling processes associated with phagocytosis, receptor endocytosis, vesicular trafficking and cross-talk between receptor systems. In addition to roles in signaling downstream from a variety of cytokine receptors, including those for IL-3, -4, -5, and GM-SCF, Fes has also been implicated in regulating signaling downstream from the TLR-4 receptor for LPS. Fes knockout mice (fes-/) display enhanced sensitivity to LPS, and this was shown to be associated with increased NF-κB signaling and TNFα production from fes-/- macrophages. Interestingly, tumor onset in the MMTV-Neu transgenic mouse model of breast cancer is significantly delayed in fes-/- mice, and this was associated with increased frequency of CD11b+ myeloid and CD3+ T cells in the premalignant mammary glands. Recent studies have also implicated Fes in cross-talk between MHC-I and the NF-κB and IRF-3 pathways in macrophages. Signal 3, the production of inflammatory cytokines and Type I interferons downstream of NF-κB and IRF-3 pathways in antigen presenting cells, is considered an important component of T-cell activation, after engagement of T cell receptor by MHC presented antigen (Signal 1) and co-receptors by their ligands (Signal 2). Using a lymphocytic choriomeningitis virus (LCMV) model of immune activation, I show that LPS stimulated fes-/- macrophages promote more robust activation of LCMV antigenspecific CD8+ T cells than wild type macrophages (fes+/+). Furthermore, LPS stimulated fes-/- ii macrophages showed increased phosphorylation of NF-kB, TBK-1 and IRF-3. I also showed that Fes co-localizes with MHC-I in dynamic vesicular structures within macrophages. These observations are consistent with a model where Fes regulates Signal 3 in antigen presenting cells through roles in cross-talk between MHC-I and the NF-kB and IRF-3 signaling pathways. This suggests that Fes plays an immune checkpoint role at the level of Signal 3, and that Fes inhibition could promote tumor immunity through increased Signal 3 driven T cell activation.

2-2-098	
Title	**Mitochondrial Dna Accumulation During Embryogenesis**
Author	Suha Arab
Program	Medicine
University	Mcgill University
Date of Publication	July 30, 2015

Abstract
Mitochondria play an important role in cellular energetic metabolism during all stages of life, including oocyte maturation, fertilization, and embryonic development. Mitochondrial DNA (mtDNA) replication occurs in growing oocytes, but stops once the oocyte reaches its full size (E. Mahrous et al., 2012). The timing and regulation of mtDNA accumulation in the embryo, however, remain poorly understood. Thus, the objectives of this study are to identify the precise timing of mtDNA replication resumption during mouse embryonic development and to investigate the molecular mechanisms controlling mtDNA accumulation during embryogenesis. In this study, we performed qPCR-based assays to estimate the quantity of mtDNA in individual mouse embryos at different stages of pre-implantation embryo development in vitro. We determined that mtDNA content remained constant up to the blastocyst stage. We then examined the expression of nuclear-encoded genes required for mtDNA replication. We found that the mRNA expression levels of Tfam, Polga, Polgb, mtSSB, Peo1, and Nrf1 were very low or undetectable during most of the pre-implantation stages, but increased at the later blastocyst stage, which correlates with the number of mtDNA molecules that remained unchanged up to the blastocyst stage, and suggests the absence of mtDNA replication during this period. However, we also discovered that mtDNA copy numbers were significantly increased in the blastocyst outgrowth stage, which may suggest that the accumulation of mtDNA during embryogenesis is closely correlated with embryo growth. To investigate the mechanisms of mtDNA accumulation and assess whether the increase in mtDNA copy number during blastocyst outgrowth is dependent on embryo growth, we inhibited the mTOR pathway, which is essential for growth and cell proliferation in early mouse embryos (Murakami, Ichisaka et al., 2004). To do so, we cultured blastocyst outgrowths in the presence or absence of the mTOR inhibitor rapamycin and 7 quantified the mtDNA copy numbers. We found no significant difference in the content of mtDNA between the two groups, suggesting that the accumulation of mtDNA is independent of embryo growth. Moreover, using immunostaining methods, we assayed for active mtDNA replication in the blastocyst outgrowth stage. We observed potential mtDNA in the cytoplasm of the blastocyst outgrowths, supporting that mtDNA replication may take place at this stage of embryogenesis.

2-2-099	
Title	**Validity of the Portable Piko-6 Spirometer Used for Screening Obstructive Airway Diseases in Community Pharmacy Practice**
Author	Meshari Alwashmi, William Midodzi, John Hawboldt, Gerry Mugford, Jamie Farrell, Erin Davis
Program	Medicine
University	Memorial University of Newfoundland
Date of Publication	August 04, 2015

Abstract
Background: Obstructive airway diseases (OADs) are among the leading causes of morbidity and mortality worldwide. Shortness of breath (SOB) is the main symptom associated with OADs. International guidelines from the Global Initiative for Chronic Lung Disease (GOLD) and the Global Initiative for Asthma (GINA) have recommended spirometry as an indispensable tool for the diagnosis of asthma and chronic obstructive pulmonary diseases (COPD), but spirometry is rarely used in family practice. Simple and reliable diagnostic tools are necessary for screening community patients with onset of OADs for timely management. Purpose: This thesis examined screening utility of the PiKo-6 forced expiratory volume in one second (pFEV1) , in six second (pFEV6), and the pRatio (pFEV1/ pFEV6) in SOB patients for OADs in community pharmacy settings. FEV6 has recently been suggested an excellent surrogate for Forced Vital Capacity (FVC), which requires maximum exhalation of the lungs. Methods: Patients with SOB symptoms who were prescribed pulmonary inhalers, by their family physicians, were recruited via community pharmacies. Trained pharmacists collected two PiKo-6 tests to assess the repeatability of the PiKo-6 device. All patients performed laboratory spirometry (FEV1, FVC and FEV1/FVC) to obtain physician diagnosis of their OADs. The results of the PiKo-6 spirometer and laboratory spirometer were compared. In addition, the PiKo-6 pRatio and laboratory FEV1/FVC were assessed against physician diagnosed COPD. Results: Sixty three patients volunteered to perform the PiKo-6 spirometry. Of these, 52.4 % were men (age 53.9 ± 15.3 years; BMI 31.9 ± 7.40 kg/m2). Repeated testing with pFEV1, pFEV6 and pRatio correlated significantly (within correlation, r = 0.835, p-Value≤ 0.05 ; 0.872, p-Value≤ 0.05; and 0.664, p-Value≤ 0.05). In addition, pFEV1, pFEV6 and pRatio correlated significantly with FEV1, FVC and FEV1/FVC, respectively (between correlation = 0.630, p-Value≤ 0.05 ; 0.660, p-Value≤ 0.05 and 0.580, p-Value≤ 0.05). The cut-off value corresponding to the greatest sum of sensitivity and specificity of pRatio for physician-diagnosed COPD was <0.80, the sensitivity and specificity were 84 % and 50%, respectively. Conclusions the portable PiKo-6 correlates moderately well with the standard spirometry, when delivered by community pharmacists to patients with OADs. The PiKo-6 spirometer may play a role in screening patients suspected of having an OAD in community pharmacies that may benefit from early physician diagnosis and appropriate management.

2-2-100	
Title	**The Relationship Between Inter-professional Collaboration, Job Satisfaction, and Patient Safety Climate for Nurses in a Teriary-level Acute Care Hospital**
Author	Noha Mohammedali Hamlan
Program	Nursing
University	The University of Western Ontario
Date of Publication	August 26, 2015

Abstract
ABSTRACT the purpose of this secondary data analysis study was to examine nurses' perceptions about inter-professional collaboration (IPC), job satisfaction and patient safety climate and the possible relationship between them in a large tertiary care hospital in Ontario, Canada. The data used for this study came from a large quasi-experimental study to evaluate the impact of introducing a new model of IPC. D'Amour's Inter-professional Collaboration, Hackman & Oldham's Global Job Satisfaction, and Sexton's Patient Safety Climate were the main instruments used in this study. Study results showed that nurses reported moderate levels of IPC (M= 3.56, SD= .65) as measured by two inter-professional subscales including: care coordination (M= 3.46, SD= .74) and sharing clinical activity (M= 3.63, SD= .66), moderate levels of job satisfaction (M= 3.28, SD= .97), and lastly, nurses reported moderately high perceptions of patient safety climate (M= 75.59, SD= 16.96). Multiple linear regression showed that inter-professional collaboration and nurses' job satisfaction explained a significant amount of the variance in patient safety climate [R2 = .33, F (7, 740) = 52,15, p < .05]. This is may be the first study to report nurses' perceptions about job satisfaction partially mediates the relationships between inter-professional collaboration and patient safety climate. Keywords: inter-professional collaboration, nurses' job satisfaction, patient safety climate, nurses' perception, relationship.

2-2-101	
Title	**The Role of Fgf Growth Factors in the Development of Chemotherapy Drug Resistance in Ovarian Cancer Cells**
Author	The Role of Fgf Growth Factors in the Development of Chemotherapy Drug Resistance in Ovarian Cancer Cells
Program	Biology
University	Laurentian University
Date of Publication	August 28, 2015

Abstract

Abstract Ovarian cancer is the most gynecological cancer, it has a 5-year mortality rate greater than 70%. When ovarian cancer patients undergo chemotherapy their gene expression changes. This project is studying a particular group of genes called Fibroblast Growth Factors (FGFs), which have been found to be very important in cancer. The hypothesis predicted that significant changes in the expression of FGF proteins are associated with the development of drug resistance in ovarian cancer. Previous work developed three resistant cell lines from the A2780 ovarian cancer cell line (A2780CBN, A2780DXL, A2780CBNDXL), in the previous studies, microarray analysis was performed to find changes in gene expression in the three cell lines. We have been able to confirm some of the changes that indicated a possible role for FGF gene expression changes in drug resistance. However, we could only confirm a change in protein expression for one of the FGF factors, FGF23, which was altered in A2780CBN and A2780CBNDXL resistant cell lines.

2-2-102	
Title	**An Environmental Scan of Public Domain Reporting on Injury and Trauma in British Columbia**
Author	Alhoshan, Raiyan
Program	Master of Science in Surgery
University	University of British Columbia (vancouver Campus)
Date of Publication	August 28, 2015

Abstract

Abstract Introduction: High quality trauma care and effective injury prevention and control in regionally discrete populations are prime objectives of mature trauma systems. In British Columbia, where 4.6 million people inhabit a vast area of one million square kilometers, numerous independent agencies and organizations with varying performance objectives guided by large independent data collection strategies support this collective effort. Whole system measures are an emerging evaluative tool useful to decision makers responsible for allocating resources to better align and integrate healthcare delivery services that result in meaningful system-level performance improvement. The usefulness of current performance reporting to drive improvement in the design and function of British Columbia's systems of trauma care and injury management is unclear. Objectives: The research objectives were to (1) describe in qualitative and semi-quantitative terms the depth and breadth of public domain reporting on injury management in the province of British Columbia; (2) identify, if possible, measures that describe performance of the system as a whole; and (3) identify performance reporting gaps that, if addressed, may facilitate improvement in system design and function. Methods: (1) Identify all B.C agencies involved in the care, control and prevention of injury; (2) Identify performance objectives for the provincial trauma system through assessment of the strategic plans of leading trauma organizations; (3) Construct an inventory of public domain reporting by identified agencies; (4) Describe retrieved reports using qualitative and semi-quantitative methods; (5) Compare performance reporting output against overarching strategic performance objectives to identify gaps in whole system reporting. Results: We identified 276 injury-related performance measures from 19 data sets in 174 reports produced by 37 B.C. organizations from 1998-2013. All 13 domain trauma system were represented. Unadjusted mortality and stratified incidence rates from surveillance reporting predominated. EMS, acute hospital care and recovery care reporting was thin. While several metrics could be adopted as whole system measures, important gaps were identified. Conclusion: Public reporting of trauma care and injury management in B.C. does not reflect an integrated system unified by well aligned outcome objectives. Awhole system measures approach to performance evaluation of the provincial trauma system could help to accomplish this.

2-2-103	
Title	**Novel Cutaneous Abscess Model : Model Development and Exploration of Reliability and Validity of Detecting Key Diagnostic Features**
Author	Alkanhal, Abdulaziz A.
Program	Master of Science in Surgery Program / Department of Surgery
University	University of British Columbia (vancouver Campus)
Date of Publication	August 31, 2015

Abstract

Introduction: The difficulty of differential diagnoses between cellulitis and occult cutaneous abscess remains the main issue in clinical practice. Educational efforts, however, have been invested into building simulation models directed toward the treatment of cutaneous abscesses. The discrepancy between the problem in clinical practice and educational efforts in this area requires simulation models that can provide an opportunity for trainees to practice their diagnostic skills. Aims: The study focuses on creating a cutaneous abscess model that is detectable by ultrasound and evaluating the reliability and validity of detecting clinical and sonographic features of cutaneous abscess disease on the basis of the model. Materials and methods: Six identical models were made, each consisting of a water balloon filled with mock abscess and two glue threads inside a pork belly, and radiologist standardized ultrasound images of the model. Reliability and validity of detecting key diagnostic features on the basis of the model by 24 judges were explored. Results: Cronbach's alpha across all models were 0.89 and 0.87 for clinical and sonographic features, respectively. The intraclass correlation coefficient was 0.71 for both clinical and sonographic features. The correlation between all clinical and sonographic features and corresponding construct were statistically significant ($p < 0.01$). Content validity indices were 0.90 for clinical features construct and 0.85 for the sonographic features construct. Discussion: The model was constructed from simple, widely available and easy to assemble materials. It is a high fidelity, cost-effective model and can be used as a simulator for diagnosis of cutaneous abscess in medical education. Study data expressed excellent internal consistency and high agreement among judges. The clinical and sonographic features were significantly correlating to the overall corresponding construct. It also reveals strong content validity. The constructed cutaneous abscess model has reliable and valid ability in demonstrating both clinical and sonographic features. Further studies are needed to examine the efficacy of the model for training and correlations with the clinical outcomes in real practice. Conclusion: The novel high fidelity cost-effective cutaneous abscess model allows for reliable and valid detection of the clinical and sonographic diagnostic features of the cutaneous abscess disease.

2-2-104	
Title	**Osmr Deficiency Provides Protection in Sepsis-induced Morbidity & Mortality in Both Young Adult and Old Mice**
Author	Nour Almalki Md, Saad Y Salim, Matt Emberg, Thomas A. Churchill, Rachel G. Khadaroo Md
Program	Masters of Experimental Surgery/ Department of Surgery
University	University of Alberta
Date of Publication	October 07, 2015

Abstract

Introduction: Oncostatin-M (OSM), a member of the IL-6 family, plays a significant role in modulation of the inflammatory response. OSM levels in septic patients have been shown to be increased. Our objective was to assess the effect of OSM receptor deficiency on the inflammatory process in sepsis in mice. Methods: Two groups of OSRM-knockout (KO) and wildtype mice aged 10-12 weeks (young adult) and 50-70 weeks (old) were given intraperitoneal injection of 1.3 mg/g of cecal slurry (CS). Mice were observed for 18 hours, followed by euthanasia and necropsy. Cytokine levels in organ homogenates were measured. Results: Old wildtype mice had an exaggerated inflammation, higher severity of illness and worse clinical outcomes compared to the old OSRM-KO mice ($P<0,0001$). Clinical score were significantly different between the two OSMR-KO mice, showing a faster response in the young-adult-KO mice after 12 hours of CS injection than in the older-KO group ($P=0,002$). Cytokine analysis of lung homogenates showed significantly lower levels of TNF-α, IL-6, IL-10 and KC in young-OSMR-KO mice compared to old-KO mice. Moreover, young-adult-KO had higher bacterial clearance in the peritoneal cavity than old-KO mice ($P<0,0001$) Conclusion: Our results demonstrate that OSMR deficiency enhance protection against sepsis-induced inflammation in the young adult mice. Younger OSMR-KO mice respond earlier to CS injection, have lower inflammatory response and better bacterial clearance than older OSMR-KO mice. While old OSMR-KO mice had lower inflammatory response, better clinical outcomes and enhanced survival than wildtype older mice. Targeting OSMR especially in elderly might provide vital time needed to improve survival.

2-2-105	
Title	**Accumulation of Mitochondrial Dna During Early Murine Embryogenesis is Linked to the Resumption of Cell Growth**
Author	Suhaib Khayat, Hugh Clarke
Program	Experimental Medicne
University	Mcgill University
Date of Publication	October 24, 2015

Abstract

Mitochondria play a major role in providing the energy required for various cellular functions. Mitochondrial DNA is commonly used to assess cellular mitochondrial content. In mammalian oocytes, mtDNA accumulates during oocyte growth and this accumulation stops when oocyte growth ceases. Following fertilization, mtDNA levels remains constant during early embryogenesis, then increase near the time of implantation. Yet the mechanism behind the resumption of accumulation remains unknown. In the current study, we aim to identify the pattern, mechanism and timing of mtDNA accumulation during embryogenesis. qPCR analysis of mtDNA levels showed that in preimplantation embryos (1CE, 2CE, early- and late-blastocysts), mitochondrial content is comparable to that of full-grown oocytes. Next, to assess levels at implantation, we cultured blastocyst outgrowths in vitro, thus mimicking the process of implantation. We found a significant increase in

levels of mtDNA in blastocysts outgrowth compared to late blastocyst controls. Moreover, we also detected a significant increase in mRNA levels of replication factors (Tfam, Nrf1, Polga, Polgb,) as the embryo develops from the 2-cell to the blastocyst stage. Our results demonstrate that the of levels mtDNA, which reflects cellular mitochondrial content, remain constant at the early stages of embryogenesis and significantly increase after implantation. This data also suggests that this increase is associated with embryo growth. In addition, we analyzed the expression level of nuclear encoded replication factor in blastocyst outgrowth and we showed statistical significant increase in Polga expression level. Furthermore, to investigate whether the increase in mtDNA in blastocyst outgrowth is associated with cell growth, we inhibited the mTOR pathway, which is an important pathway for cell growth and proliferation. We cultured blastocyst outgrowths with or without rapamycin and measured the quantity of mtDNA copy number in blastocyst outgrowth. We found that mtDNA copy number decreases in blastocyst outgrowths treated with rapamycin, suggesting that the increase in mtDNA is correlated with embryo growth.

2-2-106	
Title	**Image-guided Video-assisted Thoracoscopic Surgery (vats) Excision of Small Peripheral Pulmonary Nodules (sppn) in Patients with Previous Extra-thoracic Malignancies**
Author	Omamah Almousa
Program	Surgery
University	University of British Columbia
Date of Publication	November 12, 2015

Abstract

Objective: The purpose of this study is to determine the utility of preoperative CT-guided microcoil localization (CTML) followed by fluoroscopy guided VATS resection in the diagnosis and management of SPPN in patients with extra-thoracic malignancies. Methods: This study was a retrospective analysis of prospectively collected data between August 2003 and September 2013. Fifty patients underwent preoperative localization of undiagnosed SPPN using percutaneously placed CT-guided platinum microcoils (CTML). Coils were placed with the distal end deep to the nodule and the superficial end coiled on the visceral pleural surface. Nodules were removed by VATS wedge excision using endostapler with visualization by intraoperative fluoroscopy and VATS. Results: A total of 50 patients with a cumulative history of 14 different extra-thoracic cancers (57% female, mean age 62 years) had 55 nodules resected (mean size = 12.11mm, depth from visceral pleura = 22.07 mm) using CTML and fluoroscopic guided VATS wedge excision. The previously treated extra-thoracic tumor sites were colorectal (16), breast (9), urogenital (9), sarcoma (5), melanoma (3), lymphoma (3), thyroid (3), gastro esophageal (2), others (3). Nodule histology showed metastasis (25/50 patients), benign (11/50) and (15/50) early stage primary lung cancer. On logistic regression analysis, lung nodules in smokers were found 6 times more likely to represent primary lung cancer than metastasis (p 0.009). CTML procedure was successful in all patients with a mean time of 31.5 minutes and allowed successful diagnostic VATS wedge resection in all cases with no major complications. The mean time of VATS and iii fluoroscopy were 26.68 minutes and 1.35 minutes, respectively. After a follow up period of 35 months, all patients were alive and none of the patients had local recurrence of disease. Conclusions: Pre-operative localization of small peripheral pulmonary nodules using percutaneous CT-guided microcoil localization followed by fluoroscopic guided VATS resection was effective in achieving early definitive diagnosis, and changed the management and improved the prognosis in 50% of patients with presumed metastasis with minimal morbidity. The 20% of patients with benign disease required no further therapy while the 30% of patients with early stage primary lung cancer underwent curative surgical resection.

2-2-107	
Title	**A Meta-analysis of Hydroxyurea Use for β-thalassemia: Implications for Clinical Practice and Medical Education**
Author	Ali Hassan Algiraigri Nicola Wright Elizabeth Oddone Paolucci Aliya Kassam
Program	Community Health Science
University	University of Calgary
Date of Publication	November 13, 2015

Abstract

Chronic blood transfusion remains the most feasible therapeutic option for the majority of patients with severe β-thalassemia. However, it is associated with serious risks and complications. An alternative option is desirable and may prevent some of the problems associated with current therapy. Hydroxyurea (HU), an oral chemotherapeutic drug, is expected to increase hemoglobin, thereby minimizing the burden of blood transfusion and its complications. The objective of this study was to conduct asystematic review and meta-analysis to evaluate the clinical efficacy and safety of HU in patients with severe β-thalassemia.HU appears to be effective, well tolerated and associated with mild and transient adverse events; however, large randomized clinical trials (RCTs) should be done to confirm such findings. Nonetheless, based on the results of the present meta-analysis, it is recommended that current practice guidelines for severe β-thalassemia be appended to include a trial of HU.

2-2-108	
Title	**Qualitative Exploration of the Community Pharmacists Education and Skills Needs Concerning Addiction in Saskatoon**
Author	Sarah Fatani, Anas El-aneed
Program	College of Pharmacy and Nutrition
University	University of Saskatchewan
Date of Publication	November 14, 2015

Abstract

Community Pharmacists are the most accessible health care providers in Canada. Utilizing these cadres in effectively addressing substance abuse and addiction problems would help minimize the health and socioeconomic negative outcomes associated with the disease of addiction. Therefore, the purpose of this project is to: 1) Comprehend pharmacists' encounters with PWSAD including satisfaction, feelings, situation management, red flags, and outcome(s), 2) Identify skills and educational needs for community pharmacists concerning providing optimum services to PWSAD, 3) Define the types of educational/ training programs pharmacists require to improve their services toward PWSAD, 4) Identify immediate needs to improve current services (e.g. referral guide) and inquire about possible obstacles facing community pharmacists in providing services to PWSAD. Qualitative methodology was deemed as the most appropriate method for the research purpose. To recruit study participants, a questionnaire was sent to all community pharmacists in the city of Saskatoon. The survey results also provided general understanding of community pharmacists' perspectives about addiction. Another survey was sent to all pharmacy schools in Canada, inquiring about the main educational material concerning addiction in undergraduate curricula. The inquiry concerned with the type of educational knowledge covered including pharmacological aspects, social aspects or others. Those pharmacists selected to be interviewed where asked to comment on the education and skill needs for community pharmacists and the suitable means to address such needs. Data analysis revealed four major themes; Work Environment, Lack of Knowledge, Health System and Educational and Training Needs. Each theme represents barriers facing community pharmacists to provide optimum health care for PWSAD. It was evident for educational and training needs that the demand is to have training on the social aspects of the disease such as communication skills and inter-professional interactive learning sessions. The need to focus on the social aspects of addiction was one of the major demands, expressed by participants. This work will influence future educational plans as well as provide suggestions to improve the contemporary educational plans based on a view from the practice field. It is not surprising as the university survey also showed lack of emphasis on the social aspects of addiction within the pharmacy curricula across Canada. Based on research findings, recommendations were categorized to two main streams; recommendations at the undergraduate level and recommendations at the continuous education and practice level. It is recommended to shift the focus of addiction educational material from pharmacology and law endorsement to social issues and patient care at the undergraduate level. On the other hand, implementing inter-professional sessions as well as protocol that pharmacists can follow during their encounter with PWSAD are key recommendations at the continuous education and practice level.

2-2-109	
Title	**Ddx17 (p72), a Sox2 Binding Partner, Regulates Sox2 to Sustain Tumorigenic and Stem-like Properties in a Phenotypically Distinct Subset of Estrogen Positive Breast Cancer Cells**
Author	H. Alqahtani, K. Gopal, N. Gupta, K. Jung, A. Alshareef, X. Ye, F. Wu, L. Li, R. Lai
Program	Laboratory Medicine and Pathology
University	University of Alberta
Date of Publication	November 25, 2015

Abstract

Sox2, an embryonic stem cell marker, is involved in the pathogenesis of breast cancer (BC). Sox2 expression is associated with a poor clinical outcome in BC patients. Based on the differential Sox2 transcriptional activity, we have identified the two phenotypically distinct cell subsets, namely reporter responsive (RR) and reporter unresponsive (RU) cells. RR cells are more tumorigenic and stem-like than RU cells. The goal of this study is to understand the mechanisms of regulating Sox2 transcriptional activity. By using liquid chromatography–mass spectrometry and co-immunoprecipitation, we found that DDX17 is a Sox2 binding partner in ER+ BC cell lines. The interaction between DDX17 and Sox2 was found to be significantly higher in the RR cell subset than in the RU subset. DDX17 was found to bind to the Sox2 promoter and regulate its expression in RR cells derived from the MCF7 cell line. Although, the protein level of Sox2 was unaffected in RU and RR cell subsets. Upon siRNA knockdown of DDX17, the transcriptional activity of Sox2 was significantly decreased in RR cells but not in RU cells. Correlating with these findings, siRNA knockdown of DDX17 drastically reduced the tumorigenic and stem-like properties in RR cells, as observed by decreased in colony formation and mammosphere formation efficiency. In conclusion, DDX17 regulates Sox2 to maintain tumorigenic and stem-like properties. The interaction between Sox2 and DDX17 provides a novel mechanism underlying the functional dichotomy of BC cells, which carries potential therapeutic implications.

2-2-110	
Title	**Intracellular Localization and Regulation of Gelatinase-a in Zebrafish Skeletal Muscle**
Author	Amina M. Fallata and Bryan D. Crawford
Program	Biology
University	University of New Brunswick (fredricton Campus)
Date of Publication	December 08, 2015

Abstract
Matrix metalloproteinase (MMPs) are class-I secreted proteins known to function in extracellular matrix remodeling. However, studies in the last decade and a half revealed the unexpected presence of MMP-2 (a.k.A. gelatinase-A) intracellularly, within cardiomyocytes and implicated them in the pathology of ischemia/reperfusion injury (IRI). Furthermore, the activity of this protease in mammals is controlled by phosphorylation implicating the existence of unknown kinases and phosphatases, and possibly a signalling system that modulate MMP-2 activity inside cells. Two questions that emerge from these discoveries are (1) is the intracellular localization of gelatinase-A is something common in striated muscle, and (2) is its regulation by phosphorylation of physiological significance? Answering these questions is the objective of this thesis. Using immunofluorescence, confocal microscopy, and ultrathin sectioning, I have confirmed the intracellular localization of Mmp2 in zebrafish skeletal muscle. However, I observed zebrafish Mmp2 accumulating on M-bands within sarcomeres, rather than in the Z-discs as has been reported for mammalian MMP-2 within cardiomyocytes. I also note that the signal sequence that directs this protease into the secretory pathway is consistently poorly recognized, indicating a selective pressure for maintaining a significant intracellular portion of this enzyme. While I was unable to determine the phosphorylation status of Mmp2 purified from zebrafish muscle, there are high probability phosphorylation sites in the Mmp2 sequence that are well- conserved among homologues of this protease for which sequence is available. Thus I show that the intracellular localization of gelatinase-A proteases within the sarcomere of striated muscle is not unique to mammalian cardiomyocytes, and that its regulation by phosphorylation is likely an evolutionarily conserved characteristic of physiological significance. I speculate that this protease is a previously unrecognized component of the mechanism that regulates protein turnover within the contractile apparatus of striated muscle.

2-2-111	
Title	**Early Adoption of Aliskiren in Ontario: Prescribers' Characteristics and Patients' Outcomes**
Author	Sahar S. Othman
Program	Medical Sciences
University	University of Toronto (school of Graduate Studies)
Date of Publication	December 15, 2015

Abstract
Little is known about the patterns of adoption of new antihypertensive drugs. The objectives of this study are: 1) to examine trends of aliskiren prescribing in Ontario, 2) to determine physicians' characteristics associated with aliskiren prescribing, and 3) to compare morbidity and mortality outcomes, in addition to prescription drug costs, among patients treated by early versus late and non-adopters of aliskiren. We hypothesize that early adopters are largely represent by primary care providers, and patients treated by those physicians will have worse outcomes and higher prescription costs than patients treated by later or non-adopters of aliskiren. We examined a population-based cohort using linked administrative databases. Our results showed primary care providers were earlier and heavier prescribers of aliskiren. Patients treated by early adopter physicians incurred higher prescription costs. However, no difference in mortality and morbidity outcomes was observed between hypertensive patients treated by early vs. late or non-adopters, suggesting that early adopters provided quality of care similar to other physicians.

2-2-112	
Title	**Antimicrobial Efficacy of Different Calcium Hydroxide Containing Preparations Against Biofilms at Different Stages of Biofilm Development**
Author	Dr. Hadi Mohammed Alamri
Program	Msc in Craniofacial Sciences/diploma in Endodontics
University	The University of British Columbia
Date of Publication	December 18, 2015

Abstract
Objective: to quantify and assess the antibacterial effect of different medicaments on young and aged biofilms, and to modify the medicaments in order to increase their antibacterial effect. Hypotheses: Microbes in aged biofilms grown from a mixture of oral bacteria are more resistant to the antimicrobial activity of calcium hydroxide than microbes in young biofilms. Biofilms are less resistant to calcium hydroxide combined with other antimicrobial agents than to pure calcium hydroxide. Methodology: Collagen coated hydroxyapatite disks were immersed in plaque suspension solution and incubated for one and three weeks to grow young and aged biofilms, respectively. The tested medicaments were calcium hydroxide, iodine potassium iodide, cetrimide, and the following combinations: iodine potassium iodide + cetrimide, calcium hydroxide, calcium hydroxide + iodine potassium iodide, calcium hydroxide + cetrimide, calcium hydroxide + iodine potassium iodide + cetrimide. After exposure to the medicaments for one day, one week, and two weeks, biofilms on disks were stained with a LIVE/DEAD viability stain and imaged using confocal laser scanning microscopy. The three-dimensional reconstructions of the images were done and proportions of green and red fluorescence were measured and statistically analyzed. Results: Aged biofilms were thicker than the young biofilms. All tested medicaments showed reduced antibacterial activity on the aged biofilms compared to young biofilms. Combining iodine potassium iodide to cetrimide had an additive effect and mixed with calcium hydroxide showed stronger antibacterial effect than calcium hydroxide alone. Conclusions: Aged biofilms are more resistant to antibacterial agents than young biofilms. Combining iodine potassium iodide and cetrimide to calcium hydroxide resulted in an antibacterial effect that was stronger than using calcium hydroxide alone.

Business & Management

2-3-113	
Title	**Consumer Loyalty in Fast-food Restaurants in Saudi Arabia**
Author	Sulafah Abdulhameed a Bukhari
Program	Business and Management
University	University of Ottawa
Date of Publication	January 01, 2015

Abstract
This study assesses the loyalty behaviour of consumers in fast-food restaurants in Saudi Arabia by studying the antecedents and the consequences of loyalty behaviour. The sample consisted of 231 Saudis and non-Saudis living in Saudi Arabia. They were approached using the "snowball" technique. Participants were all over the age of eighteen, and they were customers of Al-Baik restaurants. Data was collected through a face-to-face questionnaire, and analyzed using SPSS software. Specifically, Cronbach's Alpha test, Pearson correlation coefficient, Spearman correlation coefficient, and multiple regression analysis were used. Results show that significant relationships exist between the antecedents and the consequences of loyalty behaviour. It is also indicated that participants' personalities and values were significantly related to the loyalty behaviour of consumers in Saudi Arabia. The major limitation of this study is that it was conducted in only one city, Jeddah. Therefore, additional research should be carried out in other cities with larger samples. The research results offer compelling evidence that Saudi loyalty behaviour differs from Western behaviour. Therefore, it suggests that international fast-food operators in Saudi Arabia should take local factors into account when formulating marketing strategies, such as the role of women and youth in Saudi society. This thesis makes a novel contribution to the literature, as it is the first to model the antecedents and the consequences of loyalty behaviour of consumers in a single study. It is also the first to study contributed to the literature to examine the relation between the Six Dimensional Achievement Motivation Scale (Jackson, Ahmed, and Heapy, 1976), Rokeach Value System (1973), and loyalty behaviour of consumers.

2-3-114	
Title	**Political Instability, Terrorism and Violence: Impacts on Tourism and How Destinations Responded**
Author	Thaib Abdullah Saleh Alharethi
Program	Business and Management
University	Thompson Rivers University
Date of Publication	March 01, 2015

Abstract
The tourism industry is a major source of income and revenue for a great number of countries around the globe. Tourism is playing a strong role in connecting nations, cultures and histories through interactions, engagement and relationships created between travelers and the local population in tourist destinations. However, the tourism industry is very sensitive to concerns about safety, political instability and violence and such issues are considered to be direct threats to the tourism industry. This research aims to investigate and highlight the impacts of political unrest, terrorism and violence on the tourism industry. Four tourist destinations which experienced such events were chosen for this study: New York, London, Egypt and Bangkok. This set of four case studies investigated each destination's economic conditions, marketing strategies, media and image, political responses and leader's roles. This study examined the ability of tourist destinations to overcome political instability, terrorism and violence by developing and implementing marketing strategies, improving image and undertaking rebranding efforts. As well, this study examined whether such events can help a tourist destination by forcing its government to improve tourism infrastructure and strengthen security systems. This study shows that such events have actually caused some tourist destinations to revise and strengthen their security systems and visa entry requirements as well as create security and safety legislation. As well, some of the destinations implemented effective

marketing and branding strategies in order to boost tourism. Finally, these events forced some destinations to engage in substantial improvements in tourism infrastructure as a response to such events.

2-3-115	
Title	**An Exploratory Study Into the Factors Impeding Ethical Fashion Consumption**
Author	Basemah Alhobishy
Program	Department of Recreation and Tourism
University	Vancouver Island University
Date of Publication	June 11, 2015

Abstract
ABSTRACT in recent years, the fashion industry has become highly competitive, where fashion firms compete not only on price, but also on their ability to produce and deliver new trends to the markets. Consumers are changing their preferences at a frequent pace and in particular, women revise their wardrobes often. This fast pace of fashion trends and the continuous demand for new styles impacts social and environmental sustainability. Thus, ethical fashion is in search of solutions to address sustainability issues associated with fashion production. Existing literature on ethical fashion indicates that shoppers' engagement in ethical consumption is still at a low level, some indicating that there is gap between consumers' beliefs and their purchasing behaviors (Eckhardt, Belk & Devinney, 2010; Davies, Lee & Ahonkhai, 2012). Even though there is a widespread assumption that shoppers care about apparel sweatshops and demand more ethical responsibility from fashion firms (Joergens, 2006), it is debatable if shoppers would sacrifice their own personal needs to support ethically made apparel. The purpose of this study was to examine the knowledge of Saudi females about the hidden politics behind corporate brand names, and to explore their actual purchase behaviour to determine if these consumers have any ethical intentions or constraints with respect to ethical fashion. The study also sought to determine what these participants perceive to be viable solutions to common ethical dilemmas in the fashion industry. Between October 2014 and December 2014 semi-structured interviews were conducted with Saudi female students aged between 25-35 years old at Vancouver Island University in Canada in order to obtain their behaviours, beliefs and attitudes toward ethical issues in the fashion industry. The data were analyzed using thematic analysis. The results indicate that participants need more information to make better ethical choices and ethical fashion brands need to communicate this more effectively. Findings indicated that interviewees' propensity to consider ethical issues is low in fashion consumption. This is due to a number of external or situational factors such as a lack of information about ethics in the textile industry and limited availability of alternatives. This research provides insight into the factors that influence young Saudi females' decisions to purchase from socially responsible manufacturers and assists in building a foundation of knowledge from which government and apparel industry leaders can develop policy regarding apparel sweatshops. The results will allow researchers to understand more about how a specific gender and cultural group influences ethical consumption of fashion. This knowledge is important for local business owners and international managers to have in order to develop strategies and implement solutions to expand ethical fashion. Such knowledge can be used to advance initiatives that will motivate and encourage female shoppers from Saudi Arabia and the Arab world to purchase more ethically. KEYWORDS: Saudi Arabia; fashion industry; buying behavior; ethical fashion; sustainability and Innovation.

2-3-116	
Title	**A Model of Effective It Governance for Collaborative Networked Organizations**
Author	Bijan Raahemi. Phd Greg Richards, Phd Morooj Safdar, Msc
Program	Electronic Business Technologies
University	University of Ottawa
Date of Publication	July 22, 2015

Abstract
Inter-organizational collaboration based on the use of IT systems is now essential for organizations working as Collaborative Networked Organizations (CNOs). However, little research has been done to examine the critical success factors involved in shared IT governance among members of a CNO. Accordingly, this research develops a model of inter-organizational IT governance composed of critical success factors (CSFs) and key performance indicators (KPIs). The study defines fourteen CSFs that are classified under the main four categories of IT governance, which include strategic alignment, resource management, value delivery and risk management, and performance measurement. The main dimensions of the KPIs include consensus, alignment, accountability, trust, involvement and transparency. To validate the research model, we conduct a case study of a healthcare CNO by gathering insights from CNO participants on the importance of the proposed CSFs and performance indicators included. The findings of the research validate the importance of the CSFs but suggest that they could be ranked in order of criticality. In addition, certain CSFs were redefined based on the experience of CNO participants and questions were raised related to the context of the CNO, which influences participant perceptions, as well as to the degree of formalization noted in the CNO.

2-3-117	
Title	**Correlates of Saudi Male and Female Students Work Values and Organizations Desirability**
Author	Ebtasam Albabtain
Program	Electronic Business Technology
University	University of Ottawa
Date of Publication	November 25, 2015

Abstract
Discrimination between males and females within labor markets is clear. Also, men's domination of top management positions in many countries is mentioned in different research. The labor market in Saudi Arabia has special characteristics due to strict social, religious, and tribal values, which makes it of special attention. This research investigates gender disparities in terms of preferred work values, job needs, six dimensions achievement motivation (excellent, achievement via independence, acquisitiveness, expert status, peer status, and competitiveness), Rokeach values, and organizational desirability among 200 male and female (graduate and under graduate) students from eight different universities in Saudi Arabia. The research uses the independent groups't-test to investigate gender differences significance in terms of work values, organizational desirability, job needs, Rokeach instrumental and terminal values, and six dimensions achievement motivation variables. The study also explores the correlation associating work values with demographics and six dimensions achievement motivation. It also presents the correlation relating organizations desirability with the demographics and six dimensions achievement motivation. Interestingly, both genders showed no significant differences in all values whose impact is isolated to the development of their professional careers. However, they showed clear gender-based differences regarding professional values that had effects on their personal lives. Overall, the results suggest that females prefer jobs offering them independence, reliability, job and family security while respecting traditions and societal norms. Male students seem to prefer jobs offering them prestige as well as comfortable and exciting lives. Both genders showed no differences in preferring jobs with possibilities for promotions and high status with peers and experts. We suggest that Saudi male students have higher preference for jobs with prestige, while Saudi female students have higher preference for jobs at hospitals and charity organizations. However, both genders showed no-significant differences in preferring to work in jobs with high job security (education and public institutions).

Humanity & Social Sciences

2-4-118	
Title	**The Correlation Between Negative Strategies and Basic Word Order**
Author	Mohammed Muqbil S Alluhaybi
Program	Humanities
University	University of Manitoba
Date of Publication	January 01, 2015

Abstract
Based on two typological frameworks (Dahl, 1979 and Miestamo, 2007), I explore the various strategies used to negate declarative verbal main clauses (standard negation) in 28 languages in order to investigate the correlation between them and basic word order. The 28 languages are divided into three groups according to their basic word order as follows: 11 SOV, 10 SVO and 7 VSO. As much as possible, I have included languages from different language families and different geographical areas in order to eliminate the effect of genetic relationships and borrowings. The results suggest that negative strategies are probably morphological, where the negator is an affix, in SOV languages and frequently syntactic, where the negator is an independent morpheme, in SVO and VSO languages. I also show that symmetric negation, where no structural differences are observed between affirmatives and negatives other than the negative marker (s), is the most common type cross-linguistically.

2-4-119	
Title	**Enzymatic and Immunological Comparison of Mycobacterium Tuberculosis and a Clinical Isolate of Streptomyces**
Author	Zaenab Hussain a Al Jassim
Program	Life Sciences
University	Laurentian University
Date of Publication	January 01, 2015

Abstract
Tuberculosis is a bacterial infection that affects one-third of the global population. The pathogen responsible for the vast majority of these cases is Mycobacterium tuberculosis and the current vaccines are insufficiently effective. The current vaccine against Tuberculosis is the live bacille Calmette-Guérin (BCG) vaccine with efficacy varying between 0% and 60% depending on the population demographics. DNA, cellular fractions of the pathogen, and subunit vaccines failed to provide protection beyond what the BCG vaccine can provide. Streptomyces, phylogenetic relatives of the mycobacteria, have been suggested as heterologous

systems to formulate new vaccines against Tuberculosis. The main research objective of this study is to establish a functional relationship between M. tuberculosis and a clinical isolate of streptomyces using enzymatic and immunological profiling. This clinical isolate was confirmed to be related to Streptomyces albus. Enzymatic profiling of the culture filtrate showed that out of a total of 19 enzyme activities investigated, eight were common between S. albus and M. tuberculosis. These were: alkaline phosphatase, esterase lipases (C8), lipase (C14), leucine arylamidase, valine arylamidase, acid phosphatase, naphthol-ASBI-phosphohydrolase, and -glucosidase. Highest levels of acid phosphatase activity was found in the culture filtrate protein (CFP) fraction of S. albus cultured in media containing glycine as a nitrogen source but was highest in the cytoplasmic fractions of cells grown with nitrate as a nitrogen source. The opposite was true for alkaline phosphatase where the highest activity was detected in the media with asparagine as a nitrogen source. Alanine dehydrogenase, alcohol dehydrogenase, and catalase/peroxidase showed highest levels in the CFP fraction of the media supplemented with nitrate as the nitrogen source whereas it was highest in the cytoplasmic fraction of cells harvested from media with glycine as the nitrogensource. Gelatinase zymography showed that the cytoplasmic fraction of cells grown in Sauton's media with ammonium chloride and nitrate as nitrogen sources contained the highest activities. The zymograms showed two distinct bands corresponding to approximately 120 kDa and 70 kDa and two minor bands at 48 kDa and 20 kDa. In the CFP fraction, one minor band was visible only in the medium with nitrate as a nitrogen source, corresponding to approximately 50 kDa in size. Additionally, seven monoclonal antibodies specific for seven distinct antigens of M. tuberculosis were used to screen for cross reactivity with the secretory fractions of S. albus. Of the seven antibodies, only one (F181-ID3-2) gave a positive reaction. This is a monoclonal antibody directed at a specific internal amino acid sequence in the secreted acid phosphatase of mycobacteria (SapM). This protein has a size of about 28kDa and is implicated in the pathogenesis of M. tuberculosis.

2-4-120	
Title	**Incorporation of Lutein Into Wholegrain Bread As a Functional Ingredient and Antioxidant**
Author	Hanadi Abdulhafidh a Alhawsawi
Program	Life Sciences
University	University of Guelph
Date of Publication	March 01, 2015

Abstract

The lutein carotenoid plays significant roles in human health but its consumption is low worldwide. The current study was aimed to investigate the effect of using different baking formulas and lutein forms on lutein distribution and stability in wholegrain bread to improve its lutein content and antioxidant properties. One bound wholegrain breads were made using three lutein forms (lutein powder, lutein in oil emulsion, and lutein in ethanol suspension) with two baking formulas (basic and enriched). Lutein and other carotenoids were measured in bread loaf, crust, top crumb and center crumb. Lutein-enriched breads had significantly higher lutein compared with the non-enriched respective ones. The lutein powder with basic formula was more effective in preserving lutein during baking process. The lutein content remained fairly stable during bread storage at room temperature up to 7 days. Enrichment of wholegrain bread with lutein resulted in significant increases in antioxidant properties as measured by three assays DPPH, ABTS and ORAC, particularly for breads made from the enriched formula. The study provides insights into the production of wholegrain bread enriched with lutein to boost lutein consumption and its anticipated positive health effects. More research is needed to investigate lutein bioavailability and health benefits of the developed products.

2-4-121	
Title	**Leadership –followership –learning Organization Project**
Author	Maha Mansour S Alqahtani
Program	Science Education
University	University of Northern British Colombia
Date of Publication	April 01, 2015

Abstract

This study is likely unique in its outlook as the Western (predominantly North American / European) leadership literature is examined through the lens of Saudi Arabian woman who has received a Master of Education degree in Multidisciplinary Leadership from a recognized Canadian university. In an attempt to improve our Saudi educational system to benefit learners and educators, I have chosen to focus on leadership and followership in the educational domain. I thought about how leaders and followers can understand and integrate leadership and followership styles for their own benefit and the benefit of the organization. This project the Leadership Followership Learning Organization (LFLO) Project synthesizes many sources of data to provide the Saudi system with tangible procedures that can be useful and helpful in improving the quality of education in the country. It will become effective when leaders have an understanding of leadership styles that would facilitate which type of tasks can be appropriate for followers and a clear notion of how to organize the workplace that allow leaders and followers to realize each other's styles so that all can function more effectively in a workplace setting.

2-4-122	
Title	**A Possible Role for Salicylic Acid-induced Genes in Fusarium Graminearum Infection**
Author	Reem Alharthi
Program	Biology
University	University of Ottawa
Date of Publication	May 21, 2015

Abstract

The ability of Fusarium graminearum to metabolize the plant hormone salicylic acid (SA) and use it as a carbon source was investigated in previous studies in our laboratory. The expression of some F. graminearum genes was upregulated in presence of SA. However, the role of those induced genes in SA degradation was not investigated. This study aimed at characterizing six candidate genes predicted to encode enzymes with ability to catalyze one of the first two-enzymatic steps in SA degradation by F. graminearum. Those genes are FGSG_09063, FGSG03657, FGSG_09061, FGSG_03667, FGSG08358 and FGSG_08037. In order to investigate the function of those genes, genes were individually inactivated by gene replacement and the deletion mutant strains were tested for their ability to grow in solid and liquid medium supplemented with SA as the sole carbon source. Results indicated that FGSG_03667 is an essential gene in the SA degradation pathway. This gene is predicted to encode a hydroxyquinol 1,2 dioxygenase, an enzyme that catalyzes the conversion of hydroxyquinol to 3-hydroxy-cis,cis-munocate. In addition, results indicated that two other genes, FGSG_03657 and FGSG_09061, contribute to the initial degradation of SA in culture. Those genes are predicted to encode a salicylate 1-monooxygenase and a 2,3 dihydroxybenzoic acid decarboxylase, respectively. Those two enzymes can catalyze the conversion of SA to catechol. Taken all together, the results of this study suggest that catechol is the first catabolic intermediate in the degradation of SA in F. graminearum, and that FGSG_03667 is a gene encoding a wide range substrate enzyme that can use catechol. Further studies need to be done to support this interpretation from the biochemistry perspective.

2-4-123	
Title	**Using a Panel of in Vitro Yeast Screening Bioassays to Assess Endocrine Disrupting Chemical Contents in Water and Sediment Samples from Surrey and Langley, British Columbia**
Author	Noor Ali Fageh
Program	Biology
University	Simon Fraser University
Date of Publication	June 03, 2015

Abstract

Exposure to endocrine disrupting chemicals (EDCs) potentially leads to adverse health effects in wildlife and humans. In this study, a panel of genetically modified yeast bioassays containing human estrogen, androgen, or progesterone receptors along with the appropriate steroid responsive elements of the β-galactosidase reporter gene were used to screen for EDCs in samples collected from various river and stream sites close to cattle farms and agricultural operations in Surrey and Langley. Water and sediment samples were collected on three different occasions either before or after a rainy period. The yeast screening bioassays were reproducible, accurate, and precise. They also showed calibration linearity and low detection limits for the EDC marker chemicals. Results of the studies showed high levels of androgen-, estrogen-, glucocorticoid- and aromatic hydrocarbon-like chemicals in the water and sediment samples from Surrey and Langley. As expected, the samples collected near dairy farms and agricultural operations contained much higher levels of EDCs compare to sites far away from farming and agricultural activities. The EDCs in the water samples were generally lower in concentrations than the sediments. Selected water samples were further analyzed for estrogens and androgens chemically using a gas chromatography-mass spectrometer. The water samples were found to contain estradiol, estrone, nonylphenol, bisphenol A, and androstendion with mean concentrations ranging from 0.041 to 30.10 ng/ml. Our studies demonstrate that animal farms and agriculture activities account for significant amounts of EDCs released into the aquatic environment at Surrey and Langley.

2-4-124	
Title	**Characterization of Secreted Acid Phosphatase Activity of a Streptomyces Albus Clinical Isolate**
Author	Fatin Alsalmi
Program	Biology
University	Laurentian University
Date of Publication	June 15, 2015

Abstract

Abstract Due to limitations in the efficacy of the current vaccines against Tuberculosis, there are efforts currently underway exploring the possibility of using the phylogenetically related Streptomycetes as heterologous vaccine vehicles against Tuberculosis. Ideal candidates for such a vaccine should be somewhat pathogenic and physiologically similar to M. tuberculosis so as to induce an immune response capable of targeting and inactivating this pathogen. Towards establishing such a physiological relatedness, previous work in our laboratory has established a similarity profile between M. tuberculosis and a clinical isolate of Streptomyces albus at the level of secreted enzymes. Amongst these was a

strong secreted acid phosphatase activity. This work reports on the characterization of the secreted acid phosphatase activity in this clinical isolate of Streptomyces albus. In this work, two enzymes with sequence homology to those encoding a protein tyrosine phosphatase and an inorganic pyrophosphatase were purified from the culture supernatant of S. albus. The calculated molecular masses of these two putative phosphatases were approximately 18 and 30 kDa, respectively. The S. albus protein tyrosine phosphatase has 50% amino acid sequence identity to the protein tyrosine phosphatase of M. tuberculosis (gi|686037535). The inorganic pyrophosphatase has 68% amino acid sequence identity with M. tuberculosis inorganic pyrophosphatase (gi|625006479). Based on our knowledge of the role of acid phosphatases in pathogenic bacteria, presence of this activity in the supernatant of S. albus further supports the physiological relatedness of M. tuberculosis and S. albus and supports the proposition of using S. albus as a heterologous vaccine against Tuberculosis.

2-4-125	
Title	**The Efficacy of the Meiotic Toolkit in Determining the Sexuality and Evolutionary History of Red Algae (rhodophyta)**
Author	Saeed Amin
Program	Master of Science/biology
University	University of Waterloo
Date of Publication	July 13, 2015

Abstract

Meiosis is a unique mechanism and fundamental process that is shared by sexually reproducing eukaryotic species. Species that undergo meiosis can be determined by identifying the presence of core meiotic genes also known as the "Meiosis Detection Toolkit". These genes include the following: SPO11, HOP1, HOP2, MND1, DMC1, MSH4, MSH5, MER3, and REC. Red algae (Rhodophyta) represent a distinct eukaryotic lineage with a long evolutionary history that dates 1.2 BYA and is represented by a fossil that exhibits characteristics of meiosis. Nonetheless, sexuality has never been observed in unicellular red algal species in the order Cyanidiales (Galdieria sulphuraria and Cyanidioschyzon merolae) and the Porphyridiales (Porphyridium purpureum). To understand the evolution of meiosis in red algae, this study examined the usefulness of the meiotic toolkit to determine the presence of sexuality as well as the utility of these genes as taxonomic markers for the evolutionary history of the red algae. This study used the available red algal genomes of G. sulphuraria, C. schyzon merolae, C. crispus, and Porphyridium purpureum. As a secondary objective, the genomic DNA of several sexual and asexual red algal taxa were experimentally examined to identify and compare the meiotic genes using a variety of biotechnological methods such as degenerate polymerase chain reaction (PCR) and sequencing analyses. Of the nine core meiotic genes, MND1, which is the essential meiotic gene for nuclear division and new recombination, has been observed in the Porphyra rediviva nuclear genome and appear to contain premature stop codons. Moreover, annotated amino acid sequences of six core meiotic genes (DMC1, MND1, SPO11, HOP2, MSH4, and MSH5) were used in the phylogenetic analyses. The data set included animals, fungi, plants, excavates, alveolates, and red algae. The phylogenetic trees indicated that the sexual and unicellular red algae possess the six core meiotic genes and some of these putative genes appear to be associated with horizontal gene transfer (HGT) and gene duplication events followed by subsequent losses in some of eukaryotic lineages. The results of this study suggest one of two possibilities. Either there is cryptic meiosis in the unicellular red algae that contain these genes, or these genes play alternative roles and are a poor marker for meiotic potential. The phylogenetic tree analyses also suggest that the meiotic toolkit is a not a good source of genes to use for taxonomic classification.

2-4-126	
Title	**The Role of Binocular Vision During the Performance of Complex Manipulation Skills**
Author	Fatimah Alramis
Program	Kinesiology
University	University of Waterloo
Date of Publication	August 31, 2015

Abstract

The overall goal for this thesis was to examine the significance of binocular vision during the performance of complex manipulation tasks in visually-normal children and adults. The goal of study 1 was to examine the age-related contribution of binocular vision to the performance of manipulation skills. Healthy children (n=58, age: 5-13 years) and adults (n=19, age:17-38 years) performed two manipulation tasks: peg-board and bead-threading, under randomized viewing conditions (binocular, right and left-eye monocular). The main outcome measure was movement time to complete the task. Results showed that the contribution of binocular vision differs based on age (i.e., greater in children) and on the task (i.e., greater in the bead-threading task). In study 2, the goal was to examine the significance of binocular vision during the performance of complex manipulation tasks in children with learning difficulties. Thus, the performance of fine motor skills was compared among children with learning difficulties (n=19, age: 5-12 years) and their age-matched peers tested in study 1. Results showed that children with learning difficulties were significantly slower than their peers on the bead-threading task, but performed similarly to their peers on the peg-board task. The aim of study 3 was to characterize the role of binocular vision in the performance of manipulation tasks involving tool use in visually-normal adults. Healthy adults (n=36, age: 17-38 years) performed five manipulation tasks (bead-threading, peg-board with fingers, and with tweezers, precision pointing with a tool, and picking up a target using a hook-tool) during binocular and monocular viewing. Results showed that binocular vision provides critical sensory input when the task involves precise manipulation of small objects, either when using hands directly or when using a tool to pick up the object. This thesis has two main conclusions. First, the importance of binocular vision for the performance of manipulation skills is highly dependent on the task. An important implication of this work is that a binocular visual screening is recommended for persons whose occupation requires manipulation of small object. Second, the ability to perform skilful manipulations improves significantly during development and our results indicate that normal binocular vision plays an important role in this process. Furthermore, the performance of fine motor skills differentiates between children with and without learning difficulties. Based on these results, including an assessment of fine motor skills in children with abnormal binocular vision and children with learning difficulties is highly recommended.

2-4-127	
Title	**Treatment with Extracts of Uncaria Tomentosa Promotes Apoptosis in the Human Breast Cancer Cell Line, Mcf7**
Author	Areej Aljehani
Program	Cancer Biology
University	Advanced Medical Research Institute of Canada
Date of Publication	September 09, 2015

Abstract

Uncaria tomentosa is a medicinal plant native to Peru which has been used traditionally for the treatment of various inflammatory disorders and cancer. Some studies have shown that treatment with Uncaria tomentosa promotes repair of cellular DNA in patients treated with chemotherapy drugs, preventing mutations and cell damage. Treatment with Uncaria tomentosa also inhibits inflammatory responses by inhibiting the proliferation of T and B-lymphocytes and decreasing the production of pro-inflammatory cytokines (IL-1, IL-6, and TNF-α). We have examined the effects of Uncaria tomentosa extracts on the growth of malignant cells such as MCF-7 and MDA-MB-231 cells, human breast cancer cell lines and non-malignant cells such as HBL-100, HEK 293T and HSG cells. Our results have shown that treatment of malignant cells and non-malignant cells with Uncaria tomentosa extracts inhibits their proliferation and promotes cell death in a dose-dependent manner. Further, extracts produced by boiling the ground bark in 70% ethanol are much more effective than extracts produced by boiling in water. Uncaria tomentosa-ethanol extracts potently induce cellular apoptosis as measured by changes in cell morphology, chromatin condensation (Acridine Orange/Ethidium Bromide staining assay) and DNA fragmentation (TUNEL assays) within 24 h of treatment. Overall, Uncaria tomentosa appeared to kill breast cancer cells effectively in vitro by increasing cellular apoptosis.

2-4-128	
Title	**New Vision for Market Square in An-namas: Urban Design for Enhancement of Town Identity and Cultural Heritage**
Author	Abdullah Ghurm Alshehri
Program	Environmental Design
University	University of Calgary
Date of Publication	December 23, 2015

Abstract

Since it was felt that the present An-namas public market does not reflect either the identity or the cultural heritage of the city of An-namas, the researcher decided to take the issue as a case study. The aim of the present research is to work towards the revival and revitalization of the An-namas market in the context of the contemporary life needs. There have been some research studies done on this issue in south-western towns of Saudi Arabia; however, it is felt that these studies have not adequately dealt with urban design, place identity and cultural heritage. The objective of the present study is to examine precisely to those aspects of a public market. To achieve this objective, the following tools have been used: survey, critical analysis and site analysis. The final proposed design is the end product of the present research.

CHAPTER 3
Published Papers

Engineering & Sciences

3-1-129	
Title	**Protective Relay Models for Electromagnetic Transient Simulation**
Authors	Hadi H. Alyami
Program	Electrical Engineering
University	University of Alberta
Journal	International Journal of Innovative Research in Advanced Engineering
Date of Publication	January 01, 2015

Abstract
85-87% of power system failures pertain to transmission lines, or more broadly to distribution systems, maloperation. Those failures can incur serious damage upon the faulted part, if protective actions have not been taken promptly. Distance relays are widely implemented to detect operational disturbances in long transmission lines. They are capable of providing multiple zones of protection coverage, along which the protected transmission line is 100% faultdetected. They are also characterised into a number of types, among which MHO type is most suitable protection method for long transmission lines. This paper aims at analysing a distance relay MHO type characteristic with a two-zone of protection coverage – primary zone and back-up zone. Analysis carried out through a PSCAD/EMTDC model. The transmission line under analysis has the parameters of 275 Km, 230 kV and 60 Hz. The developed model has evaluated the relaying system via two main case studies: (A) steady-state and (B) transient state "phase-to-phase fault" studies

3-1-130	
Title	**Energy Cost Models of Smartphones for Task Offloading to the Cloud**
Authors	Majid Altamimi, Member, Ieee, Atef Abdrabou, Member, Ieee, Kshirasagar Naik, Senior Member, Ieee, Amiya Nayak, Senior Member, Ieee
Program	Electical Engineering
University	University of Waterloo
Journal	Ieee Ixplor
Date of Publication	January 01, 2015

Abstract
Task offloading from smartphones to the cloud is a promising strategy to enhance the computing capability of smartphones and prolong their battery life. However, task offloading introduces a communication cost for those devices. Therefore, consideration of the communication cost is crucial for the effectiveness of task offloading. To make task offloading beneficial, one of the challenges is to estimate the energy consumed in communication activities of task offloading. Accurate energy estimation models will enable these devices to make the right decisions as to whether or not to perform task offloading, based on the energy cost of the communication activities. Simply put, if the offloading process consumes less energy than processing the task on the device itself, then the task is offloaded to the cloud. To design an energy-aware offloading strategy, we develop energy models of the WLAN, Third Generation (3G), and Fourth Generation (4G) interfaces of smartphones. These models make smartphones capable of accurately estimating the energy cost of task offloading. We validate the models by conducting an extensive set of experiments on five smartphones from different vendors. The experimental results show that our estimation models accurately estimate the energy required to offload tasks.

3-1-131	
Title	**A Systematic Review of the Critical Factors for Success of Mobile Learning in Higher Education (university Students' Perspective)**
Authors	Muasaad Alrasheedi, Luiz Fernando Capretz,and Arif Raza
Program	Software Engineering
University	The University of Western Ontario
Journal	Journal of Educational Computing Research
Date of Publication	January 01, 2015

Abstract
The phenomenon of the use of a mobile learning (m-Learning) platform in educational institutions is slowly gaining momentum. However, the enthusiasm with which mobile phones have been welcomed into every aspect of our lives is not yet apparent in the educational sector. To understand the reason, it is important to understand user expectations of the system. This article documents a systematic review of existing studies to find the success factors for effective m-Learning. Our systematic review collates results from 30 studies conducted in 17 countries, where 13 critical success factors were found to strongly impact m-Learning implementation. Using these results within the framework of the diffusion of innovation model for innovation adoption and the critical success factors together help us see what aspects of the innovation decision process are the likely causes of the reduced take-up of m-Learning by university students.

3-1-132	
Title	**Inverse Approach to the Graph Model for Conflict Resolution**
Authors	Rami A. Kinsara, D. Marc Kilgour, and Keith W. Hipel
Program	Industrial and System Engineering
University	University of Waterloo
Journal	Ieee Transactions on Systems, Man, and Cybernetics: Systems
Date of Publication	January 01, 2015

Abstract
Systems methodologies to model third-party intervention in international conflicts are developed within the framework of the graph model for conflict resolution (GMCR). An inverse GMCR is introduced to utilize the GMCR as a negotiation tool by altering the procedure of the original framework. The methodologies presented give a better understanding of how decision makers (DMs) can be motivated to undertake certain actions within the conflict. Moreover, the inverse GMCR tackles the problem of specifying which preferences for DMs lead to a particular resolution, thereby making it easier for a mediator or other third party to influence the course of the conflict. The methodologies are applied to a real-world dispute, a complex water conflict in the Middle East.

3-1-133	
Title	**A Cloud-based Secure Authentication (csa) Protocol Suite for Defense Against Denial of Service (dos) Attacks**
Authors	Marwan Darwish*, Abdelkader Ouda*, Luiz Fernando Capretz
Program	Computer Engineering, Software Engineering
University	The University of Western Ontario
Journal	Elsevier (jisa)
Date of Publication	January 02, 2015

Abstract
Cloud-based services have become part of our day-to-day software solutions. The identity authentication process is considered to be the main gateway to these services. As such, these gates have become increasingly susceptible to aggressive attackers, who may use Denial of Service (DoS) attacks to close these gates permanently. There are a number of authentication protocols that are strong enough to verify identities and protect traditional networked applications. However, these authentication protocols may themselves introduce DoS risks when used in cloud-based applications. This risk introduction is due to the utilization of a heavy verification process that may consume the cloud's resources and disable the application service. In this work, we propose a novel cloud-based authentication protocol suite that not only is aware of the internal DoS threats but is also capable of defending against external DoS attackers. The proposed solution uses a multilevel adaptive technique to dictate the efforts of the protocol participants. This technique is capable of identifying a legitimate user's requests and placing them at the front of the authentication process queue. The authentication process was designed in such a way that the cloudbased servers become footprint-free and completely aware of the risks of any DoS attack.

3-1-134	
Title	**Developing and Optimizing a Transportation Mode Inference Model Utilizing Data from Gps Embedded Smartphones.**
Authors	Akram Nour Bruce Hellinga Jeffrey Casello
Program	Transportation Engineering
University	University of Waterloo-non Medical
Journal	Transportation Research Board
Date of Publication	January 13, 2015

Abstract
Advances in wireless communications and technologies provide the opportunity to collect detailed information on travel trajectory using smart-phones equipped with GPS and accelerometers. These types of smart-phones are ubiquitous and, as such, present an opportunity to conveniently collect spatial and temporal data at regular time intervals. This can be useful to utilize as a method to document travel behavior – origin, destination, departure time, route choice, trip purpose, and mode choice. One of the challenges that has been addressed in the literature is how to identify the transportation mode of travel. The paper presents a data-driven classification model to infer transportation mode choice from data collected with GPS equipped smart phones. Rather than making a priori assumptions, we instead employ an optimization method to objectively produce the following classifier components and methods: A ranked feature vector based on the power of differentiation between different modes; the classification technique between the range of candidate classifiers; the number of ranked attributes to include in the feature vector; data formatting; and optimal model parameters. The model is trained and tested using known transportation mode segments – limits of travel by a given mode. The calibrated model is evaluated by testing its ability to classify travel mode correctly for GPS data at a different level of disaggregation than the one used in the model training step. The model provides an accuracy of approximately 86% at the disaggregated level (e.g. Walk, Bike, Transit, and Private Automobile) and approximately 94% at aggregated level (e.g. Non-Motorized and Motorized.)

3-1-135	
Title	**Theoretical and Experimental Investigations of Solar-thermoelectric Air-conditioning System for Remote Applications**
Authors	M. Alomair, Y. Alomair, S. Mahmud, and H.A. Abdullah
Program	Ph.d/ School of Engineering
University	University of Guelph
Journal	Asme
Date of Publication	January 16, 2015

Abstract
In this paper, we have designed and constructed a low cost solar-thermoelectric (TE) airconditioning system for people in remote areas where electricity is still in short supply. Such system can be potentially used to condition tents and living areas. The proposed solar-powered TE air-conditioning system is based on the principles of Peltier effect to create a finite temperature difference across the condenser and the evaporator of the TE air-conditioning system. The cold side (or the evaporator) of the TE module is used for air-conditioning application; provides cooling to the living space. The thermal energy from the hot side of the module is dumped to the surrounding environment. Using the existing heat transfer and thermodynamics knowledge, an analytical model is developed to predict the performance of the solar-TE air-conditioning system in terms of the hot and cold reservoir temperatures, heat removal rates from the conditioned space, power input, and coefficient of performance (COP). Asecond analytical model is proposed to predict the cooling down period of the conditioned space as a function of heat removed by air-conditioning system, heat gained through the wall of the conditioned space, and heat generated inside the conditioned space. Adetailed system is constructed to predict the performance of solar-TE air-conditioning system experimentally. Aconditioned space was constructed to carry out the experimental work. Multiple air-conditioning systems were installed in the conditioned space. The cooling performance of the designed solar- TE air-conditioning system was experimentally tested and verified with the analytical calculation.

3-1-136	
Title	**Identification of Critical Components of Composite Power Systems Using Minimal Cut Sets**
Authors	Badr Lami,kankar Bhattacharya
Program	Electrical Engineering
University	University of Waterloo-non Medical
Journal	Grid Technologies Sponsored by the Ieee Power & Energy Society
Date of Publication	February 18, 2015

Abstract
Reliability evaluation plays an important role in system analysis, design, upgrades, and operations, especially in composite power systems. This paper presents a reliability assessment method for composite power system using the minimal cut set calculations. The objective is to to detect critical components in order to help planners to make economic decisions on new investments in generation capacities and transmission lines upgrades, also to help operators maintain the delivery of electricity during system failure and disturbance events. This paper focuses on the evaluation of composite system reliability under steady state conditions, and assessing operational risks in real-time system operations using direct probabilistic analysis techniques and hence identify the critical components. The concepts and developed model are illustrated by application to the 6-bus Roy Billinton Test System (RBTS).

3-1-137	
Title	**Evaluation of Reilp Scenarios Toward a Long-term Planning of Wrm Systems in Saudi Arabia**
Authors	Badir S. Alsaeed and Lei Liu
Program	Environmental Engineering
University	Dalhousie University
Journal	Chi International Conference on Water Management Modeling
Date of Publication	February 25, 2015

Abstract
Water resources in Saudi Arabia are very limited. However, the population is steadily growing at a high rate. Since the yearly rainfall rate is very low in most regions of the country, the non-renewable groundwater has exceedingly consumed which resulted in a huge threat for this precious resource. In Saudi Arabia, the largest consumption of water comes from the agricultural, domestic, and industrial sectors, respectively. Without long-term planning and optimal allocation of scarce water resources among a variety of users, the country will continue to face many problems related to water in the long run. In this study, a risk explicit interval-parameter linear programming (REILP) approach was developed and applied to the long-term planning of the water resources management (WRM) system in Saudi Arabia. The approach can effectively reflect the interactions between overall cost-benefit and risk level of WRM system. In addition, the evaluation of two scenarios of REILP results from economic, environmental, social impact will be addressed to convince the stakeholders upon the best option. The results will contribute to more efficient allocation of scarce water resources while improving the accuracy of REILP. Keywords: WRM, ILP, REILP, Saudi Arabia, Stakeholders

3-1-138	
Title	**Localized Nanoclusters Formation in Pdms Upon Irradiation with Femtosecond Laser**
Authors	A. M. Alshehri,1,3 K. L. N. Deepak,1 D. T. Marquez,2 S. Desgreniers,1 and V. R. Bhardwaj1∗
Program	Physics
University	University of Ottawa
Journal	Optical Materials Express
Date of Publication	March 01, 2015

Abstract
We demonstrate formation of localized carbonaceous and siliconaceous clusters, confined to the modified region on a micron scale, when PDMS (polydimethylsiloxane) is irradiated by intense femtosecond pulses. Micro-Raman studies also suggest formation of quasi-crystalline silicon nano-clusters whose size varies with the incident laser fluence. The modified region produces broad photoluminescence whose intensity increases with laser fluence. We observed red-edge excitation effect in PDMS wherein the fluorescence from the laser modified region shifts to longer wavelengths as the excitation wavelength is increased to the red edge of the absorption band. Excitation spectra reveal four distinct absorption bands that contribute to the emission from the laser-modified region, two each ascribed to carbonaceous and siliconaceous clusters.

3-1-139	
Title	**On the Number of Bound States in Some Three-parameter S-wave Central Potentials**
Authors	A a Othman1,2, M De Montigny1,3 and F Marsiglio1,4
Program	Physics
University	University of Waterloo-non Medical
Journal	European Journal of Physics
Date of Publication	March 02, 2015

Abstract
We examine some criteria for determining the existence and number of bound states for the Schrödinger equation with non-relativistic single-particle spherically symmetric potentials in three dimensions with l = 0. By analysing specific potentials described by two parameters (triangular potential) and three parameters (finite spherical shell, Woods–Saxon, and cut-off triangular potentials), we obtain functions of these parameters that determine the number of bound states in these potentials.

3-1-140	
Title	**Silver Nanowire Coated Threads for Electrically Conductive Textiles**
Authors	Yahya Atwa, Nupur Maheshwari and Irene A. Goldthorpe.
Program	Electrical and Computer Engineering
University	University of Waterloo
Journal	Journal of Materials Chemistry C
Date of Publication	March 04, 2015

Abstract
The emerging area of e-textiles requires electrically conductive threads. We demonstrate that nylon, polyester, and cotton threads can be made conductive by coating their surfaces with random networks of solution-synthesized silver nanowires. Aresistance per unit length of 0.8 Ω cm^{-1} was achieved and can be varied through the density of the nanowire coating. Because the nanowires are 35 nm in diameter, and the mesh structure does not cover the entire surface like a thin-film, less metal is used compared to conventional silver-coated conductive threads. This leads to a much lower weight and mechanically flexible coating. The functionality of the thread as a heater and the fabrication of stretchable conductive thread are also demonstrated.

3-1-141	
Title	**Umple: A Framework for Model Driven Development of Object-oriented Systems**
Authors	Hamoud Aljamaan, Miguel A. Garzón, Timothy Lethbridge
Program	Computer Science
University	University of Ottawa
Journal	22nd Ieee International Conference on Software Analysis, Evolution, and Reengineering
Date of Publication	March 06, 2015

Abstract
Huge benefits are gained when Model Driven Engineering are adopted to develop software systems. However, it remains a challenge for software modelers to embrace the MDE approach. In this paper, we present Umple, a framework for Model Driven Development in Object-Oriented Systems that can be used to generate entire software systems (Model Driven Forward Engineering) or to recover the models from existing software systems (Model Driven Reverse Engineering). Umple models are written using a friendly human-readable modeling notation seamlessly integrated with algorithmic code. In other words, we present a model-is-the-code approach, where developers are more likely to maintain and evolve the code as the system matures simply by the fact that both model and code are integrated as aspects of the same system. Finally, we demonstrate how the framework can be used to elaborate on solutions supporting different scenarios such as software modernization and program comprehension.

3-1-142	
Title	**Metamaterial Electromagnetic Energy Harvester with Near Unity Efficiency**
Authors	Thamer S. Almoneef1, A) and Omar M. Ramahi1, B)
Program	Electrical Engineering
University	University of Waterloo
Journal	Applied Physics Letters
Date of Publication	March 15, 2015

Abstract
We present the design of a metamaterial medium for electromagnetic energy harvesting based on the full absorption concept. Ametamaterial slab was designed comprising 13 13 electrically-small cells, each loaded with an 82 resistor which mimics the input impedance of a recatication circuitry. Unlike earlier designs of metamaterial absorbers, here the power absorption is mostly dissipated across a resistive load instead of the dielectric substrate. This implies that effective electromagnetic energy harvesting can be achieved. The power is channeled through a via connected to each cell. Fora design optimized at 3 GHz, simulation and experimental results show power absorption efficiency of 97% and 93%, respectively..

3-1-143	
Title	**Emergency Response in Multiple-fire Incidents: Allocation and Scheduling of Firefighting Units**
Authors	Khaled Alutaibi1,2 , Abdullah Alsubaie1,3, Jose Marti1
Program	Computer and Electronic Engineering
University	University of British Columbia
Journal	Ninth Annual Ifip Wg 11.10 International Conference on Critical Infrastructure Protection Sri International 1100 Wilson Boulevard
Date of Publication	March 18, 2015

Abstract
Fire incidents in industrial parks such as oil refinery cause heavy loss of production each year. Due to strong interdependencies among the units in these systems, planning an efficient response is a challenging task for firefighters. In the event of multiple fire incidents, the task becomes even more challenging. In this work, we propose a Firefighting Decision Support System (FFDSS) for a more efficient response to these incidents. The proposed system optimizes the allocation of firefighting units in multiple-fire incidents with the objective of minimizing the economic impact of these fires. The petrochemical industry is taken as an example of such industrial park. The proposed optimizer system consists of two parts. The first part evaluates the economic impact of the fire and the second part determines the optimal assignment of firefighting units using an agent-based approach. The proposed simulation system can be used before the fire for training and planning, during the fire for decision support, or after the fire for evaluating suppression tactics.

3-1-144	
Title	**Dynamic Configuration of Single Frequency Networks in Mobile Streaming Systems**
Authors	Saleh Almowuena and Mohamed Hefeeda
Program	School of Computing Science
University	Simon Fraser University
Journal	The 6th Acm Multimedia Systems Conference (mmsys'15)
Date of Publication	March 19, 2015

Abstract
Although the capacity of cellular networks has increased with recent generations, the growth in demand of wireless bandwidth has outpaced this increase in capacity. Not only more users are relying on wireless networks, but also the demand from each user has substantially increased. Forexample, it has become common for mobile users to stream full TV episodes, sports events, and movies while on the go. Further, as the capabilities of mobile devices improve, the demand for higher quality and even 3D videos will escalate, which will strain cellular networks. Therefore, efficient utilization of the expensive and limited wireless spectrum remains an important problem, especially in the context of multimedia streaming services that consume a large portion of the wireless capacity. In this paper, we introduce the idea of dynamically configuring cells in wireless networks to form single frequency networks based on the multimedia traffic demands from users in each cell. We formulate the resource allocation problem in such complex networks with the goal of maximizing the number of served multimedia streams. We prove that this problem is NP-Complete, and we propose a heuristic algorithm to solve it. Through detailed packet-level simulations, we show that the proposed algorithm can achieve substantial improvements in the number of streams served as well the energy saving of mobile devices. Forexample, our algorithm can serve up to 40 times more users compared to the common unicast streaming approach, and it achieves at least 80% and up to 400% improvement compared to multicast approaches that do not use single frequency networks.

3-1-145	
Title	**Applying Simulation Technique to Improve Major Arterial Traffic Flow in Makkah, Saudi Arabia**
Authors	Hasan Tayyeb1, Dalia Said2*, Abd El Halim Abd El Halim
Program	Transportation Engineering
University	Carleton University
Journal	Journal of Intelligent Transportation and Urban Planning
Date of Publication	April 01, 2015

Abstract
The annual growth rate of the permanent resident and pilgrim populations of Makkah in the Kingdom of Saudi Arabia is placing considerable strain on the transport systems and the ability of the city to support the movement of people and goods. This is causing traffic congestion especially in the arterial roads. Umm Al-Qura Road is one of the highest-capacity urban roads in Makkah. Traffic simulation models have evolved significantly in the past years in their capabilities and sophistication and are potentially useful in analyzing and recommending traffic management plans. The main objective of this study is to apply a microscopic multimodal traffic flow simulation software (VISSIM) on the traffic conditions of Umm Al-Qura Road. To achieve this objective, different options and scenarios for a more efficient traffic management for the current and future traffic conditions were proposed and tested using VISSIM. The most appropriate solutions were recommended and selected based on the average speed and level of surface which includes having four lanes in both directions with traffic lights and turning signal. In addition, further traffic management solutions were recommended to manage the traffic congestion problems along the corridor. The results of this project will have significant implications not only for the people of Makkah, but also for the millions of Muslim pilgrims who visit the city every year.

3-1-146	
Title	**Building Tall in the Arabian Gulf: Perception | Performance | Place-making**
Authors	Building Tall in the Arabian Gulf: Perception Performance Place -making Fahad Alotaibi (university of Calgary and Qassim University) and Brian Sinclair (university of Calgary)
Program	Enviromental Design
University	University of Calgary
Journal	Conference
Date of Publication	April 01, 2015

Abstract
Skyscrapers are arguably impressive, excessive, essential and ubiquitous in the intense landscapes of contemporary global cities. As a typology these towers are unparalleled in their costs, demands, parameters and presence. Perhaps more so than any region on the planet, the realities, including both remarkable challenges and outstanding opportunities, of building tall is illustrated and demonstrated in the emerging urban centres of the Arabian Gulf . Despite the massive impacts of this building type, and especially on the burgeoning cities in the Gulf States, research concerning place-making, social perceptions, and sustainable performance (i.e., systemic views) is undeniably lacking. The cities in this region have changed dramatically – transforming overnight from traditional human-scaled settlements, built by local materials and local expertise, into the modern oil-driven technology-propelled metropolitan hubs of today. Over the past two decades the Arab Gulf area has witnessed unprecedented urban growth, especially in vertical constructions which have flourished in Emirates cities such as Dubai and Abu Dhabi, and more recently in neighbouring Doha (Qatar), Kuwait City (Kuwait), and Riyadh & Jeddah (Saudi Arabia). In relatively spectacular bursts of development these cities have seen their skylines erupt, their streets defined and their buildings soar. Such transformation has multiple impacts on the city, including the shaping of a metropolitan image, influences on inhabitant perceptions and traction towards a more sustainable tomorrow. To gain a better understanding of the impacts of tall buildings in Arabian Gulf Cities, the researchers consider urban growth in three pivotal Gulf cities (Dubai, Kuwait City and Doha) from the early 1970s until present times. The present paper, a reporting of ongoing research in this stimulating field, encompasses two main parts: The first part outlines and explores master plans for each city, with aim to delineate policy and strategies for tall buildings, while the second part reviews work on several building case studies from each city, with a goal to critically examine aspects pertaining to perception, performance and place-making. The paper surveys at a general level the phenomenon of building tall, then moves beyond the general to tackle the specific, unique and compelling context, culture and circumstances of designing and delivering towers in the Arabian Gulf. Akey outcome is an innovative framework for building tall in Gulf cities – a timely and necessary contribution that promises to help designers + developers and policymakers + politicians, to reconsider a more viable, responsible and successful path for these soaring, momentous, intensive and iconic skyscrapers. Considering the intense pressures for our buildings to reach higher, and the serious implications of housing greater numbers of occupants in our towers, there remains a pressing need to realize better understanding.

3-1-147	
Title	**Improved Electrochromic Properties of Vanadium Pentoxide Nanorods Prepaed by Thermal Treatment of Sol-gel Dip-coated Thin Films**
Authors	Mohammed Alsawafta, Afaf Almoabadi, Simona Badilescu, and Vo-van Truong
Program	Physics
University	Concordia University
Journal	The Electrochemical Society (ecs)
Date of Publication	April 10, 2015

Abstract
Porosity in the sol-gel prepared vanadium pentoxide film is created by using templating methods. The morphology, optical and electrochromic properties of the macro- and mesoporous films, prepared in the presence of structure-directing agents such as polystyrene microspheres and triblock copolymer, have been compared with those of dense films. By using various methods to remove the template material, it was shown that the morphology of the vanadium pentoxide film can be controlled and new nanostructures can be created. The transformation of the lamellar into a nanorod structure, observed when the film is heated at 375–500ºC for several hours, resulted in the development of an elegant method for the synthesis of vanadium oxide nanostructures. The electrochromic performance of the nanorods prepared through the thermal treatment was found to be superior to that of the vanadium pentoxide with the layered structure, especially in the near-infrared region, demonstrating their potential for electrochromic applications.

3-1-148	
Title	**Automatic Classification of the Emotional Content of Url Documents**
Authors	First Author: Alaa Hussainalsaid Second Author: Bahram Zahir Azami Third Author: Abdolreza Abhari
Program	Computer Science
University	Ryerson University
Journal	Association for Computing Machinery (acm) / Society for Modeling & Simulation International (scs)
Date of Publication	April 12, 2015

Abstract
In the recent decades, a huge amount of information is available in the form of URL documents, but not all contents that are posted there are positive or useful in providing the requested information. Therefore, the automatic detection of emotions in texts becomes increasingly important to deal with this task. Natural language processing can help to automatically classify the emotional content of URL documents. This paper discusses a Sentiment Analyzer that extracts sentiment of website text documents. Sentiment Analyzer detects URL documents and labels them as either positive or negative, and determines sentiment in each of the URL documents using natural language processing (NLP) techniques. In this paper we propose using bi-gram that is known as a special type of N-gram, (where N=2). Bi-gram looks into couples of two consecutive words in a document. The performance of the algorithm will be verified on online articles and general documents, such as general web pages and news articles.

3-1-149	
Title	**Automatic Validation for Multi Criteria Decision Making Models in Simulation Environments**
Authors	Mubarak Alrashoud Meshary Almeshary Abdolreza Abhari
Program	Master of Computer Sciences
University	Ryerson University
Journal	Scs/springsim'15
Date of Publication	April 13, 2015

Abstract
This paper presents a technique for validating decision support models that are tested using simulated data. In human-based decision making problems, the data is provided by the decision makers. The validity of the decision support models can be evaluated by calculating the degree of decision makers' satisfaction. The more degree of satisfaction, the more reliable and accurate a decision support model is. However, in most cases, it is not possible for the implementers of the decision making models to find realistic data for validating these models. Therefore, they use simulated data. This paper proposes a technique to measure the satisfactions of simulated decision makers (agents). The experiments show that using this technique can provide the implementers of decision models with more confidence about the results of the implemented decision support models.

3-1-150	
Title	**Memory Efficient Global Scheduling of Real-time Tasks**
Authors	Alhammad, Ahmed Wasly, Saud Pellizzoni, Rodolfo
Program	ECE
University	University of Waterloo
Journal	Ieee
Date of Publication	April 16, 2015

Abstract
Current computing architectures are commonly built with multiple cores and a single shared main memory. Even though this architecture increases the overall computation power, main memory can easily become a bottleneck. Simultaneous access to main memory from multiple cores can cause both (1) severe degradation in performance and (2) unpredictable execution time for real-time applications. We propose in this paper to mitigate these two problems by co-scheduling cores as well as the main memory for predictable execution. In particular, we use a DMA component to overlap memory with computation for hiding the memory latency and therefore increasing the system performance. The main contribution of this paper is a novel global co-scheduling algorithm along with its associated schedulability analysis for sporadic hard real-time tasks. We evaluated our system by generating synthetic tasksets based on real benchmark parameters. The results show a significant improvement in system utilization while retaining a predictable system behavior.

3-1-151	
Title	**A Systematic Review of the Critical Factors for Success of Mobile Learning in Higher Education (university Students' Perspective)**
Authors	1. Muasaad Alrasheedi 2. Luiz Fernando Capretz 3. Arif Raza
Program	Electrical and Computer Engineering / Software Engineering
University	The University of Western Ontario
Journal	Journal of Educational Computing Research/ sage
Date of Publication	April 27, 2015

Abstract
The phenomenon of the use of a mobile learning (m-Learning) platform in educational institutions is slowly gaining momentum. However, the enthusiasm with which mobile phones have been welcomed into every aspect of our lives is not yet apparent in the educational sector. To understand the reason, it is important to understand user expectations of the system. This article documents a systematic review of existing studies to find the success factors for effective m-Learning. Our systematic review collates results from 30 studies conducted in 17 countries, where 13 critical success factors were found to strongly impact m-Learning implementation. Using these results within the framework of the diffusion of innovation model for innovation adoption and the critical success factors together help us see what aspects of the innovation decision process are the likely causes of the reduced take-up of m-Learning by university students.

3-1-152	
Title	**Adaptive Router Bypass Using Feedback Adjusted**
Authors	Fahad A. Ghonaim Thomas E. Darcie Sudhakar Ganti
Program	Electrical and Computer Engineering
University	University of Victoria
Journal	22nd International Conference on Telecommunications
Date of Publication	April 28, 2015

Abstract
With continued growth in Internet traffic, traditional IP routers struggle to keep pace with bandwidth demand. Router bypass, in which portions of traffic bypass transit routers through lower layer transport capacity, has been studied as one method to address this challenge by improving network efficiency. But while various studies have shown that router bypass may offer significant advantages in network performance, partitioning bypass capacity results in a reduction in statistical multiplexing. This remains as one of the main obstacles facing widespread implementation of bypassing techniques. Features recently introduced in the G.709 Optical Transport Network (OTN) specification [1], including direct support for packet (i.e. Generic Framing Procedure) and the Hitless Adjustment (HAO), pave the way for a more dynamic transport layer. In this study, we have developed an adaptive router bypassing technique that uses adjustable OTN channels driven by traffic behavior. By monitoring queues for both channels (bypass and non-bypass), the system will adjust bandwidth allocation for both channels to optimize network performance. These dynamic adaptations reduce the negative impact of router bypass on statistical multiplexing. An OMNET++ simulation is presented that demonstrates that the rate of dropped packets can be lowered by 66% and queuing time by 11% compared with conventional router bypass.

3-1-153	
Title	**Anticipated Alteration in Extreme Climate Events Utilizing Bias Correction of Two Regional Climate Models for the South Nation Watershed**
Authors	A. S. Alodah and O. Seidou
Program	Civil Engineering
University	University of Ottawa
Journal	22nd Canadian Hydrotechnical Conference
Date of Publication	April 30, 2015

Abstract
Climate change studies are crucial to assist decision-makers in understanding future risks and planning adequate adaptation measures. In general, Global/Regional Climate Models (GCMs/RCMs) achieve coarse resolutions, and are thus unable to provide sufficient information to conduct local climate assessments. Downscaling, defined as a method that derives local to regional-scale (10 to 100 km) information from larger-scale models or data analyses, is used to address this deficiency. In this thesis, a particular downscaling technique, known as the Quantile-Quantile transformation, was used to adjust the statistical distribution of RCM variables to match the statistical distribution of the observed variables generated by two RCMs: The Canadian Regional Climate Model version 3.7.1 and the ARPEGE model, on the historical period (1961-2001). The analyses presented in this study were applied to daily precipitation as well as maximum and minimum temperatures in the South Nation watershed in Eastern Ontario, Canada. The two-sample Kolmogorov–Smirnov test indicated that the Quantile-Quantile transformation improved the shape of the PDF of RCM-simulated climate variables. The results suggest that, under the A1B scenario, temperatures in the watershed would rise significantly and there would be an increment in precipitation occurrence and intensity. The study outlined how the frequency and intensity of some extreme weather events will evolve in the 2041-2081 period in response to the rise in atmospheric GHG concentrations. Projected impacts were investigated by tracking future changes in four extreme temperature indices and three precipitation indices. It was predicted that heavy precipitation events and warm spells will occur more frequently and intensely, while extreme cold events will be weaker, and some will be hardly observed.

3-1-154	
Title	**Cross-layer Performance of Channel Scheduling Mechanisms in Small-cell Networks with Non-line-of-sight Wireless Backhaul Links**
Authors	1. Abdulaziz Alorainy 2. Md. Jahangir Hossain
Program	Electrical Engineering/school of Engineering
University	University of British Columbia (okanagan Campus)
Journal	Ieee Transactions on Wireless Communications
Date of Publication	May 04, 2015

Abstract
Small cell networks (SCNs) have emerged as a potential solution to the rapidly increasing demand for high data rate services over wireless networks. The small cell access nodes (SANs) provide service to users through the access link and can be connected to the core/global network, preferably, via a wireless backhaul link. In this paper, we develop a queuing analytical model that considers the channel scheduling mechanisms in both links of SCNs, the time varying nature of the channels, bursty packet arrivals as well as the network topology e.g., the number of SANs and the coverage of the small cells. Forthe access link we consider the so-called max rate/opportunistic channel scheduling mechanism, while for the backhaul link we consider three different channel scheduling mechanisms, namely, fixed channel scheduling, round robin channel scheduling and access link dependent channel scheduling. Our developed analytical model is useful to gauge various data link layer performance measures such as packet loss probability (PLP) and average queuing delay of the packets for the channel scheduling mechanisms under consideration. Presented numerical examples show that the choice of channel scheduling mechanism in the backhaul link is not unique and it depends on operating scenario and required quality-of-service (QoS) parameters. The developed queuing model can also facilitate cross-layer design to meet the required QoS parameters. Presented simulation results validate the accuracy of the developed model.

3-1-155	
Title	**M-ary Chirp Modulation for Coherent and Non-coherent Data Transmission**
Authors	Mohammad Alsharef and Raveendra K. Rao
Program	ECE
University	The University of Western Ontario
Journal	Ieee
Date of Publication	May 04, 2015

Abstract
M-ary chirp modulated signals are described and illustrated as a function of modulation parameters-h, the peak-to-peak frequency deviation divided by the symbol rate; and w, the frequency sweep width divided by the symbol rate. The detection of these signals in AWGN channel is addressed and optimum receiver structures for both coherent and non-coherent cases are derived. Closed-form expressions for symbol error probabilities for these receivers have been obtained. Optimum 2–, 4–, and 8–ary coherent chirp systems that minimize symbol error rate have been determined. The performances of both coherent and non-coherent M-ary chirp systems are compared with respective conventional M-ary digital modulations.

3-1-156	
Title	**Modeling Fault Tolerance Tactics with Reusable Aspects**
Authors	Naif A. Mokhayesh Alzahrani , Dorina C. Petriu
Program	System and Computer Engineering
University	Carleton University
Journal	11th International Acm Sigsoft Conference on the Quality of Software Architectures Qosa 2015
Date of Publication	May 04, 2015

Abstract
This paper is part of a larger research project aiming to integrate dependability analysis in the early phases of the software development process, by generating and analyzing Stochastic Reward Net (SRN) models from UML software models. The paper is focused on adding fault tolerance to software designs by using Aspect-Oriented Modeling. More specifically, single version fault tolerance tactics are modeled as generic reusable aspects annotated with dependability attributes. The paper describes how the generic aspects are instantiated, bound to the context and composed with the original UML software model. Since an SRN analysis model is generated from the UML model, the paper discusses what kind of transformation rules are necessary for translating fault tolerance tactics from UML to SRN, giving as an example the transformation rule for checkpoint synchronization. Acase study illustrates the proposed approach.

3-1-157	
Title	**Hydroxypropyl Methacrylate Interaction and Chitosan Coating for Enhanced Uv Detection Sensitivity of Colloidal Nanoparticles in Capillary Electrophoresis Analysis**
Authors	Samar Alsudir and Edward Pc Lai*
Program	Chemistry
University	Carleton University
Journal	Journal of Analytical and Bioanalytical Techniques
Date of Publication	May 05, 2015

Abstract
The binding interactions between silica (SiO2), titania (TiO2) or polymeric nanoparticles with hydroxypropyl methacrylate (HPMA) were investigated for enhancing the ultraviolet (UV) detection sensitivity of these nanoparticles in capillary electrophoresis (CE) analysis. HPMA interacted with colloidal SiO2 nanoparticles, producing a larger CE-UV peak at a slightly shorter migration time. An increase in particle size with HPMA binding was validated using dynamic light scattering. The interaction was selective as HPMA did not interact with TiO2 nanoparticles in aqueous suspension. Chitosan coating of SiO2 or TiO2 nanoparticles produced significantly larger hydrodynamic diameters to further enhance the sensitivity of their UV detection. The analytical technique, which involves coating SiO2 nanoparticles with chitosan first and binding with HPMA next, is novel. It has allowed us to achieve a significant enhancement of 50 folds in detection sensitivity.

3-1-158	
Title	**A Novel Feature Extraction and Classification Algorithm Based on Power Components Using Single-point Monitoring for Nilm**
Authors	M. Nguyen, S. Alshareef, A. Gilani, and W.g. Morsi, Member, Ieee
Program	Dept. Of Electrical, Computer and Software Engineering
University	University of Ontario Institute of Technology (uoit)
Journal	Ieee
Date of Publication	May 06, 2015

Abstract
This paper presents a classification approach based on the power components and applied to the Non-Intrusive Load Monitoring (NILM). The active, reactive and apparent power levels are recorded and are fed to a Decision Tree (DT) classifier to develop the appropriate classification model. The results have shown that using the change in the power components level instead of using the actual power components recorded can result in significant improvement in the classification accuracy.

3-1-159	
Title	**On the Possibility of Insider Threat Prevention Using Intent-based Access Control (ibac)**
Authors	Abdulaziz Almehmadi Khalil El-khatib
Program	Computer Science
University	University of Ontario Institute of Technology (uoit)
Journal	Ieee Systems Journal
Date of Publication	May 07, 2015

Abstract
Existing access control mechanisms are based on the concept of identity enrolment and recognition and assume that recognized identity is a synonym to ethical actions, yet statistics over the years show that the most severe security breaches are the results of trusted, identified, and legitimate users who turned into malicious insiders. Insider threat damages vary from intellectual property loss and fraud to information technology sabotage. As insider threat incidents evolve, there exist demands for a nonidentity-based authentication measure that rejects access to authorized individuals who have mal-intents of access. In this paper, we study the possibility of using the user's intention as an access control measure using the involuntary electroencephalogram reactions toward visual stimuli. We propose intent-based access control (IBAC) that detects the intentions of access based on the existence of knowledge about an intention. IBAC takes advantage of the robustness of the concealed information test to assess access risk. We use the intent and intent motivation level to compute the access risk. Based on the calculated risk and risk accepted threshold, the system makes the decision whether to grant or deny access requests. We assessed the model using experiments on 30 participants that proved the robustness of the proposed solution.

3-1-160	
Title	**A Trust Certificate Model for Multi-agent Systems**
Authors	Basmah Almoaber Thomas Tran
Program	Systems Sience
University	University of Ottawa
Journal	Mcetech
Date of Publication	May 15, 2015

Abstract
Trust plays a vital role in the decision to initiate any interaction. Rational agents may use past experiences and other agents' opinions to decide to trust, but due to the nature of open multi-agent systems, agents can dynamically join and leave the system at any time where agents may find themselves dealing with complete strangers whom neither they nor their friends have encountered before. This situation forces the agents to choose partners randomly, which significantly increases the risk of encountering unreliable agents. In this paper, we address that issue by creating a Trust Certificate model that allows agents to retrieve reputation information and make initial trust evaluations when evidence is unavailable. It also helps agents to avoid the need to make a random partner selection due to the information scarcity. We show how this model enhances the interaction process between agents by evaluating it in the context of a simulated multi-agent system.

3-1-161	
Title	**Probing Molecular Chirality on a Sub-femtosecond Timescale**
Authors	R. Cireasa, A. E. Boguslavskiy, B. Pons, M. C. H. Wong, D. Descamps, S. Petit, H. Ruf, N. Thiré, A. Ferré, J. Suarez, J. Higuet, B. E. Schmidt, A. F. Alharbi, F. Légaré, V. Blanchet, B. Fabre, S. Patchkovskii, O. Smirnova, Y. Mairesse & V. R. Bhardwaj
Program	Physics
University	University of Ottawa
Journal	Nature Physics
Date of Publication	May 19, 2015

Abstract
Chiral molecules that are non-superimposable mirror images of each other, known as enantiomers, have identical chemical and physical properties unless they interact with another chiral entity, such as chiral light. Chiroptical1 effects arising from such interactions are used to detect enantiomers in mixtures and to induce enantioselective synthesis and catalysis. Chiroptical effects often arise from the interplay between light-induced electric- and

magnetic-dipole transitions in a molecule and evolve on ultrafast electronic timescales. Here we use high-harmonic generation2, 3 from a randomly oriented gas of molecules subjected to an intense laser field, to probe chiral interactions on these sub-femtosecond timescales. We show that a slight disparity in the laser-driven electron dynamics in the two enantiomers is recorded and amplified by several orders of magnitude in the harmonic spectra. Our work shows that chiroptical detection can go beyond detecting chiral structure4, 5, 6, 7 to resolving and controlling chiral dynamics on electronic timescales.

3-1-162	
Title	**Automated Mapping of Business Process Execution Language to Diagnostics Models**
Authors	Hamza Ghandorh and Hanan Lutfiyya
Program	Electrical and Computer Engineering/ software Engineering
University	The University of Western Ontario
Journal	The 5th International Conference on Cloud Computing and Services Science, Closer 2015
Date of Publication	May 22, 2015

Abstract

This paper illustrates how a specification of a business process can be automatically mapped to a fault diagnostic model. Observed failures at run-time are quickly analyzied through the diagnostic model to determine the faulty service.

3-1-163	
Title	**A Methodology for Identifying Critical Components in Physical Infrastructures**
Authors	Abdullah Alsubaie Khaled Alutaibi Jose Marti
Program	Electrical and Computer Engineering
University	The University of British Columbia
Journal	Eic Climate Change Technology Conference 2015
Date of Publication	May 26, 2015

Abstract

Climate change increases the risk of natural extreme events. These events can cause substantial loss of essential services such as electricity, water, and healthcare facilities. Assessing critical infrastructure vulnerabilities is an important planning task for decision makers to maintain supply of such services. Due to limitations of monetary budget in many decision making agencies, prioritization of critical infrastructures is required for planning emergency management investments. This paper proposes a methodology for identifying and prioritizing critical components in physical infrastructure. An infrastructure interdependency simulator, i2Sim, is used to account for interdependency links. Atest case is used to illustrate the methodology.

3-1-164	
Title	**A Survey on Some Currently Existing Intrusion Detection Systems for Mobile Ad Hoc Networks**
Authors	Mnar Saeed Alnaghes Department of Electrical and Computer Engineering University of Victoria Victoria, Canada Manar@uvic.ca Fayez Gebali Department of Electrical and Computer Engineering University of Victoria Victoria, Canada Fayez@uvic.ca
Program	Electrical and Computer Engineering
University	University of Victoria
Journal	Second International Conference on Electrical and Electronics Engineering, Clean Energy and Green Computing
Date of Publication	May 26, 2015

Abstract

Mobile Ad-Hoc Network (MANET) is one of the most promising technologies that have applications in military, environmental, space exploration and forestry industry areas. This type of network has attractive features such as its low transmission power to conserve energy, increase throughput, and reduce delay. However, it suffers from many constraints, including limited resources, and the use of insecure wireless communication channels. Due to the lack of defense, the security of these networks is a worthy concern, particularly for the applications where confidentiality has prime importance. Thus, any kind of intrusions should be detected before attackers can harm the network in order to operate MANET in a secure way. In this article, we present a survey of the state-of-the- art in Intrusion Detection Systems (IDSs) that are proposed for MANETs. This is followed by a comparison of each scheme along with their advantages and disadvantages. This survey is concluded by highlighting open research issues in the field.

3-1-165	
Title	**Automatic Real-time 2d-to-3d Conversion for Scenic Views**
Authors	A. Wafa, P. Nasiopoulos, V. C. Leung, and M. T. Pourazad
Program	Electrical and Computer Engineering
University	University of British Columbia
Journal	7th International Workshop on Quality of Multimedia Experience
Date of Publication	May 29, 2015

Abstract

The generation of three-dimensional (3D) videos from monoscopic two-dimensional (2D) videos has received a lot of attention in the last few years. Current conversion techniques are based on generating an estimated depth map for each frame from different depth cues, and then using Depth Image Based Rendering (DIBR) to synthesize the additional views. Efficient interactive techniques have been developed in which multiple depth factors (monocular depth cues) are utilized to estimate the depth map using machine-learning algorithms. The challenge with such methods is that they cannot be used for real-time conversion. We address this problem by proposing an effective scheme that generates high quality depth maps for scenic views in real-time. In our work, we use three depth cues, haze, vertical edges, and sharpness to estimate a sparse depth map. We then obtain the full depth map from the sparse map using an edgeaware interpolation method. Performance evaluations show that our method outperforms the existing state-of-the-art 2D-to3D conversion methods.

3-1-166	
Title	**Ranking the Refactoring Techniques!based on the External Quality Attributes**
Authors	Sultan Alshehri Abdulmajeed Aljuhani
Program	Phd Software Systems Engineering
University	University of Regina
Journal	Ijres
Date of Publication	June 01, 2015

Abstract

The selection of appropriate decisions is a significant issue that might lead to more satisfactory results. The difficulty comes when there are several alternatives and when all of them have the same chance of being selected. It is important, therefore, to find the kinds of priorities among all of these alternatives in order to choose the most appropriate one. The analytic hierarchy process (AHP) is capable of structuring decision problems and finding mathematically determined judgments built on knowledge and experience. This suggests that AHP should prove useful in agile software development where complex decisions occur routinely. This paper presents an example of using the AHP to rank the refactoring techniques based on the external code quality attributes. XP encourages applying the refactoring where the code smells bad. However, refactoring may consume more time and efforts. Therefore, to maximize the benefits of the refactoring in less time and effort, AHP has been applied to achieve this purpose. It was found that ranking the refactoring techniques helped the XP team to focus on the technique that improve the code and the XP development process in general.

3-1-167	
Title	**Experimental Performance Study of a Vertical and a Horizontal Ground Loops Coupled to a Ground Source Heat Pump System**
Authors	Waleed S. Alzahrani Alan S. Fung Wey H. Leong
Program	The Department of Mechanical and Industrial Engineering
University	Ryerson University
Journal	The 25th Canadian Congress of Applied Mechanics (cancam 2015)
Date of Publication	June 02, 2015

Abstract

The performance of vertical and horizontal ground loops coupled to a ground-source heat pump (GSHP) was investigated under four different scenarios. Forthis purpose, an experimental set-up was designed and constructed at the Toronto and Region Conservation Authority (TRCA) Archetype Sustainable Houses (ASH) in Vaughan, Ontario, Canada. In the first two tests, the two vertical ground loops coupled to the GSHP were tested in heating, and cooling modes. In heating mode, the GSHP's COP ranged between 2.7 and 3.15. In cooling mode, the GSHP performed better than the heating mode with COP range of 3.75 to 5.4. In the last two tests, two scenarios were tested to compare the horizontal and the vertical ground loops in cooling mode. In the first scenario, the ground loop flow was divided equally between the loops and the GSHP's overall COP was 5.42. The last test used equal Reynolds number in both loops and the GSHP's overall COP was 5.36.

3-1-168	
Title	**On the Utilization of Multi-mode User Equipment in Multi-radio Access Technology Cellular Communication Systems**
Authors	Ahmed Alsohaily, Elvino S. Sousa
Program	Phd/ Electrical and Computer Engineering
University	University of Toronto
Journal	Ieee Access
Date of Publication	June 03, 2015

Abstract
Multi-radio access technology (RAT) cellular communication systems limit connected users to utilizing a single RAT even when employing multi-mode user equipment (UE) capable of utilizing multi-RATs. Single-mode access, combined with static spectrum partitioning between co-deployed RATs and independent resource allocation for employed RATs, results in suboptimal spectrum utilization in multi-RAT systems. This paper models user access in multi-RAT systems and proposes enabling multi- mode UE to simultaneously utilize multiple RATs, using multi-RAT carrier aggregation, to improve the performance and spectrum utilization of multi-RAT systems. Several realizations of multi-mode access with varying implementation requirements are presented and discussed. Detailed system-level simulations, for a system co-deploying High Speed Packet Access (HSPA) and Long-Term Evolution (LTE), are performed to investigate the gains and limitations of different user access congurations in multi-RAT systems.

3-1-169	
Title	**Payment Schemes for a Two-level Consignment Stock Supply Chain System**
Authors	Siraj K. Zahran, Mohamad Y. Jaber, Simone Zanoni, Lucio E. Zavanella
Program	Mechanical and Industrial Engineering
University	Ryerson University
Journal	Computers & Industrial Engineering
Date of Publication	June 04, 2015

Abstract
Inventories account for almost 50% of the total logistics costs of a supply chain. Therefore, managing inventories helps organizations to reduce costs, increase profits, and satisfy customers' demand. Different inventory models have been developed to solve transportation and warehousing issues. These models help in optimizing different supply chain systems and maximizing their total profits. Coordinating orders between players has been shown to be profitable. AConsignment Stock (CS) agreement as a coordination mechanism has been receiving attention from practitioners and academicians. This paper reflects one reality of CS agreements and investigates the effects of four different payment schemes on the total profit of the system when a consignment stock agreement is adopted between a vendor and a buyer. The results showed that adopting a scheme that makes frequent and equal payments is often better than the other payment schemes compared in this paper. It was also shown in the paper that finding the optimum number and size of payments enhances the performance of the supply chain system and its total profit.

3-1-170	
Title	**Integrating Building Information Modeling (bim) with Sustainable Universal Design Strategies to Evaluate the Costs and Benefits of Building Projects**
Authors	Bader Alsayyar(1) and Ahmad Jrade(2) (1) Phd Student, Department of Civil Engineering, University of Ottawa (2) Assistant Professor, Department of Civil Engineering, University of Ottawa
Program	Civi Engineering
University	University of Ottawa
Journal	Icsc15 - the Csce International Construction Specialty Conference
Date of Publication	June 07, 2015

Abstract
Building Information Modeling (BIM) is a well-known innovative approach in project design and construction. The use of BIM enables designers to control project cost from the early stage of its life cycle. The cost impact resulted from the construction of sustainable building is one of the main resources that designers should consider when designing such type of facilities. As the North American population is aging Universal Design requirements (design that accommodate the needs of human regardless of their ages and abilities) should be considered in conjunction with the sustainable design criteria to achieve sustainable universal design (SUD). The aim of this research is to investigate the benefits and costs associated with adopting the concept of sustainable universal design applied for building projects. Therefore, this paper proposes a methodology to develop a model that integrates BIM tools with SUD requirements and strategies (i.e. Energy, material, and indoor air quality and barrier free environment) and to evaluate the associated benefits and costs of proposed buildings at their conceptual design stage. The proposed model consists of three main modules. First, a database module, which is mainly devoted to illustrate items necessary toward SUD approach including: hand rails, entrance slope with its associated material and lighting shapes and specification. All of the mentioned items will be in accordance with the standards (i.e. Canadian National Building Code (CNBC), LEED, international standards). Second, a 3D design module will describe the design components and system used in the different areas in the 3D conceptual design (i.e. living room, toilet, and kitchen). Finally, a cost benefit analysis module that will evaluate the initial cost of each designated area that complies with the needs of aging people who have chronicle health conditions, where the total cost and benefits is calculated accordingly. The effective development of the integrated model will help owners, designers, and developers to evaluate the cost and benefits of adopting sustainable universal buildings. An actual case project is used to test the workability, capability and performance of the proposed model.

3-1-171	
Title	**Numerical Simulations of Gravity Driven Reversible Reactive Flows in Homogeneous Porous Media**
Authors	H. Alhumade J. Azaiez
Program	Chemical Engineering
University	University of Waterloo
Journal	Hindawi Publishing Corporation
Date of Publication	June 09, 2015

Abstract
The effect of reversibility on the instability of a miscible vertical reactive flow displacement is examined. Amodel, where densities and/or viscosities mismatches between the reactants and the chemical product trigger instability, is adopted. The problem is governed by the continuity equation, Darcy's law, and the convection-diffusion-reaction equations. The problem is formulated and solved numerically using a combination of the highly accurate spectral methods based on Hartley's transform and the finite difference technique. Nonlinear simulations were carried out for a variety of parameters to analyse the effects of the reversibility of the chemical reaction on the development of the flow under different scenarios of the frontal instability. In general, faster attenuation in the development and growth of the instability is reported as the reversibility of the chemical reaction increases. However, it was observed that reversibility is capable of triggering instability for particular choices of the densities and viscosities mismatches. In addition, the effect of the reversibility in enhancing the instability was illustrated by presenting the total relative contact area between the reactants and the product.

3-1-172	
Title	**Integrating Building Information Modeling (bim)**
Authors	Elaf Al-kattan1 and Ahmad Jrade2 1 Phd Candidate, Civil Engineering Department, University of Ottawa, Ottawa, On, Canada 2 Assistant Professor, Civil Engineering Department, University of Ottawa, Ottawa, On, Canada
Program	Civil Engineering
University	University of Ottawa .
Journal	Canadian Society for Civil Engineering Construction Specialty Conference 2015
Date of Publication	June 10, 2015

Abstract
Abstract: The engagement of Facilities Management (FM) during the conceptual design stage of building projects has been recently explored. Incorporating FM during the design stage through the concept of BIM has the potential to minimize the possible waste of project resources (time, money, materials, and sustainability impacts) especially during the operational stage while offering the essential tools to keep buildings running to the required living standards. This paper proposes a framework to develop an integrated conceptual design model towards effective FM. Based on an intense literature review and series of interviews with FM and design professionals, this innovative framework is created to fulfil the following basics attributes: (1) tackling the key factors that affect FM; (2) Identifying the most effective stage of design (conceptual design) to involve facility managers; and (3) Detecting the major aspects that will directly contribute in enhancing the quality of managing, operating and maintaining facilities at the early design stage of a project. The expected results of the integrated BIM-FM model should show the importance of facilities managers' contribution during the conceptual design stage that leads in reducing the operating and maintenance costs, while providing 3D Integrated Design within Building Information Modeling (BIM) environment by generating list of design alternatives through design simulations. An actual case project is used to test the models' capability and workability.

3-1-173	
Title	**Benefits of Integrating Bim and Gis in Construction Management and Control**
Authors	Ahmad Al-saggaf1 and Ahmad Jrade2 1. Phd Candidate, Civil Engineering Department, University of Ottawa, Ottawa, On, Canada 2. Assistant Professor, Civil Engineering Department, University of Ottawa, Ottawa, On, Canada
Program	Civil Engineering
University	University of Ottawa
Journal	5th International/11th Construction Specialty Conference
Date of Publication	June 10, 2015

Abstract
Generally, a tremendous amount of waste and debris are generated by the demolition of existing buildings. Construction managers and site engineers are encountering difficulties in accurately calculating the volume of these materials, which have big influence on the duration and cost of projects. This paper describes the methodology used in developing a model that integrates Building Information Modeling (BIM) and Geographic Information System (GIS) to facilitate demolition waste management and control for megaprojects. The suggested model aims at facilitating the processes of estimating the quantities of waste by calculating the travel distance between the site, storages, and landfills and related time, as well as computing the number of trucks required for loading and hauling the waste from and to multiple sites. The main goal of this study is to demonstrate how this integrated model will provide construction managers with a comprehensive tool that could substantially benefit them in comparison to solely utilizing BIM. This paper will demonstrate how the model works and explain how it has the edge over using BIM only. The suggested BIM-GIS model will contribute to more green and efficient construction management. Ahypothetical case project is given to test the workability of the model.

3-1-174	
Title	**Combining Constrained Cp-nets and Quantitative Preferences for Online Shopping**
Authors	Bandar Mohammed, Malek Mouhoub, and Eisa Alanazi
Program	Computer Science
University	University of Regina
Journal	Springer International Publishing Switzerland 2015
Date of Publication	June 10, 2015

Abstract
Constraints and preferences coexist in a wide variety of real world applications. In a previous work we have proposed a preference based online shopping system that handles both constraints as well as preferences where these latter can be in a qualitative or a quantitative form. Given online shoppers' requirements and preferences, the proposed system provides a set of suggested products meeting the users' needs and desires. This is an improvement to the current shopping websites where the clients are restricted to choose among a set of alternatives and not necessarily those meeting their needs and satisfaction. Fora better management of constraints and preferences, we extend in this paper the well known constrained CP-Net model to quantitative constraints and integrate it into our system. This extended constrained CP-Net takes a set of constraints and preferences expressing user's requirements and desires, and returns a set of outcomes provided in the form of list of suggestions. This latter list is sorted according to user's preferences. An experimental evaluation has been conducted in order to assess the time efficiency of the proposed model to return the list of suggestions to the user. The results show that the response time is acceptable when the number of attributes is of manageable size.

3-1-175	
Title	**Advanced Decision Support for the Graph Model for Conflict Resolution**
Authors	Rami A. Kinsara Oskar Petersons Keith W. Hipel D. Marc Kilgour
Program	Systems Design Engineering
University	University of Waterloo
Journal	Taylor & Francis - Journal of Decision Systems
Date of Publication	June 11, 2015

Abstract
An advanced decision support system (DSS) for implementing the Graph Model for Conflict Resolution (GMCR) is designed and illustrated using a real world conflict. The new system, called GMCR+, is capable of handling a wide variety of decision problems involving two or more decision-makers (DMs). Given the DMs, the options or courses of action available to each of them, and each DM's relative preferences over the possible scenarios or states that could occur, GMCR+ can calculate stability and equilibrium results according to a rich range of solution concepts that explain human behaviour under conflict. Then the inverse component of the DSS GMCR+ can determine what DMs' preference rankings of states must be in order to produce stable states and equilibria as specified by the user. Other features incorporated into GMCR+ include coalition analysis, graph and tree diagram visualisation, narrative reporting of results and a tracing feature that shows how the conflict could evolve from a status quo state to a desirable equilibrium or other specified outcome. The system GMCR+ has a modular design in order to facilitate the addition of further advancements.

3-1-176	
Title	**Assessment of Distribution System Margins to Accommodate the Penetration of Plug-in Electric Vehicles**
Authors	Abdullah S. Bin Humayd and Kankar Bhattacharya
Program	Electrical and Computer Engineering
University	University of Waterloo
Journal	Ieee Transportation Electrification Conference
Date of Publication	June 16, 2015

Abstract
Environmental concerns and depletion of fossil fuel resources have led to increased penetration of plug-in electric vehicles (PEVs) in recent times. However, such electrification of the transportation sector is expected to impact the distribution grid adversely. These effects will require local distribution companies (LDCs) to accurately assess the impact of PEV penetration and develop plans, policies and solutions for alleviating the consequent network constraints. This paper presents a novel framework to assess the appropriate level of PEV penetration that distribution systems can accommodate under normal and contingency conditions of operation. The model incorporates the impact of different factors such as charging level, vehicle types, vehicle users habits, feeder thermal limits, and bus voltage limits. The distribution system margins from PEV penetration are examined and compared across a wide range of scenarios.

3-1-177	
Title	**Theoretical and Experimental Analyses of Solar-thermoelectric Liquid-chiller System**
Authors	Yazeed Alomair, Muath Alomair, Shohel Mahmud , Hussein A. Abdullah
Program	Phd/school of Engineering
University	University of Guelph
Journal	Elsevier Ltd and Iir.
Date of Publication	June 16, 2015

Abstract
A solar-thermoelectric liquid chiller (STLC) system is constructed and characterized using both theoretical and experimental analyses. Acold-plate (plate and tube type) heat exchanger, attached to the cold side of the STLC system, is utilized for removing the heat from the circulating water in the system. Analytical models include the thermoelectric Peltier effect, thermal convections in air and water, and conductions within the solid parts of the STLC system. Proposed analytical models are used to calculate different perfor- mance parameters (e.g., heat removal rate and coefficient of performance) of STLC system at different input electrical currents, temperature differences (between the bulk mean temperature of the liquid and the surrounding environmental temperature), and flow rates. Optimum values of the electrical current are calculated to achieve maximum heat removal rates for a wide range of temperature differences. It is observed that the heat removal rate by the STLC system increases with increasing bulk mean temperature of the water for considered ambient temperature conditions. However, small changes in the heat removal rate are observed when liquid flow rate changes inside the cold-plate heat exchanger. Aprototype of the conditioned space is constructed to perform the experimental analysis. Experimental analysis includes the monitoring of the cooling down period of the water and conditioned space to achieve desired temperatures.

3-1-178	
Title	**Cooperative Autonomous Control for Active Power Sharing in Multi-terminal Vsc-hvdc**
Authors	1-hasan K. Alrajhi Alsiraji 2-ehab F. El-saadany
Program	Electrical and Computer Engineering
University	University of Waterloo
Journal	International Journal of Process Systems Engineering (ijpse)
Date of Publication	June 18, 2015

Abstract
Economical autonomous control for sharing active power among MTDC systems based on the availability of active power or on a power management policy is proposed in this paper. Power sharing among MTDC systems involves a priority or sequential procedural problem because of the use of the conventional droop strategy. On the other hand, the use of predefined or constant power sharing fails to identify the available power that can be shared when it is not consumed by another inverter. The proposed strategy addresses these issues through a variety of options. The test system presented in this paper consists of three simulated VSC terminals based on a detailed switching VSC model with two AC voltage levels. The MTDC system has been simulated in a PSCAD/EMTDC environment. The simulation results show a significant decrease in operating costs as well as the ability to provide effective protection with respect to the problem of overloading.

3-1-179	
Title	**Effect of Frp Wrapping on Fatigue Bond Behavior of Spliced Concrete Beams**
Authors	Rayed Alyousef; Tim Topper & Adil Al-mayah
Program	Civil Engineer
University	University of Waterloo
Journal	Asce, Journal of Composites for Construction
Date of Publication	June 18, 2015

Abstract
This paper presents the first phase of an ongoing research program at University of Waterloo to study the effect of external fiber-reinforced polymer (FRP) sheet wrap confinement along a lap splice of reinforced concrete (RC) beams on their fatigue bond strength. Fatigue loading of RC beams containing a lap splice resulted in an increase in the number and width of cracks, an increase in deflection and a decrease of the bond strength between the steel rebar and the surrounding concrete. The phase of the research described here consists of monotonic and fatigue tests of sixteen reinforced concrete beam with dimensions 2200X350X250 mm. Each beam was reinforced with two 20M bars lap spliced in the constant moment region of the tension zone and two 10M bars in the compression zone outside the constant moment region. The test variables were the presence or absence of a FRP wrapping, the type of the FRP wrapping glass or carbon fiber-reinforced polymer (GFRP or CFRP), the type of loading and the fatigue load range. The test results for monotonic loading showed that the stiffness of all beams was almost the same, but that the FRP sheet wrapping increased the bond strength and the deflection at ultimate load. All beams tested under fatigue loading failed by a bond failure except one CFRP wrapped beam that failed by fatigue of the main reinforcement. The FRP sheet increased the bond strength for all specimens under fatigue loading.

3-1-180	
Title	**Generating Hypergame States Within the Paradigm of the Graph Model for Conflict Resolution**
Authors	Yasir M. Aljefri, M. Abul Bashar1, Keith W. Hipel, and Liping Fang
Program	Systems Design Engineering
University	University of Waterloo
Journal	The 15th Meeting on Group Decision and Negotiation (gdn 2015), Warsaw School of Economics, Warsaw, Poland, June 22-26
Date of Publication	June 22, 2015

Abstract
A comprehensive procedure is designed to model misperception by decision makers (DMs) within the paradigm of the Graph Model for Conflict Resolution (GMCR). To accomplish this, the options or courses of action of each DM in a conflict are categorized according to various types of misperception that are occurring either due to others or the particular DM. Furthermore, the union of all possible kinds of option perception creates the universal set of options for each DM, which in turn can be extended across all DMs in the dispute to generate the universal set of the states. The new design can distinguish between the states that are commonly recognized by DMs and those that are individually misperceived.

3-1-181	
Title	**On Interval Process Semantics of Petri Nets with Inhibitor Arcs**
Authors	Mohammed Alqarni Ryszard Janicki
Program	Phd in Computer Science
University	Mcmaster University
Journal	Petri Nets 2015, Springer Lecture Notes in Computer Science (lncs)
Date of Publication	June 26, 2015

Abstract
Interval order semantics of Petri nets with inhibitor arc is discussed. Both the operational semantics and process, i.e. concurrent history, semantics are defined and their mutual relationship is discussed. It is shown that if operational semantics is restricted to stratified orders (i.e. step sequences) the proposed model is equivalent to models based on step processes and comtraces

3-1-182	
Title	**Instructor Perspectives of Mobile Learning Platform: An Empirical Study**
Authors	1. Muasaad Alrasheedi 2. Luiz Fernando Capretz 3. Arif Raza
Program	Electrical and Computer Engineering/ Software Engineering
University	The University of Western Ontario
Journal	International Journal of Computer Science & Information Technology (ijcsit)
Date of Publication	July 01, 2015

Abstract
Mobile learning (m-Learning) is the cutting-edge learning platform to really gain traction, driven mostly by the huge uptake in smartphones and their ever-increasing uses within the educational society. Education has long benefitted from the proliferation of technology; however, m-Learning adoption has not proceeded at the pace one might expect. There is a disconnect between the rate of adoption of the underlying platform (smartphones) and the use of that technology within learning. The reasons behind this have been the subject of several research studies. However, previous studies have mostly focused on investigating the critical success factors (CSFs) from the student perspectives. In this research, we have carried out an extensive study of the six factors that impact the success of m-Learning from instructors' perspectives. The results of the research showed that three factors – technical competence of instructors, Instructors' autonomy, and blended learning – are the most important elements that contribute to m-Learning adoption from instructors' perspectives.

3-1-183	
Title	**Probabilistic Coordination of Microgrid Energy Resources Operation Considering Uncertainties**
Authors	Walied Alharbi, Kaamran Raahemifar
Program	Electrical and Computer Engineering
University	University of Waterloo
Journal	Electric Power Systems Research
Date of Publication	July 03, 2015

Abstract
This paper presents probabilistic coordination of distributed energy resources (DERs) operation in an islanded microgrid with consideration of the associated uncertainties. In doing so, a comprehensive stochastic mathematical model is developed which incorporates a set of valid probabilistic scenarios for the uncertainties of load and intermittency in wind and solar generation sources. The uncertainty is addressed through a combination of a stochastic optimization model and additional reserve requirements. The model also includes hourly interruption costs for a variety of customer types as a means of determining the optimal probabilistic interruptible load whose reliability-based value is low enough to enable it to be shed if necessary. Acase study is carried out using a benchmark microgrid; numerical results demonstrate that coordinated operation of DERs brings notable benefits in terms of expected operation costs and system security. This probabilistic coordination further reduces the consequences of the expected power dispatch of controllable generators and hourly unserved power.

3-1-184	
Title	**Monte Carlo Study of the Random Image Area Estimation by Pairwise Comparisons**
Authors	W.w. Koczkodaj, A. Almowanes, T. Kakiashvili and G. Duncan
Program	Computer Science
University	York University
Journal	Springer International Publishing
Date of Publication	July 04, 2015

Abstract
This study presents experimental results of gaining the accuracy of 18.4 % when the pairwise comparisons method was used instead of the direct method for area estimation of random images. Random images were produced by deblurring the Gaussian blur applied to randomly generated polygons. Participants were asked to estimate the areas of five random images by using an online questionnaire. Images have been compared to a provided unit of measure and in pairs. Our intensive Internet searches could not find another Monte Carlo experimentation for 2D case conducted in the past.

3-1-185	
Title	**Complementary Split Ring Resonator Arrays for Electromagnetic Energy Harvesting**
Authors	Babak Alavikia, Thamer S. Almoneef, and Omar M. Ramahi
Program	Electrical Engineering
University	University of Waterloo
Journal	Applied Physics Letters
Date of Publication	July 07, 2015

Abstract
This work demonstrates the viability of Ground-backed Complementary Split-Ring Resonator (G-CSRR) ar- rays with signicant power conversion eciency and bandwidth enhancement in comparison to the technology used in current electromagnetic energy harvesting systems. Through numerical full-wave analysis, we demon- strated correlation between either the resonance frequency or the input impedance of G-CSRR cells with the periodicity of the array. Acomparative study of power harvesting eciency through numerical analysis and laboratory measurement was presented where an array of G-CSRRs is compared to an array of microstrip patch antennas. We demonstrated that a G-CSRR array yields power conversion efciency of 92%, which represents a significant improvement in comparison to the single G-CSRR reported in our earlier work.

3-1-186	
Title	**Real-time and Location-based Hand Hygiene Monitoring and Notification: Proof-of-concept System and Experimentation**
Authors	Malak Baslyman, Raoufeh Rezaee, Daniel Amyot, Alain Mouttham, Rana Chreyh, Glen Geiger, Alan Stewar,t Samer Sader
Program	Computer Science
University	University of Ottawa .
Journal	Pers Ubiquit Comput (2015) (journal)
Date of Publication	July 08, 2015

Abstract
Rising infection rates in health care cause complications for the patient, extended hospital stay, financial difficulties and even death. One of the crucial factors that reduce those infections is better hand hygiene. Due to the lack of automated systems that can help monitoring hand hygiene compliance, some hospitals use direct observations, surveys, dispensers usage measurements and other such methods to monitor the compliance of care providers. This paper presents an alternative system that takes advantage of emerging off-the-shelf infrastructures in hospitals and in particular of real-time location systems (RTLS) and automated hand sanitizer dispensers. Our RTLS-based hand hygiene monitoring and notification system (RHMNS) improves upon current methods by enabling interactions with care providers through notifications when they do not execute expected hand hygiene actions, even for fine-grained location situations such as moving between patients a multi-bed room. RHMNS supports two approaches that share the same infrastructure while differing in their way of deciding on missed hand hygiene opportunities. The activation-based approach, which offers better results than the time based one, exploits new intelligent dispensers that send notifications on a wireless network when sanitizer is dispensed. RHMNS also provides informative reports about compliance and trends. Validation results based on a proof-of-concept deployment in a hospital bedroom and on a performance evaluation in a university laboratory suggest that it is feasible to have an RTLS-based system that is reliable, accurate, valid and adoptable, that considers the privacy of healthcare providers and that reminds healthcare providers of taking hand hygiene actions when required.

3-1-187	
Title	**Design and Characteristics of a Two-level Vsc with a Third-harmonic Injection Bus-clamping Svm– Detailed Study**
Authors	Hadi H. Alyami
Program	Electrical and Computer Engineering
University	University of Alberta
Journal	Iosr Journal of Engineering
Date of Publication	July 17, 2015

Abstract
At present, power electronics-based technologies are widely penetrating the power systems in an effort towards “smart-oriented” operational systems. Voltage-sourced converters (VSCs) are such power electronics-based technologies that currently seem rather to preponderate in many promising applications including FACTs, HVDC grids, DGs and VSDs. VSCs are found in a plethora of structures ranging from a simple half-bridge to an advanced modular topology and in order to exploit all their possible inherent features, a number of modulation strategies have been established. This paper investigates holistically the 3Φ two-level VSC with a 3rd harmonic injection bus-clamping space-vector modulation. It is essentially envisioned to further [7]-[8] studies, which compare two common VSC topologies, by including the abovementioned bus-clamping topology. The modulation strategy implemented through the principle of the equivalence linear triangle- comparison-based PWM with a bus-clamping SVM, mainly the MAX and MIN bus-clamping schemes. The resultant asynchronised SV-PWM has been investigated with a passive RL load and an active asynchronous vector-controlled motor with the aid of Simulink® simulated models.

3-1-188	
Title	**Dynamic Node Movement Control in a Mobile Medium Ad Hoc Network**
Authors	Hanin Almutairi, John Dedourek, Przemyslaw Pochec
Program	Computer Science
University	University of New Brunswick (fredricton Campus)
Journal	Iaria/emerging 2015 : The Seventh International Conference on Emerging Networks and Systems Intelligence
Date of Publication	July 19, 2015

Abstract
A Mobile Ad hoc Network (MANET) is a network of wireless mobile devices capable of communicating with one another without any reliance on a fixed infrastructure. AMobile Medium Network is a set of mobile forwarding nodes functioning as relays for facilitating communication between the users of this Mobile Medium. The performance of the Mobile Medium depends on the Mobile Medium node density, distribution and movement. In the proposed dynamic node movement, the movement is determined based on whether the node is on a forwarding path for a data flow or not. Simulation results show that slowing down the speed of mobile nodes when they are forwarding significantly affects the delivery rates in Mobile Medium networks. Fornetworks with a few forwarding nodes dispersed in a large region reducing the mode movement speed by 50% results in an approximately 20% improvement in the delivery ratio, with even higher improvements possible at lower speeds.

3-1-189	
Title	**Optimum Processing Parameters for Hot Drape Forming of Out-of-autoclave Prepreg Over Complex Shape Using a Double Diaphragm Technique**
Authors	Hassan Alshahrani and Mehdi Hojjati
Program	Mechanical Engineering
University	Concordia University
Journal	20th International Conference on Composite Materials
Date of Publication	July 23, 2015

Abstract
Hot drape formation of out-of-autoclave (OOA) prepregs is a promising manufacturing process for the aerospace and automotive industries, as it offers a reduction in overall processing time and cost. This study aims to examine the formability of out-of-autoclave 8-harness satin woven carbon/epoxy prepregs into complex shapes using a custom-made diaphragm forming set-up. In the diaphragm forming process, a composite laminate is placed between two deformable sheets, known as diaphragms. The diaphragms are then clamped, heated with the laminate to the processing temperature, and formed to the mold by applying vacuum pressure beneath the lower diaphragm. The current study carried out a double-diaphragm forming procedure at different forming rates and temperatures in order to examine the contribution of these parameters to part quality. Aone-step procedure was used for both forming and curing processes using the same set-up. Observed defects, such as wrinkles, were compared against various processing parameters. In addition, the in-plane shear resistance of 8-harness satin woven carbon/epoxy prepreg prior to the forming process was investigated using a bias-extension test. The study shows that higher processing temperatures help to decrease the degree of wrinkling that occurs in the forming part. Meanwhile, the outer diameter of double-curved parts was found to conform more closely to the original shape when forming proceeded at a slower rate.

3-1-190	
Title	**Literature Visualization and Similarity Measurement Based on Citation Relations**
Authors	Alfraidi, Hanadi; Lee,sonsook; Sankoff,daivd
Program	Master of Computer Science
University	University of Ottawa
Journal	2015 19th International Conference on Information Visualisation
Date of Publication	July 24, 2015

Abstract
While similar documents are, traditionally, found using Natural Language Processing, we observe reference/citation information by authors indicates better insight of similarity. Our system is to retrieve publications from Google Scholar and visualize them as a 2D graph using the citation relation, where the nodes represent the documents while the links represent the citation/reference relation between them. We measure the similarity score between each pair of papers based on both the number of paths and the length of each path. More paths and shorter the lengths higher the similarity score. We compared them with another similarity scores from Scurtu’s Document Similarity API [1] that uses Natural Language Processing. We use the average of the similarity scores collected from 15 users as a ground truth to determine how good the scores from two methods are. The result shows that our citation network approach gives better results than the ones by Scurtu’s.

3-1-191	
Title	**A General Flat Lens Criterion**
Authors	Mohammed Al Shakhs, Peter Otty, Henri J. Lezecz, and Kenneth J. Chau school of Engineering, the University of British Columbia, Kelowna, British Columbia, Canada Yheilbronn University, Heilbronn, Germany Zcenter for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, Maryland, Usa
Program	Electrical Engineering
University	University of British Columbia (okanagan Campus)
Journal	2015 Ieee in Vancouver.
Date of Publication	July 24, 2015

Abstract
We introduce a general criterion to predict conditions under which a flat planar medium is capable of imaging a point source. Such a planar medium, known as a flat lens, is attractive due to its potential for imaging over unbounded

aperture dimensions. The criterion first assumes a point source on one side of the medium and then evaluates the position of the image based on the phase of the paraxial plane waves exiting the medium. The benefit of this criterion is that it makes no a priori assumption of the medium composition and is thus highly general. We apply this criterion to study a recent class of flat-lens structures made of nano-layers of metal and dielectric. The criterion is validated by comparison against past results. We use the criterion to design new flat lenses, such as a lens for transverse-electric polarization and a broad-band flat lens operating over the UV-visible spectral range.

3-1-192	
Title	**Metabolic Metabolism of Glycerol in Pseudomonas Fluorescens**
Authors	Azhar Alhasawi • Martine Leblanc • Nishma D. Appanna Christopher Auger • Vasu D. Appanna
Program	Biomolecular Science
University	Laurentian University
Journal	Metabolomics
Date of Publication	July 27, 2015

Abstract
There is mounting evidence that metabolic reprogramming is critical for the survival of organisms exposed to changing and stressed environments. Using the soil microbe Pseudomonas fluorescens as a model system, we demonstrate that the metabolic networks aimed at the conversion of aspartate into pyruvate are enhanced in the presence of hydrogen peroxide (H2O2). The metabolites pyruvate, oxaloacetate and acetate were increased in the treated cultures as measured by HPLC. Enzymes such as aspartate transaminase and phosphoenolpyruvate carboxylase (PEPC) that mediate the conversion of aspartate to phosphoenolpyruvate (PEP) were up-regulated. This highenergy phosphate was readily converted into ATP, a process facilitated by the increased activity of pyruvate orthophosphate dikinase (PPDK) and phosphoenolpyruvate synthase (PEPS) as oxidative phosphorylation was severely compromised. The ensuing formation of pyruvate readily detoxified reactive oxygen species with the concomitant formation of acetate. This H2O2-induced metabolic reconfiguration not only helps generate the antioxidants necessary to thwart oxidative stress but also powers the formation of energy.

3-1-193	
Title	**Modelling the Energy Cost of Application Software for Developers**
Authors	Fadwa Abdulhalim, Omar Alghamdi, and Kshirasagar Naik
Program	Electrical and Computer Engineering
University	University of Waterloo
Journal	The 2015 International Conference on Software Engineering Research and Practice: 57-63. Athens: The Steering Committee of the World Congress in Computer Science, Computer Engineering and Applied Comp
Date of Publication	July 27, 2015

Abstract
In this paper, we present a non-exclusive test bench to measure the power consumption of an application running on a server. We provide modelling procedure and tools to software developers to evaluate energy performance of their applications. Aneural network model (NNM) has been trained based on process count information gathered by CollectD and actual real-time power consumption monitored by a TED5000 power meter. By using measurement of actual system running different workloads, power models for four subsystems (CPU, memory, disk and network interface) on two platforms (two real servers) are developed and validated. Through the use of this modeling procedure, a developer can estimate the system power consumption without the need of using an actual power meter device. Overall, this paper helps the developers to analyze their applications in term of power cost on real servers.

3-1-194	
Title	**On Modeling Inhibitor Nets with Interval Processes and Interval Traces**
Authors	Mohammed Alqarni and Ryszard Janicki
Program	Phd Computer Science
University	Mcmaster University
Journal	Fcs'15 - the 11th International Conference on Foundations of Computer Science
Date of Publication	July 27, 2015

Abstract
Two interval semantics for elementary inhibitor Petri nets, interval process semantics and interval trace semantics are discussed and proved equivalent.

3-1-195	
Title	**Modeling of Pev Charging Load Using Queuing Analysis and Its Impact on Distribution System Operation**
Authors	Omar Hafez and Kankar Bhattacharya
Program	Electrical and Computer Engineering
University	University of Waterloo
Journal	Ieee Pes Annual General Meeting
Date of Publication	July 27, 2015

Abstract
This paper presents a novel approach for modeling the 24-hour charging demand profile of a plug-in electric vehicle (PEV) charging station using queuing analysis. The proposed queuing model considers the arrival of PEVs as a nonhomogeneous Poisson process with different arrival rates over the day. Adistribution optimal power flow (OPF) model is used to study the impact of the PEV charging load of the charging station on distribution system operation. Various objective functions, such as total feeder losses, energy drawn by the local distribution company (LDC) and total cost of energy drawn by LDC are considered in this paper.

3-1-196	
Title	**Applications of Mixed Pairwise Comparisons**
Authors	Abeer Mirdad and Ryszard Janicki
Program	Computing and Software Engineering
University	Mcmaster University
Journal	The 17th International Conference on Artificial Intelligence (icai'15)
Date of Publication	July 28, 2015

Abstract
Mixed pairwise comparisons is a systematic composition of quantitative and qualitative pairwise comparisons proposed in [9], [11] based on the use of non-linear scale proposed in [10]. We will show how this method can improve accuracy of weights assignment for attributes used for assessment of Healthcare in Canada, Quality in Use of Software, Smart Energy Grids and Medical Devices Managements Systems.

3-1-197	
Title	**Healthcare System Process Improvement - a Systems Engineering Approach**
Authors	Hesham Maghrabie Arman Sadreddin Andrea Schiffauerova
Program	Ciise
University	Concordia University
Journal	2015 Summer Simulation Multi-conference
Date of Publication	July 28, 2015

Abstract
The goal of this study is to minimize patients' length of stay and total waiting times for the Emergency Department (ED) at a given Health institution in North America. To accomplish this goal, the current process of the ED has been analyzed and a proposed model has been evaluated. In order to assess the added value of the proposed model, the results of the two models have been compared and the proposed model reflected a better performance. Asimulation software has been utilized to imitate the real system and to illustrate the proposed concept for determining the best process.

3-1-198	
Title	**Modeling Elevator System with Coloured Petri Nets**
Authors	Mohammed Assiri, Mohammed Alqarni and Ryszard Janicki
Program	Phd Computer Science
University	Mcmaster University
Journal	Serp'15 - the 13th International Conference on Software Engineering Research and Practice
Date of Publication	July 29, 2015

Abstract
A fairly general model of the elevator system is presented. Coloured Petri Nets (CPN) and CPN tools are adopted as modeling tools. The model, which is independent of the number of floors and elevators, covers different stages of the elevator system in substantial detail. The model assists simulation-based analysis of different algorithms and rules which govern real elevator systems. The results prove the compatibility and applicability of this model in various situations and demonstrate the expressive power and convenience of CPN.

3-1-199	
Title	**Theoretical Study of Hybrid Guided Modes in a Multilayer Symmetrical Planar Plasmonic Waveguide**
Authors	Sarah Aldawsari, Li Wei, Wing-ki Liu
Program	Physics and Astronomy
University	University of Waterloo
Journal	Journal of Lightwave Technology
Date of Publication	August 01, 2015

Abstract

Abstract—We presented a comprehensive theoretical study of the hybrid guided mode in a multilayer symmetrical planar plasmoinc waveguide, which is constructed with a thin film metal layer symmetrically sandwiched by three dielectric low/high/low-index layers. The seven-layer planar plasmonic structure can support super long-range plasmonic modes with strong subwavelength confinement in the low-index gap layer. We derived the dispersion equations for the guided mode and characterized the hybrid guided mode based on our derived analytical expressions. We explained how the variations in the thickness of the low-index gap and high-index cladding could change the types of the hybrid mode from strong surface plasmon polariton (SPP)-like mode, to SPP-dielectric waveguide (DW)-like mode, and further to strongDW-like mode. We also found that by tailoring the geometric dimensions of the waveguide, the plasmonic mode of the multilayer structure can be optimized with the strongest mode confinement at the nanoscale gap. The combination of tight light confinement and long-range propagation length makes the seven-layer plasmonic waveguide an excellent candidate for applications in chip-scale plasmonic integrated circuits. The presented theoretical analysis shall be very useful in the design and optimization of active and passive nanoplasmonic devices.

3-1-200	
Title	**Heuristic Evaluation of University Institutional Repositories Based on Dspace**
Authors	Maha Aljohani Jamie Blustein
Program	Computer Science/ Faculty of Computer Science
University	Dalhousie University
Journal	Http://www.springer.com/lncs Hci International 2015
Date of Publication	August 05, 2015

Abstract

The number of Institutional Repositories (IRs) as part of universities' Digital Libraries (DLs) has been growing in the past few years. However, most IRs are not widely used by the intended end users. To increase users' acceptability, evaluating IRs interface is essential. In this research, the main focus is to evaluate the usability of one type of IR's interface following the method of Nielsen's heuristics to uncover usability problems for development purposes. To produce a reliable list of usability problems by applying the heuristic evaluation approach, we examine the impact of experts and novices on the reliability of the results. From the individual heuristic analyses (by both experts and novices), we distilled 66 usability problems. Those problems are classified by their severity. The results of applying the heuristic evaluation show that both experts and non-experts can uncover usability problems. We analyzed the differences between these types of assessors in this paper. Experts tend to reveal more serious problems while novices uncover less severe problems. Interestingly, the best evaluator is a novice who found 21 % of the total number of problems. The ability to find difficult and easy problems are recorded with both types of evaluators. Therefore, we cannot rely on one evaluator even if the evaluator is an expert. Also, the frequency of each violated heuristic is used to assigned priority to the uncovered usability problems as well as the severity level. The result of the heuristic evaluation will benefit the university through improving the user interface and encouraging users to use the library services.

3-1-201	
Title	**In-plane Shear Deformability of Out-of-autoclave Prepregs Under Double-diaphragm Vacuum Compaction**
Authors	H.A. Alshahrani M.h. Hojjati
Program	Mechanical Engineering
University	Concordia University
Journal	Icaiim 2015: International Conference & Exhibition on Advanced & Nano Materials, Ottawa, Canada
Date of Publication	August 12, 2015

Abstract

During the diaphragm forming process for carbon/epoxy prepregs, a vacuum seal is applied between the upper and lower diaphragms to compact and hold the laminate. Therefore, a thorough characterization of the in-plane shear behavior of fabrics under diaphragm forming conditions must take into account the effect of vacuum-sealing and compaction between the two diaphragms during bias extension. The study presented here examined the shear angles of out-of-autoclave 8-harness satin woven carbon/epoxy prepregs under diaphragm compaction. Abias extension test was conducted to study the effect of diaphragm compaction and ply interactions on shear properties. The test was performed at different compaction levels, and changes in shear angle with respect to vacuum levels and diaphragm compaction forces were observed. The contribution of diaphragm material and ply interaction to shear stiffness was evaluated and compared with results from a direct bias extension test. The samples were tested at both room temperature and at elevated temperatures using a radiant heater. The results show that shear angle decreases significantly as vacuum pressure and compaction is applied between the two diaphragms. This finding indicates that vacuum levels and compaction forces have a significant influence on the deformation limit and wrinkling onset during the diaphragm forming process.

3-1-202	
Title	**The Role of Kinetic Envelopes to Improve Energy Performance in Building**
Authors	Fahad Alotaibi1,2* 1department of Architectural Studies, University of Calgary, Calgary, Alberta, Canada 2college of Architecture and Design, University of Qassim, Almulyda, Saudi Arabia
Program	Faculty of Environmental Design
University	University of Calgary
Journal	Journal of Architectural Engineering Technology
Date of Publication	August 22, 2015

Abstract

The building envelope plays a crucial role in saving or consuming energy, depending on the type of the envelope and design. Architects and engineers need to consider many issues when working with envelope designs, including environmental issues, aesthetic appearance, occupant comfort, and view; these aspects make the envelope a multifunctional component, thus the integration approach is the optimal method to address envelope design. In the last decade we have witnessed the inclusion of the kinetic envelope in many typologies of buildings. Many scholars believe the kinetic envelope improves the environmental performance of the building. The purpose of this paper is to review the current practice and development of the kinetic envelope and to investigate its role in the improvement of energy performance in buildings.

3-1-203	
Title	**Cloud Slicing a New Architecture for Cloud Security Monitoring**
Authors	Abdulaziz Aldribi, Issa Traore, Gabriel Letourneau
Program	Electrical and Computer Engineering
University	University of Victoria
Journal	Ieee
Date of Publication	August 24, 2015

Abstract

Cloud computing has become one of the popular terms in academia and IT industry. The security of the cloud computing infrastructure is the main concern to adopt it. Despite this concern, cloud providers do not disclose any information about their security precautions. Therefore, a provider's clients cannot be certain that their applications are protected while they are in cloud. Furthermore, clients are not granted access to the network level of the system to implement any of their own security features. In this paper we propose a new model we are naming Cloud Slicing. Cloud Slicing uses a technique called logical partitioning, to divide a cloud servers resources. By doing this division, clients on a server can safely implement their own network security features to reassure themselves, and their customers, that the applications are protected.

3-1-204	
Title	**Performance Analysis of 64-bit Carry Lookahead Adders Using Conventional and Hierarchical Structure Styles**
Authors	Abdulmajeed Alghamdi (first Author) Fayez Gebali (second Author)
Program	Electrical and Computer Engineering
University	University of Victoria
Journal	2015 Ieee Pacific Rim Conference on Communications, Computer and Signal Processing
Date of Publication	August 24, 2015

Abstract

This paper introduces performance analysis of 64-bit Carry Lookahead Adders using conventional and hierarchical structure styles. We evaluate conventional carry lookahead adder (CLA) and hierarchical carry lookahead adder (HCLA) using different parameters. Our design is targeted into FPGA Virtex 7 family. Area, delay, and area-delay product of all design choices are reported. In the experimental results, we reduced CLA delay and area using radix-2 which performed better than traditionally used radix-4 CLA. In addition, we showed that CLA using conventional structure has better performance than the hierarchical structure.

3-1-205	
Title	**Implementation and Performance Analysis of 3-d Cone and Frustum Filters**
Authors	Hussam Shubayli, Chamira U. S. Edussooriya, Iman Moazzen, Panajotis Agathoklis, and Len Bruton
Program	Department of Electrical and Computer Engineering
University	University of Victoria
Journal	Ieee Pacrim 2015
Date of Publication	August 24, 2015

Abstract
Abstract—Two novel computationally efficient implementations for 3-D FIR cone filters are proposed in this paper. In the pro- posed implementations, the well-known 1-D quadrature mirror cosine modulated and 1-D directly designed temporal filter banks are cascaded with 2-D FIR circularly symmetric lowpass spatial filters to approximate the cone-shaped passband. Furthermore, the 3-D FIR frustum filters are derived from the proposed 3-D FIR cone filter implementations. The proposed implementations provide additional 2 dB signal-to-interference-and-noise ratio improvement compared to previously reported 3-D FIR cone and frustum filter implementations with reduced or equivalent computational complexity.

3-1-206	
Title	**In Need of a Domain-specific Language Modeling Notation for Smartphone Applications with Portable Capability**
Authors	Hamza Ghandorh , Luiz Fernando Capretz, Ali Bou Nassif
Program	Electrical and Computer Engineering/ software Engineering
University	The University of Western Ontario
Journal	Springer/mobile Web and Intelligent Information Systems 9mobiwis 2015)
Date of Publication	August 25, 2015

Abstract
The rapid growth of the smartphone market and its increasing revenue has motivated developers to target multiple platforms. Market leaders, such as Apple, Google, and Microsoft, develop their smartphone applications complying with their platform specifications. The specification of each platform makes a platform-dedicated application incompatible with other platforms due to the diversity of operating systems, programming languages, and design patterns. Conventional development methodologies are applied to smartphone applications, yet they perform less well. Smartphone applications have unique hardware and software requirements. All previous factors push smartphone developers to build less sophisticated and low-quality products when targeting multiple smartphone platforms. Model-driven development have been considered to generate smartphone applications from abstract models to alleviate smartphones platform fragmentation. Reusing these abstract models for other platforms was not considered because they do not fit new platforms requirements. It is possible that defining smartphone applications using a portability-driven modeling notation would facilitate smartphone developers to understand better their applications to be ported to other platforms. We call for a portability-driven modeling notation to be used within a smartphone development process. Our in-process research work will be manifested through the application of a domain-specific language complying with the three software portability principles and three design factors. This paper aims to highlight our research work, methodology and current statue.

3-1-207	
Title	**Coordination of a Two-level Supply Chain (manufacturer- Retailer) with Permissible Delay in Payments**
Authors	Salem M. Aljazzar, Mohamad Y. Jaber & Suresh K. Goyal
Program	Mechanical and Industrial Engineering
University	Ryerson University
Journal	Taylor & Francis Group
Date of Publication	August 25, 2015

Abstract
For a supply chain coordination to be effective and profitable, it requires a working mechanism among the members of a supply chain to financially entice some players to cooperate. Permissible delay in payments is one of the most commonly practised incentives by businesses to achieve this cooperation. This paper investigates a two-level (manufacturer–retailer) supply chain, with a permissible delay in payments as a decision variable. First, the paper modifies three known models of different production and shipping policies to account for delays in payments; it then compares them and highlights the production policy that performed the best with total system cost as a performance measure. Asensitivity analysis is also utilised to test and identify the limitations of the three models.

3-1-208	
Title	**Goal and Preference Identification Through Natural Language**
Authors	Fatima Alabdulkareem Nick Cercone Sotirios Liaskos
Program	Computer Science
University	York University
Journal	Ieee - Requirement Engineering 2015
Date of Publication	August 28, 2015

Abstract
Goal models allow efficient representation of stakeholder goals and alternative ways by which these can be satisfied. Preferences over goals in the goal model are then used to specify criteria for selecting alternatives that fit specific contexts, situations and strategies. Given such preferences, automated reasoning tools allow for efficient exploration of such alternatives. Nevertheless, to be amenable to such automated processing, goals and preferences need to be specified in a formal language, making automated processing inaccessible to the very bearers of goals and preferences, i.e., the stakeholders. We combine natural language processing techniques to allow specification of preferences through natural language statements. The natural language statement is first matched through regular expressions to distinguish between the preference component and the goal component. The former is then mapped to a preferential strength measure, while the latter is used to identify the relevant goal in the goal model through statistical semantic similarity techniques. The result constitutes a formal representation that can be used for alternatives analysis. In this way, stakeholders can access advanced goal reasoning techniques through simple natural language preference expressions, facilitating their decision making in various requirements analysis contexts. An experimental evaluation with human participants shows that the proposed system is of substantial precision and that a mapping from natural preferential verbalizations to predefined preferential strength labels is possible through sampling from crowds.

3-1-209	
Title	**Wafer-level Artificial Photosynthesis for Co2 Reduction Into Ch4 and Co Using Gan Nanowires**
Authors	Bandar Alotaibi, Shizhao Fan, Defa Wang, Jinhua Ye, and Zetian Mi
Program	Electrical and Computer Engineering
University	Mcgill University
Journal	Acs Catalysis
Date of Publication	August 29, 2015

Abstract
We report on the first demonstration of high-conversion-rate photochemical reduction of carbon dioxide (CO2) on gallium nitride (GaN) nanowire arrays into methane (CH4) and carbon monoxide (CO). It was observed that the reduction of CO2 to CO dominates on as-grown GaN nanowires under ultraviolet light irradiation. However, the production of CH4 is significantly increased by using the Rh/Cr2O3 core/shell cocatalyst, with an average rate of ∼3.5 μmol gcat−1 h−1 in 24 h. In this process, the rate of CO2 to CO conversion is suppressed by nearly an order of magnitude. The rate of photoreduction of CO2 to CH4 can be further enhanced and can reach ∼14.8 μmol gcat−1 h−1 by promoting Pt nanoparticles on the lateral m-plane surfaces of GaN nanowires, which is nearly an order of magnitude higher than that measured on as-grown GaN nanowire arrays. This work establishes the potential use of metal-nitride nanowire arrays as a highly efficient photocatalyst for the direct photoreduction of CO2 into chemical fuels. It also reveals the potential of engineered core/shell cocatalysts in improving the selectivity toward more valuable fuels.

3-1-210	
Title	**Variable Ordering and Constraint Propagation for Constrained Cp-nets**
Authors	Eisa Alanazi and Malek Mouhoub
Program	Computer Science
University	University of Regina
Journal	Journal of Applied Intelligence
Date of Publication	August 30, 2015

Abstract
A Conditional Preferences network (CP-net) is a known graphical model for representing qualitative prefer- ences. In many real world applications we are often required to manage both constraints and preferences in an efficient way. The goal here is to select one or more scenarios that are feasible according to the constraints while maximizing a given utility function. This problem has been modelled as a CP-net where some variables share a set of constraints. This latter framework is called a Constrained CP-net. Solv- ing the constrained CP-net has been proposed in the past using a variant of the branch and bound algorithm called Search CP. In this paper, we experimentally study the effect of variable ordering heuristics and constraint propagation when solving a constrained CP-net using a backtrack search algorithm. More precisely, we investigate several look ahead strategies as well as the most constrained heuristic for vari- able ordering during search. The results of the experiments conducted on random Constrained CP-net instances gen- erated through the RB model, clearly show a significant improvement when adopting these techniques for specific graph structures as well as the case where a large number of variables are sharing constraints.

3-1-211	
Title	**Graphene Based Composites for Corrosion Inhibition of Stainless Steel 304**
Authors	Hesham Alhumade Erij Elkamel Hiba Nauman Aiping Yu Ali Elkamel
Program	Chemical Engineering
University	University of Waterloo
Journal	International Journal of Technical Research and Applications
Date of Publication	August 31, 2015

Abstract
Polyetherimide-Graphene (PEI/G) composites were prepared and investigated as anti-corrosion coatings on Stainless Steel 304 (SS304) substrates. Asmall load of graphene was incorporated in the polymeric matrix using in situ polymerization approach and the coating was cured under vacuum by several steps thermal imidization. The morphology was examined using Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM). The study demonstrates that advanced corrosion inhibition of SS304 can be achieved by coating the metal with PEI and this inhibition can be further enhanced by incorporating graphene. This conclusion was supported by the collected results from electrochemical techniques such as Tafel polarization and electrochemical impedance spectroscopy (EIS). In addition to corrosion protection, the interface adhesion between the protected substrate and the protective coating was evaluated according to ASTM standards.

3-1-212	
Title	**A Graph Theoretic Modeling for Securing Link Layer in Mobile Ad Hoc Networks**
Authors	Mnar Saeed Alnaghes, Fayez Gebali
Program	Electrical and Computer Engineering
University	University of Victoria
Journal	International Journal of Engineering Science and Innovative Technology
Date of Publication	September 01, 2015

Abstract
The increased usage of wireless ad-hoc networks (MANET), which is a collection of wire- less mobile nodes that form a dynamic network without the need for infrastructure or centralized points, in many different applications has opened the door for many security challenges. In recent years, secur- ing and protecting communications between mobile nodes in MANETs have become an active research field. The vast majority has only focused on providing authenticity of the route and mostly ignored the availability of malicious nodes in the environment. The aim of this work is to explore the effectiveness of malicious nodes in MANETs considering the Request-to-Send (RTS) / Clear-to-Send (CTS) protocol. It is assumed that a certain node is not listening to any RTS messages until it has a specific number of nodes within its range, and, it will have a fixed period of time before it replies a CTS message. In this paper, specific attention was paid to the security issues of a mobile ad hoc network. We propose a graph theoretic model that satisfies the basic mobility requirements of a MANET and define a mathematic analysis for the model in order to show the effectiveness of a malicious node in this network.

3-1-213	
Title	**Nanopillar Formation from Two-shot Femtosecond Laser Ablation Ofpoly-methyl Methacrylate**
Authors	F. Baset, K. Popov, A. Villafranca, A.m. Alshehri, J.-m. Guay, L. Ramunno, V.r. Bhardwaj
Program	Physics
University	University of Ottawa
Journal	Applied Surface Science
Date of Publication	September 05, 2015

Abstract
We present experimental and numerical studies on the morphological evolution and dynamics of fem-tosecond laser ablation of bulk poly-methyl methacrylate (PMMA) irradiated with a pair of pulses. Weshow that a nanopillar-like structure is formed in the middle of the ablation crater for pulse energiesbelow single-shot ablation threshold. The nanopillar is ~400 nm long, lies adjacent to a nanopore, andprotrudes ~150 nm above the sample surface. As the pulse energy is increased gradually, the nanopillardisappears and the nanopore inside the ablation crater becomes larger. At higher pulse energies, a vol-canic eruption like structure appears in the middle of the crater whose size and height increases withenergy. 2D molecular dynamics simulations reveal that a nanojet and other features observed at higherpulse energies can be formed when the reflection of a shockwave, induced by the second laser pulse,causes density pinching in the middle of the interaction region that rapidly pushes out molten materialtowards the surface. The shockwave is reflected from the cold boundaries of a modified region created by the first laser pulse.

3-1-214	
Title	**Dielectric Resonator Antenna Arrays for Microwave Energy Harvesting and Far-field Wireless Power Transfer**
Authors	Ahmed Z. Ashoor and Omar M. Ramahi
Program	Electrical and Computer Engineering
University	University of Waterloo
Journal	Progress in Electromagnetics Research C
Date of Publication	September 10, 2015

Abstract
This paper presents dielectric resonator antennas (DRAs) for efficient energy harvesting or wireless power transfer in the microwaves regime. Asingle DRA and 1 × 3 array were used to build foundation profiles for DRAs as energy absorbers. The proposed structures were designed and fabricated to resonate around 5.5GHz. The study examined different factors that affect the absorbed power efficiency. The size of ground plane and coupling between dielectric resonator (DR) elements in an array were studied, highlighting their effects on the overall efficiency of the antenna structure for different incident polarizations. A5 × 5 array was built based on the studied factors and tested numerically and experimentally. Measurements showed that energy absorption efficiency as high as 67% can be achieved using an array of DR antennas.

3-1-215	
Title	**A Metal-nitride Nanowire Dual-photoelectrode Device for Unassisted Solar-to-hydrogen Conversion Under Parallel Illumination**
Authors	B. Alotaibi, S. Fan, S. Vanka, M. G. Kibria, and Z. Mi
Program	Electrical and Computer Engineering
University	Mcgill University
Journal	Nano Letters
Date of Publication	September 11, 2015

Abstract
A dual-photoelectrode device, consisting of a photoanode and photocathode with complementary energy bandgaps, has long been perceived as an ideal scheme for achieving high efficiency, unassisted solar-driven water splitting. Previously reported 2-photon tandem devices, however, generally exhibit an extremely low efficiency (<0.1%), which has been largely limited by the incompatibility between the two photoelectrode materials. Here we show that the use of metal-nitride nanowire photoelectrodes, together with the scheme of parallel illumination by splitting the solar spectrum spatially and spectrally, can break the efficiency bottleneck of conventional 2-photon tandem devices. We have first investigated a dual-photoelectrode device consisting of a GaN nanowire photoanode and an InGaN nanowire photocathode, which exhibited an open circuit potential of 1.3 V and nearly 20-fold enhancement in the power conversion efficiency under visible light illumination (400–600 nm), compared to the individual photoelectrodes in 1 mol/L HBr. We have further demonstrated a dual-photoelectrode device consisting of parallel-connected metal-nitride nanowire photoanodes and a Si/InGaN nanowire photocathode, which can perform unassisted, direct solar-to-hydrogen conversion. Apower conversion efficiency of 2% was measured under AM1.5G 1 sun illumination.

3-1-216	
Title	**Optimal Configuration of Remanufacturing Supply Network with Return Quality Decision**
Authors	Mohannad Radhi & Guoqing Zhang
Program	Industrial and Manufacturing System Engineering
University	University of Windsor
Journal	Taylor and Francis Group
Date of Publication	September 18, 2015

Abstract
This research studies the configuration problem of a remanufacturing production network together with the decision for return quality thresholds, in which, the manufacturer has multiple remanufacturing facilities to satisfy different market demands. Quality of returns is stochastic, while demand for remanufactured products is either stochastic or deterministic. The problem we considered is to determine facilities to operate, minimum quality to accept into each operating facility, return quantity and demand allocation simultaneously so that the system's profit is maximised. The problem is formulated as a mixed integer non-linear programming model. Through the use of a numerical example, the impact of quantity of returns, total spending, quality uncertainty, demand uncertainty and transportation cost on the remanufacturing system is analysed.

3-1-217	
Title	**Spherical Space Bessel-legendre-fourier Localized Modes Solver for Electromagnetic Waves**
Authors	Mohammed A. Alzahrani* and Robert C. Gauthier
Program	Electronics
University	Carleton University
Journal	Optical Society of America
Date of Publication	September 22, 2015

Abstract
Maxwell's vector wave equations are solved for dielectric configurations that match the symmetry of a spherical computational domain. The electric or magnetic field components and the inverse of the dielectric profile are series expansion defined using basis functions composed of the lowest order spherical Bessel function, polar angle single index dependant Legendre polynomials and azimuthal complex exponential (BLF). The series expressions and non-traditional form of the basis functions result in an eigenvalue matrix formulation of Maxwell's equations that are relatively compact and accurately solvable on a desktop PC. The BLF matrix returns the frequencies and field profiles for steady states modes. The key steps leading to the matrix populating expressions are provided. The validity of the numerical technique is confirmed by comparing the results of computations to those published using complementary techniques.

3-1-218	
Title	**Sensitivity of High-order-harmonic Generation to Aromaticity**
Authors	A. F. Alharbi, A. E. Boguslavskiy, N. Thiré, B. E. Schmidt, F. Légaré, T. Brabec, M. Spanner, and V. R. Bhardwaj
Program	Physics
University	University of Ottawa
Journal	Physical Review a
Date of Publication	October 07, 2015

Abstract
The influence of cyclic electron delocalization associated with aromaticity on the high-order-harmonic generation (HHG) process is investigated in organic molecules. We show that the aromatic molecules benzene (C6H6) and furan (C4H4O) produce high-order harmonics more efficiently than nonaromatic systems having the same ring structure. We also demonstrate that the relative strength of plateau harmonics is sensitive to the aromaticity in five-membered-ring molecules using furan, pyrrole (C4H4NH), and thiophene (C4H4S). Numerical time-dependent Schrödinger equation simulations of total orientation-averaged strong-field ionization yields show that the HHG from aromatic molecules comes predominantly from the two highest π molecular orbitals, which contribute to the aromatic character of the systems.

3-1-219	
Title	**Introducing Multi-level Options to the Graph Model of Conflict Resolution**
Authors	Yasser T. Matbouli Keith W. Hipel D. Marc Kilgour
Program	Department of Systems Design Engineering
University	University of Waterloo
Journal	Systems, Man, and Cybernetics, 2015 Ieee International Conference on
Date of Publication	October 09, 2015

Abstract
An expansion to the options structure is proposed to make the option-based graph model for conflict resolution more explicitly expressive of reality. The suggested improvement provides an opportunity to replace binary (on or off) options with multi-level options, wherein the decision maker (DM) selects one out of more than two distinct levels. The new approach simplifies the representation of conflicts and facilitates the understanding of their evolution by showing, in bargaining for example, outcomes that involve partial achievement of a DM's objectives. The pref- erences of decision makers can now be related to the possibility of tradeoffs between (or among) options.

3-1-220	
Title	**Contactless Haptic Feedback: State of the Art**
Authors	Faisal Arafsha Longyu Zhang Haiwei Dong Abdulmotaleb El Saddik
Program	Electrical and Computer Engineering
University	University of Ottawa
Journal	2015 Ieee International Symposium on Haptic, Audio and Visual Environments and Games (have)
Date of Publication	October 11, 2015

Abstract
This paper discusses some of the recent advances in contactless haptic feedback. We mainly discuss two research methods to produce haptic feedback in 3D space: Air-jet and ultrasound. We discuss and compare technical basics of each technology, and then give a literature review of some of the research done that is closely related to this field. This paper also surveys the stages of the design and implementation of airborne ultrasonic tactile displays (AUTD) by researchers in the University of Tokyo, as well as an application of this research done in the University of Bristol. Acomparison is presented showing the main advances in the Tokyo research and the technical tests and implementation differences. Adiscussion follows covering possible improvements and safety issues on the contactless haptic feedback research in general. We show comments and drawbacks of the current technology. Forfuture work in the field of mid-air haptic feedback, we propose a design method to build a "Touchable Avatar", which is a holographic display with contactless haptic feedback properties. Finally, a conclusion is provided including an outlook of the future applications in the field of contactless haptic feedback.

3-1-221	
Title	**Effect of Column Type on Polyolefin Fractionation by High-temperature Thermal Gradient Interaction Chromatography**
Authors	Abdulaal Z. Al-khazaal, Joao B. P. Soares
Program	Chemical Engineering
University	University of Waterloo
Journal	Macromolecular Symposia
Date of Publication	October 14, 2015

Abstract
High-temperature thermal gradient interaction chromatography (HT-TGIC) can be used to measure the chemical composition distribution (CCD) of semi-crystalline and amorphous polyolefins. HT-TGIC extends the range of polyolefin chemical compositions that can be measured today with crystallization based techniques. Hypercarb columns packed with porous graphitic carbon are commonly used as the stationary phase in HT-TGIC fractionation. We used a set of ethylene/1-octene copolymers having different comonomer fractions (up to 25% of 1-octene) and approximately the same molecular weight average to investigate how commercial Hypercarb columns with distinct lengths and particle sizes affected HT-TGIC fractionation. Binary copolymer blends were also analyzed to study how different blend compositions affected HT-TGIC peak positions and shapes.

3-1-222	
Title	**Resource Allocation for Two-hop Communication with Energy Harvesting Constraints**
Authors	Mohammed Baljon and Lian Zhao
Program	Computer and Electrical Engineering/ Communication and Networking
University	Ryerson University
Journal	Ieee International Conference on Wireless Communications and Signal Processing (wcsp) 2015
Date of Publication	October 16, 2015

Abstract
In this paper, we consider a two-hop communication system model, where a source is able to harvest energy and a relay is non-EH half-duplex node over a fading channel. We address the throughput maximization problem for the proposed system model with and without delay tolerant. Two effective algorithms are proposed to solve the joint power allocation and transmission time scheduling problems. The performance of the proposed schemes is evaluated via simulation and the results demonstrate that a network with delay tolerant ability provides better performance in term of throughput.

3-1-223	
Title	**Error Rate Performance of Digital Chirp Communication System Over Fading Channels**
Authors	Alsharef Mohammad Abdulbaset M. Hamed Raveendra K. Rao
Program	Ece
University	The University of Western Ontario
Journal	World Congress on Engineering and Computer Science 2015
Date of Publication	October 22, 2015

Abstract
In the paper, new and easy-to-compute closed form expressions for average symbol error probability of digital M-ary chirp communication system impaired by additive white Gaussian noise and fading are derived. Three fading environments, Rayleigh, Nakagami-m, and generalized-K, that represent most practical wireless channels are considered. The closed-form expressions derived are then used to illustrate the performances of 2-,4-, and 8-ary chirp systems as a function of average received signal-to-noise ratio (SNR), modulation and fading environment parameters. The proposed mathematical analysis can be easily used to design an efficient and reliable M-ary chirp communication system for application over fading channels.

3-1-224	
Title	**Performance Evaluation of Channel-aware Mac Protocol in Smart Grid**
Authors	Abdulfattah Noorwali, Raveendra Rao, and Abdallah Shami
Program	Electrical and Computer Engineering
University	The University of Western Ontario
Journal	Eoec 2015
Date of Publication	October 26, 2015

Abstract
An Intelligent Distributed Channel-Aware Medium Access Control (IDCA-MAC) protocol is proposed for Home Area Network (HAN), in general, and for Electrical Devices Networks (EDN), in particular, in smart grids. In an EDN, electrical devices generate critical packets, and these must be communicated to their respective mesh clients. The proposed IDCA-MAC protocol employs simultaneous transmission of data packets through a single collision domain. Also, the electrical devices and the mesh client are assumed to be equipped with Multiple Input Multiple Output (MIMO) technology. The proposed protocol is compatible with the existing IEEE 802.11 standard, and uses channel-aware Medium Access Control (MAAware) and the Zig-Zag decoding algorithm. Simulations are carried out using the NS-2 network simulator, and the performance of IDCA-MAC protocol is evaluated for various smart grid scenarios that are of practical significance. It is shown that the protocol is very effective and can be easily adopted in existing smart grids for improved throughput and performance.

3-1-225	
Title	**Ring-opening Polymerization of Rac-lactide Mediated by Tetrametallic Lithium and Sodium Diamino-bis(phenolate) Complexes**
Authors	Dalal Alhashmialameer, Nduka Ikpo, Julie Collins, Louise N. Dawe, Karen Hattenhauer and Francesca M. Kerton
Program	Phd/chemistry
University	Memorial University of Newfoundland
Journal	Dalton Transaction
Date of Publication	October 26, 2015

Abstract
Lithium and sodium compounds supported by tetradentate amino-bis(phenolato) ligands, [Li2(N2O2BuBuPip)] (1), [Na2(N2O2BuBuPip)] (2) (where [N2O2BuBuPip] = 2,2′-N,N′-homopiperazinyl-bis(2-methylene-4,6-tert-butylphenol), and [Li2(N2O2BuMePip)] (3), [Na2(N2O2 BuMePip)] (4) (where [N2O2BuMePip] = 2,2′-N,N′-homopiperazinyl-bis(2-methylene-4-methyl-6-tert-butylphenol) were synthesized and characterized by NMR spectroscopy and MALDI-TOF mass spectrometry. Variable temperature NMR experiments were performed to understand solution-phase dynamics. The solid-state structures of 1 and 4 were determined by X-ray diffraction and reveal tetrametallic species. PGSE NMR spectroscopic data suggests that 1 maintains its aggregated structure in CD2Cl2. The complexes exhibit good activity for controlled ring-opening polymerization of rac-lactide (LA) both solvent free and in solution to yield PLA with low dispersities. Stoichiometric reactions suggest that the formation of PLA may proceed by the typical coordination–insertion mechanism. Forexample, 7Li NMR experiments show growth of a new resonance when 1 is mixed with 1 equiv. LA and 1H NMR data suggests formation of a Li-alkoxide species upon reaction of 1 with BnOH.

3-1-226	
Title	**Strategic Analysis of Potential Conflicts in the Smart Grid Paradigm and Their Effects on the Planning Procedures of Smart Distribution Systems**
Authors	Sindi, Hatem ; Shaaban, Mostafa ; El-saadany, Ehab
Program	Electrical and Computer Engineering
University	University of Waterloo-non Medical
Journal	Electrical Power and Energy Conference (epec), 2015 Ieee
Date of Publication	October 28, 2015

Abstract
Smart grid technologies are prevalent, especially in systems that look almost the same today as they did decades ago (i.e., power systems). Planning a transformation requires a comprehensive understanding of future challenges. Although planning techniques are gaining enhancements with regard to optimality and accuracy, many challenges are yet to be discovered and analyzed. In this work, potential conflicting goals in the smart grid are identified, and their impact on the planning process is analyzed. Two types of conflicts can arise with conventional planning techniques. The first involves potential conflicts between distribution system operators (DSO) or the virtual power plant (TVPP) prosumers, and the second involves potential conflicts among prosumers in the operation of smart distribution systems. The research paths required to overcome these conflicts are described in this paper.

3-1-227	
Title	**Application of Wavelet-based Ensemble Tree Classifier for Non-intrusive Load Monitoring**
Authors	Sami Alshareef Walid G. Morsi
Program	Phd in Elect. & Computer Eng.
University	University of Ontario Institute of Technology (uoit)
Journal	Institute of Electrical and Electronics Engineers(ieee) - Electric Power and Energy Conference (epec)
Date of Publication	October 28, 2015

Abstract
Abstract—this paper presents an application of discrete wavelet and ensemble decision tree classifier to the non-intrusive load monitoring (NILM). The effect of different order of Daubechies wavelet filter on the classification accuracy is investigated. Also the paper studies the effect of increasing the number of decision trees contained in the ensemble on the performance of the classifier by measuring the training and testing classification accuracies. The results have shown that the use of third order Daubechies wavelet filter can lead to highest classification accuracy compared other order of Daubechies filters. The results also have shown that when increasing the number of decision trees in the ensemble classifier can have significant effect on improving the classification accuracy in NILM.

3-1-228	
Title	**A Survey on Cache Management Mechanisms for Predictable Real-time Embedded Systems**
Authors	Giovani Gracioli, Ahmed Alhammad, Renato Mancuso, Antônio Augusto Fröhlich, Rodolfo Pellizzoni
Program	Computer Engineering
University	University of Waterloo
Journal	Acm Computing Surveys
Date of Publication	November 01, 2015

Abstract
Multi-core processors are being extensively used by real-time systems, mainly because of their demand for increased computing power. However, multi-core processors have shared resources that affect the predictability of real-time systems, which is the key to correctly estimate the worst-case execution time of tasks. One of the main factors for unpredictability in a multi-core processor is the cache memory hierarchy. Recently, many research works have proposed different techniques to deal with caches in multi-core processors in the context of real-time systems. Nevertheless, a review and categorization of these techniques is still an open topic and would be very useful for the real-time community. In this article, we present a survey of cache management techniques for real-time embedded systems, from the first studies of the field in 1990 up to the latest research published in 2014. We categorize the main research works and provide a detailed comparison in terms of similarities and differences. We also identify key challenges and discuss future research directions.

3-1-229	
Title	**Comparing Svd and Sdae for Analysis of Islamist Forum Postings**
Authors	Nasser Alsadhan, D.b Skillicorn
Program	Computer Science
University	Queen's University
Journal	2015 Ieee 15th International Conference on Data Mining Workshops
Date of Publication	November 14, 2015

Abstract
We analyze postings in the Turn to Islam forum using techniques based on singular value decomposition (SVD) and the deep learning technique of stacked denoising autoencoders (SDAE). Models based on frequent words and jihadist language intensity are used, and the results compared. Our main conclusion is that SDAE approaches, while clearly discovering structure in document-word matrices, do not yet provide a natural interpretation strategy, limiting their practical usefulness. In contrast, SVD approaches provide interpretable models, primarily because of the coupling between document and word variation patterns.

3-1-230	
Title	**Allocation and Scheduling of Firefighting Units in Large Petrochemical Complexes**
Authors	Khaled Alutaibi, Abdullah Alsubaie, Jose Marti
Program	Electrical and Computer Engineering
University	University of British Columbia
Journal	Publisher Springer International Publishing
Date of Publication	November 21, 2015

Abstract
Fire incidents in large petrochemical complexes such as oil refineries cause heavy losses. Due to the strong interdependencies that exist among units in these industrial complexes, planning an efficient response is a challenging task for firefighters. The task is even more challenging during

multiple-fire incidents. This chapter describes a firefighting decision support system that helps conduct efficient responses to fire incidents. The decision support system optimizes the allocation of firefighting units in multiple-fire incidents with the objective of minimizing the economic impact. In particular, the system considers infrastructure interdependencies in estimating the damage associated with a given fire scenario, calculates the resulting economic losses and determines the optimal assignment of available firefighters. The decision support system can be used before an incident for training and planning, during an incident for decision support or after an incident for evaluating suppression strategies.

3-1-231	
Title	**Corrosion Protection of Stainless Steel Type 304 Using Graphene Composites**
Authors	Hesham Alhumade Hiba Nauman Erij Elkamel Aiping Yu Ali Elkamel
Program	Chemical Engineering
University	University of Waterloo
Journal	Matter: International Journal of Science and Technology
Date of Publication	November 30, 2015

Abstract
Polyetherimide-Graphene (PEI/G) composites were prepared using in situ polymerization approach and thermally cured under vacuum on Stainless Steel 304 (SS304) substrates in order to be evaluated as corrosion protection coatings. Several steps curing were performed to ensure complete imidization of PEI/G composites. Dispersion of the graphene fillers in the PEI matrices was captured using Scanning electron microscopy (SEM) and Transmission electron microscopy (TEM). The study examines PEI/G composites as corrosion protection coatings using electrochemical techniques such as Cyclic Voltammetry (CV) and Electrochemical Impedance Spectroscopy (EIS). Furthermore, the influences of the load of graphene on the electrochemical behaviour as well as the interface adhesion of the PEI/G composites are illustrated. Adhesion tests were conducted and evaluated according to ASTM D3359 standard and the long term performances of the prepared PEI/G coatings were confirmed by conducting the adhesion tests after 30 days of exposure to the corrosive medium. The study revealed that PEI may slow down the corrosion process on SS304 substrates and this protection property of PEI can be excelled by the incorporation of graphene in the PEI matrix.

3-1-232	
Title	**Evaluating the Science-technology Interaction in Nanotechnology: A Simulation-based Study**
Authors	Nuha Zamzami Andrea Schiffauerova
Program	Information Systems Engineering
University	Concordia University
Journal	The 2015 Winter Simulation Conference
Date of Publication	December 08, 2015

Abstract
Nanotechnology as an emerging, science-driven and rapidly evolving field with the multidisciplinary nature is an example of cases where science and technology are proximate and their interaction is essential. The scientific and technological networks can be formed separately in a social context and the linkages from the scientific to the technological network can be established through authors-inventors who act as gatekeepers and bridge the knowledge between the two communities. This work concerns individual researchers who are doing both, patenting and publishing, in the field of nanotechnology in Quebec Canada. An agent-based model was developed using real data regarding both nano-related articles and their authors, and nano-related patents and their inventors were collected from SCOPUS and USPTO databases respectively. While the repetitiveness in collaborative relationships has shown an enhancement in author-inventors performance, it negatively affects the knowledge flow efficiency. Author-inventors are fundamentals for increasing the network productivity and assure its interconnectivity.

3-1-233	
Title	**A 3-dimensional Folded Dipole Antenna Arrays for Far-field Electromagnetic Energy Transfer**
Authors	Thamer S. Almoneef, Sun, H., Omar M. Ramahi
Program	Electrical Engineering
University	University of Waterloo
Journal	Antennas & Wireless Propagation Letters, Ieee
Date of Publication	December 22, 2015

Abstract
We present the concept and design of vertically stacked electromagnetic energy harvesting system using folded dipole antennas. The proposed system comprised of stacked rectenna arrays or panels which are connected in various ways to channel the collected AC power to a single DC load. We show through experiments that by vertically stacking rectenna panels, the power collected per footprint is enhanced significantly. In fact, an improvement of up to 5 times is achieved in comparison to a single panel occupying the same two-dimensional footprint.

3-1-234	
Title	**A Small-scale Standalone Wind Energy Conversion System Featuring Scig, Csi and a Novel Storage Integration Scheme**
Authors	Zuher Alnasir and Mehrdad Kazerani
Program	Electrical & Computer Engineering
University	University of Waterloo
Journal	Journal of Renewable Energy (elsevier)
Date of Publication	December 22, 2015

Abstract
In this paper, a small-scale standalone wind energy conversion system composed of a squirrel-cage induction generator, a buck converter and a current-source inverter is proposed, as an attractive renewable energy solution for off-grid communities. Geared squirrel-cage induction generators are well-known for their robustness, simplicity, light weight and low cost. Current-source inverters, even though mainly used in medium-voltage, high power applications, and proposed for megawatt-level grid-connected wind energy conversion systems, offer potential benefits in small-scale off-grid wind energy conversion systems that are yet to be investigated and evaluated against those of commonly-used voltage-source inverters. In the proposed system, the generator's shaft speed is controlled by a buck converter to extract maximum available wind power in normal mode of operation, and the wind power is dumped when it is not possible to absorb maximum available power by the storage system and the load. Anovel scheme for integration of a battery energy storage system is proposed and an effective power management algorithm is employed to maintain the supply-demand power balance through direct control of dc-link current. Asystematic approach for the dc-link inductor design is presented. The feasibility of the proposed system and its performance under variable wind and load conditions are analyzed and demonstrated through simulation.

3-1-235	
Title	**Metal Ion Binding Properties of a Bimodal Triazolyl-functionalized Calix[4] arene on a Multi-array Microcantilever System. Synthesis, Fluorescence and Dft Computation Studies.**
Authors	Abdullah N. Alodhayb, Mona Braim, Gopikishore Valluru, Luc Y Beaulieu, Shofiur Rahman, Ahmed Khottary Oraby Paris Elias Georghiou
Program	Condensed Matter Physics
University	Memorial University of Newfoundland
Journal	Rsc Advances
Date of Publication	December 23, 2015

Abstract
A bimodal calix[4]arene functionalized with triazolyl-linked anththracenyl and 3-propylthio-acetate groups is described. This new calix[4]arene formed an effective SAM on Au in a multi-arrayed microcantilever instrument and was shown to be a sensitive receptor to low concentrations of Hg2+. Competitive studies confirmed the Hg2+ sensitivity. DFT computational studies were in agreement with the likely site of binding of the metals.

3-1-236	
Title	**Crt Based Somewhat Homomorphic Encryption Over the Integers**
Authors	Ali Alzahrani, Samer Moein, Nicholas Houghton, and Fayez Gebali
Program	Electrical and Computer Engineering
University	University of Victoria
Journal	Ieee Conference Publications
Date of Publication	December 24, 2015

Abstract
Over the last decade, the demand for privacy and data confidentiality in communication and storage processes have increased exponentially. Cryptography can be the solution for this demand. However, the critical issue occurs when there is a need for computing publicly on sensitive information or delegating computation to untrusted machines. This must be done in such a way that preserves the information privacy and accessibility. Forthis reason, we need an encryption algorithm that allows computation on information without revealing details about them. In 1978 Rivest, Adleman and Dertouzos [1] raised a crucial question: can we use a special privacy homomorphism to encrypt the data and do an unlimited computations on it while it remains encrypted without the necessity of decrypting it? Researchers made extensive efforts to achieve such encryption algorithm. In this paper, we introduce the implementation of the CRT-based somewhat homomorphic encryption over the integers scheme. The main goal is to provide a proof of concept of this new and promising encryption algorithm.

Health Science

3-2-237	
Title	**Length of Mri Signal May Predict Outcome in Advanced Cervical Spondylotic Myelopathy.**
Authors	Al-habib Af1, Alaqeel Am, Aldakkan As, Albadr Fb, Shaik Sa.
Program	Neurosurgery
University	University of Toronto
Journal	Neurosciences (riyadh)
Date of Publication	January 01, 2015

Abstract

OBJECTIVE: to study clinical and radiological factors that may correlate with independent walking (IW) following advanced cervical spondylotic myelopathy (CSM) surgery. METHODS: A retrospective case series including all advanced CSM patients (Nurick 4 and 5) who underwent surgery from 2003-2010 in the Division of Neurosurgery, Department of Surgery, College of Medicine, King Saud University and King Khalid University Hospital, Riyadh, Saudi Arabia. Only patients with 6 months or more follow-up were included. Aneuroradiologist who was blinded to the clinical data reviewed all MRI studies. RESULTS: Forty-three patients were included (83% males, mean follow-up 29 months). Abetter preoperative neurological status was a positive predictor of IW after surgery (85.7% Nurick 4 versus 36.4% Nurick 5, p=0.001). Independent walking was less likely in patients with the following MRI features: longer T2-weighted image (T2WI) signal changes (p=0.001), well-circumscribed T2WI signal changes (p=0.028), T1WI hypointensity (p=0.001), and narrow spinal canal diameter (p=0.048). Multivariate regression revealed that both an increased T2WI signal change length and T1WI hypointensity were independent predictors. The risk of dependent walking increased by 1.35 times as the T2WI signal intensity length increased by one mm, and by 14-times with T1WI hypointensity. CONCLUSION: Regaining IW after surgery in patients with advanced CSM was less likely for cases showing MRI features of longer T2WI signal changes and T1WI hypointensity. Better baseline walking, less defined T2WI signal change, and a wider spinal canal were good prognostic factors.

3-2-238	
Title	**Contralateral Eye Comparison of Descemet Membrane Endothelial Keratoplasty and Descemet Stripping Automated Endothelial Keratoplasty**
Authors	Yakov Goldich, Mahmood Showail, Noa Avni-zauberman, Mauricio Perez, Randall Ulate, Uri Elbaz, and David S. Rootman
Program	Ophthalmology
University	University of Toronto
Journal	American Journal of Ophthalmology
Date of Publication	January 05, 2015

Abstract

PURPOSE: to compare objective and subjective outcomes after Descemet membrane endothelial keratoplasty (DMEK) andDescemet stripping automated endothelial keratoplasty (DSAEK) in the fellow eye of the same patients. STUDY DESIGN: Single-center, retrospective case series. METHODS: Seventeen patients with bilateral Fuchs endothelial dystrophy who underwent DSAEK earlier in 1 eye, and later underwent DMEK in the contralateral eye, composed study population. Achart review was completed to obtain follow-up data for at least 6 months after each surgery. Outcome measures included best spectacle-corrected visual acuity (BSCVA) and endothelial cell density (ECD). Subjective questionnaires were used to assess patients' satisfaction. RESULTS: Preoperative BSCVA (logMAR) was similar in both groups, 0.66 ± 0.4 in DMEK and 0.59 ± 0.4 in DSAEK (P [.6). The DMEK group showed better BSCVA than the DSAEK group at the 6-month time point (0.25 ± 0.1 and 0.39 ± 0.1, forDMEKandDSAEK, respectively, P[.02). Preoperative ECD(cells/mm2) was similar in both groups (2647 ± 249 and 2768 ± 404, P [.3) in DMEK and DSAEK, respectively. There was statistically significant difference found in ECD at 6 months (2227 ± 565 for DMEK and 1780 ± 433 for DSAEK, P [.049). Subjective level of average satisfaction after DMEK was 6 and after DSAEK was 4.87 ± 1.19 (P [.002). CONCLUSIONS: DMEK provided better visual outcome and lower endothelial cell loss than DSAEK and a higher level of patient satisfaction when assessed at 6 months after surgery. Our results comparing the 2 procedures in the same patients support the benefits of DMEK, and suggest the need for long-term studies observing this new surgical procedure. (Am J Ophthalmol 2015;159:155–159.

3-2-239	
Title	**Does Balloon Kyphoplasty Deliver More Cement Safely Into Osteoporotic Vertebrae with Compression Fractures Compared with Vertebroplasty? A Study in Vertebral Analogues**
Authors	Fahad H. Abduljabbar1,2 Abdulaziz Al-jurayyan1,3 Saad Alqahtani1,4 Zeeshan M. Sardar1 Rajeet Singh Saluja1 Jean Ouellet1 Michael Weber1 Thomas Steffen5 Lorne Beckman5 Peter Jarzem1
Program	Orthopaedic Surgery
University	Mcgill University
Journal	Global Spine Journal
Date of Publication	January 06, 2015

Abstract

Sudy Design a biomechanical and radiographic study using vertebral analogues. Objectives Kyphoplasty and vertebroplasty are widely used techniques to alleviate pain in fractures secondary to osteoporosis. However, cement leakage toward vital structures like the spinal cord can be a major source of morbidity and even mortality.We define safe cement injection as the volume of the cement injected into a vertebra before the cement leakage occurs. Our objective is to compare the amount of cement that can be safely injected into an osteoporotic vertebra with simulated compression fracture using either vertebroplasty or balloon kyphoplasty techniques. Methods Forty artificial vertebral analogues made of polyurethane with osteoporotic cancellous matrix representing the L3 vertebrae were used for this study and were divided into four groups of 10 vertebrae each. The four groups tested were: lowviscosity cement injected using vertebroplasty, high-viscosity cement injected using vertebroplasty, low-viscosity cement injected using balloon kyphoplasty, and highviscosity cement injected using balloon kyphoplasty. The procedures were performed under fluoroscopic guidance. The injection was stopped when the cement started protruding from the created vascular channel in the osteoporotic vertebral fracture model. The main outcome measured was the volume of the cement injected safely into a vertebra before leakage through the posterior vascular channel. Results the highest volume of the cement injected was in the vertebroplasty group using high-viscosity cement, which was almost twice the injected volume in the other three groups. One-way analysis of variance comparing the four groups showed a statistically significant difference ($p < 0.005$).

3-2-240	
Title	**Long Term Correction of Sandhoff Disease Following Intravenous Delivery of Raav9 to Mouse Neonates**
Authors	Jagdeep S Walia, Naderah Altaleb, Alexander Bello, Christa Kruck, Matthew C Lafave, Gaurav K Varshney, Shawn M Burgess, Biswajit Chowdhury, David Hurlbut, Richard Hemming, Gary P Kobinger, and Barbara Triggs-raine
Program	Biochemistry and Medical Genetics
University	University of Manitoba
Journal	Molecular Therapy, Nature Publishing Group
Date of Publication	January 13, 2015

Abstract

GM2 gangliosidoses are severe neurodegenerative disorders resulting from a deficiency in β-hexosaminidase a activity and lacking effective therapies. Using a Sandhoff disease (SD) mouse model (Hexb−/−) of the GM2 gangliosidoses, we tested the potential of systemically delivered adeno-associated virus 9 (AAV9) expressing Hexb cDNA to correct the neurological phenotype. Neonatal or adult SD and normal mice were intravenously injected with AAV9-HexB or –LacZ and monitored for serum β-hexosaminidase activity, motor function, and survival. Brain GM2 ganglioside, β-hexosaminidase activity, and inflammation were assessed at experimental week 43, or an earlier humane end point. SD mice injected with AAV9-LacZ died by 17 weeks of age, whereas all neonatal AAV9-HexB–treated SD mice survived until 43 weeks ($P < 0.0001$) with only three exhibiting neurological dysfunction. SD mice treated as adults with AAV9-HexB died between 17 and 35 weeks. Neonatal SD-HexB–treated mice had a significant increase in brain β-hexosaminidase activity, and a reduction in GM2 ganglioside storage and neuroinflammation compared to adult SD-HexB– and SD-LacZ–treated groups. However, at 43 weeks, 8 of 10 neonatal-HexB injected control and SD mice exhibited liver or lung tumors. This study demonstrates the potential for long-term correction of SD and other GM2 gangliosidoses through early rAAV9 based systemic gene therapy.

3-2-241	
Title	**Naproxen Induces Type X Collagen Expression in Human Bone-marrow-derived Mesenchymal Stem Cells Through the Upregulation of 5-lipoxygenase**
Authors	Abdulrahman M. Alaseem, Md, Padma Madiraju, Msc, Sultan A. Aldebeyan, Md, Hussain Noorwali, Md, John Antoniou, Phd, Md, and Fackson Mwale, Phd
Program	Experimental Surgery
University	Mcgill University
Journal	Tissue Engineering Part a
Date of Publication	January 21, 2015

Abstract
Several studies have shown that type X collagen (COL X), a marker of late-stage chondrocyte hypertrophy, is expressed in mesenchymal stem cells (MSCs) from osteoarthritis (OA) patients. We recently found that Naproxen, but not other nonsteroidal anti-inflammatory drugs (NSAIDs) (Ibuprofen, Celebrex, Diclofenac), can induce type X collagen gene (COL10A1) expression in bone marrow-derived MSCs from healthy and OA donors. In this study we determined the effect of Naproxen on COL X protein expression and investigated the intracellular signaling pathways that mediate Naproxen-induced COL10A1 expression in normal and OA hMSCs. MSCs of OA patients were isolated from aspirates from the intramedullary canal of donors (50–80 years of age) undergoing hip replacement surgery for OA and were treated with or without Naproxen (100 mg/mL). Protein expression and phosphorylation were determined by immunoblotting using specific antibodies (COL X, p38 mitogen-activated protein kinase [p38], phosphorylated-p38, c Jun N-terminal kinase [JNK], phosphorylated-JNK, extracellular signal-regulated kinase [ERK], and phosphorylated-ERK). Real-time reverse transcription polymerase chain reaction (RT-PCR) was performed to determine the expression of COL10A1 and Runt-related transcription factor 2 gene (Runx2). Our results show that Naproxen significantly stimulated COL X protein expression after 72 h of exposure both in normal and OA hMSCs. The basal phosphorylation of mitogen-activated protein kinases (MAPKs) (ERK, JNK, and p38) in OA hMSCs was significantly higher than in normal. Naproxen significantly increased the MAPK phosphorylation in normal and OA hMSCs. NSAID cellular effects include cyclooxygenase, 5-lipoxygenase, and p38 MAPK signaling pathways. To investigate the involvement of these pathways in the Naproxen-induced COL10A1 expression, we incubated normal and OA hMSCs with Naproxen with and without inhibitors of ERK (U0126), JNK (BI-78D3), p38 (SB203580), and 5-lipoxygenase (MK-886). Our results showed that increased basal COL10A1 expression in OA hMSCs was significantly suppressed in the presence of JNK and p38 inhibitors, whereas Naproxen-induced COL10A1 expression was suppressed by 5-lipoxygenase inhibitor. This study shows that Naproxen induces COL X both at transcriptional and translational levels in normal and OA hMSCs. Elevated basal COL10A1 expression in OA hMSCs is probably through the activation of MAPK pathway and Naproxen induced COL10A1 expression is through the increased 5-lipoxygenase signaling.

3-2-242	
Title	**Effect of a High-fat Diet on the Hepatic Expression of Nuclear Receptors and Their Target Genes: Relevance to Drug Disposition**
Authors	Ragia H. Ghoneim1, Emilienne T. Ngo Sock2, Jean-marc Lavoie2 and Micheline Piquette-miller1*
Program	Pharmacy
University	University of Toronto
Journal	The British Journal of Nutrition
Date of Publication	January 23, 2015

Abstract
More than 1·4 billion individuals are overweight or obese worldwide. While complications often require therapeutic intervention, data regarding the impact of obesity on drug disposition are scarce. As the influence of diet-induced obesity on drug transport and metabolic pathways is currently unclear, the objective of the present study was to investigate the effect of high fat feeding for 13 weeks in female Sprague–Dawley rats on the hepatic expression of the nuclear receptors pregnane X receptor (PXR), constitutive androstane receptor (CAR), liver X receptor (LXR) and farnesoid X receptor (FXR) and several of their target genes. We hypothesised that high fat feeding would alter the gene expression of major hepatic transporters through a dysregulation of the expression of the nuclear receptors. The results demonstrated that, along with a significant increase in body fat and weight, a high-fat diet (HFD) induced a significant 2-fold increase in the expression of PXR as well as a 2-, 5- and 2·5-fold increase in the hepatic expression of the PXR target genes Abcc2, Abcb1a and Cyp3a2, respectively (P,0·05). The expression levels of FXR were significantly increased in rats fed a HFD in addition to the increase in the expression levels of FXR target genes Abcb11 and Abcb4. The expression levels of both LXRa and LXRb were slightly but significantly increased in rats fed a HFD, and the expression levels of their target genes Abca1 and Abcg5, but not Abcg8, were significantly increased. The expression of the nuclear receptor CAR was not significantly altered between the groups. This suggests that a HFD may induce changes in the hepatobiliary transport and metabolism of endogenous and exogenous compounds.

3-2-243	
Title	**Human Fetal Ventricular Cardiomyocyte, Rl-14 Cell Line, is a Promising Model to Study Drug Metabolizing Enzymes and Their Associated Arachidonic Acid Metabolites**
Authors	Zaid H. Maayah, Osama H. Elshenawy, Hassan N. Althurwi, Ghada Abdelhamid, Ayman O.s. El-kadi
Program	Pharmacy
University	University of Alberta
Journal	Journal of Pharmacological and Toxicological Methods
Date of Publication	January 27, 2015

Abstract
Introduction: RL-14 cells, human fetal ventricular cardiomyocytes, are a commercially available cell line that has been established from non-proliferating primary cultures derived from human fetal heart tissue. However, the expression of different drug metabolizing enzymes (DMEs) in RL-14 cells has not been elucidated yet. Therefore, the main objectives of the current work were to investigate the capacity of RL-14 cells to express different cytochrome P450 (CYP) isoenzymes and correlate this expression to primary cardiomyocytes. Methods: The expression of CYP isoenzymes was determined at mRNA, protein and catalytic activity levels using real time-PCR, Western blot analysis and liquid chromatography-electron spray ionization-mass spectrometry (LC-ESI-MS), respectively. Results: Our results showed that RL-14 cells constitutively express CYP ω-hydroxylases, CYP1A, 1B, 4A and 4F; CYP epoxygenases, CYP2B, 2C and 2J; in addition to soluble epoxide hydrolayse (EPHX2) at mRNA and protein levels. The basal expression of CYP ω-hydroxylases, epoxygenases and EPHX2 was supported by the ability of RL-14 cells to convert arachidonic acid to its biologically active metabolites, 20-hydroxyeicosatetraenoic acids (20-HETEs), 14,15-epoxyeicosatrienoic acids (14,15-EET), 11,12-EET, 8,9-EET, 5,6-EET, 14,15- dihydroxyeicosatrienoic acid (14,15-DHET), 11,12-DHET, 8,9-DHETand5,6-DHET. Furthermore, RL-14 cells express CYP epoxygenases and ω-hydroxylase at comparable levels to those expressed in adult and fetal human primary cardiomyocytes cells implying the importance of RL-14 cells as amodel for studying DMEs in vitro. Lastly, different CYP families were induced in RL-14 cells using 2,3,7,8-tetrachlorodibenzo-p-dioxin and fenofibrate at mRNA and protein levels. Discussion: The current study provides the first evidence that RL-14 cells express CYP isoenzymes at comparable levels to those expressed in the primary cells and thus offers a unique in vitro model to study DMEs in the heart.

3-2-244	
Title	**Self-screening for Malnutrition Risk in Outpatient Inflammatory Bowel Disease Patients Using He Malnutrition Universal Screening Tool (must)**
Authors	Amindeep Sandhu, Md1*; Mahmoud Mosli, Md1,2,3*; Brian Yan, Md1*; Thomas Wu, Bsc1; Jamie Gregor, Md1; Nilesh Chande, Md1; Terry Ponich, Md1; Melanie Beaton, Md1; and Adam Rahman, Md1,4,5
Program	Medicine
University	The University of Western Ontario
Journal	Journal of Parenteral and Enteral Nutrition
Date of Publication	January 28, 2015

Abstract
Background and Aims: Malnutrition is common in patients with inflammatory bowel disease (IBD) and is associated with poor outcomes. Our aim is to determine if patient self-administered malnutrition screening using the malnutrition universal screening tool (MUST) is reliable by comparing patient scores with those derived from the healthcare practitioner (HCP), the gold standard. Methods: We conducted a prospective validation study at a tertiary Canadian academic center that included 154 adult outpatients with IBD. All patients with IBD completed a self-administered nutrition screening assessment using the MUST score followed by an independent MUST assessment performed by HCPs. The main outcome measure was chance-corrected agreement (κ) of malnutrition risk categorization. Results: For patient-administered MUST, the chance-corrected agreement κ (95% confidence interval [CI]) was 0.83 (0.74–0.92) when comparing low-risk and combined medium- and high-risk patients with HCP screening. Weighted κ analysis comparing all 3 risks groups yielded a κ (95% CI) of 0.85 (0.77–0.93) between patient and HCP screening. All patients were able to screen themselves. Overall, 96% of patients reported the MUST questionnaire as either very easy or easy to understand and to complete. Conclusion: Self-administered nutrition screening in outpatients with IBD is valid using the MUST screening tool and is easy to use. If adopted, this tool will increase utilization of malnutrition screening in hectic outpatient clinic settings and will help HCPs determine which patients require additional nutrition support.

3-2-245	
Title	**Prevalence and Associated Factors of Low Back Pain Among Clinicians of a Major Referral Hospital**
Authors	Alsiddiky Abdulmonem, Md, Algarni Nizar, Mbbs, Alluhaidan Abdullaha, Mbbs
Program	Orthopeadic
University	Mcgill University
Journal	Med J Malaysia
Date of Publication	February 01, 2015

Abstract
Objectives: Low back pain (LBP) is one of the most common health problems faced by health care professionals due to their occupational lifestyle. This study aimed to quantify the prevalence of LBP among clinicians, and to identify its associated factors. Methods: A cross sectional study was carried out in King Khalid University Hospital (KKUH) among 460 clinicians from different specialties. Avalidated questionnaire of 21 items was used to collect data. Chi-square test and odds ratios were used to observe and measure the association between categorical variables. Binary logistic regression by Wald method was used to identify independent factors associated with LBP (yes/no). Results: The prevalence of LBP was found to be 59.4% (244) with 38% of them reported as severe. The distribution of prevalence among consultants, registrars and residents was 110 (45.1%), 91 (37.3%) and 43 (17.6%) respectively. Out of 114 (46.7%) surgeons who suffer from LBP we found, orthopaedic surgeons had 10.2% prevalence of LBP. Male clinician (odds ratio: 1.7; 95% Confidence Interval (CI): 1.1-2.8), consultant (4.1; 95% CI: 2.1-8.3), registrar (2.2; 95% CI: 1.2-4.2), more than 10 hours/week near bedside (1.8; 95% CI: 1.1-3.0), bending backwards at work (8.3; 95% CI: 5.1-13.4) and pulling objects during work (3.1; 95% CI: 1.7-5.6) were found to be independent statistically significant associated factors of LBP. Conclusion: The high prevalence of LBP among clinicians and its associated factors indicates that clinicians should maintain good posture and avoid sudden movements during working hours in hospital to reduce this occupational health problem.

3-2-246	
Title	**Bonding Metals to Poly(methyl Methacrylate) Using Aryldiazonium Salts**
Authors	Omar Alageel, Mohamed-nur Abdallaha, Zhong Yuan Luoc, Jaime Del-rio-highsmithd, Marta Cerrutic,*, Faleh Tamimia
Program	Craniofacial Health Science
University	Mcgill University-dentistry
Journal	The Dental Materials Journal, Volume 31, Issue 2, Pages 105-114, Feb. 2015
Date of Publication	February 01, 2015

Abstract
Objectives. Many dental devices, such as partial dentures, combine acrylic and metallic parts that are bonded together. These devices often present catastrophic mechanical failures due to weak bonding between their acrylic and metallic components. The bonding between alloys and polymers (e.g. poly(methyl methacrylate), PMMA) usually is just a mechanical interlock, since they do not chemically bond spontaneously. The aim of this study was to develop a new method to make a strong chemical bond between alloys and polymers for dental prostheses based on diazonium chemistry. Methods. The method was based on two steps. In the first step (primer), aryldiazonium salts were grafted onto the metallic surfaces. The second step (adhesive) was optimized to achieve covalent binding between the grafted layer and PMMA. The chemical composition of the treated surfaces was analyzed with X-ray photoelectron spectroscopy (XPS), and the tensile or shear bonding strength between metals and poly(methyl methacrylate) was measured. Results. XPS and contact angle measurements confirmed the presence of a polymer coating on the treated metallic surfaces. Mechanical tests showed a significant increase in bond strength between PMMA and treated titanium or stainless steel wire by 5.2 and 2.5 folds, respectively, compared to the untreated control group ($p < 0.05$). Significance. Diazonium chemistry is an effective technique for achieving a strong chemical bond between alloys and PMMA, which can help improve the mechanical properties of dental devices.

3-2-247	
Title	**Gait and Lower Extremity Kinematic Analysis As an Outcome Measure After Femoroacetabular Impingement Surgery**
Authors	Hussain Alradwan, M.d., F.r.c.s.c., Moin Khan, M.d., Maggie Hamel-smith Grassby, Asheesh Bedi, M.d., Marc J. Philippon, M.d., and Olufemi R. Ayeni, M.d., M.sc., F.r.c.s.c.
Program	Orthopedics
University	Mcmaster University
Journal	Arthroscopy: The Journal of Arthroscopic and Related Surgery
Date of Publication	February 02, 2015

Abstract
Purpose: Lower extremity and pelvis kinematics have been shown to be abnormal in patients with femoroacetabular impingement (FAI). We conducted this systematic review to evaluate the current status of gait and lower extremity kinematics as an outcome measure in patients treated surgically for FAI. Methods: We searched the Embase, Medline, and PubMed databases for all reports of studies published through February 22, 2014, evaluating kinematic assessment of patients undergoing FAI surgery. Areview of eligible studies was conducted, and the references were searched. Methodologic quality was evaluated for all studies that met the inclusion and exclusion criteria, and data were extracted regarding methods of kinematic assessment and clinical and kinematic outcomes. Results: We identified 633 reports, of which 5 met our eligibility criteria. These studies included a total of 58 patients with symptomatic FAI (age range, 18 to 50 years). All included studies were of moderate methodologic quality. Kinematic assessments were completed preoperatively and postoperatively with variable methodology and follow-up (range, 3 to 32 months). Most studies used high-speed motioncapture camera systems with reflective tracking markers to evaluate in vivo kinematic function. Of the 5 included studies, 3 documented kinematic improvements postoperatively particularly regarding sagittal hip range of motion primarily with flexion (weighted mean, 35.1 5.4 preoperatively and 37.8 6.3 postoperatively). Conclusions: Gait and lower extremity kinematics can be used as an outcome measure after FAI surgery. However, the lack of uniformity in the methodology used and underpowered case series limit the ability to identify clear and predictable differences after corrective surgery for FAI. Though statistically significant, functional outcome improvements were often conflicting and not necessarily of clinical significance. Auniform outcome measure and technique to reliably assess in vivo hip motion are required for future comparative studies. Level of Evidence: Level IV, systematic review of Level IV studies

3-2-248	
Title	**Proficiency Performance Benchmarks for Removal of Simulated Brain Tumors Using a Virtual Reality Simulator Neurotouch**
Authors	Gmaan Alzhrani,mbbs,ma,md,*,† Fahad Alotaibi,mbbs,md,*,† Hamed Azarnoush,phd,*,‡ Alexander Winkler-schwartz,md,*abdulrahmansabbagh,mbbs,md,*,† Khalid Bajunaid,mbbs,md,*,§ Susanne P.lajoie,phd,‖ and Rolandof. delmaestro,md,phd*
Program	Neurosurgery
University	Mcgill University
Journal	Journal of Surgical Education
Date of Publication	February 03, 2015

Abstract
noush PhD, Alexander Winkler-Schwartz MD, Abdulrahman Sabbagh MD, Khalid Bajunaid MD, Susanne P. Lajoie PhD and Rolando F. Del Maestro PhD Journal of Surgical Education, 2015-07-01, Volume 72, Issue 4, Pages 685-696, Copyright © 2015 Association of Program Directors in Surgery Objective Assessment of neurosurgical technical skills involved in the resection of cerebral tumors in operative environments is complex. Educators emphasize the need to develop and use objective and meaningful assessment tools that are reliable and valid for assessing trainees' progress in acquiring surgical skills. The purpose of this study was to develop proficiency performance benchmarks for a newly proposed set of objective measures (metrics) of neurosurgical technical skills performance during simulated brain tumor resection using a new virtual reality simulator (NeuroTouch). Design Each participant performed the resection of 18 simulated brain tumors of different complexity using the NeuroTouch platform. Surgical performance was computed using Tier 1 and Tier 2 metrics derived from NeuroTouch simulator data consisting of (1) safety metrics, including (a) volume of surrounding simulated normal brain tissue removed, (b) sum of forces utilized, and (c) maximum force applied during tumor resection; (2) quality of operation metric, which involved the percentage of tumor removed; and (3) efficiency metrics, including (a) instrument total tip path lengths and (b) frequency of pedal activation. Setting All studies were conducted in the Neurosurgical Simulation Research Centre, Montreal Neurological Institute and Hospital, McGill University, Montreal, Canada. Participants a total of 33 participants were recruited, including 17 experts (board-certified neurosurgeons) and 16 novices (7 senior and 9 junior neurosurgery residents). Results the results demonstrated that "expert" neurosurgeons resected less surrounding simulated normal brain tissue and less tumor tissue than residents. These data are consistent with the concept that "experts" focused more on safety of the surgical

procedure compared with novices. By analyzing experts' neurosurgical technical skills performance on these different metrics, we were able to establish benchmarks for goal proficiency performance training of neurosurgery residents. Conclusion This study furthers our understanding of expert neurosurgical performance during the resection of simulated virtual reality tumors and provides neurosurgical trainees with predefined proficiency performance benchmarks designed to maximize the learning of specific surgical technical skills.

3-2-249	
Title	**Hemobilia Post Laparoscopic Cholecystectomy**
Authors	Thamer A. Bin Traiki, Ahmad A. Madkhali, and Mazen M. Hassanain
Program	Hepatopancreato-biliary and Transplant Research
University	Mcgill University
Journal	Journal of Surgical Case Reports February 2015
Date of Publication	February 09, 2015

Abstract

Hepatic artery pseudoaneurysm is a rare complication of laparoscopic cholecystectomy. Ahigh index of suspicion and early identification and therapy are important points needed to prevent rupture. We report a case of complex biliary and vascular injuries 4 weeks after a laparoscopic cholecystectomy. The patient had recurrent bleeding from a hepatic artery pseudoaneurysm that has been treated successfully with angiographic stenting and embolization.

3-2-250	
Title	**Surgical Treatment for Hepatocellular Carcinoma**
Authors	Ahmad Madkhali, Zahir T Fadel, Murad M Aljiffry, Mazen M Hassanain
Program	Plastic Surgery
University	Dalhousie University
Journal	Saudi Journal of Gastroenterology
Date of Publication	February 11, 2015

Abstract

Hepatocellular carcinoma (HCC) is an epithelial tumor derived from hepatocytes; it accounts for 80% of all primary liver cancers and ranks globally as the fourth leading cause of cancer-related deaths. HCC treatment is a multidisciplinary and a multimodal task, with surgery in the form of liver resection and liver transplantation (LT) representing the only potentially curative modality. However, there are variable opinions and discussions about applying these surgical options and using other supporting treatments. This article is a narrative review that includes articles published from 1984 to 2013 located by searching scientific databases such as PubMed, SCOPUS, and Elsevier, with the main keyword of hepatocellular carcinoma in addition to other keywords such as liver transplantation, liver resection, transarterial chemoembolization, portal vein embolization, bridging therapy, and downstaging. In this review, we focus mainly on the surgical treatment options offered for HCC, in order to illustrate the current relevant data available in the literature to help in applying these surgical options and to use other supporting treatment modalities when appropriate.

3-2-251	
Title	**Proficiency Performance Benchmarksfor Removal Ofsimulated Braintumors Using a Virtual Reality Simulatorneurotouch**
Authors	Gmaan Alzhrani,mbbs,ma,md,*,† Fahad Alotaibi,mbbs,md,*,† Hamed Azarnoush,phd,*,‡ Alexander Winkler-schwartz,md,*abdulrahmansabbagh,mbbs,md,*,† Khalid Bajunaid,mbbs,md,*,§ Susanne P.lajoie,phd,‖And Rolandof. delmaestro,md,phd*
Program	Neurosurgery
University	Mcgill University
Journal	Surgical Education
Date of Publication	February 13, 2015

Abstract

OBJECTIVE: Assessment of neurosurgical technical skills involved in the resection of cerebral tumors in operative environments is complex. Educators emphasize the need to develop and use objective and meaningful assessment tools that are reliable and valid for assessing trainees' progress in acquiring surgical skills. the purpose of this study was to develop proficiency performance benchmarks for a newly proposed set of objective measures (metrics) of neurosurgical technical skills performance during simulated brain tumor resection using a new virtual reality simulator (NeuroTouch). DESIGN: Each participant performed the resection of 18 simulated brain tumors of different complexity using the NeuroTouch platform. Surgical performance was computed using Tier 1 and Tier 2 metrics derived from NeuroTouch simulator data consisting of (1) safety metrics, including (a) volume of surrounding simulated normal brain tissue removed, (b) sum of forces utilized, and (c) maximum force applied during tumor resection; (2) quality of operation metric, which involved the percentage of tumor removed; and (3) efficiency metrics, including (a) instrument total tip path lengths and (b) frequency of pedal activation. SETTING: All studies were conducted in the Neurosurgical Simulation Research Centre, Montreal Neurological Institute and Hospital, McGill University, Montreal, Canada. PARTICIPANTS: A total of 33 participants were recruited, including 17 experts (board-certified neurosurgeons) and 16 novices (7 senior and 9 junior neurosurgery residents). RESULTS: The results demonstrated that "expert" neurosurgeons resected less surrounding simulated normal brain tissue and less tumor tissue than residents. These data are consistent with the concept that "experts" focused more on safety of the surgical procedure compared with novices. By analyzing experts' neurosurgical technical skills performance on these different metrics, we were able to establish benchmarks for goal proficiency performance training of neurosurgery residents. CONCLUSION: This study furthers our understanding of expert neurosurgical performance during the resection of simulated virtual reality tumors and provides neurosurgical trainees with predefined proficiency performance benchmarks designed to maximize the learning of specific surgical technical skills. (J Surg]:]]]-]]]. JC 2015 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.) KEY WORDS: proficiency performance benchmarks, performance metrics, virtual reality neurosurgical simulation, brain tumor resection, neurosurgical oncology, NeuroTouch COMPETENCIES: Neurosurgical Resident Training and Assessment, Patient Care, Practice-Based learning and Improvement.

3-2-252	
Title	**Surgical Treatment for Hepatocellular Carcinoma**
Authors	Ahmed Madkhali, Zahir Fadel, Murad Aljiffry, Mazem Hassanain
Program	Hepatopancreato-biliary and Transplant Research
University	Mcgill University
Journal	The Saudi Journal of Gastroenterology. Volume 21, Issue 1. January 2015
Date of Publication	February 16, 2015

Abstract

Hepatocellular carcinoma (HCC) is an epithelial tumor derived from hepatocytes; it accounts for 80% of all primary liver cancers and ranks globally as the fourth leading cause of cancer-related deaths. HCC treatment is a multidisciplinary and a multimodal task, with surgery in the form of liver resection and liver transplantation (LT) representing the only potentially curative modality. However, there are variable opinions and discussions about applying these surgical options and using other supporting treatments. This article is a narrative review that includes articles published from 1984 to 2013 located by searching scientific databases such as PubMed, SCOPUS, and Elsevier, with the main keyword of hepatocellular carcinoma in addition to other keywords such as liver transplantation, liver resection, transarterial chemoembolization, portal vein embolization, bridging therapy, and downstaging. In this review, we focus mainly on the surgical treatment options offered for HCC, in order to illustrate the current relevant data available in the literature to help in applying these surgical options and to use other supporting treatment modalities when appropriate.

3-2-253	
Title	**Assessment of Spasticity After Stroke Using Clinical Measures: A Systematic Review**
Authors	Saleh M. Aloraini (1,2), Johan Ga¨verth (1,3), Ellen Yeung (1), and Marilyn Mackay-lyons (1) (1) School of Physiotherapy, Dalhousie University, Halifax, Nova Scotia, Canada (2) College of Applied Medical Sciences, Qassim University, Saudi Arabia (3) Department of Women's and Children's Health, Karolinska Institutet, Stockholm, Sweden
Program	Applied Health Sciences
University	University of Manitoba
Journal	Disability and Rehabilitation Journal - Informa Healthcare Publisher - Taylor & Francis Group
Date of Publication	February 18, 2015

Abstract

Purpose: to identify and appraise the literature on clinical measures of spasticity that has been investigated in people after stroke. Methods: The literature search involved four databases (PubMed, CINAHL, Embase and the Cochrane Library) up to February 2014. The selected studies included those that aimed to measure spasticity using a clinical assessment tool among adult patients post-stroke. Two independent raters reviewed the included articles using a critical appraisal scale and a structured data extraction form. Results: A total of 40 studies examining 15 spasticity assessment tools in patients post-stroke were reviewed. None of the reviewed measurement tools demonstrated satisfactory results for all psychometric properties evaluated, and the majority lacked evidence concerning validity and absolute reliability. Conclusion:This systematic review found limited evidence to support the use of most of clinical measures of spasticity for people post-stroke. Future research examining the application and psychometric properties of these measures is warranted.

3-2-254	
Title	**Drug-induced Immune Thrombocytopenia Associated with Use of Tyrosine Kinase Inhibitor Imatinib**
Authors	Mansoor Radwi, Christine Cserti-gazdewich
Program	Hematology
University	Mcmaster University
Journal	Journal of Taibah University Medical Sciences
Date of Publication	February 25, 2015

Abstract
Since their introduction in the late 1990s, tyrosine kinase Inhibitors (TKIs) have been widely used for the treatment of various cancers. The side effects of the TKI imatinib are well-documented in the literature and include fatigue, skin rash, myelosuppression, and derangement of liver enzymes. Rare side effects have been observed in the postmarketing surveillance and include cardiac tamponade and Steven Johnson Syndrome. In the present report, we present a rare case of imatinib-associated immune thrombocytopenia leading to severe intra-abdominal bleeding. Abrief account of similar cases of TKI drug-induced immune thrombocytopenia (DIT) is also described.

3-2-255	
Title	**Does Balloon Kyphoplasty Deliver More Cement Safely Into Osteoporotic Vertebrae with Compression Fractures Compared with Vertebroplasty? A Study in Vertebral Analogues**
Authors	Fahad H. Abduljabbar1,2 Abdulaziz Al-jurayyan1,3 Saad Alqahtani1,4 Zeeshan M. Sardar1 Rajeet Singh Saluja1 Jean Ouellet1 Michael Weber1 Thomas Steffen5 Lorne Beckman5 Peter Jarzem1
Program	Orthopedics
University	Mcgill University
Journal	Global Spine Journal
Date of Publication	February 26, 2015

Abstract
Study Design a biomechanical and radiographic study using vertebral analogues. Objectives Kyphoplasty and vertebroplasty are widely used techniques to alleviate pain in fractures secondary to osteoporosis. However, cement leakage toward vital structures like the spinal cord can be a major source of morbidity and even mortality.We define safe cement injection as the volume of the cement injected into a vertebra before the cement leakage occurs. Our objective is to compare the amount of cement that can be safely injected into an osteoporotic vertebra with simulated compression fracture using either vertebroplasty or balloon kyphoplasty techniques. Methods Forty artificial vertebral analogues made of polyurethane with osteoporotic cancellous matrix representing the L3 vertebrae were used for this study and were divided into four groups of 10 vertebrae each. The four groups tested were: lowviscosity cement injected using vertebroplasty, high-viscosity cement injected using vertebroplasty, low-viscosity cement injected using balloon kyphoplasty, and highviscosity cement injected using balloon kyphoplasty. The procedures were performed under fluoroscopic guidance. The injection was stopped when the cement started protruding from the created vascular channel in the osteoporotic vertebral fracture model. The main outcome measured was the volume of the cement injected safely into a vertebra before leakage through the posterior vascular channel. Results the highest volume of the cement injected was in the vertebroplasty group using high-viscosity cement, which was almost twice the injected volume in the other three groups. One-way analysis of variance comparing the four groups showed a statistically significant difference ($p < 0.005$).

3-2-256	
Title	**Does Balloon Kyphoplasty Deliver More Cement Safely Into Osteoporotic Vertebrae with Compression Fractures Compared with Vertebroplasty? A Study in Vertebral Analogues**
Authors	Fahad H. Abduljabbar, Abdulaziz Al-jurayyan, Saad Alqahtani, Zeeshan M. Sardar, Rajeet Singh Saluja, Jean Ouellet, Michael Weber, Thomas Steffen, Lorne Beckman, Peter Jarzem
Program	Orthopedic Surgery
University	Mcgill University
Journal	© Georg Thieme Verlag Kg Stuttgart · New York
Date of Publication	February 26, 2015

Abstract
Study Design a biomechanical and radiographic study using vertebral analogues. Objectives Kyphoplasty and vertebroplasty are widely used techniques to alleviate pain in fractures secondary to osteoporosis. However, cement leakage toward vital structures like the spinal cord can be a major source of morbidity and even mortality. We define safe cement injection as the volume of the cement injected into a vertebra before the cement leakage occurs. Our objective is to compare the amount of cement that can be safely injected into an osteoporotic vertebra with simulated compression fracture using either vertebroplasty or balloon kyphoplasty techniques. Methods Forty artificial vertebral analogues made of polyurethane with osteoporotic cancellous matrix representing the L3 vertebrae were used for this study and were divided into four groups of 10 vertebrae each. The four groups tested were: low- viscosity cement injected using vertebroplasty, high-viscosity cement injected using vertebroplasty, low-viscosity cement injected using balloon kyphoplasty, and high- viscosity cement injected using balloon kyphoplasty. The procedures were performed under fluoroscopic guidance. The injection was stopped when the cement started protruding from the created vascular channel in the osteoporotic vertebral fracture model. The main outcome measured was the volume of the cement injected safely into a vertebra before leakage through the posterior vascular channel. Results the highest volume of the cement injected was in the vertebroplasty group using high-viscosity cement, which was almost twice the injected volume in the other three groups. One-way analysis of variance comparing the four groups showed a statistically significant difference ($p < 0.005$).

3-2-257	
Title	**Association of Dose Escalation of Octreotide Long-acting Release on Clinical Symptoms and Tumor Markers and Response Among Patients with Neuroendocrine Tumors**
Authors	Khalid Al-efraij, Mohammed A. Aljama and Hagen Fritz Kennecke
Program	Respirology
University	University of British Columbia
Journal	Cancer Medicine
Date of Publication	February 26, 2015

Abstract
Patients with nonresectable metastatic neuroendocrine tumors (NETs) experience symptoms of hormone hypersecretion including diarrhea, flushing, and bronchoconstriction, which can interfere with quality of life [Anthony and Vinik (2011) Pancreas, 40:987]. Treatment with a long-acting release formulation of octreotide, a somatostatin analog, can help to alleviate these symptoms. Although high doses of octreotide are often required for adequate symptom control, the relationship between octreotide dose escalation and symptom control in the NET context is not well quantified in the literature. Aretrospective chart review was conducted of nonresectable metastatic NET patients who received a dose greater than 30 mg intramuscular octreotide long-acting formulation (O-LAR) at any time between January 2005 and December 2011 at the British Columbia Cancer Agency (BCCA). The association between dose escalation of O-LAR, chromogranin a (CGA), 24-h urine 5-hydoxyindoacetate (5-HIAA), symptom control, and radiological progression was explored. Dose escalation of O-LAR was associated with improved symptom control in NET patients who were refractory to the standard dose levels. Reduction of serum CGA & 5-HIAA levels by at least 10% was observed in 31% and 23% respectively. Retrospective review of imaging did not document any reductions in tumor volume. Higher doses of O-LAR are associated with improved symptom control in NET patients. The variability in tumor marker levels in response to O-LAR dose escalation may indicate that tumor marker levels may not be an accurate assessment of therapeutic efficacy.

3-2-258	
Title	**3,4′,5-trans-trimethoxystilbene; a Natural Analogue of Resveratrol with Enhanced Anticancer Potency**
Authors	Fahad S. Aldawsari and Carlos A. Velázquez-martínez
Program	Pharmacy and Pharmaceutical Sciences
University	University of Alberta
Journal	Springer
Date of Publication	February 28, 2015

Abstract
Resveratrol is a phytoalexin produced by many plant species as a defence mechanism. Over the last decade, this polyphenol has been reported to be active against multiple targets associated with chronic disorders. However, its poor pharmacokinetic profile, as well as multiple discrepancies related to its in vitro and in vivo profile, has resulted not only on the study of suitable delivery systems, but the use of resveratrol derivatives. In this regard, the 3,4′,5-trans-trimethoxystilbene (TMS), a natural analogue of resveratrol, has emerged as a strong candidate. TMS has an enhanced anticancer profile compared to resveratrol, exhibiting higher potency than resveratrol, as shown by multiple reports describing an improved cancer cell proliferation inhibition, induction of cell cycle arrest, decreased metastasis, reduced angiogenesis, and increased apoptosis. In this review, we provide a concise summary of results reported in the literature, related to the similarities and differences between resveratrol and TMS, and we submit to the scientific community that TMS is a promising and (still) understudied natural agent candidate, with potential applications in cancer research. Nevertheless, based on the available evidence, we also submit to the scientific community that TMS may also find a niche in any other research area in which resveratrol has been used.

3-2-259	
Title	**2d, 3d and 4d Active Compound Delivery in Tissue Engineering and Regenerative Medicine**
Authors	Nicolas Hanauer1, Pierre Luc Latreille1, Shaker Alsharif1,2 and Xavier Banquy*
Program	Analytical and Pharmaceutical Science
University	Université de Montréal
Journal	Bentham Science
Date of Publication	March 01, 2015

Abstract

Recent advances in tissue engineering and regenerative medicine have shown that controlling cells microenvironment during growth is a key element to the development of successful therapeutic system. To achieve such control, researchers have first proposed the use of polymeric scaffolds that were able to support cellular growth and, to a certain extent, favor cell organization and tissue structure. With nowadays availability of a large pool of stem cell lines, such approach has appeared to be rather limited since it does not offer the fine control of the cell micro-environment in space and time (4D). Therefore, researchers are currently focusing their efforts on developing strategies that include active compound delivery systems in order to add a fourth dimension to the design of 3D scaffolds. This review will focus on recent concepts and applications of 2D and 3D techniques that have been used to control the load and release of active compounds used to promote cell differentiation and proliferation in or out of a scaffold. We will first present recent advances in the design of 2D polymeric scaffolds and the different techniques that have been used to deposit molecular cues and cells in a controlled fashion. We will continue presenting the recent advances made in the design of 3D scaffolds based on hydrogels as well as polymeric fibers and we will finish by presenting some of the research avenues that are still to be explored.

3-2-260	
Title	**Toxicology and Teratology of the Active Ingredients of Professional Therapy Musclecare Products During Pregnancy and Lactation: A Systematic Review**
Authors	Abdulaziz Ms Alsaad1,2,3, Colleen Fox1 and Gideon Koren1,2
Program	Pharmacy
University	University of Toronto
Journal	Biomedcentral
Date of Publication	March 01, 2015

Abstract

11 Background: The rates of muscle aches, sprains, and inflammation are significantly increased during pregnancy. 12 However, women are afraid to use systemic analgesics due to perceptions of fetal risks. Thus, topical products are 13 important alternatives to consider for those women. Of interest, Professional Therapy MuscleCare (PTMC) has shown 14 to be effective in alleviating the myofascial pain as reported in a randomized, placebo-controlled double-blinded 15 comparative clinical study of five topical analgesics. However, to date, there is no complete review or long-term 16 safety studies on the safety of these products during pregnancy and lactation. Thus, the aim of this article was to 17 review toxicological, developmental, and reproductive effects associated with the use of PTMC products. 18 Methods: We performed a systematic review on safety of PTMC from all toxicological articles investigating the 19 effects of PTMC's ingredients. This search was conducted through medical and toxicological databases including, 20 Web of Science, EMBASE, Medline, and Micromedix. Both reported and theoretical adverse effects were extensively reviewed. 21 Results: Of the 1500 publications reviewed, 100 papers were retrieved and included in the review. Although some 22 ingredients in PTMC products might cause adverse reproductive effects at high systemic doses, these doses are 23 hundreds to thousands fold greater than those systemically available from topical use at the recommended 24 maximum dose (i.e. 10 g/day). 25 Conclusions: This study provides evidence that, when used as indicated, PTMC is apparently safe for pregnant 26 women and their unborn babies as well as for breastfed infants. 27 Keywords: MuscleCare, Pregnancy, Lactation, Teratogenicity, Safety

3-2-261	
Title	**Ageing Workers with Work-related Musculoskeletal Injuries**
Authors	Algarni Fs1, Gross Dp2, Senthilselvan A3, Battié Mc4
Program	Kinesyology
University	University of Alberta
Journal	Publisher
Date of Publication	March 01, 2015

Abstract

Background: Older workers often take longer to recover and experience more missed workdays after work-related injuries, but it is unclear why or how best to intervene. Knowing the characteristics of older injured workers may help in developing interventions to reduce the likelihood of work disability. Aims: to describe and compare several characteristics between younger and middle-aged working adults (25-54 years), adults nearing retirement (55-64 years) and adults past typical retirement (≥65 years), who sustained work-related musculoskeletal injuries. Methods: Inthis cross-sectional study, Alberta workers' compensation claimants with sub-acute and chronic work-related musculoskeletal injuries were studied. Awide range of demographic, employment, injury and clinical characteristics was investigated. Descriptive statistics were computed and compared between the age groups. Results: Among 8003 claimants, adults 65 years or older, as compared to those 25-54 and 55-64 years, had lower education (16% vs. 10% and 12%, p<0.001) and were more likely to work in trades, transport and related occupations (50% vs. 46% and 44%, p<0.001), to have less offers of modified work (57% vs. 39% and 42%, p<0.001), more fractures (18% vs. 14% and 11%, p<0.001), and no further rehabilitation recommended after assessment (28%, vs. 18% and 20%, p<0.01) Conclusions: Injured workers past typical retirement age appeared to be a disadvantaged group with significant challenges from a vocational rehabilitation perspective. They were less likely to have modified work options available or be offered rehabilitation, despite having more severe injuries.

3-2-262	
Title	**Ultrasound Guidance for Vascular Access in Patients Undergoing Coronary Angiography Via the Transradial Approach**
Authors	Anthony C. Camuglia, Md; Malak Majed, Md; Shane D. Preston, Md; Shahar Lavi, Md
Program	Internal Medicine
University	The University of Western Ontario
Journal	The Journal of Invasive Cardiology
Date of Publication	March 01, 2015

Abstract

Abstract BACKGROUND: We assessed the value of routine real-time ultrasound (RTUS) guidance to improve transradial access (TRA) for cardiac catheterization. METHODS: A prospective, single-center descriptive observational study of patients presenting for cardiac catheterization via the transradial approach. The first phase of the study enrolled 100 consecutive patients who underwent TRA without the assistance of RTUS followed by 100 consecutive patients who underwent TRA using RTUS guidance. The primary outcome measure was time between needle attempts for arterial access and sheath insertion. RESULTS: There were no statistically significant differences in any outcome measures. Median time between commencing needle attempts for arterial access to sheath insertion was 82.5 seconds (interquartile range [IQR], 64-161.5 seconds) with no RTUS guidance vs 84 seconds (IQR, 52.75-122.5 seconds) with RTUS; P=.19. Median number of needle passes through the skin required was 1 (IQR, 1-3) with no RTUS guidance vs 2 (IQR, 1-3) with RTUS; P=.25. Median number of arterial punctures was 1 (IQR, 1-1) with no RTUS guidance vs 1 (IQR, 1-1) with RTUS; P=.21. CONCLUSION: Routine RTUS guidance to assist in TRA does not significantly improve parameters of successful vascular access among high-volume radial operators. However, RTUS guidance should still be considered in selected cases and among less experienced radial practitioners. PMID: 25740970 [PubMed - in process]

3-2-263	
Title	**Proteomic Profile of an Acute Partial Bladder Outlet Obstruction.**
Authors	Bader Alsaikhan Richard Fahlman Jie Ding Edward Tridget Peter Metcalfe
Program	Urology
University	Mcgill University
Journal	Canadian Urological Association Journal
Date of Publication	March 02, 2015

Abstract

Introduction: Partial bladder outlet obstruction (pBOO) is a ubiquitous problem in urology. From posterior urethral valves to prostatic hypertrophy, pBOO results in significant morbidity and mortality. However, the pathophysiology is not completely understood. Proteomics uses mass spectrometry to accurately quantify change in tissue protein concentration. Therefore, we have applied proteomic analysis to a rodent model to assess for protein changes after a surgically induced pBOO. We hypothesize that proteomic analysis after an acute obstruction will determine the most prevalent initial protein response and, potentially, novel molecular pathways. METHODS: Sprague Dawley rats underwent a surgically induced pBOO (n = 3 per group) for 3, 7, or 14 days. Bladders were assessed for weight and urodynamic parameters. Proteomics used liquid-chromatography based mass spectrometry. Polymerase chain reaction (PCR) was performed on tissue samples to confirm increased mRNA transcription. RESULTS: Bladder weight and capacity increased over the experimental period, but no changes were seen in bladder pressure. Statistically significant increases in protein quantities were seen in 3 proteins related to endoplasmic reticulum stress: GRP-78 (3.66-fold), RhoA (1.90-fold), and RhoA-GDP (1.95-fold), and 2 cytoskeleton molecules: actin (1.7-fold) and tubulin a/b (3.01-fold). Decorin and lumican, members of the small leucine rich proteoglycan (SLRP) family, were also elevated (0.35- and 0.34-fold, respectively). Real-time PCR data confirmed protein elevation. CONCLUSION: Our experiment confirms that molecular changes occur very soon after the initiation of pBOO, and implicates several molecular pathways. We believe these insights may provide insight into novel prevention and treatment strategies targeted at the pathophysiology of pBOO.

3-2-264	
Title	**Assessing Bimanual Performance in Brain Tumor Resection with Neurotouch, a Virtual Reality Simulator**
Authors	Fahad E. Alotaibi, Md, Msc*‡ Gmaan A. Alzhrani, Md*‡ Muhammad A.s. Mullah, Msc§ Abdulrahman J. Sabbagh,md*‡¶ Hamed Azarnoush, Phd*k Alexander Winkler-schwartz, Md* Rolando F. Del Maestro, Md, Phd*
Program	Neurosurgery
University	Mcgill University
Journal	Journal of Neurosurgery
Date of Publication	March 06, 2015

Abstract

BACKGROUND: Validated procedures to objectively measure neurosurgical bimanual psychomotor skills are unavailable. The NeuroTouch simulator provides metrics to determine bimanual performance, but validation is essential before implementation of this platform into neurosurgical training, assessment, and curriculum development. OBJECTIVE: to develop, evaluate, and validate neurosurgical bimanual performance metrics for resection of simulated brain tumors with NeuroTouch. METHODS: Bimanual resection of 8 simulated brain tumors with differing color, stiffness, and border complexity was evaluated. Metrics assessed included blood loss, tumor percentage resected, total simulated normal brain volume removed, total tip path lengths, maximum and sum of forces used by instruments, efficiency index, ultrasonic aspirator path length index, coordination index, and ultrasonic aspirator bimanual forces ratio. Six neurosurgeons and 12 residents (6 senior and 6 junior) were evaluated. RESULTS: Increasing tumor complexity impaired resident bimanual performance significantly more than neurosurgeons. Operating on black vs glioma-colored tumors resulted in significantly higher blood loss and lower tumor percentage, whereas altering tactile cues from hard to soft decreased resident tumor resection. Regardless of tumor complexity, significant differences were found between neurosurgeons, senior residents, and junior residents in efficiency index and ultrasonic aspirator path length index. Ultrasonic aspirator bimanual force ratio outlined significant differences between senior and junior residents, whereas coordination index demonstrated significant differences between junior residents and neurosurgeons. CONCLUSION: The NeuroTouch platform incorporating the simulated scenarios and metrics used differentiates novice from expert neurosurgical performance, demonstrating NeuroTouch face, content, and construct validity and the possibility of developing brain tumor resection proficiency performance benchmarks.

3-2-265	
Title	**Epidemiology of Sleep Disturbances and Cardiovascular Consequences**
Authors	Badran M, Yassin Ba, Fox N, Laher I, Ayas N.
Program	Experimental Medicine
University	University of British Columbia
Journal	Canadian Journal of Cardiology
Date of Publication	March 12, 2015

Abstract

It is increasingly recognized that disruption of sleep and reduced amounts of sleep can have significant adverse cardiovascular consequences. Forexample, obstructive sleep apnea (OSA) is a common underdiagnosed disorder characterized by recurrent nocturnal asphyxia resulting from repetitive collapse of the upper airway; this leads to repetitive episodes of nocturnal hypoxemia and arousal from sleep. Risk factors for disease include obesity, increased age, male sex, and family history. In epidemiologic studies, OSA appears to be an independent risk factor for cardiovascular disease (CVD), and treatment is associated with better outcomes. Habitual short sleep duration is common in today's society. In epidemiologic studies, short sleep duration is associated with a number of adverse health effects, including all-cause mortality, weight gain, and incident CVD. Given the links between sleep disorders and adverse health outcomes, obtaining adequate quality and amounts of sleep should be considered a component of a healthy lifestyle, similar to good diet and exercise.

3-2-266	
Title	**Andersen-tawil Syndrome**
Authors	Editor-in-chief Robert A. Gross, Md, Phd, Faan Deputy Editor David S. Knopman, Md, Faan Associate Editors Anthony A. Amato, Md, Faan Gregory D. Cascino, Md, Faan Olga Ciccarelli, Md, Phd, Frcp Jonathan W. Mink, Md, Phd, Faan Ryan J. Uitti, Md, Faan Bradford B. Worrall, Md, Msc, Faan Associate Editor, Neurology Editor, Neurology: Clinical Practice John R. Corboy, Md, Faan Associate Editor, Neurology Editor, Neurology: Neuroimmunology & Neuroinflammation Josep O. Dalmau, Md, Phd Associate Editor, Biostatistics Richard J. Kryscio, Phd Associate Editor, Level of Evidence Evaluations Gary S. Gronseth, Md, Faan Book Reviews Christopher J. Boes, Md Kenneth J. Mack, Md, Phd, Faan Clinical Implications of Neuroscience Research Eduardo E. Benarroch, Md, Faan Continuing Medical Education Steven L. Lewis, Md, Faan James W.m. Owens, Jr., Md, Phd Global Perspectives Johan A. Aarli, Md Oded Abramsky, Md, Phd, Frcp Patient Page Steven Karceski, Md David C. Spencer, Md Podcasts Ted M. Burns, Md Andrew M. Southerland, Md, Msc, Deputy Podcast Editor Reflections: Neurology and the Humanities Anne W. Mccammon, Md, Faan Resident & Fellow Section Mitchell S.v. Elkind, Md, Ms, Faan John J. Millichap, Md, Deputy Editor Supplements Roger M. Kurlan, Md, Faan Writeclick® Rapid Online Correspondence Robert C. Griggs, Md, Faan Megan Alcauskas, Md, Deputy Writeclick Editor Chafic Karam, Md, Deputy Writeclick Editor Ombudsman Lewis P. Rowland, Md, Faan Scientific Integrity Advisor Robert B. Daroff, Md, Faan
Program	Pediatric Neurology
University	Mcgill University
Journal	Neurology; 2015; 84; E78-e80 Doi 10.1212/wnl.0000000000001377
Date of Publication	March 16, 2015

Abstract

Andersen-Tawil syndrome (ATS) is one of the periodic paralyses. This autosomal dominant disorder was initially named after Andersen, who in 1971 reported the case of a young boy presenting with intermittent muscle weakness, ventricular arrhythmias, and other developmental abnormalities. It was subsequently renamed Andersen-Tawil syndrome following the additional work of Dr. Rabi Tawil.

Periodic paralysis, cardiac arrhythmias, and dysmorphic features are now recognized as the 3 characteristic features in patients with ATS.1,2 CLINICAL CASE the proband is a 14-year-old boy who presented at the age of 9 years with recurrent episodes of leg weakness lasting several days. These episodes became more frequent, occurring at least once a month. The severity of the weakness during the episodes varied from mild weakness to inability to walk unassisted (2-3/5 weakness of proximal leg muscles). There were no clear triggers. Serum potassium levels measured during episodes of weakness were normal. Neurologic examination between episodes demonstrated proximal weakness (4/5) in the lower and upper extremities and a positive Gower sign. Treatment with potassium supplementation and acetazolamide resulted in mild clinical improvement. Family history revealed that his mother had had similar episodes that began during adolescence, improved with age, and resolved in her 40s. Potassium levels were reported to be low during her acute episodes. Sequencing of CACN1AS and SCN4A in the proband did not reveal any abnormalities. Several years after presentation, the proband's 14-year-old brother developed a ventricular tachycardia. He had no history of weakness and his neurologic examination was normal. The combination of periodic paralysis and family history of cardiac arrhythmia prompted the testing of KCNJ2 for ATS. Apathogenic heterozygous missense c.652C.T (p.R216W) mutation was identified that segregated with the phenotype in the family. In retrospect, the proband, his brother, and his mother were noted to have mild dysmorphic features (micrognathia [figure], clinodactyly of the 5th fingers of the hands, and syndactyly of the 2nd and 3rd digits of the left foot). ECG and cardiac Holter monitoring of the proband did not reveal any abnormalities. DISCUSSION Clinical features. ATS is one of the first known channelopathies; causal mutations have been identified in KCNJ2 on chromosome 17q24, which encodes the inward rectifier potassium channel 2 protein, Kir2.1.3 the dominant mutations in the Kir2.1 channel have a dominant negative effect on the potassium current (i.e., the mutated protein loses its normal function and adversely affects the function of the normal protein), resulting in prolonged depolarization of the action potential, thereby accounting for the cardiac and muscular symptoms.2 Autosomal recessive mutations in Kir2.1 have also been reported. 4 Recently, a mutation in KCJN5, which encodes the Kir3.4 subunit, has been linked to ATS and is thought to exert an inhibitory effect on the inward rectifier potassium current.5 in ATS, episodes of periodic paralysis first develop during childhood or adolescence and typically last between several hours and several days. Serum potassium levels during the episodes may be normal, elevated, or reduced. Although most cases seem to be associated with hypokalemia, several recent studies suggest normal potassium levels in patients with ATS.1,6 Triggers of the paralytic episodes mainly include prolonged exercise, prolonged rest, rest after exercise, and emotional stress. Patients usually present with mild permanent proximal weakness. Cardiac manifestations include ventricular

arrhythmias as well as electrocardiogram abnormalities such as long QT interval, pronounced U waves, and long QTU interval.2 Patients may develop fainting spells or, in some cases, present with cardiac arrest leading to sudden death. ATS is also classified as “long QT syndrome type 7” (LQTS7), although the QT interval is either normal or only slightly prolonged in most cases.7 in addition to skeletal and cardiac muscle abnor- malities, patients with ATS have dysmorphic features that are usually subtle. In fact, the use of the term “distinctive facial features” may be more appropriate.2 Dysmorphisms include broad forehead, hypoplastic mandible, hypotelorism, short palpebral fissures, short nose with fullness along the bridge and bulbous tip, thin upper lip, high arched or cleft palate, trian- gular facies, digit clinodactyly, syndactyly of the 2nd and 3rd toes, and short stature.2,8 Patients with ATS have a distinct neurocognitive phenotype characterized by deficits in executive func- tion and abstract reasoning.9 ATS is a syndrome with a very high degree of phe- notypic variability and is therefore very difficult to diagnose. The characteristic triad of clinical features (ventricular arrhythmias, periodic paralysis, and dys- morphic features) is present in 58%–78% of patients with KCNJ2 mutations, whereas between 32% and 81% present with involvement of only 2 of the 3 organ systems.10 Approximately 60% of the patients with a clinical diagnosis of ATS have causal mutations iden- tified in KCNJ2.9 About 6%–20% of mutation- positive individuals do not exhibit any of the associated features, indicating that this disorder has incomplete penetrance.8 Differential diagnosis. The diagnosis of ATS should be considered in any individual who displays at least 2 of the characteristic triad of symptoms, i.e., periodic paralysis, cardiac abnormalities, and facial dysmor- phism. The differential diagnosis of ATS includes other periodic paralyses, namely hypokalemic periodic paralysis, hyperkalemic periodic paralysis, and thyrotoxic periodic paralysis. The onset, duration, and severity of attacks in patients with hypokalemic or hyperkalemic paralysis are similar to those in ATS.2 Hypokalemic paralysis is associated with low serum potassium levels, whereas patients with hyperkalemic periodic paralysis generally have increased levels of serum potassium. In patients with ATS, periodic paralysis can occur with normokalemia, hyperkalemia, or hypokalemia. Nevertheless, the absence of the other typical features present in ATS (cardiac abnormalities and mild dysmorphic features) generally distinguishes patients with both hyperkalemia and hypokalemia from those with ATS. The presence of myotonia is characteristic of hyperkalemic periodic paralysis, and a majority of the patients with hypokalemic paralysis have mutations in the CACNA1S or SCN4A genes.11 Management. Treatment strategies for ATS are generally directed toward the management of the periodic paralysis and cardiac arrhythmias. Athorough examination involving blood chemistry, including serum potassium concentration and thyroid function, should be done at baseline and during attacks. Cardiac evaluation including ECG and Holter monitoring should be performed, and patients should be followed by a cardiologist. Characteristic abnormalities of the heart, including prominent U waves, prolonged Q-U intervals, premature ventricular contractions, and bidirectional ventricular tachycardia, may be noted on ECG. Similarly, the use of 24-hour Holter monitoring will aid in examining the presence, frequency, and duration of ventricular tachycardia. Carbonic anhydrase inhibitors (such as acetazolamide 250–1,500 mg/day and dichlorphenamide 50–200 mg/day) have been used to reduce recurrent attacks of paralysis.2 Daily potassium supplements may be used in cases in which attacks are associated with hypokalemia. This can be an attractive option since elevated potassium levels shorten the QTc interval and decrease cardiac arrhythmogenecity.2 Cardiac pacemaker or defibrillators may be required in some patients. Analysis of mutations in KCNJ2 is the only confirmatory genetic test so far. Genetic counseling, including thorough screening of family history, must be conducted, as it enables early treatment and prevention, especially of cardiac complications. CONCLUSION ATS should be considered in the differential diagnosis of patients with periodic paralysis. The clinical triad of ATS consists of periodic paralysis, cardiac arrhythmias, and dysmorphic features. However, due to its phenotypic heterogeneity and subtle physical findings, ATS can be difficult to diagnose. Because some of the cardiac manifestations of ATS can be dangerous and life-threatening, establishing the accurate diagnosis of ATS is critical.

3-2-267	
Title	**Surgical Management Outcomes of Recurrent Thyroglossal Duct Cyst in Children - a Systematic Review**
Authors	Farid F. Ibrahim Mohammed K. Alnoury Namrata Varma Sam J. Daniel
Program	Otolaryngology- Head and Neck Surgery
University	Mcgill University
Journal	International Journal of Pediatric Otorhinolaryngology
Date of Publication	March 28, 2015

Abstract

Objectives: Management of recurrent thyroglossal duct cysts (TGDC) remains a clinical challenge to otolaryngologists – head and neck surgeons. The purpose of this systematic review is to determine the best surgical management for recurrent TGDC. Methods: A comprehensive search for relevant articles was carried out on electronic databases named Ovid Medline, Ovid Medline in process and Other Non-Indexed Citations, Embase, Ovid OldMedline, and Ovid Medline Daily. Articles published in English until 2014 were eligible for review. Using predefined inclusion criteria, published articles on surgical outcomes in the management of recurrent thyroglossal duct cyst, were selected, reviewed, and their findings synthesized. Results: Nine studies met the inclusion criteria for this systematic review comprising a total of 66 patients who underwent 114 secondary surgeries. Better outcomes were observed with en bloc neck dissection vs. Arevision Sistrunk with a recurrence rate of 20% vs. 30.12% respectively. In addition two new surgical approaches, suture-guided transhyoid pharyngotomy and Koempel’s suprahyoid technique reported 100% success rate. Conclusion: Recurrence after primary surgical management remains a clinical challenge. We highlight the outcomes of the 4 main surgical techniques reported in the literature, repeat Sistrunk procedure, en bloc neck dissection, suture-guided transhyoid pharyngotomy, and Koempel’s suprahyoid technique. Although this review reports a 100% success rate with the 2 latter techniques, further prospective studies and additional experience with these same techniques by other surgeons/institutions with or without a randomized trial could provide additional confirmation of improved outcomes using these specific surgical procedures.

3-2-268	
Title	**Olfactory and Executive Dysfunctions Following Orbito-basal Lesions in Traumatic Brain Injury**
Authors	E. De Guise1,2, A. Y. Alturki1,3, M. Lague¨-beauvais4, J. Leblanc4, M. C. Champoux4, C. Couturier4, K. Anderson2,4, J. Lamoureux5, J. Marcoux1, M. Maleki1, M. Feyz4, & J. Frasnelli6,
Program	Neurosurgery
University	Mcgill University
Journal	Brain Injury
Date of Publication	March 31, 2015

Abstract

Objective: to study the acute relationship between olfactory function and traumatic brain injury (TBI), cognitive functions and outcome. Methods: Sixty-two patients with TBI were evaluated within the first 2 weeks following TBI. The Sniffin’Sticks identification test was used to assess olfaction. Aneuropsychological evaluation was carried out to assess attention, verbal fluency, naming, memory, problemsolving and mental flexibility. The extended Glasgow Outcome Scale (GOSE) and the Disability Rating Scale (DRS) were rated at discharge from acute care. Results: Traumatic lesions located in the basal frontal area resulted in odour identification scores that were significantly lower than when lesions were elsewhere (p50.001). Asignificant positive correlation was shown between odour identification scores and mental flexibility scores (p¼0.004) and patients with hyposmia had worse performances on executive tests measuring problem-solving, verbal fluency and mental flexibility (p50.01). Moreover, the odour identification score and the DRS total score were related (p¼0.019). Conclusions: These findings add information regarding acute olfactory status following TBI and provide evidence on the importance of assessing olfaction very early post-TBI in order to plan intervention and determine what accident prevention advice will be required for home or work re-integration

3-2-269	
Title	**Pseudomonas Aeruginosa - Pathogenesis and Pathogenic Mechanisms**
Authors	Alaa Alhazmi1,2
Program	Biochemistry & Molecular Biology
University	Lakehead University
Journal	International Journal of Biology
Date of Publication	April 01, 2015

Abstract

Pseudomonas aeruginosa is a common bacterium, Gram-negative opportunistic pathogen capable of infecting humans with compromised natural defenses and causing severe pulmonary disease. It is one of the leading pathogen associated with nosocomial infections. It has a vast arsenal of pathogenicity factors that are used to interfere with host defenses. Pathogenesis in P. aeruginosa facilitates adhesion, modulate or disrupt host cell pathways, and target the extracellular matrix. The propensity of P. aeruginosa to form biofilms further protects it from antibiotics and the host immune system. P. aeruginosa is intrinsically resistant to a large number of antibiotics and can be acquired resistance to many others, making treatment difficult. P. aeruginosa provokes a potent inflammatory response during the infectious process. The majority of mortalities in immunocompromised patients; cystic fibrosis, can be attributed to the progressive decline of lung function resulting from chronic infection by pathogens such as P. aeruginosa. Antibiotic treatment of chronic P. aeruginosa infections may temporarily suppress symptoms; however, they do not eradicate the pathogen. Lung diseases caused by P. aeruginosa are a leading cause of death in immunocompromised individuals as well as in children. Although immunocytes recruitment is critical to augment the host defense, excessive neutrophil accumulation results in life-threatening diseases, such as acute lung injury, as well as acute respiratory distress syndrome. Several virulence factors have been studied for their roles as potential vaccine candidate, although there is currently no clinically accepted vaccine. Understanding host-pathogen interaction is critical for the development of effective therapeutic strategies to control the damage in the lung.

3-2-270	
Title	**The Validity of Icd Codes Coupled with Imaging Procedure Codes for Identifying Acute Venous Thromboembolism Using Administrative Data**
Authors	Ghazi S Alotaibi, Cynthia Wu, Ambikaipakan Senthilselvan, and M Sean Mcmurtry
Program	Experimental Medicine
University	University of Alberta
Journal	Vascular Medicine
Date of Publication	April 01, 2015

Abstract

Purpose: to evaluate the accuracy of using a combination of International Classification of Diseases (ICD) diagnostic codes and imaging procedure codes for identifying deep vein thrombosis (DVT) and pulmonary embolism (PE) within administrative databases. Methods: Information from the Alberta Health (AH) inpatients and ambulatory care administrative databases in Alberta, Canada was obtained for subjects with a documented imaging study result performed at a large teaching hospital in Alberta to exclude venous thromboembolism (VTE) between 2000 and 2010. In 1361 randomly-selected patients, the proportion of patients correctly classified by AH administrative data, using both ICD diagnostic codes and procedure codes, was determined for DVT and PE using diagnoses documented in patient charts as the gold standard. Results: Of the 1361 patients, 712 had suspected PE and 649 had suspected DVT. The sensitivities for identifying patients with PE or DVT using administrative data were 74.83% (95% confidence interval [CI]: 67.01–81.62) and 75.24% (95% CI: 65.86–83.14), respectively. The specificities for PE or DVT were 91.86% (95% CI: 89.29–93.98) and 95.77% (95% CI: 93.72–97.30), respectively. Conclusion: When coupled with relevant imaging codes, VTE diagnostic codes obtained from administrative data provide a relatively sensitive and very specific method to ascertain acute VTE.

3-2-271	
Title	**Removal of Lumber Spine Foreign Body Using Minimal Access System with Navigation**
Authors	Gmaan A. Alzhrani, Abdurahman Y. Alturki, Kaled N. Almusrea
Program	Neurosurgery
University	Mcgill University
Journal	Asian Journal of Neurosurgery
Date of Publication	April 01, 2015

Abstract

Removal of a foreign body from the spine is often time a surgical challenge. Recent developments in computer-assisted surgery (CAS) have brought major improvements into the operating room. Most Medical procedures nowadays take advantage of the minimal invasiveness, precision, velocity and interactivity provided by the computer-assisted systems. Minimally invasive techniques (MIT) like microscopy, stereotaxy, endoscopy and neuronavigation facilitate the procedures improve neurosurgical results and reduce operative complications. In this technical report we used minimal access system with navigation to remove a broken spinal needle at L4-L5 level from an asymptomatic lady post delivery using a custom made navigation-mounted pituitary rongeur.

3-2-272	
Title	**Fecal Calprotectin Use in Inflammatory Bowel Disease and Beyond: A Mini-review**
Authors	Bashaar Alibrahim Md1,2, Mohammed I Aljasser Md Frcpc Dabd3, Baljinder Salh Mb Frcpc4
Program	Medicine
University	University of British Columbia
Journal	Canadianjournal of Gastrornterology
Date of Publication	April 03, 2015

Abstract

Given the number of inflammatory disorders affecting the gastrointes- tinal tract directly and indirectly, coupled with the considerable over- lap with functional disorders, it is evident that more useful noninvasive diagnostic tests are required to aid with diagnosis. If these tests can also have some utility for individual patient follow-up in terms of disease activity and response to treatment, as well as providing forewarning of disease relapse, it would be extremely useful information for the clini- cian. One recently described test that may fulfill several of these attri- butes is based on leakage of a mononuclear cell cytoplasmic protein, calprotectin, along the intestinal tract, which can then be quantified in feces. This has been used to distinguish patients exhibiting symp- toms of irritable bowel syndrome from patients with inflammatory bowel disease, with a measure of success greater than with currently used techniques. The present article summarizes the experience with this test used in inflammatory bowel disease, as well as a variety of gastrointestinal disorders

3-2-273	
Title	**Effects of the I559p Gp41 Change on the Conformational and Function of Human Immunodeficiency Virus (hiv-1) Membrane Glycoprotein Trimer",**
Authors	Nirmin Alsahafi[1,2], Olfa Debbeche[2,3], Joseph Sodroski[4,5,6*], Andrés Finzi[1,2,3]
Program	Medical Laboratories - Clinical Virology
University	Mcgill University
Journal	Plos One
Date of Publication	April 07, 2015

Abstract

The mature human immunodeficiency virus (HIV-1) envelope glycoprotein (Env) trimer is produced by proteolytic cleavage of a precursor and consists of three gp120 exterior and three gp41 transmembrane subunits. The metastable Env complex is induced to undergo conformational changes required for virus entry by the binding of gp120 to the receptors, CD4 and CCR5/CXCR4. An isoleucine-to-proline change (I559P) in the gp41 ectodomain has been used to stabilize soluble forms of HIV-1 Env trimers for structural characterization and for use as immunogens. In the native membrane-anchored HIV-1BG505 Env, the I559P change modestly decreased proteolytic maturation, increased the non-covalent association of gp120 with the Env trimer, and resulted in an Env conformation distinctly different from that of the wild-type HIV-1BG505 Env. Compared with the wild-type Env, the I559P Env was recognized inefficiently by polyclonal sera from HIV-1-infected individuals, by several gp41- directed antibodies, by some antibodies against the CD4-binding site of gp120, and by antibodies that preferentially recognize the CD4-bound Env. Some of the gp120-associated antigenic differences between the wild-type HIV-1BG505 Env and the I559P mutant were compensated by the SOS disulfide bond between gp120 and gp41, which has been used to stabilize cleaved soluble Env trimers. Nonetheless, regardless of the presence of the SOS changes, Envs with proline 559 were recognized less efficiently than Envs with isoleucine 559 by the VRC01 neutralizing antibody, which binds the CD4-binding site of gp120, and the PGT151 neutralizing antibody, which binds a hybrid gp120-gp41 epitope. The I559P change completely eliminated the ability of the HIV-1BG505 Env to mediate cell-cell fusion and virus entry, and abolished the capacity of the SOS Env to support virus infection in thepresence of a reducing agent. These results suggest that differences exist between the quaternary structures of functional Env spikes and I559P Envs.

3-2-274	
Title	**Post-transplant Liver Function Score As an Early Surrogate Marker of Long-term Outcome**
Authors	Mazen Hassanain , Eve Simoneau, Ahmad Madkhali, Nouf Al-saati, Murad Aljiffry, Jean Tchervenkov, Jeffrey Barkun, Peter Metrakos
Program	Hepatopancreato-biliary and Transplant Research
University	Mcgill University
Journal	Annals of Transplantation Journal. Volume20, Page 198-205. 9 April 2015
Date of Publication	April 09, 2015

Abstract

BACKGROUND: Currently, there is no universally accepted method to evaluate liver function post-orthotopic liver transplant (OLTx) and there are no early surrogate function markers to assess the impact of perioperative interventions in trial settings. MATERIAL and METHODS: Intotal, 495 patients were included in the study. On multivariate analysis, PTLF score, defined as normal (score <4) or dysfunctional (score ≥ 4), was the only significant variable for determining significant complications (P=0.014) and graft survival (P=002) during the perioperative period. RESULTS: Intotal, 495 patients were included in the study. On multivariate analysis, PTLF score, defined as normal (score <4) or dysfunctional (score ≥ 4), was the only significant variable for determining significant complications (P=0.014) and graft survival (P=002) during the perioperative period. CONCLUSIONS: PTLF score shows promise as an early surrogate marker of post-orthotopic liver transplantation mortality and morbidity by providing results within the first 7 days post-transplantation. PTLF score can potentially be used as a tool to assess the impact of perioperative interventions by predicting long-term outcomes early in the clinical course of transplant patients

3-2-275	
Title	**Management of Fungal Infections in Lung Transplant Recipients**
Authors	Ali Alghamdi 1 & Shahid Husain1
Program	Transplant Infectious Diseases
University	University of Toronto
Journal	Curr Pulmonol Rep
Date of Publication	April 16, 2015

Abstract

Abstract Lung transplantation is one of the great advances in modern medicine, and it is the only treatment for end-stage lung disease. As surgical techniques, immunosuppressive

agents, and graft survival have improved, infections have become the major cause of morbidity and mortality among lung transplant recipients, particularly fungal infections. This paper provides an overview of the most important fungal infections that occur in lung transplant recipients excluding the endemic mycoses.

3-2-276	
Title	**Focal Brainstem Gliomas. Advances in Intra-operative Management.**
Authors	Sabbagh Aj, Alaqeel Am.
Program	Neurosurgery
University	University of Calgary
Journal	Neurosciences
Date of Publication	April 20, 2015

Abstract

Improved neuronavigation guidance as well as intraoperative imaging and neurophysiologic monitoring technologies have enhanced the ability of neurosurgeons to resect focal brainstem gliomas. In contrast, diffuse brainstem gliomas are considered to be inoperable lesions. This article is a continuation of an article that discussed brainstem glioma diagnostics, imaging, and classification. Here, we address open surgical treatment of and approaches to focal, dorsally exophytic, and cervicomedullary brainstem gliomas. Intraoperative neuronavigation, intraoperative neurophysiologic monitoring, as well as intraoperative imaging are discussed as adjunctive measures to help render these procedures safer, more acute, and closer to achieving surgical goals.

3-2-277	
Title	**Reciprocal Cellular Cross-talk Within the Tumor Microenvironment Promotes Oncolytic Virus Activity**
Authors	Carolina S Ilkow1,2, Monique Marguerie1,2, Cory Batenchuk1,2, Justin Mayer1, Daniela Ben Neriah1, Sophie Cousineau1, Theresa Falls1, Victoria a Jennings1, Meaghan Boileau1, David Bellamy1, Donald Bastin1, Christiano Tanese De Souza1, Almohanad Alkayyal1,3, Jiqing Zhang1,4, Fabrice Le Boeuf1,2, Rozanne Arulanandam1,2, Lawton Stubbert1,2, Padma Sampath5–7, Steve H Thorne5–7, Piriya Paramanthan8, Avijit Chatterjee8, Robert M Strieter9, Marie Burdick10, Christina L Addison1,2, David F Stojdl2,11, Harold L Atkins1, Rebecca C Auer1, Jean-simon Diallo1, Brian D Lichty12 & John C Bell1,2
Program	Microbiology and Immunology
University	University of Ottawa
Journal	Nature Medicne
Date of Publication	April 20, 2015

Abstract

Tumors are complex ecosystems composed of networks of interacting 'normal' and malignant cells. It is well recognized that cytokine-mediated cross-talk between normal stromal cells, including cancer-associated fibroblasts (CAFs), vascular endothelial cells, immune cells, and cancer cells, influences all aspects of tumor biology1. Here we demonstrate that the cross-talk between CAFs and cancer cells leads to enhanced growth of oncolytic virus (OV)-based therapeutics. Transforming growth factor-b (TGF-b) produced by tumor cells reprogrammed CAFs, dampened their steady-state level of antiviral transcripts and rendered them sensitive to virus infection. In turn, CAFs produced high levels of fibroblast growth factor 2 (FGF2), initiating a signaling cascade in cancer cells that reduced retinoic acid-inducible gene I (RIG-I) expression and impeded the ability of malignant cells to detect and respond to virus. In xenografts derived from individuals with pancreatic cancer, the expressionof FGF2 correlated with the susceptibility of the cancer cells to OV infection, and local application of FGF2 to resistant tumor samples sensitized them to virotherapy both in vitro and in vivo. An OV engineered to express FGF2 was safe in tumor-bearing mice, showed improved therapeutic efficacy compared to parental virus and merits consideration for clinical testing.

3-2-278	
Title	**Acute Fatal Post Hypoxic Leukoencephalopathy Following Benzodiazepine Overdose: A Case Report and Review of the Literature**
Authors	Salman Aljarallah and Fawaz Al-hussain
Program	Neurology
University	Mcgill University
Journal	Bmc Neurology
Date of Publication	April 24, 2015

Abstract

Background: Among the rare neurological complications of substances of abuse is the selective cerebral white matter injury (leukoencephalopathy). Of which, the syndrome of delayed post hypoxic encephalopathy (DPHL) that follows an acute drug overdose, in addition to "chasing the dragon" toxicity which results from chronic heroin vapor inhalation remain the most commonly described syndromes of toxic leukoencephalopathy. These syndromes are reported in association with opioid use. There are very few cases in the literature that described leukoencephalopathy following benzodiazepines, especially with an acute and progressive course. In this paper, we present a patient who developed an acute severe fatal leukoencephalopathy following hypoxic coma and systemic shock induced by benzodiazepine overdose. Case presentation: A 19-year-old male was found comatose at home and brought to hospital in a deep coma, shock, hypoxia, and acidosis. Brain magnetic resonant imaging (MRI) revealed a strikingly selective white matter injury early in the course of the disease. The patient remained in a comatose state with no signs of neurologic recovery until he died few weeks later following an increase in the brain edema and herniation. Conclusion: Toxic leukoencephalopathy can occur acutely following an overdose of benzodiazepine and respiratory failure. This is unlike the usual cases of toxic leukoencephalopathy where there is a period of lucidity between the overdose and the development of white matter disease. Unfortunately, this syndrome remains of an unclear pathophysiology and with no successful treatment.

3-2-279	
Title	**Conus Medullaris Teratoma with Utilization of Fiber Tractography: Case Report**
Authors	Fahad Alkherayf1,2,3 Abdullah Faisal Arab1,4,5 Eve Tsai1,3
Program	Division of Spine Surgery, Prince Sultan Military Medical City, Riyadh, Saudi Arabia
University	University of Ottawa
Journal	Georg Thieme Verlag Kg Stuttgart · New York
Date of Publication	April 28, 2015

Abstract

Objective Conus medullaris teratomas are very rare tumors. Traditional preoperative diagnosis depended on the findings from magnetic resonance imaging (MRI). Tractography is a novel technique that has recently been utilized to diagnose spinal cord lesions. This case report shows that fiber tractography has great potential in preoperative diagnosis and postoperative follow-up of teratomas of the conus medullaris. Methods a 50-year-old man with a conus medullaris teratoma underwent tractography with the aim of visualizing the tumor in relation to the white matter tracts. The patient underwent a T12–L2 laminectomy, and the lesion was resected. The histopathology diagnosis was of a mature teratoma. Study Design Case report. Results Diffusion tensor imaging (DTI) and tractography provide more details about the white matter tracts in relation to space-occupying lesions that may be more sensitive than conventional MRI and have recently been utilized in spinal cord lesions. Fiber tracking has the ability to visualize the integrity of the white matter tracts at the level of the conus medullaris in relation to the lesion. The tracts appeared to be displaced by the lesion at the conus medullaris. Tractography also showed no white matter tracts within the lesion. Such findings are consistent with the characteristics of a benign lesion. Exploiting tractography in this case was helpful in predicting the nature of the lesion preoperatively and in planning the surgical intervention. Conclusions Conus medullaris teratomas mostly affect adults. Patients generally present with a long history of clinical symptoms prior to diagnosis. Surgery is required for diagnosis, and the goal should be complete tumor excision without sacrificing any neurologic functions. The use of DTI and tractography, in addition to conventional MRI, has the potential to be very valuable for the diagnosis, surgical planning, and follow-up of patients with conus medullaris teratomas. received

3-2-280	
Title	**Role of Community Health Outreach Program "living for Health"® in Improving Access to Federally Qualified Health Centers in Miami-dade County, Florida: A Cross-sectional Study**
Authors	Aws Almufleh12*, Tori Gabriel3, Laura Tokayer4, Mary Comerford5, Ahmed Alaqeel67 and Paul Kurlansky8
Program	Neurosurgery
University	University of Calgary
Journal	Bmc Health Services Research
Date of Publication	April 28, 2015

Abstract

Abstract Background Care of the underserved remains one of the most compelling challenges to American healthcare. Federally Qualified Health Centers (FQHCs) address

uninsurance and underinsurance by providing primary and preventive care to vulnerable populations with fees charged based on ability to pay. Our goal is to study the effectiveness of FQHCs system in engaging patients and the barriers to utilization, which have not been well defined. Methods Retrospective analysis was performed on data from “Living for Health” (L4H) program participants from 2008 to 2012. Univariate and multivariate logistic regression analysis were performed to determine factors associated with FQHC utilization. Results Among 9453 subjects screened, 1889 were referred to a FQHC, but only 201(11%) actually sought treatment. Public insurance, non-Hispanic ethnicity, and hypertension were associated with higher rates of FQHC utilization. Inability to afford costs, cultural factors and inflexible appointment times were the most common reasons for FQHC underutilization. Conclusion the current status of FQHC utilization is sub-optimal. Community outreach programs like L4H can improve the access and utilization of FQHCs.

3-2-281	
Title	**Role of Community Health Outreach Program “living for Health”® in Improving Access to Federally Qualified Health Centers in Miami-dade County, Florida: A Cross-sectional Study**
Authors	Aws Almufleh, Tori Gabriel, Laura Tokayer, Mary Comerford, Ahmed Alaqeel and Paul Kurlansky
Program	Internal Medicine
University	Mcgill University
Journal	Bmc Health Services Research. Volume 15: 181. April 28, 2015
Date of Publication	April 28, 2015

Abstract

Background Care of the underserved remains one of the most compelling challenges to American healthcare. Federally Qualified Health Centers (FQHCs) address uninsurance and underinsurance by providing primary and preventive care to vulnerable populations with fees charged based on ability to pay. Our goal is to study the effectiveness of FQHCs system in engaging patients and the barriers to utilization, which have not been well defined. Methods Retrospective analysis was performed on data from “Living for Health” (L4H) program participants from 2008 to 2012. Univariate and multivariate logistic regression analysis were performed to determine factors associated with FQHC utilization. Results Among 9453 subjects screened, 1889 were referred to a FQHC, but only 201(11%) actually sought treatment. Public insurance, non-Hispanic ethnicity, and hypertension were associated with higher rates of FQHC utilization. Inability to afford costs, cultural factors and inflexible appointment times were the most common reasons for FQHC underutilization. Conclusion the current status of FQHC utilization is sub-optimal. Community outreach programs like L4H can improve the access and utilization of FQHCs.

3-2-282	
Title	**Current Evidence on Platelet P2y12 Receptor Inhibitors: is There Still a Role for Clopidogrel in 2015?**
Authors	Mohammed A. Qutub, Md, Frcpc, Facp, Aun-yeong Chong, Mbbs, Mrcp(uk), Md, Derek Y.f. So, Md, Frcpc, Facc
Program	Cardiology
University	University of Ottawa
Journal	Canadian Journal of Cardiology
Date of Publication	April 28, 2015

Abstract

Antiplatelets play a significant role in the management of patients with coronary disease. Novel P2Y12 inhibitors have more rapid, potent and consistent inhibitory effect on platelets compared to clopidogrel. Evidence from large clinical studies has defined populations where novel agents are superior to clopidogrel. Ticagrelor or prasugrel in addition to aspirin should be used preferentially for patients with STEMI due to significant anti-ischemic benefits. In patients with NSTEACS, ticagrelor has proven superiority over clopidogrel whether or not an invasive strategy is adopted, while prasugrel has been shown to be beneficial when started at the time of PCI. Of note, neither prasugrel nor ticagrelor have been studied in patients undergoing PCI for stable coronary disease or those requiring ‘triple therapy’. In these situations, clopidogrel should remain the default until further data is available. Prolonged use of clopidogrel in patients with drug eluting stents beyond 12months is emerging as a novel indication for the agent.

3-2-283	
Title	**The Accessory Coracobrachialis Muscle: Ultrasound and Mr Features**
Authors	Salem Bauones Antoine Moraux
Program	Musculoskeletal Radiology
University	Université de Montréal
Journal	Skeletal Radiology Journal
Date of Publication	April 30, 2015

Abstract

Objective. To present the prevalence, the clinical relevance, and the ultrasound (US) and magnetic resonance imaging (MRI) appearance of the accessory coracobrachialis (ACB) muscle. Materials and methods. We present an US prospective study of the ACB muscle over a two-year period. MRI subsequently examined five of the eight patients with suspected ACB on ultrasound. Results. An ACB muscle was demonstrated by US in eight patients (seven females, one male, age range 33-57 years, mean age 39 years) over 664 consecutive shoulder US examinations referred to our institution with a prevalence of 1.2%. In dynamic US assessment, one case of subcoracoid impingement secondary to a bulky ACB was diagnosed. No thoracic outlet syndrome was encountered in the remaining cases. MRI confirmed the presence of the accessory muscle in five cases. Conclusion. ACB muscle is a rare anatomic variation of the shoulder musculature encountered only in eight of 664 patients referred for a shoulder US study. Its US and MRI appearance is described. One of our patients presented with subcoracoid impingement related to the presence of an ACB. None of them presented with thoracic outlet syndrome related to ACB.

3-2-284	
Title	**Neurosurgical Assessment of Metrics Including Judgment and Dexterity Using the Virtual Reality Simulator Neurotouch (najd Metrics)**
Authors	Fahad E. Alotaibi, Msc, Md1,2, Gmaan A. Alzhrani, Md1,2, Abulrahman J. Sabbagh, Md1,2, Hamed Azarnoush, Phd1, Alexander Winkler-schwartz, Md1, and Rolando F. Del Maestro, Md, Phd1
Program	Neurosurgery
University	Mcgill University
Journal	Surgical Innovation Journal
Date of Publication	May 01, 2015

Abstract

Advances in computer-based technology has created a significant opportunity for implementing new training paradigms in neurosurgery focused on improving skill acquisition, enhancing procedural outcome, and surgical skills assessment. NeuroTouch is a computer-based virtual reality system that can generate output data known as metrics from operator performance during simulated brain tumor resection. These measures of quantitative assessment are used to track and compare psychomotor performance during simulated operative procedures. Data output from the NeuroTouch system is recorded in a comma-separated values file. Data mining from this file and subsequent metrics development requires the use of sophisticated software and engineering expertise. In this article, we introduce a system to extract a series of new metrics using the same data file using Excel software. Based on the data contained in the NeuroTouch comma-separated values file, 13 novel NeuroTouch metrics were developed and classified. Tier 1 metrics include blood loss, tumor percentage resected, and total simulated normal brain volume removed. Tier 2 metrics include total instrument tip path length, maximum force applied, sum of forces utilized, and average forces utilized by the simulated ultrasonic aspirator and suction instrument along with pedal activation frequency of the ultrasonic aspirator. Advanced tier 2 metrics include instrument tips average separation distance, efficiency index, ultrasonic aspirator path length index, coordination index, and ultrasonic aspirator bimanual forces ratio. This system of data extraction provides researchers expedited access for analyzing the data files available for NeuroTouch platform to assess the multiple psychomotor and cognitive neurosurgical skills involved in complex surgical procedures.

3-2-285	
Title	**Modeling Early-onset Post-ischemic Seizures in Aging Mice**
Authors	Chiping Wu, Justin Wang, Jessie Peng, Nisarg Patel, Yayi Huang, Xiaoxing Gao, Salman Aljarallah, James H. Eubanks, Robert Mcdonald, Liang Zhang
Program	Neurology
University	Mcgill University
Journal	Experimental Neurology Journal
Date of Publication	May 02, 2015

Abstract

Stroke is the leading cause of seizures and epilepsy in the aged population, with post-stroke seizures being a poor prognostic factor. The pathological processes underlying post-stroke seizures are not well understood and studies of these seizures in aging/aged animals remain scarce. Therefore, our primary objective was to model post-stroke seizures in aging mice (C57 black strain, 16–20 months-old), with a focus on early-onset, convulsive seizures that occur within 24-hours of brain ischemia. We utilized a middle cerebral artery occlusion model and examined seizure activity and brain injury using combined behavioral and electroencephalographic monitoring and histological assessments. Aging mice exhibited vigorous convulsive seizures within hours of the middle cerebral artery occlusion. These seizures manifested with jumping, rapid running, barrel-rolling and/or falling all in the absence of hippocampal–cortical electrographic discharges. Seizure development was closely associated with severe brain injury and acute mortality. Anticonvulsive treatments after seizure occurrence offered temporary seizure control but failed to improve animal survival. Aseparate cohort of adult mice (6–8 months-old) exhibited analogous early-onset convulsive seizures following the middle cerebral artery occlusion but had better survival outcomes following anticonvulsive treatment. Collectively, our data suggest that early-onset convulsive seizures are a result of severe brain ischemia in aging animals.

3-2-286	
Title	**Frailty and Mortality in Dialysis: Evaluation of a Clinical Frailty Scale**
Authors	Talal A. Alfaadhel, Steven D. Soroka, Bryce A. Kiberd, David Landry, Paige Moorhouse, and Karthik K. Tennankore
Program	Nephrology
University	Dalhousie University
Journal	Clinical Journal of the American Society of Nephrology
Date of Publication	May 07, 2015

Abstract

Background and objectives: Frailty is associated with poor outcomes for patients on dialysis; however, previous studies have not taken into account the severity of frailty as a predictor of outcomes. The purpose of this study was to assess if there was an association between the degree of frailty and mortality among patients on incident dialysis. Design, setting, participants, & measurements: A cohort study of incident chronic dialysis patients was conducted between January of 2009 and June of 2013 (last follow-up in December of 2013). On the basis of overall clinical impression, the Clinical Frailty Scale (CFS) score was determined for patients at the start of dialysis by their primary nephrologist. This simple scale allocates a single point to different states of frailty (1, very fit; 2, well; 3, managing well; 4, vulnerable; 5, mildly frail; 6, moderately frail; 7, severely frail or terminally ill) with an emphasis on function of the assessed individual. The primary outcome was time to death. Patients were censored at the time of transplantation. Results: The cohort consisted of 390 patients with completed CFS scores (mean age of 63615 years old). Most were Caucasian (89%) and men (67%), and 30% of patients had ESRD caused by diabetic nephropathy. The median Charlson Comorbidity Index score was 4 (interquartile range =3–6), and the median CFS score was 4 (inter- quartile range =2–5). There were 96 deaths over 750 patient-years at risk. In an adjusted Cox survival analysis, the hazard ratio associated with each 1-point increase in the CFS was 1.22 (95% confidence interval, 1.04 to 1.43; P=0.02). Conclusions: A higher severity of frailty (as defined by the CFS) at dialysis initiation is associated with higher mortality.

3-2-287	
Title	**Knowledge, Practices, and Opinions of Ontario Dentists When Treating Patients Receiving Bisphosphonates**
Authors	Alhussain A, Peel S, Dempster L, Clokie C, Azarpazhooh A
Program	Oral Surgery
University	University of Toronto
Journal	Journal of Oral and Maxillofacial Surgery (peer Reviewed Journal
Date of Publication	May 11, 2015

Abstract

PURPOSE: Bisphosphonate-related osteonecrosis of the jaws (BRONJ) is a severe but extremely rare complication of prolonged treatment with bisphosphonates (BPs). Improper treatment or misdiagnosis can have serious repercussions. In some cases, the treatment of BRONJ can require jaw resection, prolonged use of antibiotics, and long hospitalizations. This study aimed to measure the awareness of dentists in the Province of Ontario, Canada about BRONJ and to identify any gaps in their knowledge of the condition and its treatment. In particular, the study aimed to answer questions about the dentists' knowledge of the current guidelines and their opinions and practices related to performing surgical dental procedures in patients taking BPs. MATERIALS and METHODS: The study involved sending a Web-based questionnaire to a random sample of dentists in Ontario, Canada (n = 1,579). Information about their awareness of BPs, their experiences treating patients presenting with ONJ, their experiences with different surgical procedures in patients taking intravenous or oral BPs, and their awareness of the BRONJ guidelines suggested by the American Association of Oral and Maxillofacial Surgeons was collected. RESULTS: A response rate of 30% was achieved. Sixty percent of responding dentists had a good knowledge of BP and BRONJ; however, only 23% followed the guidelines for surgical treatment of a patient taking BPs, and 63% would refer patients if they were taking BPs. Approximately 50% of responding Ontario dentists were not comfortable treating patients with BRONJ at their current knowledge. CONCLUSION: The finding shows that although 60% of Ontario general dentists and specialists have a good knowledge about BRONJ, most are not comfortable performing oral surgery in patients taking BPs. Those who are comfortable have higher knowledge scores, suggesting greater educational efforts should be made to promote the knowledge of dentists regarding BP, ONJ, and BRONJ. PMID: 25843818 [PubMed - indexed for MEDLINE]

3-2-288	
Title	**Primary Fallopian Tube Clear Cell Adenocarcinoma in Pregnancy: Case Presentation and Review of the Literature**
Authors	Mohammed Malak and Stephanie Klam Department of Obstetrics and Gynecology, King Abdulaziz University, Jeddah 22254, Saudi Arabia Mcgill University, Montreal, Qc, Canada
Program	Obgyn
University	The University of Western Ontario
Journal	Case Reports in Obstetrics and Gynecology
Date of Publication	May 11, 2015

Abstract

Primary fallopian tube cancer in pregnancy is rare and is even more so for the clear cell variant. Our case is the third case of primary fallopian tube cancer in pregnancy and the first case of clear cell adenocarcinoma of the fallopian tube in pregnancy. The patient presented with increasing pelvic pain starting in the second trimester. Serial ultrasound evaluations were performed and revealed a rapidly growing complex adnexal mass adjacent to the uterus. Her pregnancy was further complicated by spontaneous preterm labor and she delivered prematurely per vaginam at 31 weeks. She underwent an urgent laparotomy in the immediate postpartum period for acute aggravation of her right pelvic pain and fever. The diagnosis of tubal clear cell adenocarcinoma was subsequently made on histopathology examination.

3-2-289	
Title	**Improved Neurologic Outcomes After Cardiac Arrest with Combined Administration of Vasopressin, Steroids, and Epinephrine Compared to Epinephrine Alone**
Authors	Tudor Bontnaru Mdcm Tawfeeq Altherwi Mbbs Jerrald Dankoff Mdcm
Program	Emergency Medicine
University	Mcgill University
Journal	Canadian Journal of Emerency Medicine
Date of Publication	May 11, 2015

Abstract

Clinical question is a vasopressin, steroid, and epinephrine (VSE) protocol for in-hospital cardiac arrest resuscitation associated with better survival to hospital discharge with favourable neurologic outcome compared to epinephrine alone? Article chosen Mentzelopoulos S, Malachias S, Konstantopoulos D, et al. Vasopressin, steroids, and epinephrine and neurologically favorable survival after in-hospital cardiac arrest: A randomized clinical trial. JAMA 2013;310:270-9. Objective to determine if a VSE protocol during cardiopulmonary resuscitation with hydrocortisone administration inpatients with postresuscitative shock at 4 hours after return of spontaneous circulation would improve survival to hospital discharge with favourable neurologic outcome.

3-2-290	
Title	**C-reactive Protein, Fecal Calprotectin, and Stool Lactoferrin for Detection of Endoscopic Activity in Symptomatic Inflammatory Bowel Disease Patients:a Systematic Review and Meta-analysis**
Authors	Mosli Mh1, Zou G2, Garg Sk3, Feagan Sg4, Macdonald Jk4, Chande N5, Sandborn Wj6, Feagan Bg7.
Program	Medicine
University	The University of Western Ontario
Journal	American Journal of Gastroenterology
Date of Publication	May 12, 2015

Abstract

OBJECTIVES: Persistent disease activity is associated with a poor prognosis in inflammatory bowel disease (IBD). Therefore, monitoring of patients with intent to suppress subclinical inflammation has emerged as a treatment concept. As endoscopic monitoring is invasive and resource intensive, identification of valid markers of disease activity is a priority. The objective was to evaluate the diagnostic accuracy of C-reactive protein (CRP), fecal calprotectin (FC), and stool lactoferrin (SL) for assessment of endoscopically defined disease activity in IBD. METHODS: Databases were searched from inception to November 6, 2014 for relevant cohort and case-control studies that evaluated the diagnostic accuracy of CRP, FC, or SL and used endoscopy as a gold standard in patients with symptoms consistent with active IBD. Sensitivities and specificities were pooled to generate operating property estimates for each test using a bivariate diagnostic meta-analysis. RESULTS: Nineteen studies (n=2499 patients) were eligible. The pooled sensitivity and specificity estimates for CRP, FC, and SL were 0.49 (95% confidence interval (CI) 0.34-0.64) and 0.92 (95% CI 0.72-0.96), 0.88 (95% CI 0.84-0.90) and 0.73 (95% CI 0.66-0.79), and 0.82 (95% CI 0.73-0.88) and 0.79 (95% CI 0.62-0.89), respectively. FC was more sensitive than CRP in both diseases and was more sensitive in ulcerative colitis than Crohn's disease. CONCLUSIONS: Although CRP, FC, and SL are useful biomarkers, their value in managing individual patients must be considered in specific clinical contexts

3-2-291	
Title	**Ing3 Protein Expression Profiling in Normal Human Tissues Suggest Its Role in Cellular Growth and Self-renewal**
Authors	Arash Nabbi, Amal Almami, Satbir Thakur, Keiko Suzuki, Donna Boland, Tarek A. Bismar, Karl Riabowol.
Program	Medical Sciense/department of Oncology Cumming School of Medicine,
University	University of Calgary
Journal	European Journal of Cell Biology
Date of Publication	May 14, 2015

Abstract

Abstract Members of the INhibitor of Growth (ING) family of proteins act as readers of the epigenetic code through specific recognition of the trimethylated form of lysine 4 of histone H3 (H3K4Me3) by their plant homeodomains. The founding member of the family, ING1, was initially identified as a tumor suppressor with altered regulation in a variety of cancer types. While alterations in ING1 and ING4 levels have been reported in a variety of cancer types, little is known regarding ING3 protein levels in normal or transformed cells due to a lack of reliable immunological tools. In this study we present the characterization of a new monoclonal antibody we have developed against ING3 that specifically recognizes human and mouse ING3. The antibody works in western blots, immunofluorescence, immunoprecipitation and immunohistochemistry. Using this antibody we show that ING3 is most highly expressed in small intestine, bone marrow and epidermis, tissues in which cells undergo rapid proliferation and renewal. Consistent with this observation, we show that ING3 is expressed at significantly higher levels in proliferating versus quiescent epithelial cells. These data suggest that ING3 levels may serve as a surrogate for growth rate, and suggest possible roles for ING3 in growth and self renewal and related diseases such as cancer.

3-2-292	
Title	**Low-grade Ependymoma with Late Metastasis: Autopsy Case Study and Literature Review**
Authors	Wael Alshaya1 & Vivek Mehta1 & Beverly A.wilson2 & Susan Chafe3 & Keith E. Aronyk1 & Jian-qiang Lu4
Program	Neurosurgery
University	University of Alberta
Journal	Childs Nervous System
Date of Publication	May 15, 2015

Abstract

Introduction Ependymoma metastasis occurs usually along with local recurrence within 7 years after the initial diagnosis. Later spinal metastasis without local recurrence after the surgical resection has been rarely reported in patients with low-grade ependymomas but not with high-grade ependymomas. Here, we present a case with autopsy revealing late extensive supratentorial metastasis of a fourth ventricle classicWHO grade II ependymoma with no local recurrence or spinal metastasis. Methods a 4-year-old boy underwent a gross total resection (GTR) of the fourth ventricle ependymoma and postoperative radiation therapy. Follow-up MRI showed no recurrence for the next 7 years, but a half year later, extra-axial tumors in the left cerebellopontine angle and right frontal lobe were observed. GTR of the left cerebellopontine angle ependymoma was performed, followed by additional radiation therapy. Results He was stable for the following 2 years before MRI revealed growth of the right frontal tumor and new lesions. GTR of the right frontal tumor demonstrated similar pathologic features of ependymoma. Despite chemotherapy, follow-up MRIs exhibited increasing numbers and sizes of supratentorial tumors but no infratentorial or spinal tumors. He died 15 years after the initial diagnosis. Postmortem brain examination confirmed the supratentorial subarachnoid dissemination with multifocal metastases of classic ependymomas but no recurrence at the infratentorial sites. Conclusion Our case study and literature review suggest that low-grade ependymomas under the current WHO classification have the risk of late metastasis. Therefore, long-term follow-up of the whole neuroaxis is more important for the patients with low-grade ependymomas even in the absence of local recurrence.

3-2-293	
Title	**Comparative Evaluation of Modern Dosimetry Techniques Near Low- and High-density Heterogeneities**
Authors	Eyad A. Alhakeem, Sami Alshaikh, Anatoly B. Rosenfeld, and Sergei F. Zavgorodni
Program	Medical Physics/ Physics
University	University of Victoria
Journal	Journal of Applied Clinical Medical Physics
Date of Publication	May 18, 2015

Abstract

The purpose of this study is to compare performance of several dosimetric methods in heterogeneous phantoms irradiated by 6 and 18 MV beams. Monte Carlo (MC) calculations were used, along with two versions of Acuros XB, anisotropic analytical algorithm (AAA), EBT2 film, and MOSkin dosimeters. Percent depth doses (PDD) were calculated and measured in three heterogeneous phantoms. The first two phantoms were a 30 × 30 × 30 cm3 solid-water slab that had an air-gap of 20× 2.5 × 2.35 cm3. The third phantom consisted of 30 × 30 × 5 cm3 solid water slabs, two 30 × 30 × 5 cm3 slabs of lung, and one 30 × 30 × 1 cm3 solid water slab. Acuros XB, AAA, and MC calculations were within 1% in the regions with particle equilibrium. At media interfaces and buildup regions, differences between Acuros XB and MC were in the range of +4.4% to −12.8%. MOSkin and EBT2 measurements agreed to MC calculations within ~ 2.5%, except for the first centimeter of buildup where differences of 4.5% were observed. AAA did not predict the backscatter dose from the high-density heterogeneity. Forthe third, multilayer lung phantom, 6 MV beam PDDs calculated by all TPS algorithms were within 2% of MC. 18 MV PDDs calculated by two versions of Acuros XB and AAA differed from MC by up to 2.8%, 3.2%, and 6.8%, respectively. MOSkin and EBT2 each differed from MC by up to 2.9% and 2.5% for the 6 MV, and by −3.1% and ~2% for the 18 MV beams. All dosimetric techniques, except AAA, agreed within 3% in the regions with particle equilibrium. Differences between the dosimetric techniques were larger for the 18 MV than the 6 MV beam. MOSkin and EBT2 measurements were in a better agreement with MC than Acuros XB calculations at the interfaces, and they were in a better agreement to each other than to MC. The latter is due to their thinner detection layers compared to MC voxel sizes.

3-2-294	
Title	**Seepage Effect to Control Cement Filling in the Bone Augmentation Procedure**
Authors	S Alenezi1, F Benyahia2, S Becker3, M Bohner4, G Baroud1
Program	Biomedical Engineering
University	Université De Sherbrooke
Journal	Griboi
Date of Publication	May 19, 2015

Abstract

Treating osteoporotic fractures often fails because of the inherent difficulty to anchor orthopedic screws in the weakened bone. Augmenting the bone with a biomaterial is a novel approach to effectively instrument the bone structure [1-3]. The bone cement, as per example, is injected into the osteoporotic bone by different delivery tools to control the in-situ distribution. We present a novel delivery cannula to improve the distribution of the biomaterial and therefore the effectiveness of the treatment. Such a cannula is designed to have a sufficiently large conduit and relatively small perforations at its distal end. The perforations are sufficiently small for the conduit to represent a path of least resistance. Specifically, the cement fills the conduit first until it reaches the distal end of the cannula, and once the cannula is completely filled, the inside pressure increases and allows for the cement to seep uniformly through the distal perforations. This study examines computationally a novel design of perforated cannula with variable slot diameter to investigate the cement uniformity

3-2-295	
Title	**The Impact of School Gardening on Cree Children's Knowledge and Attitudes Toward Vegetables and Fruit**
Authors	Mahitab A. Hanbazaza, Msc; Lucila Triador, Msc; Geoff D.c. Ball, Phd, Rd; Anna Farmer, Phd, Rd; Katerina Maximova, Phd; Alexander First Nationd; Noreen D. Willows, Phd
Program	Agricultural Food and Nutritional Science
University	University of Alberta
Journal	Canadian Journal of Dietetic Practice and Research
Date of Publication	May 21, 2015

Abstract

Purpose: School-based interventions may increase children's preferences for vegetables and fruit (V&F). This Canadian study measured changes in Indigenous First Nations schoolchildren's V&F knowledge, preferences, and home consumption following the implementation of a gardening and V&F snack program. Methods: At baseline, 7 months, and 18 months, children in grades 1–6 (i) listed at least 5 V&F they knew, (ii) tasted and indicated their preferences towards 9 vegetables and 8 fruit using a 6-point Likert scale, and (iii) indicated their home consumption of 17 V&F. Results: At all 3 time points, 56.8% (n = 66/116) of children provided data. Children listed a greater number of V&F at 18 months (4.9 ± 0.1) than at baseline (4.5 ± 1.0) or 7 months (4.7 ± .07) ($F(1.6,105.6) = 6.225$, $P < 0.05$). Vegetable preferences became more positive between baseline (37.9 ± 9.3) and 7 months (39.9 ± 9.2), but returned to baseline levels at 18 months (37.3 ± 8.7) ($F(1.6,105.8) = 4.581$, $P < 0.05$). Fruit preferences at 18 months (42.7 ± 3.0) were greater than at baseline (41.1 ± 4.3) and at 7 months (41.9 ± 5.1) ($F(1.7,113.3) = 3.409$, $P < 0.05$). No change in V&F consumption occurred at home. Conclusions: Despite improvements in V&F knowledge and preferences, home consumption of V&F did not occur. Complementing school-based programs with home-based components may be needed to influence V&F intake of children.

3-2-296	
Title	**Vedolizumab for Induction and Maintenance of Remission in Ulcerative Colitis: A Cochrane Systematic Review and Meta-analysis**
Authors	Mahmoud H. Mosli, Mbbs, Msc,*,† John K. Macdonald, Ma,* Stephen J. Bickston, Md,‡ Brian W. Behm, Md,§ David J. Tsoulis, Md,* Jianfeng Cheng, Md, Phd,jj Reena Khanna, Md,* and Brian G. Feagan, Md, Msc*
Program	Medicine
University	The University of Western Ontario
Journal	Inflammatory Bowel Disease
Date of Publication	May 21, 2015

Abstract

BACKGROUND: We performed a systematic review to evaluate the efficacy and safety of vedolizumab for induction and maintenance of remission in ulcerative colitis. METHODS: A literature search to June 2014 identified all applicable randomized trials. Outcome measures were clinical and endoscopic remission, clinical and endoscopic response, quality of life, and adverse events. The risk ratio (RR) and 95% confidence intervals (CI) were estimated for each outcome. Study quality was evaluated using the Cochrane risk of bias tool. The GRADE criteria were used to assess the quality of the evidence. MAIN RESULTS: Four studies (606 patients) were included. The risk of bias was low. Pooled analyses indicated that vedolizumab was significantly superior to placebo for induction of remission (RR = 0.86, 95% CI, 0.80-0.91), clinical response (RR = 0.82, 95% CI, 0.75-0.91), endoscopic remission (RR = 0.82, 95% CI, 0.75-0.91), and for achieving remission at 52 weeks in week 6 responders (RR = 2.73, 95% CI, 1.78-4.18). GRADE analyses suggested that the overall quality of the evidence was high for induction of remission and moderate for maintenance therapy (due to sparse data consisting of 246 events). No statistically significant difference was observed in the incidence of adverse events between vedolizumab and placebo. CONCLUSIONS: Vedolizumab is superior to placebo as induction and maintenance therapy for ulcerative colitis. Future studies are needed to define long-term efficacy and safety of this agent.

3-2-297	
Title	**Assessment of Left Ventricular Ejection Fraction Using Low Radiation Dose Computed Tomography**
Authors	Yiqi Yang, Yeung Yam, Bsc, Li Chen, Msc, Ahmed Aljizeeri, Md, Siamak Aliyary Ghraboghly, Md, Ibraheem Al-harbi, Mbbs, Ally Pen, Phd, Terrence D. Ruddy, Md, Frcpc, Facc, Fasnc, and Benjamin J. W. Chow, Md, Frcpc, Facc, Fasnc, Fsccta,b
Program	Cardiac Imaging Fellowship/ Cardiology
University	University of Ottawa
Journal	Journal of Nuclear Cardiology
Date of Publication	May 22, 2015

Abstract

Background. Cardiac CT is a non-invasive modality with the ability to estimate LVEF. However, given its limited temporal resolution and radiation, there has been initial resistance to use CT to measure LVEF. Developing an accurate, fast, low radiation dose protocol is desirable. Objective. The objective of this study is to demonstrate that a 'low radiation dose' 64 slice cardiac computed tomography (CT) protocol is feasible and can accurately measure left ventricular ejection fraction (LVEF) while delivering a radiation dose lower than radionuclide angiography (RNA). Methods. Patients undergoing RNA were prospectively screened and enrolled to undergo a 'low-dose' 64 slice CT LVEF protocol. LVEF measures, duration of each study and radiation dose between CT and RNA were compared. Results. Atotal of 77 patients (mean age 5 61.8 ± 12.2 years and 58 men) were analyzed. The mean LVEF measured by CT and RNA were 41.9 ± 15.2% and 39.4 ± 13.9%, respectively, (P 5 0.154) with a good correlation (r 5 0.863). Bland-Altman plot revealed a good agreement between the CT and RNA LVEF (mean difference of 22.4). There was good agreement between CT LVEF and RNA for identifying patients with LVEF £30% (kappa 5 0.693) and LVEF ‡50% (kappa 5 0.749). The mean dose estimated effective dose for CT and RNA were 4.7 ± 1.6 and 9.5 ± 1.0 mSv, respectively. The mean CT LVEF imaging duration (4:32 ± 3:05 minutes) was significantly shorter than the RNA image acquisition time (9:05 ± 2:36 minutes; p < 0.001). Conclusion. The results of our study suggest that low-dose CT LVEF protocol is feasible, accurate, and fast while delivering a lower radiation dose than traditional RNA. (J Nucl Cardiol 2015)

3-2-298	
Title	**Novel Targeted Therapies in Chordoma: An Update**
Authors	Salvatore Di Maio Stephen Yip Gmaan a Al Zhrani Fahad E Alotaibi Abdulrahman Al Turki Esther Kong Robert C Rostomily
Program	Neurosurgery
University	Mcgill University
Journal	Therapeutics and Clinical Risk Management
Date of Publication	May 26, 2015

Abstract

Chordomas are rare, locally aggressive skull base neoplasms known for local recurrence and not-infrequent treatment failure. Current evidence supports the role of maximal safe surgical resection. In addition to open skull-base approaches, the endoscopic endonasal approach to clival chordomas has been reported with favorable albeit early results. Adjuvant radiation is prescribed following complete resection, alternatively for gross residual disease or at the time of recurrence. The modalities of adjuvant radiation therapy reported vary widely and include proton-beam, carbon-ion, fractionated photon radiotherapy, and photon and gamma-knife radiosurgery. As of now, no direct comparison is available, and high-level evidence demonstrating superiority of one modality over another is lacking. While systemic therapies have yet to form part of any first-line therapy for chordomas, a number of targeted agents have been evaluated to date that inhibit specific molecules and their respective pathways known to be implicated in chordomas. These include EGFR (erlotinib, gefitinib, lapatinib), PDGFR (imatinib), mTOR (rapamycin), and VEGF (bevacizumab). This article provides an update of the current multimodality treatment of cranial base chordomas, with an emphasis on how current understanding of molecular pathogenesis provides a framework for the development of novel targeted approaches.

3-2-299	
Title	**Polyarticular Septic Arthritis in an Immunocompetent Adult: A Case Report and Review of the Literature**
Authors	Annelise Miller,1 Fahad Abduljabbar,1,2 and Peter Jarzem1
Program	Orthopedic Surgery
University	Mcgill University
Journal	Hindawi Publishing Corporation
Date of Publication	May 26, 2015

Abstract

Septic arthritis is a clinical emergency requiring prompt diagnosis and treatment to avoid significant morbidity and mortality. Polyarticular septic arthritis (PASA) accounts for 15% of all infectious arthritides and rarely occurs in immunocompetent adults. Staphylococcus aureus is the most commonly isolated organism, with infection primarily affecting knees, shoulders, elbows, and hips. The morbidity associated with PASA is very high, and mortality in treated cases of PASA may be as high as 50% of cases. We report a case of PASA with associated epidural abscess in a healthy adult male, who presented with complaints of arthralgia and limited range of motion of his left shoulder, wrist, and ankle. He also presented with low back pain and motor weakness associated with an epidural abscess spanning L2-S1, with multilevel vertebral osteomyelitis. Surgical washout of the affected joints as well as decompressive laminectomies was performed, and he received a standard course of intravenous antibiotics. Staphylococcus aureus was isolated from joint aspirations and from blood cultures. The patient had a full neurological and functional recovery postoperatively with no sequelae. To the best of our knowledge this is the only case report of Staphylococcus aureus PASA with concomitant epidural abscess in an immunocompetent adult.

3-2-300	
Title	**A Mendelian Randomization Study of the Effect of Type-2 Diabetes on Coronary Heart Disease**
Authors	Omar S. Ahmad1,2, John A. Morris1,3, Muhammad Mujammami1,2, Vincenzo Forgetta1,2, Aaron Leong4,rui Li1,2,3, Maxime Turgeon5, Celia M.t. Greenwood5, George Thanassoulis2,3, James B. Meigs4, Robert Sladek2,3 & J Brent Richards1,2,3,6
Program	Endocrinology and Metabolism
University	Mcgill University
Journal	Nature Communications
Date of Publication	May 28, 2015

Abstract

In observational studies, type-2 diabetes (T2D) is associated with an increased risk of coronary heart disease (CHD), yet interventional trials have shown no clear effect of glucoselowering on CHD. Confounding may have therefore influenced these observational estimates. Here we use Mendelian randomization to obtain unconfounded estimates of the influence of T2D and fasting glucose (FG) on CHD risk. Using multiple genetic variants associated with T2D and FG, we find that risk of T2D increases CHD risk (odds ratio (OR)¼1.11 (1.05–1.17), per unit increase in odds of T2D, P¼8.8105; using data from 34,840/114,981 T2D cases/controls and 63,746/130,681 CHD cases/controls). FG in non-diabetic individuals tends to increase CHD risk (OR¼1.15 (1.00–1.32), per mmol <?> per l, P¼0.05; 133,010 non-diabetic individuals and 63,746/130,681 CHD

cases/controls). These findings provide evidence supporting a causal relationship between T2D and CHD and suggest that long-term trials may be required to discern the effects of T2D therapies on CHD risk.

3-2-301	
Title	**The Utility of Ultrasound for Surgical Spinal Decompression.**
Authors	Ahmed Alaqeel1,2, Hussam Abou Al-shaar3, Alaa Alaqeel4, Amro Al-habib2
Program	Neurosurgery
University	University of Calgary
Journal	Medical Ultrasound Journal
Date of Publication	June 01, 2015

Abstract

Surgery is routinely performed to decompress the spinal cord. While a number of imaging modalities are currently used in the perioperative setting of surgical spinal cord decompression including computed tomography scan and magnetic resonance imaging, ultrasound (US) usage is relatively new. Therefore, only a few studies in the literature describe its value in the perioperative setting. US is a simple, safe, rapid, non-invasive, and inexpensive modality that constitutes a potential alternative when other modalities are not suitable or unavailable. It enables surgeons to generate high-resolution real-time images that can aid in diagnosing pathologies, guiding surgeries, and evaluating surgical outcomes. This review discusses the present literature and utility of pre-, intra-, and post-operative US in patients undergoing surgical spinal decompression. We also delineate three cases in which US was utilized at King Saud University hospital, which is considered one of the first centers in our region to report the use of US to guide treatment in spine surgery.

3-2-302	
Title	**Early Changes in Cytochrome P450s and Their Associated Arachidonic Acid Metabolites Play a Crucial Role in the Initiation of Cardiac Hypertrophy Induced by Isoproterenol**
Authors	Hassan N. Althurwi, Zaid H. Maayah, Osama H. Elshenawy, Ayman O. S. El-kadi
Program	Pharmacy
University	University of Alberta
Journal	Drug Metabolism and Disposition
Date of Publication	June 01, 2015

Abstract

Cytochrome P450 enzymes (P450s), along with their cardioprotective metabolites the epoxyeicosatrienoic acids (EETs) and cardiotoxic metabolite 20-hydroxyeicosatetraeonic acid (20-HETE), were found to be altered in cardiac hypertrophy; however, it is unclear whether these changes are causal or epiphenomenon. Therefore, we hypothesized that P450s and their metabolites play a crucial role in the initiation of cardiac hypertrophy. To test our hypothesis, rats and RL- 14 cells were treated with the hypertrophic agonist isoproterenol for different time periods. Thereafter, in vivo heart function and wall thickness were assessed using echocardiography. Moreover, the role of P450 epoxygenases, ω-hydroxylases, and soluble epoxide hydro- lase (sEH) were determined at mRNA, protein, and activity levels using real-time polymerase chain reaction, Western blot, and liquid chromatography–mass spectrometry, respectively. Our results show that in vivo and in vitro hypertrophy was initiated after 72 hours and 6 hours of isoproterenol treatment, respectively. Studies performed at the prehypertrophy phase showed a significant decrease in P450 epoxygenases along with a significant induction of sEH activity. Consequently, lower EET and higher dihydroxyeicosatrienoic acid levels were observed during this phase. However, significant in- creases in P450 v-hydroxylase along with its associated metabolite, 20-HETE, were detected only in vivo. Interestingly, increasing EET levels by P450 epoxygenase induction, sEH inhibition, or exogenous administration of EET prevented the initiation of cardiac hypertrophy through a nuclear factor-kB-mediated mechanism. Taken together, these findings reveal a crucial role of P450 epoxygenases and EETs in the development of cardiac hypertrophy, which could uncover novel targets for prevention of heart failure at early stages.

3-2-303	
Title	**Effect of Addition of Clopidogrel to Aspirin on Subdural Hematoma: Meta-analysis**
Authors	Majid F. Bakheet1*, Lesly A. Pearce2, and Robert G. Hart3 Correspondence: Majid F. Bakheet*, Population Health Research Institute, Hamilton General Hospital/dbcvsri C4-6c, 237 Barton Street East, Hamilton, Ontario L8l 2x2, Canada. E-mail: Majid.bakheet@phri.ca 1-department of Neurology, Ministry of Health, Medina, Saudi Arabia 2-minot, North Dakota, Usa 3-population Health Research Institute,hamilton Health Sciences, Department of Medicine
Program	Stroke Neurology
University	Mcmaster University
Journal	Canadian Stroke Congress
Date of Publication	June 01, 2015

Abstract

-Purpose to quantify the risk of subdural hematoma associated with dual antiplatelet therapy with clopidogrel plus aspirin. -Methods Randomized clinical trials comparing clopidogrel plus aspirin with aspirin alone were identified by searching the Cochrane Central Register of Controlled Trials from 1990 to 2014, and restricted to those with more than 7 days of treatment. Two reviewers independently extracted data about subdural hematomas. -Results of 24 randomized trials testing clopidogrel added to aspirin, results for subdural hematoma were available for 11 trials, of which eight did not identify any subdural hematomas. The three trials reporting subdural hematomas were double-blind and included patients with recent lacunar stroke, acute coronary syndromes or atrial fibrillation with a total of 23,136 patients (mean age 66 years) and reported 39 subdural hematomas during a mean follow-up 2·1 years per patient. Clopidogrel plus aspirin was associated with a significantly increased risk of subdural hematoma compared with aspirin alone (risk ratio 2·0, 95% CI 1·0, 3·8; P = 0·04; fixed effects model; I2 for heterogeneity of 0%, P = 0·51). The average absolute incidence of subdural hematoma averaged 1·1 (95%CI 0·7,1·6) per 1000 patient – years among those assigned clopidogrel plus aspirin in 11 randomized trials. -Conclusions the absolute rate of subdural hematoma during dual antiplatelet therapy is low, averaging 1·1 per 1000 patient-years. Chronic treatment with clopidogrel plus aspirin significantly increases the risk of subdural hematoma compared with aspirin alone.

3-2-304	
Title	**From Learning to Memory: What Flies Can Tell Us About Intellectual Disability Treatment**
Authors	Alaura Androschuk , Basma Al-jabri and Francois V. Bolduc
Program	Developmental Paediatrics
University	University of Alberta
Journal	Frontiers in Psychiatry
Date of Publication	June 03, 2015

Abstract

Intellectual disability (ID), previously known as mental retardation, affects 3% of the population and remains without pharmacological treatment. ID is characterized by impaired general mental abilities associated with defects in adaptive function in which onset occurs before 18 years of age. Genetic factors are increasing and being recognized as the causes of severe ID due to increased use of genome-wide screening tools. Unfortunately drug discovery for treatment of ID has not followed the same pace as gene discovery, leaving clinicians, patients, and families without the ability to ameliorate symptoms. Despite this, several model organisms have proven valuable in developing and screening candidate drugs. One such model organism is the fruit fly Drosophila. First, we review the current understanding of memory in human and its model in Drosophila. Second, we describe key signaling pathways involved in ID and memory such as the cyclic adenosine 3′,5′- monophosphate (cAMP)–cAMP response element binding protein (CREB) pathway, the regulation of protein synthesis, the role of receptors and anchoring proteins, the role of neuronal proliferation, and finally the role of neurotransmitters. Third, we characterize the types of memory defects found in patients with ID. Finally, we discuss how important insights gained from Drosophila learning and memory could be translated in clinical research to lead to better treatment development.

3-2-305	
Title	**Novel Targeted Therapies in Chordoma: An Update**
Authors	Salvatore Di Maio1 Stephen Yip2 Gmaan a Al Zhrani3,4 Fahad E Alotaibi3,4 Abdulrahman Al Turki3,4 E Sther Kong2 Robert C Rostomily5
Program	Neurosurgery
University	Mcgill University
Journal	Therapeuric Clinical Risk Managment
Date of Publication	June 05, 2015

Abstract

Chordomas are rare, locally aggressive skull base neoplasms known for local recurrence and not-infrequent treatment failure. Current evidence supports the role of maximal safe surgical resection. In addition to open skull-base approaches, the endoscopic endonasal approach to clival chordomas has been reported with favorable albeit early results. Adjuvant radiation is prescribed following complete resection, alternatively for gross residual disease or at the time of recurrence. The modalities of adjuvant radiation therapy reported vary widely and include proton-beam, carbon-ion, fractionated photon radiotherapy, and photon and gamma-knife radiosurgery. As of now, no direct comparison is available, and high-level evidence demonstrating superiority of one modality over another is lacking. While systemic therapies have yet to form part of any first-line therapy for chordomas, a number of targeted agents have been evaluated to date that inhibit specific molecules and their respective pathways known to be implicated in chordomas. These include EGFR (erlotinib, gefitinib, lapatinib), PDGFR (imatinib), mTOR (rapamycin), and VEGF (bevacizumab). This article provides an update of the current multimodality treatment of cranial base chordomas, with an emphasis on how current understanding of molecular pathogenesis provides a framework for the development of novel targeted approaches.

3-2-306	
Title	**Vascularization Strategies of Engineered Tissues and Their Application in Cardiac Regeneration.**
Authors	Xuetao Sun (a), Wafa Altalhia (d), Sara S. Nunes (a, B, C) A-university Health Network, Toronto General Research Institute, 101 College St., Canada B-institute of Biomaterials and Biomedical Engineering, University of Toronto, Canada C-heart & Stroke/richard Lewar Centre of Excellence, University of Toronto, Canada D-laboratory Medicine and Pathology, University of Toronto, Canada
Program	Laboratory Medicine and Pathology
University	University of Toronto
Journal	Advanced Drug Delivery Reviews
Date of Publication	June 06, 2015

Abstract

The primary function of vascular networks is to transport blood and deliver oxygen and nutrients to tissues, which occurs at the interface of the microvasculature. Therefore, the formation of the vessels at the microcirculatory level, or angiogenesis, is critical for tissue regeneration and repair. Current strategies for vascularization of engineered tissues have incorporated multi-disciplinary approaches including engineered biomaterials, cells and angiogenic factors. Pre-vascularization of scaffolds composed of native matrix, synthetic polymers, or other biological materials can be achieved through the use of single cells in mono or co-culture, in combination or not with angiogenic factors or by the use of isolated vessels. The advance of these methods, together with a growing understanding of the biology behind vascularization, has facilitated the development of vascularization strategies for engineered tissues with therapeutic potential for tissue regeneration and repair. Here, we review the different cell-based strategies utilized to pre-vascularize engineered tissues and in making more complex vascularized cardiac tissues for regenerative medicine applications.

3-2-307	
Title	**Gelsolin Familial Amyloidosis Peripheral Neuropathy in Canada: A Case Report**
Authors	Majed Alabdali, Carolina Barnett, Alon Abraham, Danah Al Jaafari, Vera Bril
Program	Neuromuscular Disorders
University	University of Toronto
Journal	The Canadian Journal of Neurological Sciences
Date of Publication	June 08, 2015

Abstract

Hereditary gelsolin amyloidosis (AGel amyloidosis) is a rare multisystemic disorder caused by a mutation on the gelsolin gene (G654A or G654T). The clinical presentation is typically characterized by a triad of ophthalmic, neurologic, and dermato- logic findings. AGel amyloidosis has been reported in several countries, primarily in Japan and Finland. We report a genetically confirmed case of gelsolin familial amyloidosis in Canada.

3-2-308	
Title	**Critically Appraising Noninferiority Randomized Controlled Trials: A Primer for Emergency Physicians**
Authors	Mohammad Al Deeb, Md*3; Aftab Azad, Mbbs*4; David Barbic, Md, Msc1
Program	Emergency Medicine
University	Mcgill University
Journal	Cjem
Date of Publication	June 08, 2015

Abstract

Noninferiority (NI) trials aim to show that a new treatment or drug is not inferior to a standard, accepted treatment. The rapid proliferation of NI trials within the literature makes it imperative for emergency physicians to be able to read, interpret, and appraise critically this type of research study. Using several emergency medicine examples from the recent literature, this article outlines the key differences between traditional, superiority randomized controlled trials and NI trials. We summarize four important points that an emergency physician should consider when critically appraising an NI trial: 1) Does the new treatment have tangible benefits over the standard treatment? 2) Was the choice of the NI margin appropriate? 3) Was the effect of the standard treatment preserved? Does the trial have assay sensitivity? and 4) What type of analysis strategy was employed: intention-to-treat (ITT) or per protocol (PP)?

3-2-309	
Title	**Aortic Valve Repair for Insufficiency in Older Children Offers Unpredictable Durability That May Not Be Advantageous Over a Primary Ross Operation**
Authors	Travis J. Wildera, Christopher A. Caldaronea, Glen S. Van Arsdella, Eric Pham-hunga, Michael Grittia, Mohammed Al Jughimana,b and Edward J. Hickeya,*
Program	Cardiac Surgery
University	University of Toronto
Journal	European Journal for Cardio-thoracic Surgery
Date of Publication	June 09, 2015

Abstract

OBJECTIVES: to evaluate the durability of aortic valve (AoV) repair relative to other strategies for children with significant aortic insufficiency (AI). METHODS: From 2001 to 2012, 90 children with greater than or equal to moderate AI underwent surgery. Resulting procedures were classified according to final operative outcome: AoV repair (repair; n = 46, 51%), Ross procedure (Ross; n = 21, 23%) or replacement with mechanical or tissue prosthesis [aortic valve replacement (AVR); n = 23, 26%]. Repeated measures (n = 1081 echocardiograms) mixedmodel analysis and parametric multiphase risk-adjusted hazard analysis were used to evaluate haemodynamic parameters and durability of operations. RESULTS: Mean age at operation was similar for repair and Ross groups, but slightly higher for the AVR group (10.6, 11 and 13.2, respectively; P = 0.04). Baseline annular dimensions were similar among groups. Of 46 repairs, 85% involved pericardial leaflet extensions (commonly with leaflet shaving and/or commisuroplasty). The remaining repairs were commissuroplasties. On multivariable analysis, repair was associated with increased early (1–2 years) AI and increased outflow tract peak pressure gradients relative to Ross and AVR procedures. On univariate analysis, repairs tended to have a larger annulus size compared with Ross or AVR; however, this was not significant on multivariable analysis. There were 25 reinterventions (surgical reoperation = 16; transcatheter intervention = 9) for 22 children. Freedom from surgical reoperation was 64, 100 and 51% at 6 years for repairs, Ross and AVR, respectively (P = 0.05); however, three of five reoperations after AVR were for failed bioprosthetic devices. The freedom from reintervention was not significantly influenced by the type of AoV operation (P = 0.43). CONCLUSIONS: Durability of aortic valve repair for children is limited by recurrence of AI and/or stenosis, often within the first few years. After repair, reoperation should be anticipated within 7 years.

3-2-310	
Title	**Chemotherapeutic Treatment of Colorectal Cancer in Pregnancy: Case Report**
Authors	Ziyad Makoshi, Claire Perrott, Khadija Al-khatani and Fadia Al-mohaisen
Program	Neurosurgery
University	University of Ottawa
Journal	Journal of Medical Case Reports
Date of Publication	June 13, 2015

Abstract

Introduction: Colon cancer in pregnancy is uncommon. Only a small number of case reports have been published in the literature on the use of chemotherapeutic drugs during pregnancy. Reports of such cases assist clinicians in further investigating the use of chemotherapy in pregnancy. Case presentation: FOLFOX-6 was administered to a pregnant, 33-year-old Saudi woman with metastatic colon cancer from 22 to 30 weeks of gestation. Her cancer was diagnosed during her pregnancy. She tolerated the chemotherapy well and delivered a full-term baby girl with no obvious harm, and normal development was documented at her 2-year follow-up examination. Conclusion: Colon cancer during pregnancy is not easily detected and is difficult to manage. Adetailed history and high clinical suspicion are needed in patients who present with symptoms and signs suggestive of malignancy. Amultidisciplinary approach with patient involvement is needed to decrease morbidity and mortality caused by both treatment and the cancer in the mother and to limit side effects for the fetus. Further data and long-term follow-up are needed to better understand the potential long-term side effects of chemotherapeutic drugs on offspring.

3-2-311	
Title	**Phenylbutazone Oxidation Via Cu,zn-sod Peroxidase Activity: An Epr Study.**
Authors	Naif Aljuhani,†,§ Randy M. Whittal,‡ Saifur R. Khan,† and Arno G. Siraki*,†
Program	Pharmaceutical Sciences
University	University of Alberta
Journal	Acs
Date of Publication	June 19, 2015

Abstract

We investigated the effect of Cu,Zn-superoxide dismutase (Cu,Zn-SOD)-peroxidase activity on the oxidation of the nonsteroidal anti-inflammatory drug phenylbutazone (PBZ). We utilized electron paramagnetic resonance (EPR) spectroscopy to detect free radical intermediates of PBZ, UV-vis spectrophotometry to monitor PBZ

oxidation, oxygen analysis to determine the involvement of C-centered radicals, and LC/MS to determine the resulting metabolites. Using EPR spectroscopy and spin-trapping with 5,5-dimethyl-1-pyrroline-N-oxide (DMPO), we found that the spin adduct of CO3(•-) (DMPO/(•)OH) was attenuated with increasing PBZ concentrations. The resulting PBZ radical, which was assigned as a carbon-centered radical based on computer simulation of hyperfine splitting constants, was trapped by both DMPO and MNP spin traps. Similar to Cu,Zn-SOD-peroxidase activity, an identical PBZ carbon-centered radical was also detected with the presence of both myeloperoxidase (MPO/H2O2) and horseradish peroxidase (HRP/H2O2). Oxygen analysis revealed depletion in oxygen levels when PBZ was oxidized by SOD peroxidase-activity, further supporting carbon radical formation. In addition, UV-vis spectra showed that the λmax for PBZ (λ = 260 nm) declined in intensity and shifted to a new peak that was similar to the spectrum for 4-hydroxy-PBZ when oxidized by Cu,Zn-SOD-peroxidase activity. LC/MS evidence supported the formation of 4-hydroxy-PBZ when compared to that of a standard, and 4-hydroperoxy-PBZ was also detected in significant yield. These findings together indicate that the carbonate radical, a product of SOD peroxidase activity, appears to play a role in PBZ metabolism. Interestingly, these results are similar to findings from heme peroxidase enzymes, and the context of this metabolic pathway is discussed in terms of a mechanism for PBZ-induced toxicity.

3-2-312	
Title	**Pulmonary Artery Cement Embolism After a Vertebroplasty**
Authors	Anas Nooh, Fahad H. Abduljabbar, Ahmed H. Abduljabbar,and Peter Jarzem
Program	Diagnostic Radiology
University	Dalhousie University
Journal	Hindawi Publishing Corporation Case Reports in Orthopedics
Date of Publication	June 21, 2015

Abstract

Vertebroplasty is a minimally invasive procedure most commonly used for the treatment of vertebral compression fractures. Although it is relatively safe, complications have been reported over time. Among those complications, massive cement pulmonary embolism is considered a rare complication.Herewe report a case of massive diffuse cement pulmonary embolism following percutaneous vertebroplasty for a vertebral compression fracture. Study Design. Case report. Methods.This is a 70-year-old female who underwent vertebroplasty for T11 and T12 vertebral compression fracture. Results. CT-scan revealed an incidental finding of cement embolism in the pulmonary trunk and both pulmonary arteries. Since the patient was asymptomatic, she was monitored closely and she did not need any intervention. Conclusion.Vertebroplasty is a minimally invasive procedure used for treatment of vertebral compression fracture. Despite the low rate of complications, a pulmonary cement embolism can occur. Theconsequences of cement embolism range widely frombeing asymptomatic to embolism that can cause paralysis, radiculopathy, or a fatal pulmonary embolism.

3-2-313	
Title	**Book Chapter: Ventricular Tachycardia in Patients with Tetralogy of Fallot**
Authors	Atif Al-qubbany, Lucy Roche, Erwin Oechslin, Eugene Downar & Krishnakumar Nair
Program	Complex/congenital Electrophysiology, Department of Cardiology
University	University of Toronto - Department of Medicine
Journal	Clinical Insights: Adult Congenital Heart Disease. By Future Medicine
Date of Publication	June 28, 2015

Abstract

In this chapter, we describe the incidence and mechanisms of ventricular tachycardia after surgical repair of tetralogy of Fallot. We then detail risk stratification for sudden cardiac death in this population, including specific ventricular stimulation protocols that are followed in our institution. The management of ventricular tachycardia in tetralogy of Fallot, including drugs and catheter ablation, is discussed. In particular, we discuss the role of intraoperative cryoablation performed at the time of pulmonary valve replacement, and the role of implantable cardioverter defibrillators. We finally detail the unique management strategy that has been adopted at our institution for the past few decades.

3-2-314	
Title	**Pulmonary Artery Cement Embolism After a Vertebroplasty**
Authors	Anas Nooh, Fahad H. Abduljabbar, Ahmed H. Abduljabbar, and Peter Jarzem
Program	Experimantal Surgery
University	Mcgill University
Journal	Case Reports in Orthopedics
Date of Publication	June 29, 2015

Abstract

Background Context. Vertebroplasty is a minimally invasive procedure most commonly used for the treatment of vertebral compression fractures. Although it is relatively safe, complications have been reported over time. Among those complications, massive cement pulmonary embolism is considered a rare complication.Herewe report a case of massive diffuse cement pulmonary embolism following percutaneous vertebroplasty for a vertebral compression fracture. Study Design. Case report. Methods.This is a 70-year-old female who underwent vertebroplasty for T11 and T12 vertebral compression fracture. Results. CT-scan revealed an incidental finding of cement embolism in the pulmonary trunk and both pulmonary arteries. Since the patient was asymptomatic, she was monitored closely and she did not need any intervention. Conclusion. Vertebroplasty is a minimally invasive procedure used for treatment of vertebral compression fracture. Despite the low rate of complications, a pulmonary cement embolism can occur. Theconsequences of cement embolism range widely frombeing asymptomatic to embolism that can cause paralysis, radiculopathy, or a fatal pulmonary embolism.

3-2-315	
Title	**Resveratrol-salicylate Derivatives As Selective Dnmt3 Inhibitors and Anticancer Agents**
Authors	Fahad S. Aldawsari, Rodrigo Aguayo-ortiz, Kanishk Kapilashrami, Jakyung Yoo, Minkui Luo, José L. Medina-franco, and Carlos A. Velázquez-martinez.
Program	Pharmacy and Pharmaceutical Sciences
University	University of Alberta
Journal	Tylor and Francis
Date of Publication	June 29, 2015

Abstract

Resveratrol is a natural polyphenol with plethora of biological activities. Resveratrol has previously shown to decrease DNA methyltransferase (DNMT) enzymes expression and to reactivate silenced tumor suppressor genes. Currently, it seems that no resveratrol analogues have been developed as DNMT inhibitors. Recently, we reported the synthesis of resveratrol-salicylate derivatives and by examining the chemical structure of these analogues, we proposed that these compounds could exhibit DNMT inhibition especially that they resembled NSC 14778, a compound we previously identified as DNMT inhibitor by virtual screening. Indeed, using in vitro DNMT inhibition assay, some of the resveratrol-salicylate analogues we screened in this work showed selective inhibition against DNMT3 enzymes which was greater than resveratrol. Amolecular docking study revealed key binding interactions with DNMT3A and DNMT3B enzymes. Additionally, the most active analogues, 10 showed considerable cytotoxicity against three human cancer cells; HT-29, HepG2 and SK-BR-3 which was greater than resveratrol. Further studies are needed to understand the anticancer mechanisms of these derivatives.

3-2-316	
Title	**Hamstring Injuries in Athletes: Diagnosis and Treatment**
Authors	Mohammad M. Alzahrani, Md, Msc(c) Sultan Aldebeyan, Md, Msc(c) Fahad Abduljabbar, Mbbs Paul A. Martineau, Md, Frcsc
Program	Orthopedic Surgery
University	Mcgill University
Journal	Jbjs Reviews
Date of Publication	June 30, 2015

Abstract

Hamstring injuries are one of the most common sports injuries as they can affect both recreational and elite athletes1-3. These injuries have gained considerable attention in the literature because of the length of time lost from sports and the burden both on athletes and indirectly on their teams. Although fairly common, these types of injuries are considered a difficult entity to treat. Controversy exists as to the optimal treatment plan, the possible need for operative intervention, and the postoperative rehabilitation program. The first step in treating these injuries is prompt identification andaccurate diagnosis. The vast majority of these injuries are muscle strains, but failure to identify the small subset of proximal and distal injuries can therefore delay the presentation to a specialist and potentially adversely affect the outcome4. These injuries have a tendency to recur, especially in elite athletes, and some patients may develop chronic symptoms. The purposes of this review are (1) to summarize the epidemiology, classification, and evaluation of hamstring injuries; (2) to provide evidence-based principles of hamstring injury treatment, including nonoperative treatment, operative treatment, and rehabilitation protocols; and (3) to assess preventive measures and programs to decrease the incidence of these injuries in both recreational and elite athletes.

3-2-317	
Title	**Macular Atrophy in a Case of Abetalipoproteinemia As Only Ocular Clinical Feature.**
Authors	Alshareef Ra, Bansal As, Chiang A, Kaiser Rs.
Program	Ophthalmology
University	Mcgill University
Journal	Canadian Journal of Ophthalmology
Date of Publication	June 30, 2015

Abstract

Abetalipoproteinemia is an autosomal recessive disorder that effects absorption of fat due to the absence of lipoprotein

B.(1) Ocular manifestations include Retinal pigment epithelial changes which resemble retinitis pigmentosa, (2) ophthalmoplegia, ptosis, nystagmus, cataracts, angioid streaks, Helicoid peripapillary chorioretinal degeneration was also described. (3) Atrophic maculopathy is characterized by loss of retinal pigment epithelium within the macula. We report a case of unilateral macular atrophy associated with abetalipoproteinemia.

3-2-318	
Title	**The Results of Different Diagnostic Imaging Studies Used in Children with Urinary Tract Infection**
Authors	Majida Noori Nasaif Ahmed Hassan Alghamdi Jameel Al Ghamdi Ali Al-dammas
Program	Neonatal Medicine- Paediatrics
University	Mcmaster University
Journal	Sudanese Journal of Paediatrics
Date of Publication	July 01, 2015

Abstract

Urinary tract infections (UTI) can cause significant renal scarring, which can be complicated by hypertension and renal impairment. This study describes the outcome of different imaging modalities in children with UTI and its relation to age, sex and type of UTI. Our objective was to describe the frequencies of different imaging studies, which were used to investigate children with UTI at King Fahad Hospital (KFH) between the years 2003 and 2008. This is a descriptive study of all children presenting with UTI at KFH from 2003 to 2008. The study population, 100 children , were divided into 3 age groups; first group (> 1 month to 2 years); second group (> 2 to 5 years) , third group (> 5 to 12 years). All enrolled children were confirmed to have had UTI via urinary cultures. Ninety seven (97%) patients underwent renal ultrasonography (US), 77 (77%) had a 99mTcdimercaptosuccinic acid (DMSA) scan within 2months of presentation, and 60 (60%) patients underwent micturating cystourethrogram (MCUG), mainly those with an abnormal DMSA scan. Atotal of 100 patients screened, 10 (10%) were males and 90 (90%) were females, first age group constituted 10%, second age group was 25% , third age groups was 65%. E-coli was isolated in 84% of patients, 60% had recurrent UTI, 45% had pyelonephritis, 48.4% had abnormal renal US, 61% had an abnormal DMSA scan, and 26.6% had abnormal MCUG. UTI can cause significant morbidity in children if not managed properly. Imaging studies are useful in identifying children who require advanced medical intervention; however, such studies should be performed only when indicated.

3-2-319	
Title	**An Accelerated Diagnostic Protocol for the Early, Safe Discharge of Low-risk Chest Pain Patients**
Authors	Tawfeeq Altherwi, Mbbs*†; Willis B. Grad, Md, Cm*
Program	Emergency Medicine
University	Mcgill University
Journal	Canadian Journal of Emerency Medicine
Date of Publication	July 02, 2015

Abstract

Clinical Question Can an accelerated 2-hour diagnostic protocol using the cardiac troponin I (cTnI) measurement as the only biomarker be implemented to allow an earlier and safe discharge of low-risk chest pain patients? Article Chosen Than M, Cullen L, Aldous S, et al. 2-Hour accelerated diagnostic protocol to assess patients with chest pain symptoms using contemporary troponins as the only biomarker: The ADAPT trial. J Am Coll Cardiol 2012; 59(23):2091-8. Objective to determine whether an accelerated diagnostic protocol (ADP) for possible cardiac chest pain could identify lowrisk patients suitable for early discharge using cTnI as the sole biomarker.

3-2-320	
Title	**The Reliability and Validity of the Perceived Dietary Adherence Questionnaire for People with Type 2 Diabetes**
Authors	Ghada Asaad , Maryam Sadegian , Rita Lau , Yunke Xu, Diana C. Soria-contreras, Rhonda C. Bell and Catherine B. Chan
Program	Agricultural, Food & Nutritional Science
University	University of Alberta
Journal	Nutrients Journal
Date of Publication	July 07, 2015

Abstract

Nutrition therapy is essential for diabetes treatment, and assessment of dietary intake can be time consuming. The purpose of this study was to develop a reliable and valid instrument to measure diabetic patients' adherence to Canadian diabetes nutrition recommendations. Specific information derived from three, repeated 24-h dietary recalls of 64 type 2 diabetic patients, aged 59.2 ± 9.7 years, was correlated with a total score and individual items of the Perceived Dietary Adherence Questionnaire (PDAQ). Test-retest reliability was completed by 27 type 2 diabetic patients, aged 62.8 8.4 years. The correlation coefficients for PDAQ items versus 24-h recalls ranged from 0.46 to 0.11. The intra-class correlation (0.78) was acceptable, indicating good reliability. The results suggest that PDAQ is a valid and reliable measure of diabetes nutrition recommendations. Because it is quick to administer and score, it may be useful as a screening tool in research and as a clinical tool to monitor dietary adherence.

3-2-321	
Title	**Choosing Drugs for the Treatment of Diabetic Neuropathy**
Authors	Majed Alabdali, Mohammad Qrimli, Carolina Barnett, Alon Abraham, Ari Breiner, Hans D Katzberg, Danah Aljaafari, Hana Albulaihe, Bruce a Perkins & Vera Bril
Program	Epilepsy
University	University of Toronto
Journal	Expert Opin. Pharmacotherapy
Date of Publication	July 09, 2015

Abstract

Diabetic sensorimotor polyneuropathy (DSP) affects 50% of diabetes patients and is painful in about 26%. Although disease-modifying therapies are not available for DSP, symptomatic treatments for painful diabetic neuropathy (PDN) are effective. Areas covered: We performed a MEDLINE search on PubMed using the search terms: treatment diabetic neuropathy and treatment PDN. This review outlines the problem posed by DSP, the clinical presentation and the characterization of PDN. Adiscussion of disease-modifying interventions, including the benefits of strict glycemic control, is followed by a focus on interventions for PDN including antidepressants, anticonvulsants and other treatments. Expert opinion: Disease modification in DSP remains an unmet need in clinical medicine affecting a large percentage of the population with concomitant healthcare costs. Strict glycemic control and attention to potential risk factors such as hypertension, hyperlipidemia and obesity may minimize DSP. Many patients benefit from treatment of their painful symptoms with anticonvulsants or antidepressants, but all are associated with significant side effects that limit their usefulness. There is a need for treatments of PDN with fewer side effects and more effective pain relief.

3-2-322	
Title	**Stem-sleeve Junction Failure of Modular Femoral Hip System: A Retrieval Analysis**
Authors	1-feras Waly 2-fahad H. Abduljabbar 3-trevor Gascoyne 4-thomas R. Turgeon 5-olga Huk, Md, Msc, Frcsc
Program	Orthopaedic Surgery
University	Mcgill University
Journal	Hss Journal: The Musculoskeletal Journal of Hospital for Special Surgery
Date of Publication	July 09, 2015

Abstract

Background: The use of modular femoral hip systems in total hip arthroplasty has increased in the last two decades as they are advantageous for correction of abnormal femoral anteversion and options for reduced offset. Possible complications of using these modular stems include dissociation of components, corrosion at modular junctions and subsequent catastrophic fractures. Case Description: We report a case of a fractured modular design at the stem-sleeve interface in an adult female following modular, uncemented total hip arthroplasty. Systematic investigation and retrieval analysis were carried out to determine the underlying circumstances that contributed to the failure. Literature Review: Although fracture of the modular femoral prosthesis is a rare complication, many concerns have been raised with metal on metal modular junctions and the potential for fretting and corrosion. Purposes and Clinical Relevance: Modular stem failure is multifactorial, These factors can include the effect of mechanical micromotion and associated crevice corrosion at the stem-sleeve interface, the use of longer necks for higher offset, varus implant alignment, cross-sectional area of the stem, patient's obesity and activity level.

3-2-323	
Title	**Choosing Drugs for the Treatment of Diabetic Neuropathy**
Authors	Majed Alabdali, Mohammad Qrimli, Carolina Barnett, Alon Abraham, Ari Breiner, Hans D Katzberg, Danah Aljaafari, Hana Albulaihe, Bruce a Perkins and Vera Bril
Program	Neurology/ Neuromuscular Department
University	University of Toronto
Journal	Expert Opinion on Pharmacotherapy
Date of Publication	July 10, 2015

Abstract

Introduction: Diabetic sensorimotor polyneuropathy (DSP) affects 50% of diabetes patients and is painful in about 26%. Although disease-modifying therapies are

not available for DSP, symptomatic treatments for painful diabetic neuropathy (PDN) are effective. Areas covered: We performed a MEDLINE search on PubMed using the search terms: treatment diabetic neuropathy and treatment PDN. This review outlines the problem posed by DSP, the clinical presentation and the charac- terization of PDN. Adiscussion of disease-modifying interventions, including the benefits of strict glycemic control, is followed by a focus on interventions for PDN including antidepressants, anticonvulsants and other treatments. Expert opinion: Disease modification in DSP remains an unmet need in clinical medicine affecting a large percentage of the population with concomitant healthcare costs. Strict glycemic control and attention to potential risk factors such as hypertension, hyperlipidemia and obesity may minimize DSP. Many patients benefit from treatment of their painful symptoms with anticonvul- sants or antidepressants, but all are associated with significant side effects that limit their usefulness. There is a need for treatments of PDN with fewer side effects and more effective pain relief. Keywords: diabetic neuropathy, drug, painful diabetic neuropathy, treatment Expert Opin. Pharmacother. [Early Online]

3-2-324	
Title	**Choosing Drugs for the Treatment of Diabetic Neuropathy**
Authors	Majed Alabdali, Mohammad Qrimli, Carolina Barnett, Alon Abraham, Ari Breiner, Hans D Katzberg, Danah Aljaafari, Hana Albulaihe, Bruce a Perkins & Vera Bril
Program	Neuromuscular Disorders
University	University of Toronto
Journal	Expert Opin. Pharmacotherapy
Date of Publication	July 10, 2015

Abstract

Diabetic sensorimotor polyneuropathy (DSP) affects 50% of diabetes patients and is painful in about 26%. Although disease-modifying therapies are not available for DSP, symptomatic treatments for painful diabetic neuropathy (PDN) are effective.

3-2-325	
Title	**The Association Between Leisure Time Physical Activity and Pancreatic Cancer Risk in Adults: A Systematic Review and Meta-analysis**
Authors	Megan S. Farris, Mohammed H. Mosli, Alison A. Mcfadden, Christine M. Friedenreich, and Darren R. Brenner
Program	Community Health Sciences
University	University of Calgary
Journal	Cancer Epidemiology, Biomarkers & Prevention
Date of Publication	July 14, 2015

Abstract

We conducted a meta-analysis of the association between leisure time physical activity (LTPA) and risk of pancreatic cancer to update previous analyses in light of newly published studies, to examine subgroups of interest and potential sources of heterogeneity. We searched the PubMed and MEDLINE databases for studies until February 2015. Study information was collected using a standardized form to abstract relevant data on study design, number of cases, participant and study characteristics, assessment of LTPA, risk estimates, and adjustments for confounding by two independent abstractors. We used random-effects models to pool estimates from included studies of lowest versus highest comparison of LTPA. The search identified 26 studies eligible for inclusion into the meta-analysis. The combined summary risk estimate was [relative risk (RR), 0.89; 95% confidence interval (CI), 0.82-0.96]. There was evidence of heterogeneity across studies (I 2 = 22.1%, P heterogeneity = 0.130). Some of the heterogeneity could be explained by study design, with stronger protective effects observed among case-control studies (RR, 0.69; 95% CI, 0.59-0.81) compared with cohort studies (RR, 0.96; 95% CI, 0.91-1.02). Across study designs, age of population was a source of heterogeneity, with stronger effects observed among younger (<50 years) populations. The present meta-analysis supports a protective association between LTPA and pancreatic cancer with an 11% risk reduction observed. LTPA appears to have the strongest effect among young populations. Additional investigations are needed to provide insights regarding the impact of LTPA in healthy adult populations, to reduce the risk of pancreatic cancer and encourage increases in LTPA.

3-2-326	
Title	**Subcutaneous Abatacept in Rheumatoid Arthritis: Current Update**
Authors	Edward Keystone, Abdulaziz Alkhalaf & Mosaab Makkawy
Program	Rheumatology
University	University of Toronto
Journal	Expert Opinion on Biological Therapy
Date of Publication	July 15, 2015

Abstract

INTRODUCTION: A number of biologic agents have been approved for the treatment of rheumatoid arthritis (RA). They have changed the landscape of therapy and demonstrate substantial efficacy with a good safety record. One of these agents is intravenous (i.v.) abatacept (ABA), which has a novel mechanism of action by selectively inhibiting the interaction between T- and antigen-presenting cells. Recently, ABA administered by subcutaneous (s.c.) injection has also been approved for use in RA. In this review, will focus in recent data published in this agent. AREAS COVERED: This paper reviews Phase III clinical trials (ACQUIRE, ACCOMPANY, ALLOW, ATTUNE, AMPLE and AVERT) in terms of clinical efficacy including long-term efficacy, radiographic progression, safety and immunogenicity. EXPERT OPINION: Given the current trend in biologic therapy to s.c. administration, the availability of both i.v. And s.c. ABA provides considerable advantage both to patients and physicians in this competitive environment. The clinical trials have shown comparable efficacy and safety of s.c. ABA to i.v. ABA and others biologics. KEYWORDS: abatacept; biologic therapy; rheumatoid arthritis; subcutaneous.

3-2-327	
Title	**Subcutaneous Abatacept in Rheumatoid Arthritis: Current Update**
Authors	Edward Keystone, Abdulaziz Alkhalaf & Mosaab Makkawy
Program	Rheumatology
University	University of Toronto
Journal	Expert Opinion on Biological Therapy
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Abstract

INTRODUCTION: A number of biologic agents have been approved for the treatment of rheumatoid arthritis (RA). They have changed the landscape of therapy and demonstrate substantial efficacy with a good safety record. One of these agents is intravenous (i.v.) abatacept (ABA), which has a novel mechanism of action by selectively inhibiting the interaction between T- and antigen-presenting cells. Recently, ABA administered by subcutaneous (s.c.) injection has also been approved for use in RA. In this review, will focus in recent data published in this agent. AREAS COVERED: This paper reviews Phase III clinical trials (ACQUIRE, ACCOMPANY, ALLOW, ATTUNE, AMPLE and AVERT) in terms of clinical efficacy including long-term efficacy, radiographic progression, safety and immunogenicity. EXPERT OPINION: Given the current trend in biologic therapy to s.c. administration, the availability of both i.v. And s.c. ABA provides considerable advantage both to patients and physicians in this competitive environment. The clinical trials have shown comparable efficacy and safety of s.c. ABA to i.v. ABA and others biologics.

3-2-328	
Title	**Anti-vegfs Hinder Bone Healing and Implant Osseointegration in Rat Tibiae**
Authors	A. Al Subaie, H. Eimar, M. Abdallah, R. Durand, J. Feine, F. Tamimi* , E. Emami1* .
Program	Oral & Maxillofacial Surgery
University	Mcgill University
Journal	Journal of Clinical Periodontology
Date of Publication	July 16, 2015

Abstract

Aim: to assess the effect of anti-vascular endothelial growth factors on bone healing (defect volume) and implant osseointegration (bone-implant-contact percent) in rat tibia. Materials and Methods: InSprague Dawley rats (n=36), a unicortical defect was created in the right tibia and a titanium implant was placed in the left tibia of each rat. Rats were assigned into 3 groups and received either anti-vascular endothelial growth factor neutralizing antibody, Ranibizumab or saline (control). Two weeks following surgery, rats were euthanized and bone samples were retrieved. Bone healing and osseointegration were assessed using micro-CT and histomorphometry. One-way ANOVA followed by the Tukey's test was used for data analyses. Results: The volume of the bone defects in the anti-VEGF group (2.48 + 0.33 mm3) was larger (p=0.026) than in the controls (2.11 + 0.36 mm3) as measured by μ-CT. Bone-implant contact percent in the anti-VEGF (19.9 + 9.4%) and Ranibizumab (21.7 + 9.2 %) groups were lower (p<0.00) than in the control group (41.8 + 12.4 %). Conclusions: The results of this study suggest that drugs that inhibit the activity of vascular endothelial growth factor (i.e. anti-VEGF) may hinder bone healing and implant osseointegration in rat tibiae.

3-2-329	
Title	**Factors Predicting Prolonged Operative Time for Individual Surgical Steps of Robot-assisted Radical Prostatectomy (rarp): A Single Surgeon's Experience**
Authors	Abdullah M. Alenizi, Md;*§ Roger Valdivieso, Md;* Emad Rajih, Md;*§ Malek Meskawi, Md;* Cristian Toarta, Md;* Marc Bienz, Md;* Mounsif Azizi, Md;* Pierre Alain Hueber, Md;* Hugo Lavigueur-blouin, Md;* Vincent Trudeau, Md;* Quoc-dien Trinh, Md, Frcsc;† Assaad El-hakim, Md, Frcsc;§ Kevin C. Zorn, Md, Frcsc*
Program	Robotic Urology
University	Université de Montréal
Journal	Canadian Urological Association Journal (cuaj)
Date of Publication	July 17, 2015

Abstract

Introduction: We evaluated the average time required to complete individual steps of robotic-assisted radical prostatectomy (RARP) by an expert RARP surgeon. The intent is to help establish a time- based benchmark to aim for during apprenticeship. In addition, we aimed to evaluate preoperative patient factors, which could prolong the operative time of these individual steps. Methods: We retrospectively identified 247 patients who under- went RARP, performed by an experienced robotic surgeon at our institution. Baseline patient characteristics and the duration of each step were recorded. Multivariate analysis was performed to predict factors of prolonged individual steps. Results: Inmultivariable analysis, obesity was a significant predic- tor of prolonged operative time of: docking (odds ratio [OR] 1.96), urethral division (OR 3.13), and vesico-urethral anastomosis (VUA) (OR 2.63). Prostate volume was also a significant predictor of lon- ger operative time in dorsal vein complex ligation (OR 1.02), blad- der neck division (OR 1.03), pedicle control (OR 1.04), urethral division (OR 1.02), and VUA (OR 1.03). Aprolonged bladder neck division was predicted by the presence of a median lobe (OR 5.03). Only obesity (OR 2.56) and prostate volume (OR 1.04) were pre- dictors of a longer overall operative time. Conclusions: Obesity and prostate volume are powerful predictors of longer overall operative time. Furthermore, both can predict prolonged time of several individual RARP steps. The presence of a median lobe is a strong predictor of a longer bladder neck division. These factors should be taken into consideration during RARP training.

3-2-330	
Title	**Prevalence and Risk Factors of Contralateral Extraprostatic Extension in Men Undergoing Radical Prostatectomy for Unilateral Disease at Biopsy: A Global Multi-institutional Experience**
Authors	Marc Bienz, Pierre-alain Hueber, Vincent Trudeau, Abdullah M. Alenizi, Roger Valdivieso, Modar Alom, Mevlana Derya Balbay, Abdullah Erdem Canda, Vladimir Mouraviev, David M. Albala, Assaad El-hakim, Quoc-dien Trinh, Mathieu Latour, Fred Saad, Kevin C. Zorn
Program	Robotic Urology
University	Université de Montréal
Journal	Canadian Urological Association Journal (cuaj)
Date of Publication	July 17, 2015

Abstract

Introduction: We assessed the incidence of contralateral prostate cancer (cPCa), contralateral EPE (cEPE) and contralateral positive surgical margins (cPSM) in patients diagnosed preoperatively with unilateral prostate cancer and evaluated risk factors predictive of contralateral disease extension. Methods: The occurrence of cPCa, cEPE and cPSM and the sidespecific nerve-sparing technique performed were collected postoperatively from 327 men diagnosed with unilateral prostate cancer at biopsy. Parameters, such as the localization, proportion, and percentage of cancer in positive cores, were prospectively collected. Results: Overall, 50.5% of patients had bilateral disease, and were at higher risk when associated with a positive biopsy core at the apex ($p = 0.016$). The overall incidence of ipsilateral EPE and cEPE were 21.4% and 3.4%, respectively ($p < 0.001$). Compared to cPCa, ipsilateral disease was at an almost 4-fold higher risk of extending out of the prostate ($p < 0.001$). None of the criteria tested were identified as useful predictors for cEPE. The low incidence of cEPE in our cohort could limit our ability to detect significance. The overall incidence of ipsilateral PSM and cPSM were 15.3% and 5.8%, respectively ($p < 0.001$). More aggressive nerve-sparing was not associated with a higher incidence of PSM. Prostate sides selected for more aggressive nerve-sparing were associated with younger patients ($p < 0.001$), a smaller prostate ($p = 0.006$), and a lower percentage of cancer in biopsy material ($p = 0.008$). Conclusion: Although the risk of cPCa is high in patients diagnosed with unilateral prostate cancer at biopsy, the risk of cEPE and cPSM is low, yet not insignificant. Contralateral aggressive nervesparing should be used with caution and should not compromise oncological outcome.

3-2-331	
Title	**Factors Predicting Prolonged Operative Time for Individual Surgical Steps of Robot-assisted Radical Prostatectomy (rarp): A Single Surgeon's Experience**
Authors	Abdullah M. Alenizi, Md;*§ Roger Valdivieso, Md;* Emad Rajih, Md;*§ Malek Meskawi, Md;* Cristian Toarta, Md;* Marc Bienz, Md;* Mounsif Azizi, Md;* Pierre Alain Hueber, Md;* Hugo Lavigueur-blouin, Md;* Vincent Trudeau, Md;* Quoc-dien Trinh, Md, Frcsc;† Assaad El-hakim, Md, Frcsc;§ Kevin C. Zorn, Md, Frcsc
Program	Urology
University	Université de Montréal
Journal	Canadian Urological Association Journal
Date of Publication	July 17, 2015

Abstract

Introduction: We evaluated the average time required to complete individual steps of robotic-assisted radical prostatectomy (RARP) by an expert RARP surgeon. The intent is to help establish a timebased benchmark to aim for during apprenticeship. In addition, we aimed to evaluate preoperative patient factors, which could prolong the operative time of these individual steps. Methods: We retrospectively identified 247 patients who underwent RARP, performed by an experienced robotic surgeon at our institution. Baseline patient characteristics and the duration of each step were recorded. Multivariate analysis was performed to predict factors of prolonged individual steps. Results: Inmultivariable analysis, obesity was a significant predictor of prolonged operative time of: docking (odds ratio [OR] 1.96), urethral division (OR 3.13), and vesico-urethral anastomosis (VUA) (OR 2.63). Prostate volume was also a significant predictor of longer operative time in dorsal vein complex ligation (OR 1.02), bladder neck division (OR 1.03), pedicle control (OR 1.04), urethral division (OR 1.02), and VUA (OR 1.03). Aprolonged bladder neck division was predicted by the presence of a median lobe (OR 5.03). Only obesity (OR 2.56) and prostate volume (OR 1.04) were predictors of a longer overall operative time. Conclusions: Obesity and prostate volume are powerful predictors of longer overall operative time. Furthermore, both can predict prolonged time of several individual RARP steps. The presence of a median lobe is a strong predictor of a longer bladder neck division. These factors should be taken into consideration during RARP training.

3-2-332	
Title	**Intraplacental Villous Artery Resistance Indices and Identification of Placenta-mediated Diseases**
Authors	I Babic, Zm Ferraro, K Garbedian, a Oulette, Cg Ball, F Moretti and a Gruslin
Program	Maternal - Fetal Medicine
University	University of Ottawa Postgraduate Medical Education
Journal	Journal of Perinatology
Date of Publication	July 30, 2015

Abstract

OBJECTIVE: Placenta-mediated diseases (PMDs) including preeclampsia and fetal growth restriction are often characterized by shallow trophoblast invasion and incomplete spiral artery remodeling leading to impaired placental perfusion. In this context, umbilical artery (UA) Doppler can be used to detect high resistance to flow characteristic of very late-stage placental disease. We propose that evaluation of intraplacental villous artery (IPVA) resistance can provide earlier detection of increased resistance in placental flow. STUDY DESIGN: Seventy-five patients were recruited from the Ottawa Hospital. All had scans at 18 to 20, 28 and 34 weeks of gestation. IPVAs arising perpendicular to the chorionic plate in three regions (placental tips 4 cm away from cord insertion and within 1 cm from cord insertion) were sampled at each gestational age for resistance index (RI) and pulsatility index (PI). UA Doppler was also obtained from a free loop of cord. Pregnancy outcomes were collected from a chart review. Data were analyzed using SAS version 9.4 and standard statistic tests (mean ± s.d., Student's t-test, mixed-effects modeling). RESULT: A total of 53 patients completed the study. Of these, 38 had normal pregnancy outcomes (controls) and 15 (cases) developed PMD (preeclampsia, n = 8 and low birth weight/intrauterine growth restriction, n = 7). Mean birth weight in the study group was 2482.1 ± 518.85 g. At 18 to 20, 28 and 34 weeks gestation, the mean IPVA resistance indices in the control group were 0.86 ± 0.16, 0.81 ± 0.12 and 0.71 ± 0.12 for PI and 0.57 ± 0.07, 0.55 ± 0.06 and 0.49 ± 0.06 for RI, respectively. However, in the cases developing PMDs, the PIs were 1.09 ± 0.17, 0.95 ± 0.21 and 0.78 ± 0.07 and RIs 0.66 ± 0.07, 0.60 ± 0.07 and 0.54 ± 0.04, respectively (Po0.05). UA PI and RI Doppler did not differ between the groups as early as 18 to 20 weeks gestation. CONCLUSION: Doppler measures of IPVA appear superior to UA in detecting early changes related to PMD. IPVA PI and RI Doppler may be useful in the early identification of patients at risk of PMD. Journal of Perinatology advance online publication, 30 July 2015; doi:10.1038/jp.2015.85

3-2-333	
Title	**Initial Assessment of Patient Handoff in Accredited General Surgery Residency Programs in the United States and Canada: A Cross-sectional Survey**
Authors	Abdulaziz M. Saleem, Md Jessica K. Paulus, Scd Melina C. Vassiliou, Md Susan K. Parsons, Md
Program	General Surgery
University	Mcgill University
Journal	Canadian Journal of Surgery / Canadian Association of General Surgeons
Date of Publication	August 01, 2015

Abstract

Background: Communication errors are considered one of the major causes of senti- nel events. Our aim was to assess the process of patient handoff among junior surgical residents and to determine ways in which to improve the handoff process. Methods: We conducted nationwide surveys that included all accredited general surgery residency programs in the United States and Canada. Results: Of the 244 American and 17 Canadian accredited surgical residency pro- grams contacted, 65 (27%) and 12 (71%), respectively, participated in the survey. Of the American and Canadian respondents, 66% and 69%, respectively, were from post- graduate year (PGY) 1, and 32% and 29%, respectively, were from PGY 2; 85 (77%) and 50 (96%), respectively, had not received any training about patient handoff before their surgical residency, and 27% and 64%, respectively, reported that the existing handoff system at their institutions did not adequately protect patient safety. More- over, 29% of American respondents and 37% of Canadian respondents thought that the existing handoffs did not support continuity of patient care. Of the American resi- dents, 67% and 6% reported receiving an incomplete handoff that resulted in minor and major patient harm, respectively. These results mirrored results from Canadian residents (63% minor and 7% major harm). The most frequent factor reported to improve the patient handoff process was standardization of the verbal handoff. Conclusion: Our survey results indicate that the current patient handoff system con- tributes to patient harm. More efforts are needed to establish standardized forms of verbal and written handoff to ensure patient safety and continuity of care.

3-2-334	
Title	**Uroflow Stop Test and Potency Recovery: A Surrogate for Pelvic Floor Integrity Post Robotic Assisted Radical Prostatectomy?**
Authors	Abdullah M. Alenizi, Marc Bienz, Emad Rajih, Anwar Alesawi, Naif Al-hathal, Serge Benayoun, Thierry Lebeau, Kevin C. Zorn, Assaad El-hakim
Program	Robotic Urology
University	Université de Montréal
Journal	Urology Journal/ Elsevier
Date of Publication	August 04, 2015

Abstract

OBJECTIVE: study the relation between uroflow Stop Test and early recovery of potency following RARP. We recently showed that the ability to completely stop urine flow during voiding, measured objectively by uroflowmetry at the time of catheter removal (uroflow Stop Test) can predict early urinary continence recovery following RARP. METHODS: Inthis prospective observational cohort, data was collected on 108 patients operated by a single surgeon (AEH). Eighty patients had a positive uroflow Stop Test (group one) and 28 had a negative Stop Test (group two). Patients were followed for a minimum of 2 years. Covariates included age, BMI, IPSS and SHIM scores, PSA, tumor stage, prostate volume, nerve sparing status and EBL. RESULTS: Preoperative characteristics were comparable between both groups except nerve sparing and PSA which were statistically higher in group one ($p<0.05$). Early 3- and 6-months recovery of erectile function was significantly higher in group one. Potency rates in group one and two at 1, 3, 6, 9, 12, 18 and 24 months were 25% vs. 14.3% (p 0.241), 54.5% vs. 18.5% (p 0.001), 55.4% vs. 18.5% (p 0.001), 56.4% vs. 36% (p 0.084), 66.6% vs. 50% (p 0.141), 65.5% vs. 56% (p 0.404) and 73.2% vs. 57.7% (p 0.160) respectively. Uroflow Stop Test was independent predictor of early potency recovery on multivariate regression analysis at 6 months [OR 6.042 (CI95% 1.496-24.413) p= 0.012]. CONCLUSION: Although simple, Uroflow stop test may help predict early potency recovery post RARP. The aim of this study is to evaluate whether the uroflow Stop Test can predict early recovery of potency following RARP.

3-2-335	
Title	**The Introduction of Basic Critical Care Echocardiography Reduces the Use F Diagnostic Echocardiography in the Intensive Care Unit**
Authors	Aws Alherbish, Md 1, Fran Priestap, Msc, Robert Arntfield, Md*,2
Program	Critical Care
University	The University of Western Ontario
Journal	Journal of Critical Care
Date of Publication	August 07, 2015

Abstract

Background: Basic critical care echocardiography (CCE) is routinely used by intensive care unit (ICU) providers to rapidly address key hemodynamic questions for the critically ill. By comparison, diagnostic echocardiography (DE) uses a comprehensive examination with more traditional workflow and sophisticated techniques. Despite these differences, both are frequently used to answer similar questions in ICU. This overlap raises questions of duplicate testing and redundancy of hospital resources. We therefore evaluated the effect of the introduction of basic CCE over the use of DE in Victoria Hospital, a tertiary care ICU in London Ontario, Canada. Methods: The monthly mean ratios of basic CCE and DE studies to patient care days (PCD) were plotted and general linear models were used to test for trends over time. Student t test was used to compare the mean DE/PCD before and after the introduction of basic CCE. The ratio of management actions for basic CCE studies was described. Outcome measures were compared using Pearson $\chi 2$ test of association or the Wilcoxon rank sum test. Results: Over the 2-year study period, 1264 basic CCE studies were performed. Over this time, the ratio of CCE/PCD increased significantly (P b .001),whereas the ratio of DE/PCD decreased significantly (P=.004).When comparing the pre- and post-CCE periods, the mean DE/PCD decreased significantly from 5.27% to 4.51% (P = .01). There was no adverse change in ICU outcomes before and after the introduction of basic CCE. Mortality rates (pre- and post-CCE) were 23.69% and 24.61% (P= .48); median length of stay was 4.18 and 3.53 days (P b .001); and ventilated patient day rate was 64.96% and 64.93% (P N .9). There was a significant increase in vasoactive/inotropic drugs from a 20.47% vasoactive/inotropic drug/patient day rate to 21.99% (P b .001). Of all basic CCE studies, 61% led to a specific management action, including ordering a DE in 10.7% of cases. Conclusion: Ina hospitalwith a significant increase in basic CCE use, an associated significant decrease in DE usewas observed with no increase in adverse outcomes. The significant increase in basic CCE use resulted in a change of management in most cases including the request for DE in a minority of cases.

3-2-336	
Title	**Repeatability of Associated Phoria Tests**
Authors	1) Mosaad Alhassan 2) Jeffery K. Hovis 3) Ralph B. Chou
Program	Phd in Vision Science, School of Optometry and Vision Science
University	University of Waterloo
Journal	Optometry and Vision Science
Date of Publication	August 08, 2015

Abstract

Purpose. H.J. Haase developed a set of tests for measuring associated phoria and stereopsis using a variety of different targets for each. This testing method is known as the MKH-Haase method and it is used commonly in Germany. The aim of this study was to investigate the test-retest repeatability of the distance and near associated phoria tests for the MKH-Haase charts and other clinical tests. Methods. Horizontal and vertical associated phorias were measured at distance and near for 34 symptomatic and 40 asymptomatic participants with different tests. The tests are Cross, Pointer, Double Pointer, and Rectangle tests of MKH-Haase charts at distance and near. The other common tests include theMallett Test and the American Optical (AO) Slide at distance. At near, there are the Mallett Test, the AO Card, the Saladin Card, the Wesson Card, and the Sheedy Disparometer. Results. The 95% limits of agreement for all of the distance horizontal values for the symptomatic group were within T1.25$, except for the AO Slide limits, which were larger by 0.43$. The limits of agreement for the asymptomatic group were within T0.875$.At near, the 95%limits of agreement formost of the horizontal associated phoria testswere T2.00$. The exceptionwas the symptomatic group's Sheedy Disparometer limits, which werej4.25 to 5.75$. Except for the Disparometer values for the asymptomatic group, the mean between-session differences were not statistically significant different from zero based on the 95% confidence interval. The asymptomatic group's mean Disparometer value was less eso at the second session. The 95% limits of agreement for all of the vertical values at distance and near for both groups were very narrow (i.e., within T0.375$). Conclusions. Most of the tests showed good repeatability for both subject groups at distance and near, except for the Sheedy Disparometer. The reason for the lower repeatability could be the design of the Disparometer.

3-2-337	
Title	**Obstructive Sleep Apnea and Kidney Disease: A Potential Bidirectional Relationship?**
Authors	Abuyassin B, Sharma K, Ayas Nt, Laher I.
Program	Experimental Medicine
University	University of British Columbia (vancouver Campus)
Journal	Journal of Clinical Sleep Medicine
Date of Publication	August 15, 2015

Abstract
Chronic kidney disease (CKD) is associated with high mortality rates and heavy economic and social burdens. Nearly 10% of the United States population suffer from CKD, with fatal outcomes increased by 16-40 times even before reaching end-stage renal disease. The prevalence of obstructive sleep apnea (OSA) is between 3% and 7% in the general population, and has increased dramatically during the last 2 decades along with increased rates of obesity. However, the prevalence of OSA is much greater in patients with CKD. In addition, aggressive dialysis improves OSA. The current literature suggests a bidirectional association between CKD and OSA through a number of potential pathological mechanisms, which increase the possibility of both diseases being possible risk factors for each other. CKD may lead to OSA through a variety of mechanisms, including alterations in chemoreflex responsiveness, pharyngeal narrowing due to fluid overload, and accumulation of uremic toxins. It is also being increasingly recognized that OSA can also accelerate loss of kidney function. Moreover, animals exposed to intermittent hypoxia suffer histopathological renal damage. Potential mechanisms of OSA-associated renal dysfunction include renal hypoxia, hypertension, endothelial dysfunction, activation of the sympathetic nervous system, and increased oxidative stress.

3-2-338	
Title	**Solitary Hepatic Nodule Adjacent to the Right Portal Vein: A Common Finding of Alagille Syndrome?**
Authors	Alhammad A, Kamath Bm, Chami R, Ng Vl, Chavhan Gb.
Program	Pediatric Radiology
University	University of Toronto
Journal	Journal of Pediatric Gastroenterology & Nutrition
Date of Publication	August 18, 2015

Abstract
BACKGROUND: Hepatic lesions have been described in Alagille syndrome (ALGS) in isolated case reports, and most of these have been reported to be hepatocellular carcinoma (HCC). OBJECTIVES: to determine the frequency, imaging and histopathologic characteristics of hepatic lesions in children with ALGS. METHODS: Available abdominal imaging of children with ALGS was retrospectively reviewed to note the presence of any focal liver lesion, its location and imaging characteristics. Other findings including signs of portal hypertension, portal lymph nodes, splenic and renal abnormalities were also noted. Findings were correlated with pathology in available cases and with clinical follow up. RESULTS: Of 55 children with clinically and/or genetically confirmed ALGS followed in the Liver Clinic, 39 (19 boys, 20 girls; mean age- 8.9 years) with imaging available on PACS were included in the study. Focal hepatic lesions were seen in 12/39 (30%) children, solitary in 11 and multiple in one. Ten of these children had a large nodule adjacent to the right portal vein. The median diameter of the lesions was 8.1 (range 5.6 to 9.8) cm. MRI features and pathology in available cases were suggestive of a regenerative nodule. AFP levels were normal in all except one child who had mild elevation. CONCLUSIONS: Combining our series and previous case reports, the presence of a large nodule adjacent to the right portal vein appears to be a common finding in ALGS. The typical location, normal AFP levels, MRI features with vessels coursing through the lesion can reliably differentiate this benign nodule from HCC.

3-2-339	
Title	**Diagnostic Value of Sox-10 Immunohistochemical Staining for the Detection of Uveal Melanoma**
Authors	Sarah a Alghamdi, Pablo Zoroquiain, Ana Beatriz T Dias, Sulaiman R Alhumaid, Sultan Aldrees and Miguel N Burnier Jr
Program	Pathology
University	Mcgill University
Journal	Ecancer
Date of Publication	August 20, 2015

Abstract
Objectives: SOX-10 has been shown to be a sensitive marker of cutaneous melanoma. This study aimed to evaluate Sox-10 expression in uveal melanoma. Methods: A total of 40 tissue blocks of enucleated eyes with uveal melanoma were cut and stained using an anti-SOX-10 mouse monoclonal antibody and HMB-45 antibody. Results: SOX-10 showed exclusive nuclear positivity in 100% of the uveal melanoma cases (38/38). HMB-45 showed cytoplasmic positivity in 97.3 (37/38). Positivity for SOX-10 was also noted in the inner and outer nuclear layers of the retina in 78% of the enucleated eyes. Conclusions: SOX-10 expression proved to be the most sensitive marker for uveal melanoma, and therefore, we propose a modified panel for the diagnosis of uveal melanoma that includes both SOX-10 and HMB-45. The observation of distinct, diffuse nuclear SOX-10 expression in retinal inner and outer nuclear layers is a finding that warrants further investigation as a marker for retinoblastoma. Keywords: uveal melanoma, SOX-10, immunohistochemistry

3-2-340	
Title	**Preoperative Diagnostic Angiogram and Endovascular Aortic Stent Placement for Appleby Resection Candidates: A Novel Surgical Technique in the Management of Locally Advanced Pancreatic Cancer**
Authors	N. Trabulsi,1,2 J. S. Pelletier,1 C. Abraham,3 and T. Vanounou1
Program	Surgery
University	Mcgill University
Journal	Hindawi Publishing Corporation Hpb Surgery
Date of Publication	August 26, 2015

Abstract
Background. Pancreatic adenocarcinoma of the body and tail usually presents late and is typically unresectable. The modified Appleby procedure allows resection of pancreatic body carcinoma with celiac axis (CA) invasion. Given that the feasibility of this technique is based on the presence of collateral circulation, it is crucial to confirm the presence of an anatomical and functional collateral system. Methods. We here describe a novel technique used in two patients who were candidates for Appleby resection. We present their clinical scenario, imaging, operative findings, and postoperative course. Results. Both patients had a preoperative angiogram for assessment of anatomical circulation and placement of an endovascular stent to cover the CA.We hypothesize that this new technique allows enhancement of collateral circulation and helps minimize intraoperative blood loss when transecting the CA at its takeoff. Moreover, extra length on the CA margin may be gained, as the artery can be transected at its origin without the need for vascular clamp placement. Conclusion. We propose this novel technique in the preoperative management of patients who are undergoing a modified Appleby procedure.While further experience with this technique is required, we believe that it confers significant advantages to the current standard of care.

3-2-341	
Title	**Intraventricular Hemorrhage in Asphyxiated Newborns Treated with Hypothermia: A Look Into Incidence, Timing and Risk Factors**
Authors	Ghalia Al Yazidi, Elodie Boudes, Xianming Tan, Christine Saint-martin, Michael Shevell and Pia Wintermark
Program	Child Neurology
University	Mcgill University
Journal	Bmc Pediatrics
Date of Publication	August 28, 2015

Abstract
Background: Intraventricular hemorrhage (IVH) is uncommon in term newborns. Asphyxia and hypothermia have been mentioned separately as possible risk factors of IVH, since they might cause fluctuations of cerebral blood flow. The aim of this study was to assess the incidence, the timing, and the risk factors of intraventricular hemorrhage (IVH) in term asphyxiated newborns treated with hypothermia. Methods: We conducted a prospective cohort study of all term asphyxiated newborns treated with hypothermia from August 2008 to June 2013. The presence or not of IVH was assessed using brain magnetic resonance imaging (MRI) performed after the hypothermia treatment was completed or using head ultrasound during the hypothermia treatment. Forthese newborns, to determine the timing of IVH, we retrospectively reviewed if they had other brain imaging studies performed during their neonatal hospitalization stay. In addition, we compared their general characteristics with those not developing IVH. Results: One hundred and sixty asphyxiated newborns met the criteria for hypothermia. Fifteen of these newborns developed IVH, leading to an estimate of 9 % (95 % CI: 5.3-15.0 %) of IVH in this population of newborns. Fifty-three percent had hemorrhage limited to the choroid plexus or IVH without ventricular dilatation; 47 % had IVH with ventricular dilatation or parenchymal hemorrhage. Sixty-seven percent had an initial normal brain imaging; the diagnostic brain imaging that demonstrated the IVH was obtained either during cooling (in 30 %), within 24 h of the rewarming (in 30 %), or 24 h after the rewarming (in 40 %). Recurrent seizures were the presenting symptom of IVH during the rewarming in 20 % of the newborns. Coagulopathy was more frequent in the asphyxiated newborns developing IVH ($p < 0.001$). The asphyxiated newborns developing IVH also presented more frequently with persistent pulmonary hypertension, hypotension, thrombocytopenia and coagulopathy ($p = 0.03$). Conclusions: The asphyxiated newborns treated with hypothermia appear to be at an increased risk of IVH, especially those with significant hemodynamic instability. IVH seems to develop during late hypothermia and rewarming. Efforts should be

directed towards maintaining hemodynamic stability in these patients, even during the rewarming. Keywords: Birth asphyxia, Hypothermia, Neonatal encephalopathy, Intraventricular hemorrhage, Magnetic resonance imaging, Newborn brain.

3-2-342	
Title	**First Trimester Exposure to Topiramate and the Risk of Oral Clefts in the Offspring: A Systematic Review and Meta-analysis**
Authors	Abdulaziz M.s. Alsaada,b,c, Shahnaz Akthar Chaudhrya, Gideon Korena,b,*
Program	Pharmaceutical Sciences/clinical Pharmacology and Toxicology
University	University of Toronto
Journal	Reproductive Toxicology
Date of Publication	September 01, 2015

Abstract

Topiramate (TPM) is an increasingly used drug during childbearing ages for treatment of epilepsy, migraine, and appetite suppression as well as for off-label indications such as sleep and psychiatric disorders. Presently, while some reports suggested an increased risk of oral cleft (OC), these reports are balanced by studies that could not confirm such association. We conducted a meta-analysis of all studies reporting on women exposed to TPM during pregnancy. Of the 2327 publications reviewed, 6 articles met the inclusion criteria including 3420 patients and 1,204,981 controls. The odd ratio (OR) of OC after the first trimester exposure to TPM exposure was 6.26 (95% confidence interval: 3.13–12.51; P = 0.00001). This study provides strong evidence that TPM is associated with an increased risk of OC in infants exposed to TPM during embryogenesis and should lead to a careful review of TPM use in women of reproductive ages.

3-2-343	
Title	**Misdiagnosing Absent Pedicle of Cervical Spine in the Acute Trauma Setting**
Authors	Fahad H. Abduljabbar, Felipe Rossel, Anas Nooh, Peter Jarzem
Program	Orthopedic Surgery
University	Mcgill University
Journal	Pagepress)orthopedic Reviews)
Date of Publication	September 01, 2015

Abstract

Congenital absence of cervical spine pedicle can be easily misdiagnosed as facet dislocation on plain radiographs especially in the acute trauma setting. Additional imaging, including computed tomography (CT)-scan with careful interpretation is required in order to not mis- diagnose cervical posterior arch malformation with subsequent inappropriate management. A39-year-old patient presented to the emergency unit of our university hospital after being trampled by a cow over her back and head fol- lowed by loss of consciousness, retrograde amnesia and neck pain. Her initial cervical CT- scan showed possible C5-C6 dislocation, then, it became clear that her problem was a misdi- agnosed congenital cervical abnormality. Patient was treated symptomatically without consequences. The congenital absence of a cervical pedicle is a very unusual condition that is easily misdiagnosed. Diagnosis can be accurately confirmed with a CT-scan of the cer- vical spine. Symptomatic conservative treatment will result in resolution of the symptoms

3-2-344	
Title	**Asthma and Copd Overlap Syndrome (acos): A Systematic Review and Meta Analysis.**
Authors	Alshabanat A, Zafari Z, Albanyan O, Dairi M, Fitzgerald Jm.
Program	Experimental Medicine
University	The University of British Columbia
Journal	Plos One
Date of Publication	September 03, 2015

Abstract

BACKGROUND: The combination of asthma and chronic obstructive pulmonary disease (COPD), or ACOS is a recently defined syndrome. The epidemiology of the condition is poorly described and previous research has suggested ACOS is associated with worse outcomes than either condition alone. We therefore decided to complete a systematic review of the published literature. METHODS: This review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta- Analyses guidelines. Astructured search was performed in the PubMed, Embase, and Medline databases up to Feb 2015 to identify studies reporting incidence, prevalence, health care utilization, morbidity, or mortality in COPD and asthma. RESULTS: A total of 19 studies were included in the present study. The pooled prevalence of overlap among COPD was 27% (95% CI: 0.16-0.38, p<0.0001) and 28% (95% CI: 0.09-0.47, p = 0.0032) in the population and hospital-based studies, respectively. We found no significant difference between ACOS and COPD in terms of gender, smoking status, lung function and 6mWD. However, in comparison to subject with only COPD, ACOS subjects were significantly younger, had higher BMI, healthcare utilization, and lower HRQoL. CONCLUSION: ACOS is a common condition that exists in a substantial proportion of subjects with COPD. ACOS represents a distinct clinical phenotype with more frequent exacerbations, hospitalization, worse health-related quality of life, and higher healthcare costs than either disease alone. There is a critical need to better define the management and treatment of this syndrome.

3-2-345	
Title	**Obesity-linked Diabetes in the Arab World: A Review.**
Authors	Bisher Abuyassin and Ismail Laher
Program	Experimental Medicine
University	The University of British Columbia
Journal	Eastern Mediterranean Health Journal
Date of Publication	September 08, 2015

Abstract

The Arab world is experiencing an epidemic of obesity and type 2 diabetes mellitus. This review summarizes the major pathological factors linking obesity to diabetes, focussing on current epidemiological data related to obese diabetic patients in the Arab world, the etiology of the disease and the genetic determinants of diabetes and obesity. There are alarming data related to the rising prevalence of obesity and type 2 diabetes mellitus in children of Arab ethnicity. Replication studies identify several genetic variants in Arabs with obesitylinked diabetes. Forexample, variants of the ADIPOQ gene (the rs266729 single-nucleotide polymorphism) are associated with obesity and diabetes in various Arab countries. Gaps exist in our information about diabetes and obesity in Arab populations in relation to ethnic-specific cut-off points for diagnosis and treatment of diabetes. Further genome-wide association studies in obese and diabetic Arab populations could add to our understanding of the pathophysiology, prevention and reversal of this disease.

3-2-346	
Title	**Radiation Therapy After Radical Prostatectomy: A Single-centre Radiation Oncology Experience in Trends of Referral and Treatment Practices**
Authors	Michel Zimmermann, Daniel Taussky, Guila Delouya, Md, Abdullah M. Alenizi, Kevin C. Zorn,
Program	Robotic Urology
University	Université de Montréal
Journal	Canadian Urological Association Journal (cuaj)
Date of Publication	September 09, 2015

Abstract

Introduction: Our objective was to assess whether referral and treatment practices have changed since publication of the Southwest Oncology Group (SWOG) 8794 Trial in 2009, the first randomized study to demonstrate an overall survival advantage of adjuvant radiation therapy (RT) after radical prostatectomy (RP). Methods: We retrospectively reviewed all medical charts of men who received RT at our institution between 2004 and 2014 following RP. All RT was conducted by a single radiation oncologist (DT). We divided the cohort into 2 groups according to first referral date before or after the SWOG 8794 trial publication (i.e., before 2010 and after 2010). Results: Medical charts were available for 161/165 patients (97.6%). RP was performed at the same institution in 58% of cases. The median time between surgery and first referral for RT decreased significantly from 672 days (interquartile range [IQR] 295–1449) before 2010 to 300 days (IQR 225–1023) after 2010 (p = 0.04). This trend was associated with lower median prostate-specific antigen (PSA) at RT referral (0.26 µg/L [IQR 0.17–0.48] vs. 0.46 µg/L [IQR 0.25–0.90], respectively; p = 0.001). Androgen-deprivation therapy with RT nearly tripled over time from 13% before 2010 to 37% after 2010 (p = 0.003). Throughout the study period, the time interval between surgery and RT initiation was positively correlated with pT-stage (p = 0.001), Gleason score (p = 0.005) and PSA doubling time (p < 0.001). Conclusions: At our tertiary-referral academic institution, post-RP patients are notably referred earlier for RT and at lower PSA values compared to men treated prior to 2010. Further study is necessary to evaluate this impact on biochemical recurrence-free survival.

3-2-347	
Title	**Molecular Basis for the Regulation of Transcriptional Coactivator P300 in Myogenic Differentiation**
Authors	Jihong Chen2, Yingjian Wang2,†, Munerah Hamed1, Natascha Lacroix2 & Qiao Li1,2
Program	Cellular and Molecular Medicine
University	University of Ottawa
Journal	Nature Publishing Group/scientific Reports
Date of Publication	September 10, 2015

Abstract

Skeletal myogenesis is a highly ordered process which specifically depends on the function of transcriptional coactivator p300. Previous studies have established that Akt/protein kinase B (PKB), a positive regulator of p300 in proliferating cells, is also important for proper skeletal muscle development. Nevertheless, it is not clear as to how the p300 is regulated by myogenic signaling events given that both p300 and Akt are involved in many cellular processes. Our studies revealed that the levels of p300 protein are temporally maintained in ligand-enhanced skeletal myocyte development. Interestingly, this maintenance of p300 protein is observed at the stage of myoblast differentiation, which coincides with an increase

in Akt phosphorylation. Moreover, regulation of p300 during myoblast differentiation appears to be mediated by Akt signaling. Blunting of p300 impairs myogenic expression and myoblast differentiation. Thus, our data suggests a particular role for Akt in myoblast differentiation through interaction with p300. Our studies also establish the potential of exploiting p300 regulation and Akt activation to decipher the complex signaling cascades involved in skeletal muscle development.

3-2-348	
Title	**Case Series of Multiple Repeat Caesarean Sections: Operative, Maternal, and Neonatal Outcome**
Authors	Abdullah Alnoman1, Ziad El-khatib5, Ahmad M S Almrstani, Mark Walker and Darine El-chaar
Program	Obstetrics and Gynecology
University	Université de Montréal
Journal	The Journal of Maternal-fetal & Neonatal Medicine
Date of Publication	September 12, 2015

Abstract

Objective: The objective of this study is to review the maternal and neonatal morbidity and mortality associated with six or more caesarean section (CS). Methods: We conducted a retrospective chart review, at King Abdulaziz University Hospital (KAUH) in Jeddah, for all patients admitted between 2000 through 2010 and identified five patients having more than six CS deliveries. Results: Deliveries occurred in the ranges of 31–38 weeks, from which four cases required emergency CS. There were two cases in the series with a placenta previa. There was a single case of uterine dehiscence. Only one case required a blood transfusion and was complicated with a placenta accreta, bladder injury, urinary tract infection, and prolonged maternal hospital stay with neonatal intensive care unit (NICU) admission. All cases had moderate to severe adhesion intra-operatively. Operative time was long in all cases with a range 55–106 min. One of the five cases had a postoperative wound infection. Finally, none of the current series showed fetal or maternal mortalities. Conclusions: The long-term complications associated with CS should be discussed with patients in the first and subsequent pregnancies. This case series highlighted the outcomes in these unique cases of higher order caesareans.

3-2-349	
Title	**New Paradigm for the Treatment of Glucose Transporter 1 Deficiency Syndrome: Low Glycemic Index Diet and Modified High Amylopectin Cornstarch**
Authors	Mohammed Almuqbil Mda,b,c, Cristina Go Mdd, Laura L. Nagy Msc, Rda,e, Nisha Pai Msc, Rda,e, Eva Mamak Phdf, Saadet Mercimek-mahmutoglu Md, Phda,g,*
Program	Pediatric Neurology
University	Mcgill University
Journal	Pediatric Neurology Journal
Date of Publication	September 14, 2015

Abstract

OBJECTIVE: Glucose transporter 1 deficiency syndrome is an autosomal, dominantly inherited neurometabolic disorder caused by mutations in the SLC2A1 gene. Decreased glucose transport into the brain results in seizures and cognitive dysfunction. The ketogenic diet is the treatment of choice, but complicated with compliance problems. Stabilization of blood glucose levels by low glycemic index diet and modified high amylopectin cornstarch would provide steady-state glucose transport into the brain to prevent seizures and cognitive dysfunction in patients with glucose transporter 1 deficiency syndrome as an alternative treatment. PATIENT: We report a new glucose transporter 1 deficiency syndrome patient (c.988C>T; p. Arg330X in the SLC2A1) treated with modified high amylopectin cornstarch (Glycosade) and low glycemic index diet because of compliance problems with the ketogenic diet. She was diagnosed at 11.5 years of age and was treated with the ketogenic diet between ages 12 and 18 years. RESULTS: She was started on modified high amylopectin cornstarch at bedtime and low glycemic index diet with meals and snacks every 3-4 hours. Within the first 6 months of therapy, she improved in her seizures and cognitive functions, but experienced compliance problems afterwards. Neuropsychological assessment was stable at 12 months of therapy. CONCLUSION: This diet was easy to apply compared with the ketogenic diet and resulted in stable neuropsychological functioning of this glucose transporter 1 deficiency syndrome patient. Modified high amylopectin cornstarch and low glycemic index diet might be an alternative treatment in glucose transporter 1 deficiency syndrome patients with compliance problems to the ketogenic diet treatment, but additional patients should be treated to prove usefulness of this new treatment.

3-2-350	
Title	**Cathelicidin Antimicrobial Peptide: A Novel Regulator of Islet Function, Islet Regeneration, and Selected Gut Bacteria**
Authors	Lynley D. Pound Christopher Patrick Chandra E. Eberhard Walid Mottawea Gen-sheng Wang Turki Abujamel Roxanne Vandenbeek Alain Stintzi Fraser W. Scott
Program	Microbiology and Immunology
University	University of Ottawa
Journal	Diabetes Journals
Date of Publication	September 14, 2015

Abstract

Cathelicidin antimicrobial peptide (CAMP) is a naturally occurring secreted peptide that is expressed in several organs with pleiotropic roles in immunomodulation, wound healing, and cell growth. We previously demonstrated that gut Camp expression is upregulated when type 1 diabetes–prone rats are protected from diabetes development. Unexpectedly, we have also identified novel CAMP expression in the pancreatic β-cells of rats, mice, and humans. CAMP was present even in sterile rat embryo islets, germ-free adult rat islets, and neogenic tubular complexes. Camp gene expression was downregulated in young BBdp rat islets before the onset of insulitis compared with control BBc rats. CAMP treatment of dispersed islets resulted in a significant increase in intracellular calcium mobilization, an effect that was both delayed and blunted in the absence of extracellular calcium. Additionally, CAMP treatment promoted insulin and glucagon secretion from isolated rat islets. Thus, CAMP is a promoter of islet paracrine signaling that enhances islet function and glucoregulation. Finally, daily treatment with the CAMP/LL-37 peptide in vivo in BBdp rats resulted in enhanced β-cell neogenesis and upregulation of potentially beneficial gut microbes. In particular, CAMP/LL-37 treatment shifted the abundance of specific bacterial populations, mitigating the gut dysbiosis observed in the BBdp rat. Taken together, these findings indicate a novel functional role for CAMP/LL-37 in islet biology and modification of gut microbiota.

3-2-351	
Title	**The Accordion Maneuver: A Noninvasive Strategy for Absent or Delayed Callus Formation in Cases of Limb Lengthening**
Authors	Asim M. Makhdom,1,2 Adrian Sever Cartaleanu,1 Juan Sebastian Rendon,1 Isabelle Villemure,3 and Reggie C. Hamdy1
Program	Orthopaedic Surgery
University	Mcgill University
Journal	Advances in Orthopedics
Date of Publication	September 27, 2015

Abstract

The distraction osteogenesis (DO) technique has been used worldwide to treat many orthopaedic conditions. Although successful, absent or delayed callus formation in the distraction gap can lead to significant morbidities. An alternate cycle of distraction compression (accordion maneuver) is one approach to accelerate bone regeneration. The primary aim of our study is to report our experience with the accordion maneuver during DO and to provide a detailed description of this technique, as performed in our center. The secondary aim is to present a review of the literature regarding the use of accordion maneuver. We reviewed the database of all patients undergoing limb lengthening from the year of 1997 to 2012. Four patients (6.15%) out of 65 showed poor bone regenerate in their tibiae and therefore accordion maneuver was applied for a mean of 6.75 weeks. Of these, three patients have had successful outcome with this technique.The literature showed that this technique is successful approach to trigger bone healing.However, details of how and when to apply this combination of distraction-compression forces were lacking. In conclusion, the accordion technique is safe noninvasive approach to promote bone formation, thus avoidingmore invasive surgical procedures in cases of poor callus formation in limb lengthening.

3-2-352	
Title	**Misdiagnosing Absent Pedicle of Cervical Spine in the Acute Trauma Setting**
Authors	Fahad H. Abduljabbar, Felipe Rossel, Anas Nooh, Peter Jarzem
Program	Experimental Surgery
University	Mcgill University
Journal	Orthopedic Reviews
Date of Publication	September 28, 2015

Abstract

Congenital absence of cervical spine pedicle can be easily misdiagnosed as facet dislocation on plain radiographs especially in the acute trauma setting. Additional imaging,

including computed tomography (CT)-scan with careful interpretation is required in order to not misdiagnose cervical posterior arch malformation with subsequent inappropriate management. A39-year-old patient presented to the emergency unit of our university hospital after being trampled by a cow over her back and head followed by loss of consciousness, retrograde amnesia and neck pain. Her initial cervical CTscan showed possible C5-C6 dislocation, then, it became clear that her problem was a misdiagnosed congenital cervical abnormality. Patient was treated symptomatically without consequences. The congenital absence of a cervical pedicle is a very unusual condition that is easily misdiagnosed. Diagnosis can be accurately confirmed with a CT-scan of the cervical spine. Symptomatic conservative treatment will result in resolution of the symptoms.

3-2-353	
Title	**Chronic Granulomatous Disease with an Initial Presentation of Arthritis and Oral Ulcers**
Authors	Mohammad Alsalamah, Mariam Hanna, Julia Upton
Program	Immunology and Allergy
University	University of Toronto
Journal	Lymphosign
Date of Publication	September 30, 2015

Abstract

Introduction: Chronic granulomatous disease (CGD) is an inherited defect of leukocyte phagocytic function leading to recurrent infections. Autoimmune manifestations are reported in up to 6% of patients with CGD (van den Berg et al. 2009). We report a case of CGD presenting with arthritis as the first manifestation of disease. Case Description: A twelve-year-old Pakistani male of consanguineous parents presented with migratory arthritis and painless oral ulcerations of six months duration that was minimally responsive to non-steroidal anti-inflammatory treatment. Initial assessment demonstrated elevated inflammatory markers (ESR 62), weakly positive ANA (titer 1:40), negative anti-DsDNA and negative RF. He presented to the emergency department with fevers and arthritis. Repeat work-up suggested early Macrophage Activation Syndrome: normocytic anemia (Hgb 95g/L), thrombocytopenia (Plt 141x109/L), elevated LDH 1603, ferritin 1230 mcg/L, ESR 127, CRP 9.3, hypertiglycerdemia (3.2mmoL/L) and mild transaminitis (ALT 63, AST 87), normal bone marrow (no hemophagocytosis), but mildly elevated Soluble CD 136 (1,086ng/mL) and Soluble IL-2-receptor (CD25) (1,698 U/mL). He was treated with oral prednisone with symptom resolution. The arthritis relapsed after one month and the patient developed fever, productive cough and pleuritic chest pain. Chest imaging revealed multiple nodular opacities and enlarged mediastinal lymph nodes. Aspergillus fumigatus complex was isolated from induced sputum prompting screening for primary immunodeficiency. Neutrophil oxidative burst function as assessed by a dihydrorhodamine flow cytometry based assay was low at 1.26 and 1.48 (normal range 32-300). Genetic analysis showed a previously described mutation in NCF 1 confirming the diagnosis of Autosomal-recessive CGD. Discussion: Chronic granulomatous disease can present with an exclusively rheumatologic presentation including arthritis and oral ulceration. Statement of Novelty: This case demonstrates that CGD can present with rheumatological symptoms prior to any infectious features.

3-2-354	
Title	**A Practical Methodological Approach Towards Identifying Core Competencies in Medical Education Based on Literature Trends: A Feasibility Study Based on Vestibular Schwannoma Science.**
Authors	Mansouri A1, Aldakkan A, Badhiwala Jh, Taslimi S, Kondziolka D.
Program	Neurosurgery
University	University of Toronto
Journal	Neurosurgery
Date of Publication	October 01, 2015

Abstract

BACKGROUND: Competency-based medical education (CBME) is gaining momentum in postgraduate residency and fellowship training. While randomized trials, consensus statements, and practice guidelines can help delineate some of the core competencies for CBME, they are not applicable to all clinical scenarios. OBJECTIVE: to propose and assess the feasibility of a practical methodology for addressing this issue using radiosurgery for vestibular schwannoma (VS) science as an example. METHODS: The Web of Science electronic database was searched using relevant terms. A3-step review of titles and abstracts was used. Studies were classified independently and in duplicate as either efficacy or effectiveness analyses. Cohen's kappa score was used to assess inter-rater agreement. RESULTS: Overall, 1818 surgical and 943 radiosurgical publications were identified. The number of effectiveness studies surpassed that of efficacy studies in the late 1980s for surgical studies, and in the early-to-mid 1990s among radiosurgical studies. The publication rate was higher for radiosurgery in the mid 1990s, but it paralleled that of surgical studies beyond the early 2000s. Variations in this overall trend corresponded to the emergence of studies that assessed the role of endoscopy and the utility of dose reduction in radiosurgery. CONCLUSION: We have confirmed the feasibility and accuracy of this objective methodological approach. By understanding how the peer-reviewed literature reflects actual practice interests, educators can tailor curricula to ensure that trainees remain current. While further validation studies are needed, this methodology can serve as a supplemental strategy for identifying additional core competencies in CBME.

3-2-355	
Title	**Military Research Colordx and Printed Color Vision Tests**
Authors	Ali Almustanyir ; Jeff Ery K. Hovis
Program	Optometry
University	University of Waterloo
Journal	Aerospace Medical Association
Date of Publication	October 01, 2015

Abstract

PURPOSE: to determine the equivalence of the ColorDx Military Research version (mColorDx) test and three printed pseudoisochromatic tests (HRR, Ishihara, and PIPIC) for color vision testing. METHODS: Participating in the study were 75 color-normals and 47 subjects with red-green color vision defects. Color vision wasclassified by an anomaloscope. The HRR (4 th edition), Ishihara 38-plate edition, and PIPIC tests are printed color visiontests, whereas mColorDx test fi gures were displayed on a calibrated computer desktop monitor. All tests were repeatedin about 1 wk. RESULTS: The kappa level of agreement (k) values with the anomaloscope for screening for each test was 0.96 or greater. Thevalues were statistically identical. Specifi city for each test was at least 0.99 and sensitivity was at least 0.95. The repeatabilityof the screening sections for all tests was very good with k values greater than 0.95. Deutans tended to miss the tritan screening plates on the HRR and mColorDx tests. The Spearman rank correlation coeffi cients between the severity of the defect and anomaloscope range was moderate with r 5 0.45 for the mColorDx and r 5 0.6 for the HRR. Both the mColorDx and HRR had perfect agreement with the anomaloscope in classifying the defects as either protan or deutan. CONCLUSION: The validity of the four tests for color vision screening was statistically identical; however, the HRR may be preferred because it had the highest sensitivity of 0.99, a specifi city of 1.0, and a reasonable correlation between the severity rating of the defect and the anomaloscope range. KEYWORDS: color vision test, mColorDx, ColorDx Military Research version, HRR, Ishihara, PIPIC.

3-2-356	
Title	**Celecoxib Demonstrates Clinical Efficacy Superior to Acetaminophen in Chronic Nonspecific Low Back Pain: Results of a Randomized Controlled Trial.**
Authors	Mohamed K. Bedaiwi Ismail Sari Dinny Wallis Finbar D. O'shea David Salonen Nigil Haroon Ahmed Omar Robert D. Inman
Program	Rheumatology
University	University of Toronto
Journal	Arthritis Care and Research (hoboken)
Date of Publication	October 01, 2015

Abstract

Abstract OBJECTIVE: Inthis randomized controlled trial we compared the effect of celecoxib and acetaminophen on pain and MRI scores in patients with chronic nonspecific low back pain (NSLBP). METHODS: Fifty patients with chronic NSLBP blindly randomized into two groups treated with celecoxib (200 mg bid) or acetaminophen (500 mg bid). Outcome measures included total back pain (TBP), nocturnal back pain (NBP), and Oswestry Disability Index (ODI) scores, SF-36 to assess physical and mental status, and patient global assessment (PGA). Bath ankylosing spondylitis disease activity, functional and metrology indices (BASDAI, BASFI and BASMI) were also assessed before and after the therapy. The Spondyloarthritis Research Consortium of Canada (SPARCC) scoring method was used to evaluate spinal MRI changes. RESULTS: Celecoxib showed superior effect on TBP, ODI, BASDAI, NBP and PGA compared to acetaminophen ($p < 0.05$). The number of patients with a significant change in back pain scales was higher in celecoxib arm (ODI=34.8% vs. 4.5%; NBP=41.7% vs. 9.1%; TBP=33.3% vs. 9.1; BASDAI=30.4% vs. 9.1%, all $p<0.01$). The responsiveness to celecoxib, calculated by Guyatt Responsiveness Index was 1.62, 1.28, 1.27 and 0.58 for the ODI, TBP, BASDAI and NBP respectively. The MRI-SIJ and -spine scores showed no significant change with either treatment when compared with baseline values ($p > 0.05$). CONCLUSION: There was superior efficacy of celecoxib compared with acetaminophen in chronic NSLBP. Inflammatory lesions of SIJs and spine are commonly seen in NSLBP, but these lesions did not change with either celecoxib or acetaminophen treatments, and were not associated with clinical response to either agent. This article is protected by copyright. All rights reserved.

3-2-357	
Title	**Tardive Dyskinesia Occurring in a Young Woman After Withdrawal of an Atypical Antipsychotic Drug**
Authors	Mohammed A. Alblowi, Md, Fahad D. Alosaimi, Md.
Program	Psychiatry
University	Queen's University
Journal	Neuro Science Journal
Date of Publication	October 01, 2015

Abstract
Tardive dyskinesia (TD) is one of the most serious and disturbing side-effects of dopamine receptor antagonists. It affects 20-50% of patients on long-term antipsychotic therapy. The pathophysiology of TD remains poorly understood, and treatment is often challenging. Here, we present a 32-year-old woman presenting with a 9-month history of TD occurring after risperidone withdrawal, and characterized almost exclusively by tongue protrusion. After being seen by different specialties and undergoing multiple investigations, she was eventually correctly diagnosed with TD by a specialist team and successfully treated with amantadine. Vigilance and awareness of this condition and its risk factors are required to make the correct diagnosis, especially in cases with unusual presentations caused by atypical antipsychotics, and treatment can be challenging.

3-2-358	
Title	**Diagnostic Value of Fine Needle Aspiration Brafv600e Mutation Analysis in Papillary Thyroid Cancer: A Systematic Review and Meta-analysis**
Authors	Naif Fnais, Charlene Soobiah, Khalid Al-qahtani, Jemila S. Hamid, Laure Perrier, Sharon E. Straus, Andrea C. Tricco
Program	Otolaryngology - Head and Neck Surgery
University	Mcgill University
Journal	Human Pathology
Date of Publication	October 01, 2015

Abstract
Summary Fine needle aspiration (FNA) with cytologic analysis is an initial step in diagnosing thyroid nodules that are suspicious for cancer. We systematically reviewed the test accuracy of B-type Raf kinase (BRAFV600E) gene mutation analysis plus conventional FNA in the diagnosis of papillary thyroid cancer. We identified studies reporting BRAFV600E mutation analysis after FNA for evaluation of thyroid nodules through searching MEDLINE, EMBASE, and the Cochrane Central Register of Controlled Trials, scanning reference lists of relevant studies, and contacting experts. Two independent reviewers screened literature results, abstracted data, and appraised study quality. When appropriate, bivariate and univariate random-effects meta-analyses of sensitivity and specificity were considered for all outcomes. Forty-seven studies met our inclusion criteria after screening 1560 citations and 169 fulltext articles. The included studies enrolled approximately 16 170 patients with 9924 FNA samples evaluated for BRAFV600E mutation. Univariate pooled sensitivity was 69% (95% confidence interval, 61%-76%) for papillary thyroid cancer. Forthyroid nodules that were diagnosed cytologically as suspicious for papillary thyroid cancer, univariate pooled sensitivity using FNA and BRAFV600E results was 52% (95% confidence interval, 39%-64%). Despite its high specificity, our meta-analysis shows that BRAFV600E mutation analysis has a low sensitivity in diagnosing papillary thyroid cancer in thyroid nodules. The feasibility of this test as a single molecular tool is not well established, which indicates the need for well-designed prospective clinical studies.

3-2-359	
Title	**Trebananib (amg 386): A Non-vegf Antiangiogenesis Option in Women with Ovarian Cancer**
Authors	Khalid Al Wadi Prafull Ghatage
Program	Gyn Oncology
University	University of Calgary
Journal	Current Angiogenesis
Date of Publication	October 02, 2015

Abstract
Epithelial ovarian cancer (EOC) is the most frequent cause of death from all gynecological malignancies with the majority of women being diagnosed with advanced stage disease. It is considered a chemosensitive cancer with a high initial response rate to first-line platinum and taxane-based chemotherapy. However, a majority of patients will relapse with subsequent resistance to treatment and ultimately succumb to their disease. This emphasizes the need for the development of new therapeutic approaches to improve outcomes. Angiogenesis has been recognized as an important mechanism promoting EOC growth and metastasis with angiogenesis inhibitors being developed and tested for over a decade. Bevacizumab, a humanized monoclonal antibody, that targets vascular endothelial growth factor a (VEGF-A), has been the most well evaluated molecular targeted drug in the treatment of advanced and recurrent EOC with proven clinical efficacy. However, anti-VEGF therapies are often associated with serious toxicities and drug resistance ultimately develops. Hence, new therapeutic approaches are needed. Targeting the angiopoietin-Tie-2 complex pathway (VEGF independent) has gained interest over the last few years as an alternative strategy to overcome anti-VEGF therapy resistance and toxicity. Trebananib (formerly known as AMG 386; Amgen, Thousand Oaks, CA, USA) is a novel first-inclass angiopoietin antagonist, which inhibits angiopoietin-1 and angiopoietin-2 interaction with the Tie-2 tyrosine kinase receptor and hence, disrupts tumor angiogenesis. In preclinical models trebananib has shown antiangiogenesis and antitumor activity. It also has shown antitumor activity as a monotherapy with an acceptable toxicity profile in recurrent EOC. It prolonged progression-free survival in a recently published randomized Phase III clinical trial in the recurrent setting (TRINOVA-1). However, overall survival was unchanged.

3-2-360	
Title	**Respiratory Therapy Students' Perceptions of Effective Teaching Characteristics of Clinical Instructors at an Urban University**
Authors	Ali Alasmari, Ms, Rrt-nps Teaching Assistant Medical College of Rehabilitation Sciences Department of Respiratory Therapy Taibah University Madinah Al-munawarah, Saudi Arabia Douglas S. Gardenhire, Edd, Rrt-nps, Faarc Interim Chair and Clinical Associate Professor Department of Respiratory Therapy Lewis School of Nursing and Health Professions Georgia State Universit
Program	Rehabilitation Sciences
University	University of British Columbia
Journal	Respiratory Care Education Annual
Date of Publication	October 03, 2015

Abstract
Background: Respiratory therapy students' perception of the effectiveness of clinical instructors' behavior is an important indicator to modify and to facilitate effective clinical instruction. The purpose of this study was to identify the effective clinical teaching behaviors (ECTB) perceived by undergraduate respiratory therapy (BSRT) and integrated graduate respiratory therapy (MSRT) students and to identify any similarities in their rankings. Method: The study used descriptive exploratory design with a self-reporting survey. The survey was administered to a convenience sample of first and second year BSRT and MSRT students attending an accredited respiratory therapy program at an urban university located in the southeastern United States. The survey consisted of 35 teaching behaviors presented on a five-point Likert scale according to importance. Collected data were analyzed using descriptive statistics. Results: Seventy-two students were surveyed; 54 respondents studied were BSRT students with 42 females and 12 males. Graduate MSRT respondents accounted for 18 of the total sample, 9 females and 9 males. The study findings showed "respect student as an individual" and "be approachable" characteristics rated the highest by BSRT students with similar mean (M) score and standard deviation (SD), (M 4.89, SD ±0.37) with the MSRT students. The MSRT students valued "be supportive & helpful" and "be approachable" characteristics as the highest, M 4.94, SD ±0.24. BSRT students ranked the characteristic "evaluate students fairly" (M 4.87, SD ±0.34) second highest while MSRT students rated "demonstrate self-control & patience" (M 4.89, SD ±0.32) the second highest. Students' perceived 1:1 as optimal ratio for students per clinical instructor during clinical rotation. Conclusion: Although BSRT and MSRT students' perceptions demonstrated similarities, mean scores data between first and second year student show a shift in ranking between characteristics. In addition, results may assist respiratory therapy clinical instructors to appreciate students' views and acknowledge areas of success as well as areas needing improvement.

3-2-361	
Title	**Clinical Severity of Pediatric Respiratory Illness with Enterovirus D68 Compared with Rhinovirus or Other Enterovirus Genotypes**
Authors	Dominik Mertz Md Msc, Abdulsalam Alawfi Md, Jeffrey M. Pernica Md Msc, Candy Rutherford Mlt Art, Kathy Luinstra Bsc, Marek Smieja Md Phd
Program	Infection Prevention and Control/pediatric Infectious Diseases
University	Mcmaster University
Journal	Cmaj: Canadian Medical Association Journal
Date of Publication	October 13, 2015

Abstract
Background: Enterovirus D68 (EV-D68) resulted in a reported increase in the number of children needing hospital or critical care admission because of respiratory insufficiency during 2014. It remains unclear, however, whether EV-D68 infections were more severe than non–EV-D68 rhinovirus or enterovirus infections. Methods: We evaluated consecutive children presenting to a pediatric hospital between Aug. 1 and Oct. 31, 2014, with positive naso- pharyngeal swabs for rhinovirus or enterovi- rus that were sent automatically for EV-D68 testing. We compared characteristics and out-comes of patients with EV-D68 with those with non–EV-D68 rhinovirus or enterovirus infections in a matched cohort study. Results: A total of 93/297 (31.3%) of rhinovi- rus or enterovirus samples tested positive for EV-D68, and it was possible to compare 87 matched pairs. Children with EV-D68 infection were more likely to have difficulty breathing (odds ratio [OR] 3.00, 95% confidence interval [CI] 1.47–6.14). There was no significant differ- ence in admission to the critical care unit or death among children with EV-D68 infection compared with those with other

rhinovirus or enterovirus infections (adjusted or 1.47, 95% CI 0.61–3.52). Children with EV-D68 infection were more often admitted to hospital, but not significantly so (adjusted or 2.29, 95% CI 0.96–5.46). Interpretation: Enterovirus D68 seems to be a more virulent pulmonary pathogen than non–EV-D68 rhinoviruses and enteroviruses, but we did not find a significant difference in death or need for critical care. The pediatric mortal- ity and morbidity attributable to EV-D68 com- pared with pathogens such as influenza or respiratory syncytial virus has yet to be deter- mined.

3-2-362	
Title	**Penile Fracture with Two Ipsilateral Corporal Tears and Delayed Presentation: A Case Report**
Authors	Emad Rajih, Md;* Abdullah Alenizi, Md;† Assaad El-hakim, Md, Frcsc†
Program	Urology Fellowship
University	Université de Montréal
Journal	Canadian Urology Association Journal
Date of Publication	October 13, 2015

Abstract

Although penile fracture is an infrequent injury, it is a welldescribed urologic emergency. It results from the rupture of the tunica albuginea of corpora cavernosa by blunt strain that mandates immediate surgical exploration. Reported cases are usually single tear unless contralateral corporal tear is present. We present a case of 56-year-old with intraoperative findings of two separate tears in the same corpus cavernosum. Clinical presentation was also delayed for 4 days post-injury and repair was performed on day 7. This case accentuates the need for a high index of suspicion to rule out concomitant ipsilateral tear. Delayed repair was possible, and full recovery ensued.

3-2-363	
Title	**Treatment Responsiveness in Cidp Patients with Diabetes is Associated with Higher Degrees of Demylination**
Authors	Alon Abraham1, Majed Alabdali2, Mohammad Qrimli1, Hana Albulaihe3, Ari Breiner1, Carolina Barnett1, Hans D. Katzberg1, Leif E. Lovblom4, Bruce A. Perkins4, Vera Bril1*
Program	Neuromuscular Felloship
University	University of Toronto - Department of Medicine
Journal	Plos One
Date of Publication	October 13, 2015

Abstract

Introduction Chronic inflammatory demyelinating polyradiculoneuropathy (CIDP) is one of several chronic treatable acquired demyelinating neuropathies. Objectives to explore the association between the degree of demyelination in CIDP, and treatment responsiveness. Methods a retrospective chart review of CIDP subjects assessed between 1997 and 2013 was per- formed to compare treatment responsiveness using different sets of criteria. Results 99 CIDP patients were included, 34 with diabetes mellitus (DM). Treatment responsiveness was higher in CIDP-DM fulfilling 1 or more EFNS/PNS criteria, (63% vs. 31%, p = 0.03), and in CIDP+DM fulfilling 2 or more criteria (89% vs. 36%, p = 0.01). Nonetheless, treatment responsiveness in CIDP+DM had the highest odds ratio (3.73, p = 0.01). Similar results were also shown in simplified uniform study criteria, with 10% cut off values for CIDP-DM, compared to 30% for CIDP+DM. Conclusion in CIDP+DM, higher degrees of demyelination are associated with treatment responsive- ness, implying the need to adjust current criteria in these patients.

3-2-364	
Title	**Treatment Responsiveness in Cidp Patients with Diabetes is Associated with Higher Degrees of Demyelination**
Authors	Alon Abraham1, Majed Alabdali2, Mohammad Qrimli1, Hana Albulaihe3, Ari Breiner1, Carolina Barnett1, Hans D. Katzberg1, Leif E. Lovblom4, Bruce A. Perkins4, Vera Bril
Program	Neuromuscular Disorders
University	University of Toronto
Journal	Plos One
Date of Publication	October 13, 2015

Abstract

Introduction Chronic inflammatory demyelinating polyradiculoneuropathy (CIDP) is one of several chronic treatable acquired demyelinating neuropathies. Objectives to explore the association between the degree of demyelination in CIDP, and treatment responsiveness. Methods a retrospective chart review of CIDP subjects assessed between 1997 and 2013 was performed to compare treatment responsiveness using different sets of criteria. Results 99 CIDP patients were included, 34 with diabetes mellitus (DM). Treatment responsiveness was higher in CIDP-DM fulfilling 1 or more EFNS/PNS criteria, (63% vs. 31%, p = 0.03), and in CIDP+DM fulfilling 2 or more criteria (89% vs. 36%, p = 0.01). Nonetheless, treatment responsiveness in CIDP+DM had the highest odds ratio (3.73, p = 0.01). Similar results were also shown in simplified uniform study criteria, with 10% cut off values for CIDP-DM, compared to 30% for CIDP+DM. Conclusion in CIDP+DM, higher degrees of demyelination are associated with treatment responsiveness, implying the need to adjust current criteria in these patients.

3-2-365	
Title	**Evaluating the Initial Impact of the Riyadh Epilepsy Awareness Campaign**
Authors	Ahmed Alaqeel A,b, Hisham Kamalmaz C, Hussam Abou Al-shaar C, Ibrahim Alzahrani D, Alaa Alaqeel E, 3 Samiha Aljetaily E, Amjad Aldrees E, Alanood Alsolaihim E, Rana Badghesh E, Al-bandari Al Hamzah E, 4 Hanan Algethamy E, Albatool Al-khalaf E, Feras Alqunaieer E, Iyad Aboual-shaar F, 5 Aws Almufleh E, Abdulrahman J. Sabbagh
Program	Internal Medicine
University	Mcgill University
Journal	Epilepsy and Behaviour
Date of Publication	October 14, 2015

Abstract

OBJECTIVE: The objective of this report was to determine the impact of an educational awareness campaign on the level of knowledge and the attitude of the Saudi population in Riyadh, Saudi Arabia in an attempt to improve the awareness and reduce the social stigma associated with epilepsy. METHODS: The Saudi Epilepsy Society organized a citywide awareness campaign in 2013. Asurvey consisting of 11 questions pertaining to epilepsy awareness was distributed to Saudi citizens living in Riyadh, aged 15years and above, in malls, health clubs, mosques, universities, and schools during that campaign. The same questionnaire was administered before and after the awareness campaign to the same individuals on the same day to assess the impact of the campaign (n=2118). RESULTS: The epilepsy awareness campaign significantly raised the general knowledge about epilepsy: 1519 before vs. 1944 after (P<0.001) would allow their children to interact with an individual who had epilepsy; 1567 before vs. 688 after (P<0.001) would not want their children to marry an individual with epilepsy. Eight hundred twenty six before vs. 47 after (P<0.001) thought that epilepsy is untreatable. Regarding the causes of epilepsy, 1663 before vs. 896 after (P<0.001) believed that epilepsy is caused by supernatural powers, and 1224 before vs. 1874 after (P<0.001) chose brain disease as a cause of epilepsy. CONCLUSION: These findings suggest that epilepsy awareness campaigns can close knowledge gaps. Along-term reevaluation may be needed to assess awareness sustainability.

3-2-366	
Title	**Optic Cup Segmentation Based on Extracting Blood Vessel Kinks and Cup Thresholding Using Type-ii Fuzzy Approach**
Authors	A. Almazroa, S. Alodhayb, R. Burman, W. Sun, K. Raahemifar, V. Lakshminarayanan
Program	Optometry
University	University of Waterloo
Journal	2nd International Conference on Opto-electronics and Applied Optics 2015 (optronix-2015)
Date of Publication	October 15, 2015

Abstract

A novel technique has been developed to segment the optic cup from a 2D colored fundus image. Cup segmentation is the most challenging part of image processing the optic nerve head (ONH) due to the complexity of its structure. The cup size is used for diagnosis of glaucoma. Blood vessels densely cover the cup boundary in some cases and in other cases, they form the boundaries. Therefore, extracting the vessels were conducted by using a top hat transform and Otsu's function in order to detect the curvature of the blood vessels (kinks), which indicates the cup boundary. Then, an Interval Type-II fuzzy entropy procedure was applied to cup thresholding. Finally, the Hough transform was applied to approximate the cup boundaries. The algorithm was evaluated on 100 fundus images from the RIGA database, where the cup was manually marked by 6 Ophthalmologists. The cup detection accuracy was 72.5%.

3-2-367	
Title	**Hip Arthroscopy for the Management of Osteoid Osteoma of the Acetabulum: A Systematic Review of the Literature and Case Report**
Authors	Yousef A. Marwan1,2*, Sarantis Abatzoglou2, Ali A. Esmaeel1,3, Saad M. Alqahtani2,4, Saleh A. Alsulaimani2, Michael Tanzer2 and Robert E. Turcotte2
Program	Orthopedic Surgery
University	Queen's University
Journal	Bmc Musculoskeletal Disorders Journal
Date of Publication	October 24, 2015

Abstract

Background: Intra-articular osteoid osteoma (OO) causes irreversible joint damage. Its treatment of choice is radiofrequency ablation (RFA); however, some areas of the acetabulum are hard to access. Therefore, hip arthroscopy was used to treat this tumor. We aim to systematically review

the literature with regards to arthroscopic management of acetabular OO, and to report a further case in which hip arthroscopy was used for treatment. Methods: PubMed and EMBASE were searched for articles relevant to the arthroscopic management of acetabular OO on December 2, 2014. All articles published on and before that date were reviewed, and studies which met our pre-determined inclusion criteria were included. Articles screening and data abstraction were done by two reviewers independently. We also presented a 31-year-old man with acetabular OO who underwent hip arthroscopy for the management of his tumor after failing to respond to medications and computed tomography scan (CT)-guided RFA. Results: The initial search revealed 14 studies, of which ten met our inclusion criteria. Atotal of ten patients underwent hip arthroscopy for the management of acetabular OO. Only two patients were females, and the patients' age ranged from 7 to 47 years. Two patients underwent arthroscopic guided-RFA of the lesion, while the rest underwent excision. The follow-up period ranged from 6 months to 2 years. Success rate was 100 %, and no recurrence was reported. Minor complications (transient impotence and perineal numbness) developed in one patient (10 %). Arthroscopicguided RFA failed to eliminate the tumor in our additional case. Asecond trial of CT-guided RFA was successful in treating the patient's condition. Conclusions: Hip arthroscopy is an effective and safe option for the management of acetabular OO, with success rate exceeding 90 %. Studies of higher level of evidence are required.

3-2-368	
Title	**Fatigue in Ankylosing Spondylitis and Non-radiographic Axial Spondyloarthritis: Analysis from a Longitudinal Observation Cohort**
Authors	Mohamed Bedaiwi Ismail Sari Arane Thavaneswaran Renise Ayearst Nigil Haroon Robert D. Inman
Program	Rheumatology
University	University of Toronto
Journal	The Journal of Rheumatology
Date of Publication	November 01, 2015

Abstract

Abstract OBJECTIVE: Inthis study, we aimed to address the prevalence of fatigue, its associated factors, and the effect of tumor necrosis factor inhibitors (TNFi) on this subgroup of patients in a large axial spondyloarthritis (axSpA) cohort. METHODS: The study included 681 patients [ankylosing spondylitis (AS) and nonradiographic axSpA (nr-axSpA)]. The Fatigue Severity Scale (FSS) and the Bath AS Disease Activity Index question 1 (BASDAI Q1) indices were used for fatigue assessment. Severe fatigue was defined as an FSS ≥ 4 or a BASDAI Q1 ≥ 5. Disease activity, function, and quality of life (QoL) measures were recorded. Patients who had been treated with TNFi were identified, and baseline and followup data were analyzed. RESULTS: Of the cohort, 67.3% had severe fatigue, and the prevalence was similar between AS (67.2%) and nr-axSpA (68.2%). Severely fatigued patients tended to have higher disease activity scores, increased acute-phase proteins, and decreased QoL measures. TNFi therapy was associated with improvement in disease activity, and although this treatment led to significantly decreased fatigue scores, this reduction was not optimal in the majority of patients with 80% continuing to have severe fatigue according to their posttreatment scores. Health Assessment Questionnaire, mean scores of BASDAI Q5 and Q6, and BASDAI enthesitis were independent predictors of fatigue severity. CONCLUSION: Fatigue is a common symptom in axSpA, and the burden of fatigue among patients with nr-axSpA is similar to that seen in AS. While biologics are effective in improving disease activity, their effect on fatigue is more limited. In axSpA, fatigue remains unresponsive to TNFi in nearly 80% of patients.

3-2-369	
Title	**Elevated Vibration Perception Thresholds in Cidp Patients Indicate More Severe Neuropathy and Lower Treatment Response Rates**
Authors	Alon Abraham1, Hana Albulaihe2, Majed Alabdali3, Mohammad Qrimli1, Ari Breiner1, Carolina Barnett1, Hans D. Katzberg1, Leif E. Lovblom4, Bruce A. Perkins4, Vera Bril1*
Program	Neuromuscular Department
University	University of Toronto - Department of Medicine
Journal	Plos One
Date of Publication	November 06, 2015

Abstract

Introduction Vibration perception threshold (VPT) examination using a neurothesiometer provides objec- tive, sensitive and specific information, and has been utilized mainly in patients with diabetic polyneropathy. Objectives Explore the utility of VPT examination in CIDP patients. Methods CIDP subjects attending the Neuromuscular clinic between 01/2013 and 12/2014 were evaluated. Demographic data, clinical history, physical examination, VPT values, and electrophysiologic data from their charts were extracted. Results 70 charts were reviewed. 55 CIDP patients had elevated VPT, associated with higher frequency of abnormal sensory testing for various modalities (92.7% vs. 46.7%, p<0.0001), lower sensory and motor amplitudes and reduced conduction velocities on nerve conduc- tion studies, and lower treatment response rates (54% vs. 93%, p = 0.01). Conclusion VPT examination is a simple tool, which is a reliable and sensitive measure not only for diabetic neuropathy, but also for CIDP. Moreover, in CIDP, elevated VPT values are also associated with lower treatment response rates.

3-2-370	
Title	**Ddx17 (p72), a Sox2 Binding Partner, Promotes Stem-like Features Conferred by Sox2 in a Small Cell Population in Estrogen Receptor-positive Breast Cancer**
Authors	H. Alqahtania, K. Gopala, N. Guptaa, K. Jungb, A. Alshareefa, X. Yea, F. Wua, L. Lic, R. Laia, B,
Program	Laboratory Medicine and Pathology
University	University of Alberta
Journal	Cellular Signalling
Date of Publication	November 10, 2015

Abstract

We have previously demonstrated the existence of two phenotypically distinct cell subsets in estrogen receptor (ER)-positive breast cancer (BC) based on their differential response to a Sox2 reporter (SRR2), with reporter responsive (RR) cells being more tumorigenic and stem-like than reporter unresponsive (RU) cells. To delineate the molecular mechanisms underlying this phenotypic dichotomy, we tested our hypothesis that Sox2, which is a key regulator of the RR phenotype, is under the control of its binding partners. In this study, we focused on DDX17, known to be a transcription co-activator and found to be a Sox2 binding partner by liquid chromatography-mass spectrometry. Using immunoprecipitation, we confirmed the binding between DDX17 and Sox2, although this interaction was largely restricted to RR cells. While DDX17 was found in both the cytoplasm and nuclei in RU cells, it is confined to the nuclei in RR cells. siRNA knockdown of DDX17 in RR cells substantially decreased the Sox2-SRR2 binding and significantly decreased the SRR2 reporter activity without affecting the protein level of Sox2. Using ChIP-PCR, DDX17 knockdown also significantly decreased the binding of Sox2 to genomic SRR2, as well as 3 of its specific gene targets including MUC15, CCND1 and CD133. Correlating with these findings, siRNA knockdown of DDX17 significantly reduced soft agar colony formation and mammosphere formation in RR cells but not RU cells. To conclude, DDX17 is a Sox2-binding protein in ER-positive BC. In RR but not RU cells, DDX17 enhances the tumorigenic and stem-like features of Sox2 by promoting its binding to its target genes.

3-2-371	
Title	**Requirement of Clusterin Expression for Prosurvival Autophagy in Hypoxic Kidney Tubular Epithelial Cells**
Authors	Hatem A. Alnasser, Qiunong Guan, Fan Zhang, Martin Gleave, Christopher Y.c. Nguan, and Caigan Du
Program	Experimental Medicine
University	University of British Columbia
Journal	American Journal of Physiology
Date of Publication	November 11, 2015

Abstract

Cellular autophagy is a prosurvival mechanism in the kidney against ischemia-reperfusion injury (IRI), but the molecular pathways to activating the autophagy in ischemic kidneys are not fully understood. Clusterin (CLU) is a chaperone-like protein and its expression is associated with kidney resistance to IRI. This study investigated the role of CLU in the pro-survival autophagy in the kidney. Renal IRI was induced in mice by clamping renal pedicles at 32°C for 45 min. Hypoxia in renal tubular epithelial cell (TEC) cultures was induced by exposure to 1% O2 atmosphere. Autophagy was determined by either LC3-BII expression in Western blot or LC3- GFP aggregation in confocal microscopy. Cell apoptosis was determined by flow cytometric analysis. Unfolded protein response (UPR) was determined by PCR array. Here, we showed that autophagy was significantly activated by IRI in wild type (WT) but not CLU deficient kidneys. Similarly, the autophagy was activated by hypoxia in human proximal TECs (HKC-8) and WT mouse primary TECs, but was impaired in CLU null TECs. Hypoxia-activated autophagy was CLU dependent and was positively correlated with cell survival, and inhibition of autophagy significantly promoted cell death both in HKC-8 and mouse WT/CLU-expressing TECs, but not in CLU null TECs. Further studies showed that CLU-dependent prosurvival autophagy was associated with UPR activation in hypoxic kidney cells. In conclusion, these data suggest that activation of prosurvival autophagy by hypoxia in kidney cells requires CLU expression, and may be a key cytoprotective mechanism of CLU in the protection of the kidney from hypoxia/ischemia-mediated injury.

3-2-372	
Title	**Quality of Assessment and Counselling Offered by Community Pharmacists and Medication Sale without Prescription to Patients Presenting with Acute Cardiac Symptoms: A Simulated Client Study**
Authors	Tarek Seifaw Kashour1 & Abdulaziz Joury1 & Abdullah M. Alotaibi2 & Mahmoud Althagafi1 & Aws S. Almufleh1 & Ahmad Hersi1 & Lukman Thalib3
Program	Internal Medicine
University	Mcgill University
Journal	European Journal of Clinical Pharmacology
Date of Publication	November 23, 2015

Abstract

Abstract Purpose Self-medication is common worldwide. However, the prevalence of sale of prescription medications without prescription and the quality of assessment and counselling provided by community pharmacists to cardiac patients is un- known. We sought to determine the prevalence of prescription medication sales and explore how pharmacists assess and counsel patients with acute cardiac conditions. Methods Six hundred community pharmacies in the two larg- est cities in Saudi Arabia were selected. Two simulated clients presented either an acute coronary syndrome (ACS) scenario or an acute heart failure (AHF) scenario to the pharmacists. Descriptive statistics and regression models were used to an- alyse and present the collected data. Results of 600 pharmacies, 379 (63.2 %) sold various pre- scription medications to simulated patients without prescrip- tion. Assessment and counselling provided by pharmacists were inadequate. Almost a quarter of pharmacists did not ask simulated patients any questions; 52 % asked one or two questions; and only 24 % asked three or more questions. Only 28 pharmacists (4.7 %) inquired about drug allergies; 48.5 % instructed simulated patients on the dosage and frequency of the sold medications; 21.6 % provided instruction on treat- ment duration; and 19.4 % gave instructions on dose, frequen- cy, and duration of treatment. Compared to AHF, ACS simu- lated patients were more likely to be asked about other symp- toms and comorbidities (59.7 % vs. 48.7 %, p = 0.007 and 46.3 % vs. 37.3 %, p = 0.005, respectively) and were more likely to be advised to go to hospital (70.3 % vs. 56.3 %, p < 0.001). Conclusions the sale of prescription medications by community pharmacists to simulated cardiac patients without prescription is very common; assessment and counselling qualities are suboptimal.

3-2-373	
Title	**Olfactory Function in Acute Traumatic Brain Injury**
Authors	J. Frasnellia,b,*, M. Laguë-beauvaisc, J. Leblancc, A.y. Alturkif,h, M.c. Champouxc,c. Couturierc, K. Andersond, J. Lamoureuxe, J. Marcouxf, S. Tinawic,g, J. Dagherc,g,m. Malekif, M. Feyzc, E. De Guised,
Program	Neurosurgery
University	Mcgill University
Journal	Clinical Neurology and Neurosurgery
Date of Publication	November 24, 2015

Abstract

Objective: Traumatic brain injury (TBI) represents a significant public health problem and is associated with a high rate of mortality and morbidity. Although TBI is amongst the most common causes of olfactorydysfunction the relationship between injury severity and olfactory problems has not yet been investigatedwith validated and standardized methods in the first days following the TBI.Methods: We measured olfactory function in 63 patients admitted with TBI within the first 12 days follow-ing the trauma by means of the Sniffin' Sticks identification test (quantitative assessment) and a parosmiaquestionnaire (qualitative assessment). TBI severity was determined by means of the Glasgow Coma Scale(GCS) and by duration of post-traumatic amnesia (PTA) as measured by the Galveston Orientation andAmnesia Test.Results: Poor olfactory scores correlated with a longer amnesia period, but not with GCS scores. Further,we observed higher parosmia scores in assault victims than in victims of falls or motor vehicle collisions.Conclusions: We show that PTA is intimately related to olfactory problems following a TBI. Thus, a thor-ough evaluation of olfaction is essential in order to detect posttraumatic olfactory dysfunction and totake appropriate actions early on to help the individual deal with this impairment.

3-2-374	
Title	**Bucket-handle Meniscal Tear in a 9-year-old Girl: A Case Report and Review of the Literature.**
Authors	Anas Nooh, Feras Waly, Fahad Abduljabbar, Chantal Janelle
Program	Experimental Surgery
University	Mcgill University
Journal	Journal of Paediatric Orthopaedics B
Date of Publication	November 27, 2015

Abstract

Bucket-handle meniscal tears used to be rare in children younger than 10 years of age. However, nowadays, we encounter more cases because of increased sport and recreational activities. In this paper, we report on a 9-yearold girl who presented with an isolated medial meniscal bucket-handle tear of the right knee and review the literature for similar cases. Bucket-handle meniscal tears are rare in young children. However, it should be ruled out in patients with knee pain and mechanical symptoms following knee injury.

3-2-375	
Title	**Bucket-handle Meniscal Tear in a 9-year-old Girl: A Case Report and Review of the Literature**
Authors	Anas Nooh Feras Waly Fahad H. Abduljabbar Chantal Janelle
Program	Orthopaedic Surgery
University	Mcgill University
Journal	Journal of Pediatric Orthopaedics
Date of Publication	November 27, 2015

Abstract

Bucket-handle meniscal tears used to be rare in children younger than 10 years of age. However, nowadays, we encounter more cases because of increased sport and recreational activities. In this paper, we report on a 9-year-old girl who presented with an isolated medial meniscal bucket-handle tear of the right knee and review the literature for similar cases. Bucket-handle meniscal tears are rare in young children. However, it should be ruled out in patients with knee pain and mechanical symptoms following knee injury.

3-2-376	
Title	**The Role of Formate in Combatting Oxidative Stress**
Authors	Sean C. Thomas . Azhar Alhasawi . Christopher Auger . Abdelwahab Omri . Vasu D. Appanna
Program	Biomolecular Science
University	Laurentian University
Journal	Antonie Van Leeuwenhoek
Date of Publication	November 28, 2015

Abstract

The interaction of keto-acids with reactive oxygen species (ROS) is known to produce the corresponding carboxylic acid with the concomitant formation of CO2. Formate is liberated when the ketoacid glyoxylate neutralizes ROS. Here we report on how formate is involved in combating oxidative stress in the nutritionally-versatile Pseudomonas fluorescens. When the microbe was subjected to hydrogen peroxide (H2O2), the levels of formate were 8 and twofold higher in the spent fluid and the soluble cell-free extracts obtained in the stressed cultures compared to the controls respectively. Formate was subsequently utilized as a reducing force to generate NADPH and succinate. The former is mediated by formate dehydrogenase (FDH-NADP), whose activity was enhanced in the stressed cells. Fumarate reductase that catalyzes the conversion of fumarate into succinate was also markedly increased in the stressed cells. These enzymes were modulated by H2O2. While the stressed whole cells produced copious amounts of formate in the presence of glycine, the cell-free extracts synthesized ATP and succinate from formate. Although the exact role of formate in anti-oxidative defence has to await further investigation, the data in this report suggest that this carboxylic acid may be a potent reductive force against oxidative stress

3-2-377	
Title	**Current and Emerging Treatments for Severe Asthma**
Authors	Khalid Al Efraij, J. Mark Fitzgerald
Program	Respirology
University	University of British Columbia
Journal	Journal of Thoracic Disease
Date of Publication	November 30, 2015

Abstract

Abstract: Severe asthma, which is poorly controlled despite the elimination of modifiable factors and the correct use of standard therapy, accounts only for 5% of people with asthma but it contributes to approximately 50% of the economic costs of asthma. Because of this unmet need, novel therapies have been developed for optimal treatment of these patients. The use of tiotropium, omalizumab, mepolizumab and thermoplasty in well-selected patients provides better control and most importantly a reduction in asthma exacerbations.

3-2-378	
Title	**Risk of Active Tuberculosis in Chronic Kidney Disease: A Systematic Review and Meta-analysis**
Authors	K. Al-efraij, L. Mota, C. Lunny, M. Schachter, V. Cook, J. Johnston
Program	Respirology
University	University of British Columbia
Journal	International Journal of Tuberculosis and Lung Disease
Date of Publication	December 01, 2015

Abstract

BACKGROUND: Although the global prevalence of chronic kidney disease (CKD) is increasing, the relationship between CKD and active TB is not well described. OBJECTIVE : to conduct a systematic review to evaluate active TB risk in CKD populations. METHODS : We searched Ovid Medline, EMBASE and Cochrane databases and relevant journals to identify multicentre or regional studies reporting quantitative effect estimates of an association between CKD and active TB. Risk ratios and rate ratios were used as common measures of association. Pooled estimates were generated using a random-effects model. RESULTS : Of 3406 papers screened, 12 eligible studies were identified with 71 374 end-stage renal disease (ESRD) patients and 560 TB cases. Meta-analysis of adjusted rate ratio data in dialysis populations showed an increased rate of 3.62 (95%CI 1.79–7.33, P , 0.001) compared to the general population, while unadjusted risk ratio data in transplant populations showed an increased risk of 11.35 (95%CI 2.97–43.41) compared to the general population. CONCLUS ION: We found consistent evidence of an increased risk of active TB in ESRD compared to the general population. This relationship persisted despite variability in study population, design and renal replacement therapy (RRT) modality. Further research into the role of comorbidities, RRT modality and CKD stage is required to better understand the association between CKD and active TB. KEY WORDS: tuberculosis; chronic kidney disease; systematic review.

3-2-379	
Title	**Adult Reconstructive Surgery: A High-risk Profession for Work-related Injuries**
Authors	Saad M. Alqahtani, Md, Msc, Frcsc A, B, Mohammad M. Alzahrani, Md, Msc A, B, Michael Tanzer, Md, Frcsc
Program	Orthopedic Surgery
University	Queen's University
Journal	Journal of Arthroplasty (elsevier Inc.)
Date of Publication	December 01, 2015

Abstract

Background: Adult reconstructive surgery is an orthopedic subspecialty characterized by surgical tasks that are physical, repetitive, and require some degree of stamina from the surgeon. This can result strain and/or injury of the surgeon's musculoskeletal system. This study investigates the prevalence of workrelated injuries among arthroplasty surgeons. Methods: A modified version of the physical discomfort survey was sent to surgeon members of the Hip Society, the International Hip Society, and the Canadian Orthopedic Arthroplasty via email. One hundred and eighty-three surgeons completed the survey. Results: Overall, 66.1% of the arthroplasty surgeons reported that they had experienced a work-related injury. The most common injuries that occurred were low back pain (28%), lateral epicondylitis of the elbow (14%), shoulder tendonitis (14%), lumbar disc herniation (13%), and wrist arthritis (12%). Overall, 27% of surgeons took time off from work because of the injury. As the number of disorders diagnosed increased, there was a significant increase in the incidence of requiring time off work because of the disorder ($P < .001$) and also exacerbation of a previously diagnosed disorder ($P < .01$). Factors that significantly increased the risk of the surgeon requiring time off because of the disorder were age >55 years, practicing for more than >20 years, and performing >100 total hip arthroplasty procedures per year ($P < .05$). In addition, 31% of the orthopedic surgeons surveyed required surgery for their injury. Conclusion: Although most studies concentrate on the importance of patient safety and thus the quality of the health care system, the surgeon's safety is also considered an integral part of this system's quality. This study highlights a high prevalence of musculoskeletal work-related injuries among arthroplasty surgeons and indicates the need for the identification of preventive measures directed toward improving the operative surgical environment and work ergonomics for the surgeons.

3-2-380	
Title	**Early-onset Convulsive Seizures Induced by Brain Hypoxia-ischemia in Aging Mice: Effects of Anticonvulsive Treatments**
Authors	Justin Wang, Chiping Wu1, Jessie Peng, Nisarg Patel, Yayi Huang, Xiaoxing Gao, Salman Aljarallah, James H. Eubanks, Robert Mcdonald, Liang Zhang
Program	Mcgill Neurology Residency Program
University	Mcgill University
Journal	Plos One Journal
Date of Publication	December 02, 2015

Abstract

Aging is associated with an increased risk of seizures/ epilepsy. Stroke (ischemic or hemorrhagic) and cardiac arrest related brain injury are two major causative factors for seizure development in this patient population. With either etiology, seizures are a poor prognostic factor. In spite of this, the underlying pathophysiology of seizure development is not well understood. In addition, a standardized treatment regimen with anticonvulsants and outcome assessments following treatment has yet to be established for these post-ischemic seizures. Previous studies have modeled post-ischemic seizures in adult rodents, but similar studies in aging/aged animals, a group that mirrors a higher risk elderly population, remain sparse. Our study therefore aimed to investigate early-onset seizures in aging animals using a hypoxia-ischemia (HI) model. Male C57 black mice 18-20-month-old underwent a unilateral occlusion of the common carotid artery followed by a systemic hypoxic episode (8% O2 for 30 min). Early-onset seizures were detected using combined behavioral and electroencephalographic (EEG) monitoring. Brain injury was assessed histologically at different times post HI. Convulsive seizures were observed in 65% of aging mice post-HI but not in control aging mice following either sham surgery or hypoxia alone. These seizures typically occurred within hours of HI and behaviorally consisted of jumping, fast running, barrel-rolling, and/or falling (loss of the righting reflex) with limb spasms. No evident discharges during any convulsive seizures were seen on cortical-hippocampal EEG recordings. Seizure development was closely associated with acute mortality and severe brain injury on brain histological analysis. Intra-peritoneal injections of lorazepam and fosphenytoin suppressed seizures and improved survival but only when applied prior to seizure onset and not after. These findings together suggest that seizures are a major contributing factor to acute mortality in aging mice following severe brain ischemia and that early anticonvulsive treatment may prevent seizure genesis and improve overall outcomes.

3-2-381	
Title	**Bridging the Gap Between Evidence and Practice for Adults with Medically Refractory Temporal Lobe Epilepsy: is a Change in Funding Policy Needed to Stimulate a Shift in Practice?**
Authors	Alireza Mansouri, Abdulrahman Aldakkan,magda J. Kosicka,jean-eric Tarride, and Taufik A. Valiante
Program	Neurosurgery
University	University of Toronto
Journal	Epilepsy Research and Treatment
Date of Publication	December 08, 2015

Abstract

Objective. Surgery for medically refractory epilepsy (MRE) in adults has been shown to be effective but underutilized. Comprehensive health economic evaluations of surgery compared with continued medical management are limited. Policy changes may be necessary to influence practice shift. Methods. Acritical review of the literature on health economic analyses for adults with MRE was conducted. The MEDLINE, EMBASE, CENTRAL, CRD, and EconLit databases were searched using relevant subject headings and keywords pertaining to adults, epilepsy, and health economic evaluations. The screening was conducted independently and in duplicate. Results. Four studies were identified (1 Canadian, 2 American, and 1 French). Two were cost-utility analyses and 2 were cost-effectiveness evaluations. Only one was conducted after the effectiveness of surgery was established through a randomized trial. All suggested surgery to be favorable in the medium to long term (7-8 years and beyond). The reduction of medication use was the major cost-saving parameter in favor of surgery. Conclusions. Although updated evaluations that are more generalizable across settings are necessary, surgery appears to be a favorable option from a health economic perspective. Given the limited success of knowledge translation endeavours, funder-level policy changes such as quality-based purchasing may be necessary to induce a shift in practice.

3-2-382	
Title	**Utilization of Intra-operative Visual Evoked Potential in Long Spine Case: Case Report**
Authors	Alghamdi Myt Houlden Da Alkherayf F
Program	Neurosurgery
University	University of Ottawa
Journal	Neurology & Neurophysiology
Date of Publication	December 09, 2015

Abstract

Perioperative visual loss (POVL) is a terrifying complication that can rarely follow non-ocular surgery. The incidence of POVL following complex spine and cardiac surgery is higher than other surgical procedures and can be as high as 0.2% [1-3]. The etiology behind POVL can involve any part of the visual pathway stating from the cornea to the occipital lobe, with optic nerve ischemia being the most common pathophysiology [2,3]. Different risk factors identified in the literature include prolonged duration of surgery, prone position, significant blood loss, hypoxia, hypotension, anemia and the presence of comorbidity [2,3] Visual Evoked Potential is a non-invasive test used to test the function of the visual pathway from the retina to the occipital lobe by using a high contrast visual stimulation and occipital electrodes [4]. The use of Intraoperative visual evoked potential is a technique which has been tried in some surgical procedures to monitor the optic nerve in case direct injury occurs, such procedure include transsphenoidal surgery, occipital lobe surgery and paraorbital surgery [5,6]. We are exploring the use of Intra operative visual evoked potentials in long spine cases (high risk) in an attempt to prevent perioperative

visual loss by detecting early changes in the visual evoked potential. The use of intraoperative flash visual evoked potential (FVEP) is not associate with serious side effects and is convenient in the setting of an available neurophysiology monitoring. In our article we include a case where intra operative VE monitoring was utilized.

3-2-383	
Title	**Retinoid X Receptor Selective Signaling in the Regulation of Akt/protein Kinase B Isoform-specific Expression**
Authors	Hamood Alsudais*, Kawther Aabed †, William Nicola*, Katherine Dixon*, Jihong Chen† and Qiao Li*,†
Program	Cellular and Molecular Medicine
University	University of Ottawa
Journal	Jbc
Date of Publication	December 14, 2015

Abstract

The differentiation and fusion of myoblasts into mature myotubes are complex processes responding to multiple signaling pathways. The function of Akt/protein kinase B (PKB) is critical for myogenesis, but less is clear as to the regulation of its isoform-specific expression. Bexarotene is a drug already used clinically to treat cancer, and it has the ability to enhance the commitment of embryonic stem cells into skeletal muscle lineage. While bexarotene regulates fundamental biological processes through retinoid X receptor-mediated gene expression, molecular pathways underlying its positive effects on myogenesis remain unclear. In this study, we have examined the signaling pathways which transmit bexarotene action in the context of myoblast differentiation. We show that bexarotene promotes the myoblast differentiation and fusion through the activation of RXR and the regulation of Akt/PKB isoform-specific expression. Interestingly, bexarotene signaling appears to correlate with residue-specific histone acetylation and is able to counteract the detrimental effects of cachectic factors on myogenic differentiation. We also signify an isoform-specific role for Akt/PKB in RXR selective signaling to promote and to retain myoblast differentiation. Taken together, our findings establish the viability of applying bexarotene in the prevention and treatment of muscle-wasting disorders, particularly given the lack of drugs that promote myogenic differentiation available for potential clinical applications. Furthermore, the model of bexarotene-enhanced myogenic differentiation will provide an important avenue to identify additional genetic targets and specific molecular interactions that we can study and apply for the development of potential therapeutics in muscle regeneration and repair.

3-2-384	
Title	**Hemorrhagic Presentations of Cerebellar Pilocytic Astrocytomas in Children Resulting in Death: Report of 2 Cases**
Authors	M Itchell P . W Ilson, Md , 1 E Dward S . Johnson, Md , F Rcpc , 2 C Ynthia H Awkins, Md , P H D , F Rcpc , 3 Kerry a Tkins, Bs C, 4 W Ael a Lshaya, Md , 5,6 and Jeffrey a . P Ugh, Md , Ms C, F Rcsc 5
Program	Neurosurgery
University	University of Alberta
Journal	Journal of Neurosurgery Pediatric
Date of Publication	December 18, 2015

Abstract

Acute hemorrhagic presentation in pilocytic astrocytomas (PAs) has become increasingly recognized. This type of presentation poses a clinically emergent situation in those hemorrhages arising in PAs of the cerebellum, the most frequent site, because of the limited capacity of the posterior fossa to compensate for mass effect, predisposing to rapid neurological deterioration. As examples, we describe two cases of fatal hemorrhagic cerebellar PAs: one of a child with a slowly growing stereotypical WHO Grade I PA with a 1-year period of symptomatology that preceded a rapid clini - cal deterioration, and another of an asymptomatic child having a PA variant, presenting with progressive obtundation following a presumed Valsalva event. These two scenarios parallel previous reports in the literature of either a setting of progressive expression of cerebellar dysfunction and transient episodes of raised intracranial pressure (ICP), or abrupt onset of features of increased ICP in a previously well child. The literature is further reviewed for a current understanding of the factors that predispose, initiate and propagate bleeding, with specific reference to the role of vascular endothelial growth factor and other angiogenic agents in the genesis and stability of the vasculature in PAs. In this context, we propose that obliterative vascular mural hyalinization with associated altered flow dynamics and microaneurysm forma - tion was the pathogenesis of the hemorrhage in our first case. In the second case, large tumor size, increased growth rate, looseness of the background myxoid matrix, and thinness of the tumor blood vessels with calcospherite deposition predisposed to vascular leakage and bleeding concurrent with sudden increases in intravascular hydrostatic pressure. In that cerebellar PAs are common, this report underscores the importance of considering in the differential diagnosis the possibility of a spontaneous hemorrhage in a posterior fossa PA in a child presenting with a sudden neurological ictus and raised ICP.

3-2-385	
Title	**Donepezil Regulates Energy Metabolism and Favors Bone Mass Accrual**
Authors	Hazem Eimar, Sharifa Alebrahim, Garthiga Manickam, Ahmed Al-subaie, Lina Abu-nada, Monzur Murshed, Faleh Tamimi
Program	Faculty of Dentistry
University	Mcgill University
Journal	The Bone Journal
Date of Publication	December 21, 2015

Abstract

The autonomous nervous system regulates bone mass through the sympathetic and parasympathetic arms. The sympathetic nervous system (SNS) favors bone loss whereas the parasympathetic nervous system (PNS) promotes bone mass accrual. Donepezil, a central-acting cholinergic agonist, has been shown to down-regulate SNS and up-regulate PNS signaling tones. Accordingly, we hypothesize that the use of donepezil could have beneficial effects in regulating bone mass. To test our hypothesis, two groups of healthy female mice were treated either with donepezil or saline. Differences in body metabolism and bone mass of the treated groups were compared. Body and visceral fatweights aswell as serumleptin levelwere increased in donepezil-treated mice compared to control, suggesting that donepezil effects on SNS influenced metabolic activity. Donepezil-treated mice had better bone quality than controls due to a decrease in osteoclasts number. These results indicate that donepezil is able to affect whole body energy metabolism and favors bone mass in young femaleWT mice.

3-2-386	
Title	**Rhegmatogenous Retinal Detachments Associated to Stickler Syndrome in a Tertiary Eye Care Center in Saudi Arabia**
Authors	Saeed T Alshahrani, Nicola G Ghazi, Saba Al-rashaed
Program	Ophthalmology/retina
University	Queen's University
Journal	Clinical Ophthalmology Journal
Date of Publication	December 21, 2015

Abstract

Purpose: to investigate the clinical ndings and outcomes of rhegmatogenous retinal detachment (RRD) in Stickler syndrome on affected and fellow eyes that underwent prophylactic retinopexy. Patients and methods: Chart review of 70 eyes (62 patients). Incidence of RRD, postopera- tive visual acuity, and risk factors were evaluated. Results: Twenty-two patients (35%) had RRD in the fellow eye, 37% of the eyes had cataract, 93% had macular detachment, 50% had proliferative vitreoretinopathy, and 41% had posterior vitreous detachment. Success rates were: 60% of patients after scleral buckling; 57.1% after pars plana vitrectomy; and 75% after combined scleral buckling and pars plana vitrectomy. Sixty-one (93.8%) of patients had successful surgery (including second surgery). Silicone oil tamponade was signi cantly associated with nal anatomic outcome, with a protective odds ratio of 0.11 (P=0.027). Visual acuity improved in 54% of eyes and decreased in 5%. Statistically signi cant associations were present for eyes with nal visual acuity $20/200, and total retinal detachment (P,0.001); preoperative cataract (P=0.023); and proliferative vitreoretinopathy (P,0.001). RRD developed in 16/44 eyes despite laser prophylaxis. Conclusion: Prophylactic retinopexy was not bene cial for Stickler syndrome patients. Success of primary surgery for RRD remains low. The primary surgery should be vitrectomy combined with scleral buckling and silicone oil tamponade.

3-2-387	
Title	**Parental Health Beliefs, Socio-demographics, and Healthcare Recommendations Influence Micronutrient Supplementation in Youth with Celiac Disease**
Authors	Michelle R. Hoffmann; Abeer S. Alzaben; Simone E. Enns; Margaret A. Marcon; Justine Turner; Diana R. Mager
Program	Nutrition and Metabolism
University	University of Alberta
Journal	Canadian Journal of Dietetic Practice and Research
Date of Publication	December 28, 2015

Abstract

To identify parental influences affecting micronutrient supplementation in children and adolescents (2–18 years of age) with Celiac Disease (CD), a multi-method (survey, focus groups) study was conducted. A35-item questionnaire consisting of open- and closed-ended questions was launched nationally via Canadian Celiac Association internet sites. Five focus groups were conducted using a semi-structured interview guide. The survey and semi-structured interview guide content was vetted for face and content validity. Thematic analyses were conducted on the focus group content and open-ended survey questions, and $\chi 2$ and Fischer's exact analysis were performed on closed-ended survey data. Survey respondents were predominantly mothers (97%) of female children (80 F, 49 M) between the ages of 9–12 (31%) with CD, residing in western provinces (55%) with a combined family income ≥$100 000/year (63%). Seventy-seven percent of parental respondent's children or adolescents consumed micronutrient supplements, for 1–5 years (52%), 7

days a week (65%), as both multi-vitamin and single vitamin preparations (40%). Parental influences on child micronutrient use included health beliefs and knowledge, parental supplement use, supplement characteristics, age of child (above or below 13 years), household routines, and provincial residential status ($P < 0.05$). Parents relied on health professional recommendation (69%; MD, RD) and the internet (21%) as sources of information regarding child micronutrient supplementation. Parental health beliefs and knowledge, socio-demographic factors, and practitioner recommendation influence micronutrient supplement use in children and adolescents with CD.

3-2-388	
Title	**Change in Presurgical Diagnostic Imaging Evaluation Affects Subsequent Pediatric Epilepsy Surgery Outcome**
Authors	Luc Rubinger, Carol Chan, Felice D'arco, Rahim Moineddin, Osama Muthaffar, James T. Rutka, O. Carter Snead, Mary Lou Smith and Elysa Widjaja
Program	Neurology/epilepsy
University	University of Toronto
Journal	Epilepsia Journal
Date of Publication	December 30, 2015

Abstract

Objective Since 2008, we have changed our presurgical diagnostic imaging evaluation for medically refractory focal epilepsy to include high-resolution epilepsy protocol on 3 T magnetic resonance imaging (MRI), and combined magnetoencephalography and 18-fluorodeoxyglucose–positron emission tomography (FDG-PET) in selected patients with normal or subtle changes on MRI or discordant diagnostic tests. The aim of this study was to evaluate the effectiveness of the change in imaging practice on epilepsy surgery outcome in a tertiary pediatric epilepsy surgery center. Methods the change in practice occurred in early 2008, and patients were classified based on old or new practice. The patient characteristics, surgical variables, and seizure-free surgical outcome were compared, and the trend in seizure-free outcome over time was assessed. Results There was a trend for increased abnormal MRI (92% vs. 86%, respectively, $p = 0.062$), and increased utilization of FDG-PET (34% vs. 3% respectively, $p < 0.001$) with new relative to old practice. There were no statistically significant differences in invasive monitoring, location, and type of surgery and histology between the two periods (all $p > 0.05$). During the old practice, there was no statistically significant change in yearly trend of seizure-free outcome (odds ratio [OR] 0.960, 95% confidence interval [CI] 0.875–1.053, p …= 0.386). The change in practice in 2008 was associated with a significant improvement in seizure-free outcome (OR 1.535, 95% CI 1.100–2.142, $p = 0.012$). During the new practice, there was a significant positive trend in yearly seizure-free outcome (OR 1.219, 95% CI 1.053–1.411, $p = 0.008$), after adjusting for age at seizure onset, invasive monitoring, location and type of surgery, histology, MRI, magnetoencephalography, and FDG-PET. Significance We have found an improvement in seizure-fee surgical outcome following the change in imaging practice. This study highlights the importance of optimizing and improving presurgical diagnostic imaging evaluation to improve surgical outcome.

3-2-389	
Title	**Unilateral Adrenal Hemorrhage and the Challenge of Early Recognition**
Authors	Alkhiari R, Attar D, Kraeker C.
Program	Gastroenterology/ Internal Medicine
University	Mcmaster University
Journal	Canadian Journal of General Internal Medicine.
Date of Publication	December 31, 2015

Abstract

Adrenal hemorrhage (AH) is a rare condition with an estimated prevalence of 1% among hospital-based autopsies. It is usually discovered incidentally on computed tomography. Most cases are associated with the use of anticoagulation, especially in the setting of heparin-induced thrombocytopenia, anti-phospholipid antibody syndrome, trauma, metastatic disease, sepsis, and critical illness. We report a case of acute unilateral adrenal hemorrhage associated with Escherichia coli pyelonephritis in the context of recent prolonged steroid use.

Business & Management

3-3-390	
Title	**The Role of the Dean in Contributing to Management Education in the Ontario 2000-2010 Context**
Authors	Aseel Al Ghamdi Chih Chang (kevin) Tyler Hummel Josh D'alvise University of Guelph
Program	Management/marketing
University	University of Guelph
Journal	The Administrative Sciences Association of Canada (asac)
Date of Publication	June 14, 2015

Abstract

Business schools have exploded in growth over the past decade. However, few studies have been done on how the role of the dean contributes to the success of management education. The authors have constructed a framework to describe how the role of the dean leads to management education success. The framework is created based on 1) the role of the dean according to previous literature, 2) a definition of success in management education based on the academic literature and BusinessWeek publications and 3) application of stakeholder theory. Aqualitative study is then carried out in the Ontario 2000-2010 context to see if the framework is applicable and if so how the stakeholder relationships have changed over time. Overall, the framework is supported and it is concluded that while the stakeholder relationships have remained foundationally unchanged, the nature of these relationships has adapted.

Humanity & Social Sciences

3-4-391	
Title	**Detecting and Overcoming Systematic Bias in High-throughput Screening Technologies: A Comprehensive Review of Practical Issues and Methodological Solutions**
Authors	Iurie Caraus, Abdulaziz A. Alsuwailem, Robert Nadon and Vladimir Makarenkov
Program	Human Genetics
University	Mcgill University
Journal	Briefings in Bioinformatics
Date of Publication	March 07, 2015

Abstract

Significant efforts have been made recently to improve data throughput and data quality in screening technologies related to drug design. The modern pharmaceutical industry relies heavily on high-throughput screening (HTS) and high-content screening (HCS) technologies, which include small molecule, complementary DNA (cDNA) and RNA interference (RNAi) types of screening. Data generated by these screening technologies are subject to several environmental and procedural systematic biases, which introduce errors into the hit identification process. We first review systematic biases typical of HTS and HCS screens. We highlight that study design issues and the way in which data are generated are crucial for providing unbiased screening results. Considering various data sets, including the publicly available ChemBank data, we assess the rates of systematic bias in experimental HTS by using plate-specific and assay-specific error detection tests. We describe main data normalization and correction techniques and introduce a general data preprocessing protocol. This protocol can be recommended for academic and industrial researchers involved in the analysis of current or next-generation HTS data.

3-4-392	
Title	**Syntactic Processing of Subjects in Arabic: is There a Difference Between Pre/post-verbal Processing**
Authors	Saleh Alqahtani King Saud University and Laura Sabourin University of Ottawa
Program	Linguistics
University	University of Ottawa
Journal	Conference
Date of Publication	April 01, 2015

Abstract

The aim of this study is to investigate the preference and processing of Arabic word order, namely, Verb-Subject-Object (VSO) or Subject-Verb-Object (SVO) by native speakers of Arabic (NSs). In Arabic, two different word orders can be used: (1) kataba wrote Pal-walad-u the-boy-NOM Pal-wadZib-a the-homework-ACC 'The boy did the homework.' VSO (2) Pal-walad-u the-boy-NOM kataba wrote Pal-wadZib-a the-homework-ACC 'The boy did the homework.' SVO Some linguists argue that VSO is more dominant than SVO (Abdul-Raof, 1998; Althwaini, 2008, among others). We can take this preference as evidence to argue that VSO linear order is easier to process than SVO order since the former requires only one movement (V-to-T) (Fassi-Fehri, 1993; Ouhallah, 1994); the subject remains in situ however; see (7). (3) [TP [T' katxaba [VP Pal-walad-u [V' .... Pal-wadZib-a]]]]. ForSVO, one additional movement is required; the subject may need to move from [Spec: VP] to [Spec: TP]; see(8). (4) y [TP Pal-walad-u [T' kaxtaba [VP .... [V' .... Pal-wadZib-a]]]]]. Within the realm of experimental syntax and building on Chomsky's (1995) idea that E-language is an extensional form of I-language (mental form), we administered a sentence reordering writing task and an online self-paced reading task. 20 NSs participated in the experiment. The writing task checks for the participants' preferred word order. In the reading task, the reaction time (RT), from the onset appearance of the target item on a computer screen until the participant presses the SPACE-BAR, is calculated. Target items are the syntactic subjects of SVO or VSO. Writing task's results showed that NSs significantly preferred VSO order to SVO ($p < .01$). In the reading task, NSs showed a significant difference in processing between preverbal and postverbal subjects. Precisely, subjects in VSO took a shorter RT than subjects in SVO ($F(2.38) = 5.213$, $p < .05$). No significant difference was found between the definite and indefinite subjects in VSO. In conclusion, the writing task results offer evidence of VSO preference over SVO. The difference in RT between

processing times shown by NSs suggests that postverbal subjects are easier to process than preverbal subjects. Findings might be taken as evidence that there is only one syntactic movement (V-to-T) to derive VSO. By contrast, the longer RTs required to process subjects in SVO might resemble more syntactic movements1.

3-4-393	
Title	**Textual Input Enhancement for Vowel Blindness: A Study with Arabic Esl Learners**
Authors	Reem Alsadoon Trude Heift
Program	Linguistics
University	Simon Fraser University
Journal	Modern Language Journal
Date of Publication	May 31, 2015

Abstract
This study explores the impact of textual input enhancement on the noticing and intake of English vowels by Arabic L2 learners of English. Arabic L1 speakers are known to experience vowel blindness, commonly defined as a difficulty in the textual decoding and encoding of English vowels due to an insufficient decoding of the word form. Thirty beginner ESL learners participated in a training study during which the experimental group received textual input enhancement on English vowels. Students completed a pretest and an immediate and delayed posttest. An eye-tracker recorded students' eye fixations during the treatment phase. Results indicate that vowel blindness was significantly reduced for the experimental group who received vowel training in the form of textual input enhancement. This might be due to a longer focus on the target words as suggested by our eye-tracking data.

3-4-394	
Title	**Plagiarism Education: Strategies for Instructors**
Authors	Julia Colella-sandercock and Hanin Alahmadi
Program	Education
University	University of Windsor
Journal	International Journal of Learning, Teaching and Educational Research
Date of Publication	August 01, 2015

Abstract
Abstract. Plagiarism among college and university students is a growing concern. Some researchers feel that plagiarism is an issue that is here to stay. Several research studies focus on self-reported plagiarism rates. In these studies, students report on the frequencies of their engagement in plagiarism behaviours. Although these studies are helpful in determining plagiarism rates, they are only an initial step. Other research on plagiarism examines reasons why students plagiarize, and one of the recurring reasons is that students are unclear regarding what plagiarism entails and how to avoid it. Research on plagiarism needs to examine plagiarism education strategies for instructors and their effectiveness. Students who are educated on plagiarism may plagiarize less. This paper will share a number of strategies centering on plagiarism education that educators can use in their classrooms with their students. The activities suggested can be modified by instructors to fit the needs of their classes.

3-4-395	
Title	**Bone Mineral Density and Growth in Children Having Undergone Liver Transplantation with Corticosteroid-free Immunosuppressive Protocol.**
Authors	Mager D, Al-zaben As, Robert C, Gilmour S, Yap J.
Program	Afns
University	University of Alberta
Journal	Jpen J Parenter Enteral Nutr.
Date of Publication	September 25, 2015

Abstract
BACKGROUND: Children post-liver transplantation (post-LTX) are at risk of growth delay and decreased bone mineral density (BMD) secondary to corticosteroid (CS) therapy and suboptimal intake of nutrients important for bone health. The pediatric LTX program at Stollery Children's Hospital introduced a CS-free LTX regimen in 2003. This retrospective study investigated whether the implementation of a CS-free protocol resulted in improvements in BMD (dual x-ray absorptiometry) and growth following LTX. METHODS: A retrospective chart review of all children undergoing LTX was conducted. The parameters included repeated measures of anthropometric (weight, weight z score, height, height z score), BMD/bone mineral content (BMC), laboratory variables, graft function (number/severity of rejection), and CS therapy (dose, duration). RESULTS: A total of 39 patients met study inclusion (20 male; n = 28 on CS; n = 11 CS-free). Mean duration of follow-up was 5.5 ± 3.3 years. The mean weight and height z scores were -0.31 ± 0.14 (CS) and 0.22 ± 0.23 (CS-free; P = .09) and -0.71 ± 0.13 (CS) and 0.23 ± 0.22 (CS-free; P = .002), respectively. Lumbar and whole-body BMD z score less than -2 were present in 15% and 8% of the cohort, respectively. There were no significant differences between CS and CS-free in lumbar BMC (22.2 ± 1.4 and 23.4 ± 2.02 g; P = .165) and lumbar BMD (0.57 ± 0.02 and 0.80 ± 0.22 g/cm2; P = .152), respectively. Lumbar BMC (r2 = 0.89, P < .05) and whole-body BMC (r2 = 0.93, P < .05) were inversely related to CS dose >0.2 mg/kg/d and positively related to bone age (P < .01). CONCLUSION: CS therapy in children post-LTX is associated with reduced BMC and delayed linear growth. Understanding the clinical and nutrition factors influencing bone health is important to optimizing growth and bone health in children post-LTX.

3-4-396	
Title	**Isolation of Camelid Single-domain Antibodies Against Native Proteins Using Recombinant Multivalent Peptide Ligands**
Authors	Norah A. Alturki , Kevin A. Henry , C. Roger Mackenzie , and Mehdi Arbabi-ghahroudi.
Program	Immunology
University	University of Ottawa
Journal	Methods in Molecular Biology
Date of Publication	October 06, 2015

Abstract
Generation of antibodies against desired epitopes on folded proteins may be hampered by various characteristics of the target protein, including antigenic and immunogenic dominance of irrelevant epitopes and/or steric occlusion of the desired epitope. In such cases, peptides encompassing linear epitopes of the native protein represent attractive alternative reagents for immunization and screening. Peptide antigens are typically prepared by fusing or conjugating the peptide of interest to a carrier protein. The utility of such antigens depends on many factors including the peptide's amino acid sequence, display valency, display format (synthetic conjugate vs. recombinant fusion) and characteristics of the carrier. Here we provide detailed protocols for: (1) preparation of DNA constructs encoding peptides fused to verotoxin (VT) multimerization domain; (2) expression, purifi cation, and characterization of the multivalent peptide-VT ligands; (3) concurrent panning of a non-immune phage-displayed camelid V HH library against the peptide- VT ligands and native protein; and (4) identifi cation of V HHs enriched via panning using nextgeneration sequencing techniques. These methods are simple, rapid and can be easily adapted to yield custom peptide-VT ligands that appear to maintain the antigenic structures of the peptide. However, we caution that peptide sequences should be chosen with great care, taking into account structural, immunological, and biophysical information on the protein of interest.

3-4-397	
Title	**A List of Bee Species (hymenoptera: Apoidea) Recorded from Three Municipalities in the Niagara Region of Ontario, Including a New Record of Lasioglossum Furunculum Gibbs (halictidae) in Canada**
Authors	T. M. Onuferko, R. Kutby, M. H. Richards197
Program	Biology Department
University	University of Calgary
Journal	Jeso
Date of Publication	October 15, 2015

Abstract
We carried out an extensive survey of bee species in the Niagara Region of Ontario, Canada, by sampling various sites within three municipalities from 200197 to 201197. The municipalities were St. Catharines, Port Colborne, and Wainfleet. Sampling mainly consisted of pan-trapping, but also included sweeping through vegetation and targeted collection from flowers. In the longest ongoing survey of a bee community to date in Canada, we collected 51,842 bee specimens comprising nearly 150 valid species, of which 1970 were not previously recorded for the region. We also present the first record of the rare sweat bee species Lasioglossum furunculum Gibbs (Hymenoptera: Halictidae) in Canada, which was previously known only from Massachusetts, United States of America.

CHAPTER 4
Conference Presentations

Engineering & Sciences

4-1-398	
Title	**Resources Allocation in Emergency Response Using an Interdependencies Simulation Environment**
Authors	Abdullah Alsubaie Khaled Alutaibi Jose Marti
Program	Electrical and Computer Engineering
University	University of British Columbia
Conference	Ihtc 2015
Date of Publication	June 02, 2015

Abstract
Natural and man-made disasters cause tremendous losses every year. Recent events, such as Hurricane Katrina and Sandy, have revealed the need for coordinated and effective emergency responses. In order to reduce human lives and economic losses, available resources should be allocated efficiently. Emergency responders are increasingly being challenged by the size and complexity of critical infrastructures that provide vital resources for emergency response operations. In this paper, we propose an integrated simulation-optimization tool for assisting emergency responders in finding the optimal allocation of available resources during a disaster event. The proposed tool utilizes the Infrastructure Interdependencies Simulator (i2Sim) for modeling the critical infrastructures that provides the available resources such as power and water. An optimization agent is developed based on a Genetic Algorithm (GA) to interact with the i2Sim simulator. We use this integrated simulation-optimization tool to address the problem of resources allocation during a disaster event. The objective of the optimization problem is maximizing the operational capacity of a critical infrastructure, a hospital in this case. The problem formulation incorporates the physical interdependencies between critical infrastructures in emergency response operations. This paper describes early results of our work that shows the use of our approach in optimizing resources allocation in a simulated disaster event.

4-1-399	
Title	**Characterization of Hard Chrome Plated 416 Stainless Steel**
Authors	Abdullah Almotairi, Dr. Andrew Warkentin & Dr. Zoheir Farhat
Program	Mechanical Engineering Department
University	Dalhousie University
Conference	Canadian Materials Science Conference
Date of Publication	June 04, 2015

Abstract
Hard chrome plating has a wide range of applications in industry. Chromium is electroplated onto an object by connecting a negative charge to the object and dipping it into a solution containing chromic acid. Chromic ions carry a positive charge and are deposited on the object. Objects are subsequently ground to achieve final tolerances. In this study, the coating is characterized before and after grinding to assess the effect of grinding parameters on coating integrity in an attempt to optimize coating thickness, and in doing so, minimize the cost of the chromium coating. Hard chromium coatings were plated on steel coupons subjected to various surface roughness conditions and plated for different time periods. The steel coupons were then ground at different feed rates. Scratch tests where employed to test for the adhesion of the coating to the substrate as a function of surface roughness, coating thickness and grinding parameters. Scratch tests were performed with increasing applied load to identify the critical load at which coating failure occurs. Mechanical and tribological properties of the coatings were assessed using nano-indentation and reciprocating wear experiments, respectively. Detailed SEM examination is conducted to assess coating integrity during scratch and wear tests and identify possible operative wear mechanisms.

4-1-400	
Title	**Skolem Type Sequences and Rosa**
Authors	Fatimah Alruhaymi
Program	Mathematics
University	Memorial University of Newfoundland
Conference	Cms
Date of Publication	June 08, 2015

Abstract
Let S be a set of positive integers. A Skolem--type sequence is a sequence of $i \in S$ such that every $i \in S$ appears exactly twice in the sequence at positions $a!$ and $b!$, and $b! - a! = i$. These sequences might contain empty positions, which are filled with null elements. ASkolem defined and studied Skolem sequences in order to generate solutions to Heffter's difference problems. Later, Skolem sequences were generalized in many ways to suit constructions of different combinatorial designs. Alexander Rosa made the use of these generalization into a fine art.

4-1-401	
Title	**Probing the Structure of the Electron Wavefunction at the Tunnel Exit in Polyatomic Molecules**
Authors	A. F. Alharbi1, A. E. Boguslavskiy1, N. Thirè2, G. Thekkadath3, Be. Schmidt2, F. Lègarè2, T. Brabec1, M. Spannar3 and V. R. Bhardwaj1*
Program	Physics
University	University of Ottawa
Conference	Photonics North
Date of Publication	June 11, 2015

Abstract
We show that the tunnel electron wavefunction in polyatomic molecules could have non-Gaussian structure and that it can be decoded from the harmonic spectrum. Employing time-dependent calculations, we compare the electron wavefunction in the most probable direction for strong-filed ionization in three five-membered ring molecules; thiophene, furan and dihydrofuran. Thiophene shows a very strong node in the continuum wavefunction compared to furan while dihydrofuran exhibits Gaussian-like structure. Experimentally, we show that these differences translate into the dependence of harmonic yield on laser ellipticity at 1800nm in randomly oriented molecules.

4-1-402	
Title	**Enhanced Router Bypass Using Fine Granularity Transport Channels**
Authors	Ghonaim, Fahad A. ; Darcie, Thomas E. ; Ganti, Sudhakar
Program	Electrical and Computer Engineering Department
University	University of Victoria
Conference	Ieee\ Computer, Information and Telecommunication Systems (cits), 2015 International Conference on
Date of Publication	July 16, 2015

Abstract
Internet traffic has been growing year-after-year for decades, but processing all that traffic through traditional IP routers has become an obstacle to further expansion. Router bypass has been introduced recently to overcome capacity limitations and processing costs of IP routers. With router bypass, a portion of traffic is provisioned to bypass the traditional router and is instead switched by the transport layer. Router bypass has been shown to potentially provide a significant savings in network costs, but these advantages are limited by a reduction in statistical multiplexing associated with the subdivision of available bandwidth into typically two distinct portions. This criticism has limited interest in bypass techniques. In parallel, G.709 Optical Transport Network (OTN) [1] technology with its recently introduced features such as direct support for packet (i.e., Generic Framing Procedure) and the Hitless Adjustment (HAO) have paved the way for a more dynamic and finer granularity transport layer. In this paper, we explore the impact of exploiting this finer granularity of provisioned bypass bandwidth and provisioning time on the efficacy of router bypass techniques. An OMNET++ simulation show that with finer bypassing granularity throughput can be enhanced up to 13% and packet drops can be reduced by up to 30%.

4-1-403	
Title	**Graphene Based Composites for Corrosion Inhibition of Copper**
Authors	Hesham Alhumade, Ahmed Abdala, Aiping Yu, Ali Elkamel and Leonardo Simon
Program	Chemical Engineering
University	University of Waterloo
Conference	5th International Conference of Engineering and Applied Sciences
Date of Publication	July 21, 2015

Abstract
Polyetherimide-Graphene (PEI/G) and Epoxy-Graphene (E/G) composites are prepared and investigated as corrosion inhibition coatings on copper substrates. An identical load of graphene is incorporated in both polymers matrices using in situ polymerization approach. PEI/G coating is cured under vacuum by thermal imidization, while E/G is cured at ambient temperature. The influences of the hosting polymer on corrosion inhibition in addition to the long-term performances of both coatings are investigated. The dispersion of graphene is examined using Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM). The study demonstrates that both nanocomposites provide advanced corrosion inhibition of copper. However, the degree of corrosion inhibition of the protective coatings may vary even when the same load of Graphene is incorporated in the different hosting matrices. This conclusion is supported by the results collected from various electrochemical techniques such as Tafel polarization and electrochemical impedance spectroscopy (EIS). In addition to corrosion protection, the long-time performances of the coatings are confirmed by testing the adhesion of PEI/G and E/G composites to copper substrates before conducting the electrochemical tests and after 20 days of exposure to the corrosive medium.

4-1-404	
Title	**Non-local Means for Stereo Image Denoising Using Structural Similarity**
Authors	Monagi H. Alkinani
Program	Department of Computer Science
University	The University of Western Ontario
Conference	Springer International Publishing / International Conference on Image Analysis and Recognition Iciar 2015
Date of Publication	July 22, 2015

Abstract
We present a novel stereo image denoising algorithm. Our algorithm takes as an input a pair of noisy images of an object captured form two different directions. We use the structural similarity index as a similarity metric for identifying locations of similar patches in the input images. We adapt the Non-Local Means algorithm for denoising collected patches from the input images. We validate our algorithm on various stereo images at various noise levels. Experimental results show that the denoising performance of our algorithm is better than the original Non-Local Means and Stereo-MSE methods at low noise level ($\sigma \leqslant 20$).

4-1-405	
Title	**A Study of the Distribution of News-related Tweets Over Geographic and Time Dimensions**
Authors	Ghada Amoudi Carolyn Watters
Program	Computer Science
University	Dalhousie University
Conference	Social Media and Society 2015
Date of Publication	July 29, 2015

Abstract
Twitter is an active social network for news sharing. Our aim is to investigate relationships between the spread of news and the data elements one can associate with individual tweets, including, news type, geographic locations of users, and characteristics (retweets, links, hashtags and sentiment) within the body of the tweets.

4-1-406	
Title	**Completeness of the Universal Hybrid Calculus**
Authors	Bill Wadge Omar Alaqeeli
Program	Computer Science
University	University of Victoria
Conference	The European Summer Meeting of the Association for Symbolic Logic, the Logic Colloquium 2015 (lc 2015) and the 15th Congress of Logic, Methodology and Philosophy of Science (clmps 2015)
Date of Publication	August 05, 2015

Abstract
Completeness of the Universal Hybrid Calculus We present a completeness proof for the Universal Hybrid Calculus (UHC) with respect to a Beth style tableau system. The UHC is a simple formal system with the same expressive power as Monadic Predicate Logic but without bound variables. Upper case letters and their Boolean combinations denote properties - for example, G^M might denote the property of being Greek and Mortal. UHC formulas themselves are Boolean combinations of atomic formulas. The simplest involves applying a property to an individual constant (lower case letters in our syntax). Thus if s denotes Socrates, sG asserts that Socrates is Greek. Universal generalization works by splitting the modal operator [] into brackets [and]. Thus [G]M (another atomic formula) might assert that all Greeks are mortal, and [S+A]G that all Spartans or Athenians are Greek. In the same way we split <> into < and > so that (G ^ M) might assert that some Athenians are Greek and mortal. The proof rules make use of the existence of individual constants. Thus the rule for [P]Q on the right allows us to cancel this formula, select a new unused constant v, and add vP on the left and vQ on the right. For[P]Q on the left we cannot cancel. But we can choose any constant x (usually one already in use) and split the tree. On one branch we add xP on the right and on the other xQ on the left. The rules for Q are similar. The completeness proof uses the standard technique of showing that from an open branch we can construct a counterexample.

4-1-407	
Title	**Review of Elliptic Curve Processor Architectures**
Authors	Ibrahim H. Hazmi, Fan Zhou, Fayez Gebali, and Turki F. Al-somani
Program	Electrical Engineering
University	University of Victoria
Conference	Ieee Pacrim 2015
Date of Publication	August 24, 2015

Abstract
Several Elliptic Curve Processors (ECP) have been proposed in the literature associated with various architectures using different and sometimes confusing terminologies. This paper is a short review study of ECP architectures, considering the hardware platforms used for their implementations. The main design parameters of the ECP architectures, including the field choice and scalar multiplication algorithms were identified. Based on these parameters, a statistical study is conducted on a large collection of the published work. From the analysis of the collected data, several conclusions were deduced, such as the notion that binary field is easier to be implemented in hardware than prime field as well as the polynomial basis is dominant over other bases representation. Another significant conclusion is that Montgomery scalar multiplier has been used more than Lopez-Dahab, Binary, and NAF methods, particularly with the dominance of Lopez-dahab Projective coordinate.

4-1-408	
Title	**A Two-stage Prediction Model for Dea Efficiency Scores**
Authors	Abdullah Aldamak Saeed Zolfaghari
Program	Mechanical and Industrial Engineering
University	Ryerson University
Conference	The 13th International Conference on Data Envelopment Analysis (dea2015)
Date of Publication	August 25, 2015

Abstract
the best relative efficiency approach is the most common method for evaluating decision-making units (DMUs) within standard data envelopment analysis (DEA). This approach is known as the optimistic approach, where all DMUs are evaluated according to the efficiency frontier. The pessimistic DEA model is another well-known DEA model that ranks all DMUs according to the inefficiency frontier. Results across both models have large variation. In the literature, it is well known that using only one model leads to biased evaluation. In this paper, we proposed a DEA regression model for score prediction and efficiency evaluation by combining both approaches after incorporating regression analysis into each model. The second stage of the proposed model combined both regression approaches by taking the geometric average of both scores. An illustrative numerical example is provided.

4-1-409	
Title	**Umplerun: A Dynamic Analysis Tool for Textually Modeled State Machines Using Umple**
Authors	Hamoud Aljamaan, Timothy Lethbridge, Miguel Garzón
Program	School of Electrical Engineering and Computer Science
University	University of Ottawa
Conference	Acm/ieee 18th International Conference on Model Driven Engineering Languages and Systems
Date of Publication	September 27, 2015

Abstract
In this paper, we present a tool named UmpleRun that allows modelers to run the textually specified state machines under analysis with an execution scenario to validate the model's dynamic behavior. In addition, trace specification will output execution traces that contain model construct links. This will permit analysis of behaviour at the model level.

4-1-410	
Title	**Evaluation of an Oauth 2.0 Protocol Implementation for Web Server Applications**
Authors	Marwan Darwish, Abdelkader Ouda
Program	Electrical and Computer Engineering
University	The University of Western Ontario
Conference	6th International Conference and Workshop on Computing and Communication
Date of Publication	October 15, 2015

Abstract
OAuth 2.0 is one of the protocols that are most commonly implemented as an authorization framework currently. This is because it has many advantages, one of which is its ability to be flexibly implemented on different systems and for different purposes. This work evaluates the implementation of Google's OAuth 2.0 for web server applications. This evaluation indicates that the implementation of Google's OAuth 2.0 protocol may lead to a security flaw that exploits low to medium size web servers. This threat might occur by exhausting the storage resources of the web server and making its applications unavailable. In addition, a number of recommendations are made to help protect against this type of threat when an OAuth 2.0 authorization protocol is implemented on web application servers.

4-1-411	
Title	**Motl: A Textual Language for Trace Specification of State Machines and Associations**
Authors	Hamoud Aljamaan, Timothy C. Lethbridge, Miguel A. Garzón
Program	School of Electrical Engineering and Computer Science
University	University of Ottawa
Conference	Acm Proceedings of the 25th Conference of the Center for Advanced Studies on Collaborative Research (cascon)
Date of Publication	November 03, 2015

Abstract
In a model-driven development (MDD) environment where most or all of the source code is generated from models, there is a lack of tools for model-level tracing, in which generated execution traces can be linked to model level constructs. This lack of tools might inhibit the use of MDD, since it forces modelers to do dynamic analysis at a lower level of abstraction. In this paper, we propose a solution allowing modelers to textually specify the tracing of modeling constructs: attributes, state machines and associations using Umple. The resulting execution traces then contain model construct links. We describe the syntax and semantics of the language, as well as the generated execution traces, and give an example.

4-1-412	
Title	**Towards Ultrasound Operation Capture and Skill Evaluation Using Depth Cameras**
Authors	Maryam Alruhaymi, Mohamed Shehata, Andrew Smith
Program	Computer Engineering/engineering and Applied Science Department
University	Memorial University of Newfoundland
Conference	Maryam Alruhaymi /necec 2015
Date of Publication	November 05, 2015

Abstract
Ultrasound is becoming increasingly important in medicine, both as a diagnostic tool and as a therapeutic modality. At present, experienced sonographers observe trainees as they generate hundreds of images, constantly providing them feedback and eventually deciding if they have the appropriate skills and knowledge to perform ultrasound independently. This research aims to develop an automated system to evaluate the motion tracking of the ultrasound transducer that will be seen as optimal. In this paper, we describe the current progress towards collecting data inside an operating room to differentiate between a novice, an intermediate and an expert sonographer. The current developed system synchronizes the ultrasound images with three kinects placed on the top, left and right side of the patient to ensure the visibility of the ultrasound probe.

Health Science

4-2-413	
Title	**One Pill Can Kill**
Authors	Shadi Tamur This Was a Presentation Not a Research Project No Journal Publication
Program	Clinical Pharmacology and Toxicology
University	Mcgill University
Conference	Menatox
Date of Publication	January 25, 2015

Abstract
Objectives • Understand the theory behind "One Pill Can Kill" • Recognize the 11 classes of medications which can kill a toddler (10 kg or less) with one or two standard doses • Understand the typical presentations, initial stabilization and specific treatment of these ingestions Background: Despite childproof containers and educational programs American Association of Poison Control Centers AAPCC (2013): - Over 1 million cases children < 5 years age - 29 fatal cases.

4-2-414	
Title	**Fracture Healing Accelerated by Sclerostin Antibody Injections**
Authors	Mohammad M. Alzahrani, Mbbs, Reggie Hamdy, M.b., M.sc. (ortho.), Frcs(c)
Program	Orthopedic Surgery
University	Mcgill University
Conference	Ao Meeting
Date of Publication	February 06, 2015

Abstract
PURPOSE: Sclerostin inhibition has been proven to result in larger and stronger callus formation with accelerated fracture healing in both sclerostin knockout and sclerostin antibody injected mouse fracture models[1-4]. The effects of these two mechanisms have not been compared to assess the accurate effect of the Scl-Ab injections. Therefore we designed a study to compare the effect of sclerostin depletion (sclerostin knockout) and inhibition (Scl-Ab injection). STUDY METHODOLOGY: 10-week-old male SOST knockout (KO)

(N=20) and Wild-type (WT) (N=40) mice underwent insertion of a tibial intramedullary pin after which a mid-shaft tibial osteotomy was performed. The mice were divided into three groups: SOST KO (N=20), WT with Scl-Ab injection "intravenous dose of 100mg/kg weekly" (N=20) and WT with saline injection (N=20). Each group was managed and sacrifi ced according to the specifi ed protocol (Figure 1). RESULTS: Both Scl-Ab and KO groups showed signifi cantly increased trabecular bone volume/ total volume at the fracture site compared to the saline group at all time points and also showed no signifi cant difference between them (except at 28 days postoperative) (Figure 2). On biomechanical testing the Scl-Ab and KO groups showed signifi cant increased strength in stiffness at days 14, 28 and 35 compared to the saline group (Figure 3). CONCLUSIONS: Scl-Ab injections showed promising results, which were comparable to the complete depletion of sclerostin, especially at earlier stages of the healing process and thus completing the process of healing at an earlier time point.

4-2-415	
Title	**Mysterious Case Presentation**
Authors	Noura Al Osaimi
Program	Rheumatology
University	University of Ottawa
Conference	Canadian Rheumatology Asssociation Annual Meetingquebec City, Quebec, February 4-7, 2015 /
Date of Publication	February 07, 2015

Abstract

OBJECTIVES: to present a mysterious case of scurvy seen in the developed world. The relevant literature is reviewed and unusual manifestations highlighted. METHODS: We report here a mysterious case of a patient who presented with three weeks of inflammatory arthritis and painful purpuric lesions on her lower extremities and bleeding gums. She ultimately diagnosed with scurvy. We reviewed the relevant literature with an emphasis on the rheumatologic manifestations of Scurvy. CONCLUSIONS: Scurvy exists in the developed world. We have to consider it in patients with depression and multiple food restrictions. Spontaneous hemarthrosis, especially in the setting of normal coagulation studies, should raise clinical concern for scurvy.

4-2-416	
Title	**Transradial Access for Hepatic Chemoembolization**
Authors	Mohammed T Alshammari David Liu Darren Klass
Program	Interventional Radiology Fellowship
University	University of British Columbia
Conference	Pairs2015
Date of Publication	March 12, 2015

Abstract

Purpose: Transradial access (TRA) is well described in the literature for coronary intervention. This approach has not been well described in the radiology literature. This paper describes our initial experience utilizing the left radial artery for hepatic arterial angiography and liver directed therapy. Materials and Methods: 28 TRA procedures were performed in 22 patients (19 male, 3 female; mean age 64) between April and August 2014 for the purpose of liver directed therapy. Bland embolization (n=4), chemoembolization (n=10), selective internal radiation therapy (n=7) and hepatic arterial mapping (n=8) were performed. The integrity of the palmar arch circulation was assessed using the Barbeau test (plethysmography and pulse oximetery). The artery was accessed under ultrasound guidance and using a proprietary 5 French radial access set. Following sheath placement a combination of 200 mcg nitroglycerin, 2.5 mg verapamil and 2000 IU heparin mixed with 16 ml of patient's blood was administered. Avariety of diagnostic catheters ranging from 100 cm to 125 cm in length were used to access the hepatic arterial vasculature with or without the use of a microcatheter. Following the procedure, a proprietary hemostatic device was used to obtain hemostasis. Patients were allowed to ambulate immediately after the procedure. Patients were recalled to evaluate the access site to exclude complications such as occlusion, pseudoaneurysm or distal embolic phenomena using Doppler ultrasound and clinical examination. Result: All TRA procedures were technically successful (100%) with no immediate complications encountered or major morbidity related to the approach on the follow-up ultrasound scan and clinical examination. The radial artery was accesed subsequently twice in 6/22 patients (27%) and three times in 1/21patients (5%). Conclusion: TRA is safe and feasible approach for mesenteric artery catheterization, with a low complication rate. This procedure is preferred by many patients over transfemoral access due to the improved recovery and comfort after the procedure.

4-2-417	
Title	**Outcomes and Opportunities for Improvement in Self-inflicted Trauma**
Authors	A. Babsail, D. Roizblatt, M. Alhabboubi, F. Hammadani, C. Malo, D. Deckelbaum, K. Kwhaja, A. Beckett, T. Razek, P. Fata.
Program	Department of Surgery
University	Mcgill University
Conference	Trauma Association of Canada
Date of Publication	April 10, 2015

Abstract

Background: Self-inflicted trauma (SIT) is a public health issue ranking 4th as leading cause of death and disability in young adults. Methods: Retrospective descriptive analysis of patients admitted to a level 1 trauma centre with self-inflicted injuries, 2008-2013. Results: Over a 5-year period, 268 patients with SIT presented to our hospital, 177 (66%) male, average age 39.4 years (SD 16). The most common mechanism of injury was stabbing, (47%), followed by jumping (26.86%). Jumpers had higher ISS (22 v. 9). Seasonal variation showed summer with highest incidence (34%), winter having the lowest (17%). Patients from rural areas accounted for 28%, these were younger (30 v. 42 years, p = 0.002), had lower ISS (9 v. 14, p = 0.007), presented with more firearm injuries (18.6% vs. 2.3%). Overall, 63 (23%) patients had pre-existing psychiatric disease; these patients had longer LOS (20 v. 7 days, p = 0.002), and had jumping from height as predominant mechanism (p = 0.01). Mortality was 13.8%. Patients that died were older (42 v. 30 years, p = 0.002), had higher ISS (14 v. 9, p = 0.007), longer LOS (13.5 v. 6 days, p = 0.004), with fall being the predominant mechanism associated with mortality (p < 0.0001). Conclusion: Our study defines and characterizes the population at risk for SIT in an attempt to implement appropriate prevention strategies and improve the existing post-injury care pathway.

4-2-418	
Title	**The Benefits of Epidural Analgesia in Flail Chest Injuries.**
Authors	Abdul Mohsin Babsail,* Badar Alhadhrami,† Muhamad ©2015 8872147 Canada Inc. Can J Surg, Vol. 58 (issue 2 Suppl 1) April 2015 — Abstracts S5 Trauma Association of Canada 2015 Elhusseini,† Mostafa Alhalbboubi,† Mohamed Abdulla,† Talat Chughtai,† Paola Fata,† Kosar Khwaja,† Tarek Razek,† Andrew Beckett.†
Program	Department of Surgery
University	Mcgill University
Conference	Trauma Association of Canada
Date of Publication	April 11, 2015

Abstract

Background: Many trauma patients sustain chest wall injuries. Flail chest may increase morbidity and mortality in polytrauma patients by 10–20%. Pulmonary contusions, prolonged mechanical ventilation, pneumonia, sepsis and poor pain control are common among patients sustaining flail chest injuries. We hypothesized that better pain control by the use of epidural analgesia leads to improved clinical outcomes in this group of patients. Methods: A retrospective database study was conducted for the years 2008–2013 for patients admitted to our level 1 trauma centre. Patients were diagnosed with flail chest by clinical exam and imaging. Our trauma registry was queried to study modalities of pain control, especially the use of epidural. We divided the patients into 2 groups; ones who received epidural analgesia and ones did not receive epidural analgesia. Alogistic regression model was developed to identify independent predictors of 30-day in-hospital mortality. Results: A total of 180 patients had flail chest; mean age was 57.4 years. There were 74.4% males. There were 43.3% who had a chest tube, 23.8% who developed pneumonia and 6.7% who had tracheostomy. Seventy-nine patients (44.4%) had epidural analgesia. IsS was 26.19 for patients with epidural analgesia and 30 for patients without epidural (p = 0.02). The mean LOS was 18.46 days, and 30-day mortality was 3.8% for the epidural group v. 11.5% for the non-epidural group (p = 0.058). Logistic regression analysis for 30-day mortality was significant (p = 0.002, 0.006, 0.003 and 0.028) in the group with epidural analgesia for age, ISS, hospital LOS and pneumonia, respectively. Conclusion: Epidural analgesia as pain control for patients with flail chest is understudied. This study demonstrates a trend toward reduction in mortality with the use of epidural in patients diagnosed with flail chest in a level 1 trauma centre. Patients with higher ISS received less epidural analgesia. This difference can be attributed to head injuries and other interventions that may restrict the use of epidural analgesia. Alarge randomized study is needed to evaluate the clinical superiority of epidural analgesia over standard pain control modalities in trauma patients with flail chest.

4-2-419	
Title	**Time from Stroke or Transient Ischemic Attack to Carotid Revascularization Surgery**
Authors	Wael Alshaya Cian J. O'kelly, Md, Thomas Jeerakathil, Md, A. (sentil) Senthilselvan, Phd
Program	Neurosurgery
University	University of Alberta
Conference	2015 Alberta Neurosurgical Society Annual Meeting & Resident Research Symposium
Date of Publication	April 17, 2015

Abstract
Background: Stroke is one of main causes of death and disability in developed countries Carotid endarterectomy or stenting for symptomatic carotid stenosis is a potent preventive strategy for patients stroke, associated with a 60% relative risk reduction in recurrent stroke Objectives: Determine, within Alberta, the time to carotid revascularization surgery from initial presentation with stroke or TIA and Estimation risk of stroke recurrence with carotid revascularization Methods: Retrospective cohort study based on analysis of a prospectively collected database Alberta Provincial Stroke Strategy (2003- 2012) Results: Effect of intervention in stroke recurrence; HR 0.34, P value:0.042 (CI: 0.12-0.96) After adjustment for age and sex HR 0.349, P value: 0.048 (CI: 0.12- 0.99) Conclusion: InAlberta mean time of carotid revascularization surgery is 4 days. With carotid revascularization there is 66% risk reduction in stroke recurrence. Hypertension and Atrial fibrillation have protective effect; the possible explanations: death vs aggressively treated.

4-2-420	
Title	**Current Challenge in Treatment of Rectal Cancer**
Authors	Haifaa Malaekah
Program	Surgical Department
University	Université de Montréal
Conference	3rd World Rectal Conference on Organ Preserving Perspective
Date of Publication	May 02, 2015

Abstract
I presented in one of international conference in Canada, montreal for rectal cancer. It's not research, that why I don't have abstract.

4-2-421	
Title	**Pericyte Loss in Vitrectomy Samples is a Sensitive and Specific Marker of Diabetic Retinopathy**
Authors	Mohammed F. Qutub1, Sultan Aldrees1, Natalia Vila2, Michael Kapusta2, John C. Chen2, Miguel N. Burnier1, 2. 1henry C. Witelson Ocular Pathology Laboratory, Montreal, Qc, Canada;
Program	Opthalmology
University	Mcgill University
Conference	Arvo Conference
Date of Publication	May 03, 2015

Abstract
Purpose: Diabetic retinopathy (DR) is the leading cause of new cases of blindness among the working aged population in North America. One of the most important morphological manifestations of the disease is pericyte loss as described in animal models. The purpose of this study is to evaluate the presence of pericytes in vitreous samples from diabetic and non-diabetic patients. Methods: Vitreous specimens from 125 patients who underwent pars plana vitrectomy for different clinical conditions were analyzed. All samples were centrifuged and the sediment was processed to obtain a cell block, for routine paraffin embedded histopathological sections. Forty cases (32%) had blood vessels in the vitrectomy sections and were selected for further analysis. Detailed clinical data, including glycemia, creatinine, and glomerular filtration rate (GFR), were recorded. The presence of pericytes was evaluated by immunohistochemistry for alpha-smooth muscle actin (aSMA), and was quantified using the following scoring system: total loss (3), >50% loss (2), <50% loss (1), and no loss (0). The results were evaluated using a digital scanner to compare the immunohistochemical results of the vitrectomy samples between diabetic and non-diabetic patients. Results: Thirty-three of the 40 cases were included in the subsequent analysis due to the unequivocal presence of blood vessels. The average age was 60.42±12.9 years; 22 samples were from males; and 29 samples were from diabetic patients. The 29 diabetic patients had DR. Six diabetic patients had a score of 1 (less than 50% pericyte loss); 8 diabetic patients had a score of 2 (>50% pericyte loss); 15 patients had a score of 3 (absence of pericytes). Apositive correlation between glycemia levels and pericyte loss was observed (r2=0.21, P=0.04). Moreover, all non-diabetic cases had a score of 0 (no pericyte loss), while all diabetic cases showed some degree of pericyte loss (sensitivity and specificity = 100%). Conclusions: to the best of our knowledge, this is the first study analyzing cell block sections of vitrectomy samples using immunohistochemistry and digital pathology. Pericyte loss is a sensitive and specific marker of DR and correlates with glycemia levels. This finding supports the hypothesis that hyperglycemia is the primary cause of DR. This technique may be used to evaluate DRlike damage in glucose intolerant patients.

4-2-422	
Title	**9p21.3 Coronary Artery Disease Risk Variants Disrupt Tead Transcription Factor Binding and Tead-dependent Tgfβ Induction of P16 Expression**
Authors	Naif Almontashiri, Darlene Antoine, Ragnar Vilmundarson, Hsiao-huei Chen, Alexandre Stewart
Program	Medical Genetics
University	University of Ottawa
Conference	Atvb Meeting
Date of Publication	May 08, 2015

Abstract
The mechanism by which 9p21.3 locus increases the risk of CAD is elusive. The 9p21.3 risk locus is associated with reduced expression of the cell cycle suppressor genes CDKN2A (p16) and CDKN2B (p15) and increased vascular smooth muscle cell proliferation. We asked if risk alleles disrupt transcription factor binding that could account for this effect.

4-2-423	
Title	**Assessing the Reliability of Arabic Translations of Self-report Measures of Chronic Pain, Child Maltreatment and Ptsd**
Authors	Eman Alhalal, Rn, Mscn, Phd (c) Marilyn Ford-gilboe, Phd, Rn, Faan Carol Wong, Phd Fadia Albuhairan, Md
Program	Nursing
University	The University of Western Ontario
Conference	The Nursing Network on Violence Against Women International (nnvawi)
Date of Publication	May 10, 2015

Abstract
Problem and Purpose: There is substantial evidence that women who have experienced Intimate Partner Violence (IPV) and/or child abuse are more likely to experience physical and mental health problems, including chronic pain and Post-traumatic Stress Disorder (PTSD). Most research on the health consequences of abuse has been carried out in Western countries and, therefore, may not be generalizable to Arab women who live in different social contexts. Reliable Arabic versions of health-related measures are needed in order to study the health consequences of abuse among Arab women. Both the PTSD checklist- version (PCL-C) and Chronic Pain Grade (CPG) are well-established and valid measures which have been used extensively with English-speaking women who have experienced IPV and or child abuse. The Arabic version of Childhood Trauma Questionnaire (CTQ) was used in one Arab population study, but the five sexual abuse items were not included and tested in the Arab population. These items tap and essential domain of child maltreatment. The purpose of this study was to translate these three self-report scales (PCL-C, CPG, and CTQ) from English to Arabic and assess their reliability before using them in a larger study examining the physical and mental health consequences of family violence among Saudi women. Method: The integrated method for adaptation and translation of measures (Sidani et al, 2010) was used to guide the translation and validation of each measure. Foreach scale, items were assessed for conceptual equivalence and translation from English to Arabic by 2 bilingual and bicultural health professionals and one professional translator. Next, the item pool was tested for comprehension and cultural validity in a sample of 30 Adult, Arab women from the Middle East during a 15-20 minutes structured interview conducted by a bilingual researcher. All participants had immigrated to Canada in the previous 4 years and were recruited from a settlement agency for newcomers a mid-sized Canadian city. Results: For each scale, item analysis was conducted to examine the degree of inter-item correlation, and item-total score correlations, and internal consistency reliability (Cronbach's alpha) was estimated. The pilot study provided evidence that the PCL-C, CPG, and CTQ are reliable measures of PTSD, chronic pain, and child abuse among Arab population. The result also suggests the compatibility of these Arabic versions with English versions. All items seem to be clear and understandable for women, with the exception of item 8 at the PCL. Therefore, a slight revision of item 8 will be done in a consultation with the translators.

4-2-424	
Title	**Management of Female Epispadias: Outcome Analysis of Two Surgical Techniques**
Authors	Fahad a Alyami, Armando J Lorenzo, Peter Metcalfe, Joao L. Pippi Salle
Program	Urology
University	University of Toronto
Conference	American Urological Association/society for Pediatric Urology Annual Meeting . May 15 - 19, 2015 in New Orleans, La
Date of Publication	May 15, 2015

Abstract
INTRODUCTION and OBJECTIVES: Isolated female epispadias without bladder exstrophy is a rare urogenital anomaly. Refractory urinary incontinence and bifid clitoris

or exposed bladder neck (BN) is the usual presentation. There are few published reports regarding post-operative urinary continence following BN repairs. Herein we compare surgical outcomes following two techniques: perineal cervicoplasty with BN tailoring (PC+BNT), a simplified repair, versus classic Young-Dees-Leadbetter (YDL) BN repair. METHODS: We retrospectively reviewed 14 patients with isolated female epispadias managed between 2001 and 2013, divided in two groups: PC+BNT and classic YDL . Forthe PC + BNT group the BN was tailored using a simplified perineal approach, incising the inter-symphiseal bands to improve visualization. ForYDL, the BN the trigone were tubularized as previously described, using an infra-umbilical incision. In both groups clitoroplasty and vulvoplasty were performed. RESULTS: Nine cases were diagnosed at birth. All cases had bifid clitoris. Pubic diastasis was present in 7/12 (58%) cases. The median age for PC +BNT and YDL was 9 years (8-16) and 10 years (1-17), respectively. None required concurrent osteotomies. Bladder augmentation was done at the time of the first procedure in 2/3 patients from the YDL group. Table 1 presents continence outcomes for both surgical techniques. Forolder children, following the initial procedure, the continence rate was 71% (5/7) in PC +BNT vs. none in YDL. Deflux injection was done in 3 incontinent patients after PC + BNT rendering 2 continent and one remains with stress incontinence. In YDL group, redo BN repair with appendicovesicostomy (2/3 patients) was successful rendering them all dry on CIC. Most patients have volitional voiding after PC +BNT although 2 are still young to evaluate toilet training but they seem to cycle their bladders with dry intervals. All patients had good cosmetic results. CONCLUSIONS: Female epispadias can be successfully repaired using a simplified perineal approach. Ultimately most patients achieve continence with either technique although volitional voiding was achieved only with PC + BNT. Our preliminary findings indicate better outcomes with PC+ BNT but long-term follow up as well as other centers experience is needed to confirm our results.

4-2-425	
Title	**Experiences of Cde Pharmacists in Delivering Diabetes Care Management**
Authors	Fahad Alzahrani, Kerry Mansell, Jeff Taylor, Jason Perepelkin
Program	Pharmacy
University	University of Waterloo
Conference	Canadian Society for Pharmaceutical Sciences (csps)
Date of Publication	May 27, 2015

Abstract

Background: Pharmacists are a rapidly growing segment of certified diabetes educators (CDEs) in Canada; however, little is known about their practice experiences. Objective: This study aimed to describe the practice experiences of CDE pharmacists and the impact of the CDE designation. Methods: A qualitative research approach was used. Apurposive sample of 14 CDE pharmacists in Saskatchewan was selected to obtain data by means of in-depth semi-structured interviews. Data were analysed using thematic analysis and NVivo10 software. Findings: Four themes emerged from the data: (1) CDE pharmacists engage in a multitude of diabetes-related activities, (2) becoming a CDE has been beneficial, (3) certain challenges still exist when trying to provide diabetes-related education, and (4) strategies were proposed to try and overcome these challenges. CDE pharmacists are engaging in both broad and focused diabetes management, such as insulin starts and adjustments. Pharmacists are satisfied that the CDE designation has helped achieve some of their goals and have benefited from improved relationships with other health care professionals. Although some solutions were offered, CDE pharmacists still face challenges in putting their knowledge to full use with respect to devoting time to diabetes management and remuneration for providing diabetes services. Conclusions: CDE pharmacists in Saskatchewan report enhanced diabetes-related activities prior to becoming a CDE and that designation has had a positive impact on them and perhaps their patients. This information could prove useful to employers and payers as the number of CDE pharmacists continues to increase. However, more information is necessary to describe CDE pharmacist practice experiences across Canada.

4-2-426	
Title	**Biomarker Profiles of Advanced Staged Oral Cavity Squamous Cell Carcinoma Correlated with Patient Outcomes**
Authors	Abdulrahman Alenazi, Vincent L. Biron, Lakshmi Puttagunta, Daniel A. O'connell, Jeffrey Harris and Hadi Seikaly
Program	Experimental Surgery
University	University of Alberta
Conference	The 69th Annual Canadian Society of Otolaryngology
Date of Publication	June 07, 2015

Abstract

Objectives: Over 300,000 new cases of oral cavity squamous cell carcinoma (OCSCC) are diagnosed yearly worldwide. OCSCC is molecularly heterogeneous, which is thought to contribute to differences in treatment response between patients who have otherwise similar characteristics. The objective of this study is to examine the role of a combination of important tumor biomarkers in predicting outcomes of patients with OCSCC. Materials and Methods: Patient demographics, pathology and treatment information for diagnosed with advanced stage OCSCC between 1998-2010 was obtained from a provincial cancer registry. Atissue microarray was constructed and processed for immunohistochemistry with p16, p53, Bcl-XL, EGFR and Ki-67 antibodies. Additional staining with pancytokeratin and DAPI was used for 3-channel co-localization and quantification of biomarkers in normal vs tumor tissues. Biomarker expression levels were correlated with tumor recurrence, metastases and patient survival. Results: Between 1998-2010, 584 patients were diagnosed and treated for OCSCC at a single tertiary care center. Nearly 70 % of these patients presented with advanced stage disease and were retrospectively reviewed for biomarker analysis. P16 positivity was found in 16.6 % of these tumors but was not predictive of survival. Low levels of Ki-67 was associated with lower survival rates and poorer treatment responses to radiation. Combined EGFR and Ki-67 ratios were also associated with significant differences in survival. Conclusions: Biomarkers analysis in advanced stage OCSCC including Ki67 and EGFR may be predictive of patient outcomes. Further prospective studies should be undertaken to examine the role of these biomarkers in selecting optimal treatment regimens.

4-2-427	
Title	**A Novel Fusiform Aneurysmal Model in a Rabbit Carotid: A Combination of Pericarotid Calcium Chloride and Elastase Incubation**
Authors	A Alaqeel (calgary)* C Meek (calgary) J Wong (calgary) a Mitha(calgary)
Program	Neurosurgery
University	University of Calgary
Conference	Cnsf
Date of Publication	June 10, 2015

Abstract

Background: The purpose of this study was to develop a novel, simple and effective model of fusiform artery aneurysms in rabbits using a combination of periaortic calcium chloride (CaCl2) and elastase incubation. Methods: Fusiform aneurysms were developed in three New Zealand White rabbits by exposing a 2 cm segment of the right carotid artery to CaCl2 (0.5 mol/L) and pancreatic porcine elastase (75 U) for 20 minutes. The left carotid was used as a control. Vessel diameter was measured by serial digital subtraction angiography imaging at weeks 2, 4 and 6. Animals were sacrificed on week 6 and histopathological studies were performed. Results: All rabbits developed a fusiform aneurysm, with an average dilation ratio of 105% ± 10% by week 6. No mortality was reported. Histopathological studies revealed pathological features consistent with fusiform aneurysms. Conclusions: This novel rabbit model of fusiform carotid aneurysms is the first in the literature by using a combination of periaortic CaCl2 and elastase incubation. This is a simple, reliable, and effective technique and results in a potentially valuable model for the study of fusiform aneurysms and possible therapeutic interventions, such as flow diversion.

4-2-428	
Title	**Very Small Circular Fields Output Factors: Comparison of Mc Calculations, Ebt3 Film and Micro-diamond Measurements**
Authors	E. Alhakeem and S. Zavgorodni
Program	Medical Physics/ Physics and Astronomy
University	University of Victoria
Conference	Springer International Publishing / World Congress on Medical Physics and Biomedical Engineering
Date of Publication	June 10, 2015

Abstract

The purpose of this work was to obtain output factors (OFs) of 6MV beam collimated by customized circular cones of 1.3 and 3.5 mm diameter at isocenter. We also compared OFs from these cones with OFs from BrainLabTM of 10, 12.5, 15 and 40 mm cones. OFs were measured using GafChromic EBT3 films and micro-diamond detector. Detectors were placed isocentrically in a water phantom at 1.5 cm depth. Two sets of EBT3 measurements were extracted from different image resolutions as shown in Table 1. Micro-diamond detector was also used to measure cone OFs with detector axis orthogonal to the incident beam. BEAMnrc/DOSXYZnrc codes were used to calculate OFs and dose profiles in water with 1x1x1 mm 3 voxels for the 10-40 mm cones and 0.1x0.1x0.1 mm 3 voxels for the 1.3 and 3.5 mm cones, respectively. Results for OFs (relative to 40 mm diameter cone) are shown in Table 1. Differences of 15.4% and 15.9% were found for cone 1.3 and 3.5, respectively. Maximum differences of up to 4.0%, 2.9% and 1.9% were found for cones 10, 12.5 and 15 mm, respectively. Scanning resolution of the films was critical for the two smallest fields and the differences between two EBT3 OF's measurement set were 6.7% and 14.3% for cone 3.5 and 1.3, respectively. In conclusion, differences in output factor were within 4% for cones with 10 mm diameter and greater. However, larger differences were observed for the 3.5 and 1.3 mm field sizes. Scanning resolution has significant effect on the output factor of the smallest cones in this work.

4-2-429	
Title	**Regulation of Competence Genes in Salmonella Enterica Serovar Typhimurium**
Authors	Ebthal Y.s. Alshabib, Andrew D.s. Cameron
Program	Phd/ Biology
University	University of Regina
Conference	Canadian Society of Microbiologists 65th Annual Conference
Date of Publication	June 16, 2015

Abstract

Bacterial infections are one of the greatest global health burdens, and the threat of infection is being made worse by a rapid decline in antibiotic effectiveness. To combat bacterial infections we need to better understand processes that can block or reduce infection in the absence of antibiotics. One such process may be natural competence, which is the ability of some bacteria to bind and internalize extracellular DNA from their environment. It is not yet clear why competence is important for bacteria, yet there is emerging evidence that this process reduces bacterial infection. Although competence is undetected or overlooked in many species, including the global pathogen Salmonella, my research is discovering physiological and environmental factors that induce competence in Salmonella. Using reporter gene fusions, RT-qPCR, and RNA-seq to quantify competence gene expression in response to a variety of environmental variables, this research has detected expression of the competence genes, pilA, hopD, comM, comN, comA, and comF, that are known to be silent in most experimental conditions. Moreover, my research has identified key regulatory proteins that are required for activation of competence genes such as CRP (the cAMP reporter protein), Sxy (TfoX), FIS (the factor for inversion stimulation), H-NS (the histone-like nucleoid structuring protein), and RpoS (RNA polymerase sigma S). This project is the first to study competence in Salmonella and the first to investigate the link between competence and infection. Thus, this research will enhance our understanding of the role of natural competence in bacterial infections.

4-2-430	
Title	**Orthopedic Trauma Surgery: Do We Have a Safe Practice?**
Authors	Saad Alqahtani, Mcgill Univeristy Mohammad M Alzahrani, Edward J Harvey
Program	Orthopaedic Surgery
University	Mcgill University
Conference	Canadian Orthopaedic Association (coa/ cora) Meeting
Date of Publication	June 17, 2015

Abstract

Introduction: Orthopaedic trauma surgery is characterized by repetitive, forceful tasks that are physically demanding. In addition, surgeons in this specialty are subjected to irregular and longer working hours, thus theoretically subjecting them to increased risk of musculoskeletal injuries. The aim of this study is to assess prevalence and characteristics of musculoskeletal disorders among orthopaedic trauma surgeons and the impact of these injuries on the surgeons practice. Methods: A modified version of the physical discomfort survey was sent to surgeon members of the Orthopaedic Trauma Association (OTA) via e-mail. Data was collected and descriptive statistics were analyzed. Fordata analysis, one-way Analysis of Variance (ANOVA) and Fisher Exact test were performed to compare the variables where appropriate. P values<0.05 were considered statistically significant. Results: A total of 84 surgeons completed the survey during the period of data collection. Of the respondents 84.7%were males and more than half were aged between 30-45 years old(Figure 1). Of these, 41.7% were in practice for less than five years, 33.33% for 10-20 years, 19.1% for 20-30 years and 5.9% for more than 30 years. Majority (64.7%) of the participants were working in an academic institute, 23.5% in a community hospital and 4.7% practiced in a private setting. Of note- 5.9% worked in more than one institute. The majority of musculoskeletal complaints and disorders were low back pain (29.3%), wrist or forearm tendinitis (17.95%), elbow lateral epicondylitis (15.4%), plantar fasciitis (14.7%), carpal tunnel syndrome (12.8%), shoulder pain or tendinitis (12.8%) and knee osteoarthritis (10.7%)(Figure 2). The number of body regions involved showed a significant difference between different age groups, as the number of involved regions increased with increasing age ($p<0.048$). Also when data was grouped according to number of years in practice the results yielded a significant difference between the groups in both number of regions involved ($p<0.05$) and number of musculoskeletal disorders ($p<0.05$), as a higher proportion of these were documented in surgeons practicing for 16-20 years and another peak in surgeons practicing more than 30 years. Also when we looked at time-off work due to these disorders, surgeons working in a private setting ($p<0.005$), surgeons working in more than one institute ($p<0.005$), increased number of regions involved ($p<0.001$) and increased number of musculoskeletal disorders ($p<0.001$) were significantly more likely to require time-off work. Conclusion: to our knowledge, our study is the first of its kind that shows a high percentage of orthopaedic trauma surgeons sustain occupational injuries some time in their careers. Cost of management and rehabilitation of these injuries, in addition to the amount of missed workdays due to these injuries indicate that these injuries have a significant economic burden on the health-care system. Increased awareness may help in early detection of these injuries and implementation of preventive measures.

4-2-431	
Title	**Comparison of the Effect of Sclerostin Antibody to Complete Depletion on Fracture Healing**
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Program	Orthopedic Surgery
University	Mcgill University
Conference	Coa/cors
Date of Publication	June 18, 2015

Abstract

Purpose: Sclerostin is a secreted glycoprotein that inhibits the intracellular Wnt signaling pathway, which when inactivated bone formation is stimulated. This stimulation has been proven in fracture studies, showing larger and stronger calluses with accelerated fracture healing, both in sclerostin knockout and sclerostin antibody injection models. The effects of these two mechanisms have not been compared to assess the accurate effect of the Scl-Ab injections. Therefore we designed a study to compare the effect of sclerostin depletion (sclerostin knockout) and inhibition (Scl-Ab injection). Methods: 10-week-old male SOST knockout (KO) (N=20) and Wild-type (WT) (N=40) mice underwent insertion of a tibial intramedullary pin after which a midshaft tibial osteotomy was performed. The mice were divided into three groups: SOST KO (N=20), WT with Scl-Ab injection "intravenous dose of 100mg/kg weekly" (N=20) and WT with saline injection (N=20). Each group was managed and sacrificed according to the specified protocol (Fig.1). Results: Both Scl-Ab and KO groups showed significantly increased trabecular bone volume/ total volume at the fracture site compared to the saline group at all time points and also showed no significant difference between them (except at 28 days postoperative) (Fig.2). On biomechanical testing the Scl-Ab and KO groups showed significant increased strength in stiffness at days 14, 28 and 35 compared to the saline group (Fig.3). Discussion and Conclusion: Scl-Ab injections showed promising results, which were comparable to the complete depletion of sclerostin, especially at earlier stages of the healing process and thus completing the process of healing at an earlier time point.

4-2-432	
Title	**Prognosis of Advanced Local Tissue Reactions (altr) Around Hip Arthroplasty As Identified by Mars Mri**
Authors	Mohammed Ahmed O. Al Sobeai Laura M. Epure Adrian Carteleanu Olga L. Huk David J. Zukor John Antoniou, Qc
Program	Arthroplasty/orthopedic
University	Mcgill University
Conference	Canadian Orthopedic Association
Date of Publication	June 18, 2015

Abstract

Purpose: The clinical significance and management of adverse local soft tissue reactions (ALSTRs) following total hip arthroplasty (THA) and hip resurfacing arthroplasty (HRA) continues to be controversial. The reported prevalence of ALTRs ranges between 1% to 71%. The purpose of this study was to evaluate sequential MARS MRIs in patients with painful hip arthroplasties in order to establish management criteria. Method: Seventeen patients (18 hips) were retrospectively identified to have had sequential MARS MRIs for pain. The group consisted of tow metal-metal THA, three metal-cross-linked polyethylene THA and 13 metalmetal HRA. Two board certified musculoskeletal radiologists evaluated all the MRIs. Apreviously used and standardized form was used to evaluate the MRIs: 1) presence of adverse soft tissue reaction; 2) thickness of wall mass; 3) intensity on T1 and T2 weighted images; 4) contents of mass (fluid, solid or complex); 5) location relative to joint. Changes in the size of the lesions were evaluated between initial and final scans. Results: MARS MRI evaluation revealed that eight hips (44%) were cystic fluid filled lesions, one hip (5%) was a solid mass and nine hips (50%) were a complex mixed lesion. The mean follow up is 8.44 years (range from 6.25 to 12.06 years). The mean time between the first and last MRI is 20.66 months (range from 8.3 months to 56.4 months). The mean initial volume of the ALTRs was 274ml and the final volume was 408ml. There was one outlier lesion that measured 808 ml and consisted of a large anterior fluid mass that completely resolved in the follow up MRI nine months later and is thought to be a psoas bursal lesion. Four cases (22%) increased in size, eight cases (44%) decreased in size and the remaining cases did not change significantly with sequential MRIs. Seven cases required revision surgery and five of these cases had either increase in size or were initially large enough and patient keep complaining indicating the surgery. Conclusion: Serial MARS MRI imaging is essential for evaluating patients with painful hip arthropalsty. Larger lesions that increase in size over time tend to be more aggressive and can lead to more soft tissue and bony destruction. Stable ALTR should be followed and can be treated conservatively. Cystic fluid filled masses can resolve or decrease spontaneously.

4-2-433	
Title	**Short Link N As a Therapeutic Agent to Treating Early Intervertebral Disc Degeneration**
Authors	Nizar Algarni1,2,3, Michael P Grant 2, Laura M Epure2, Omar Salem1,2,, Rakan Bokar1,2, John Antoniou1,2, Fackson Mwale1,2
Program	Experimental Surgery
University	Mcgill University
Conference	Coa-aco Vancouver
Date of Publication	June 18, 2015

Abstract
Purpose: Although the disc has limited endogenous repair activity, induced repair of disc tissue may be possible by the intradiscal injection of growth factors to stimulate the production of disc matrix. We previously demonstrated that Link N (DHLSDNYTLDHDRAIH), a naturally occurring peptide generated by the N-terminal proteolytic fragmentation of link protein during tissue turnover, can act as a growth factor in the disc. It can stimulate matrix production in vitro, in vivo and in intact ex vivo human intervertebral discs (IVDs). We have recently discovered that AF cells have the ability to proteolytically process Link N resulting in a fragment spanning amino acid residues 1-8 (US Patent # 61870394) – short Link N (sLink N). Our in vitro data indicates that the biologically active sequence is preserved within this fragment and, thus, sLink N could represent a potential stable growth factor able to stimulate disc repair. Separately, we developed a long-term organ culture model with vertebral bone. The purpose of the present study was to evaluate the effect of sLink N and compare its efficacy to Link N in this novel organ culture model of early disc degeneration. Method: Caudal IVDs from the tails of 20-24 month old steers were isolated with adjacent vertebral bone. After 7 days of preconditioning in culture, degeneration was induced in IVDs by a single injection of 50 µg trypsin into the NP. Seven days after induced-degeneration, the trypsin-treated discs were injected with either sLink N or Link N (100 µg/disc, n=6 discs/group). Four of the trypsin-treated degenerate discs were injected with PBS alone to serve as a control for degeneration while four discs served as non-degeneration controls. At 2, 4 and 8 weeks post treatment, two discs from each treatment and control groups were processed for biochemical analyses. Proteoglycan (predominantly aggrecan) synthesis in the NP was monitored as sulfated glycosaminoglycan using the 1,9-dimethylmethylene blue dye-binding assay, and Western blotting was performed to determine the expression of aggrecan and type II collagen in the tissue. Results: The GAG content in the degenerate discs decreased approximately 50% when compared to controls. When degenerate discs were treated with sLink N or Link N, significant increases in GAG content was observed. However, sLink N was more potent at inducing proteoglycan and type II collagen in degenerate discs compared Link N treatment. Conclusion: Our results reveal that sLink N or Link N have the ability to restore tissue content and that sLink N may be more potent than Link N in treating early disc degeneration. Acknowledgements: This research is supported by the Canadian Institute of Health Research (CIHR) and AO Foundation.

4-2-434	
Title	**The Rate, Type, and Quantification of the Intraoperative Contamination of the Anterior Cruciate Ligament Autografts**
Authors	Abdulaziz Alomar, Thamer Alraiyes, Ali M Somily, Ahmad S Bin Nasser, Fawzi F Aljassir
Program	Orthopedics Surgery
University	Mcgill University
Conference	Canadian Orthopedic Association Annual Meeting in Vancouver, 2015
Date of Publication	June 19, 2015

Abstract
Background: While inadvertent contamination of the anterior cruciate ligament (ACL) autografts during harvesting or by accident is infrequent, it can result in significant complications, and managing this contamination poses a challenging dilemma to orthopedic surgeons. Published data on the rate of this mechanism of contamination are limited. Additionally, the quantification of the bacterial contamination during harvesting and preparation and compare to those accidently dropped is unknown. Purpose: to quantitatively evaluate the rate of bacterial contamination of ACL autograft during harvesting and to compare it to the rate of contamination from accidently dropping the graft onto an operating room floor.

4-2-435	
Title	**Quantification Analysis of the Intraoperative Bacterial Contamination Rate of Osteochondral Autograft**
Authors	Abdulaziz Alomar, Thamer Alraiyes, Ali M Somily, Ahmad S Bin Nasser, Fawzi F Aljassir
Program	Orthopedic Surgery
University	Mcgill University
Conference	Coa Annual Meeting in Vancouver, 2015
Date of Publication	June 20, 2015

Abstract
Background: While inadvertent contamination of osteochondral (OC) autografts during harvesting or by accident is infrequent, it can result in significant complications, and managing this contamination poses a challenging dilemma to orthopedic surgeons. Subsequently, the operative team must weigh the risk of an infectious complication following reimplantation against that of discarding the OC fragment. The most commonly reported mechanism of contamination is accidentally dropping an OC fragment. Published data on the rate of this mechanism of contamination are limited. Additionally, the rate of contamination during harvesting and preparation is still unknown, and to our knowledge, it has not been reported in the English literature. Purpose: to quantitatively evaluate the rate of bacterial contamination of OC autograft during harvesting and to compare it to the rate of contamination from accidently dropping the graft onto an operating room floor.

4-2-436	
Title	**The Impact of Living with Adolescent Idiopathic Scoliosis (ais): A Utility Scores Assessment**
Authors	Asim M. Makhdom, Qc; Hani Sinno, Qc; Stephane Bergeron, Qc; Jean Ouellet, Qc; Neil Saran, Qc
Program	Orthopaedic Surgery
University	Mcgill University
Conference	Canadian Orthopaedic Association
Date of Publication	June 21, 2015

Abstract
Purpose: Minimal information exists on the health burden of living with AIS. Utility scores represent the health burden of a disease and can be used to help advocate for and appropriately allocate health care resources towards the disease. The authors set out to quantify the perceived health state utility of living with AIS. Method: Adult subjects were approached to participate in this study and were recruited from the general population. One hundred and seventeen subjects completed a survey consisting of validated utility outcome measures including the visual analog scale (VAS), time trade-off (TTO), and standard gamble (SG) tests for a scenario of living with AIS. Monocular and binocular blindness were used as controls. Demographic information was collected to assess for any socioeconomic predictors of health utility. Linear regression and Student t tests were used for statistical analysis. Results: Age, gender, income, and education as independent predictors of each of the utility scores for AIS showed no statistically significant difference ($p>0.05$). All measures (VAS, TTO, and SG) for AIS (77±16.4, 0.90±0.11, and 0.91±0.13, respectively) showed a significant deviation ($p<0.001$) from healthy state values (100,1, and 1 respectively). They were significantly less severe ($p <0.001$) than the corresponding scores for monocular blindness (62.2±19.9, 0.85±0.16, and 0.83±0.9, respectively) and binocular blindness (35.2±19.5, 0.63±0.27, and 0.63±0.28, respectively). The TTO and SG revealed that patients were willing to trade off 3.6 years of their remaining life and to accept a theoretical 9% chance of mortality to not have to live with scoliosis. Conclusion: Utility scores revealed that AIS patients live with a significant health burden and are willing to trade off 3.6 years of their life and take a 9% chance of mortality to not have to live with AIS. This and future studies quantifying the health burden of AIS will allow for improved advocacy for health care resources towards the treatment of scoliosis.

4-2-437	
Title	**Gubernacular Sparing Laparoscopic Orchidopexy for Intra-abdominal Testicle**
Authors	Alyami, Fahad; Bowlin, Paul; Lee, Linda; Farhat, Walid a
Program	Pediatric Urology
University	University of Toronto
Conference	The 70th Annual Meeting of the Canadian Urological Association Meeting , Ottawa, Canada
Date of Publication	June 30, 2015

Abstract
Introduction and Objectives: Laparoscopic management of the intra-abdominal testis typically involves division of the gubernaculum and passage of the testicle into the scrotum through a new inguinal hiatus. However, this approach can compromise gubernacular blood supply and may predispose the patient to testicular atrophy. Methods: Video demonstrating techniques for performing two-stage laparoscopic orchidopexy with gubernacular preservation. Results: N/A Conclusions: The laparoscopic two stage orchidopexy with gubernacular preservation is a safe, feasible, and effective technique.

4-2-438	
Title	**International Principles of Mental Health Legislation in the Context of the Saudi Arabia's First Mental Health Act**
Authors	Yazeed Hamad Alsanad
Program	Psychiatry
University	University of Toronto
Conference	Xxxivth International Congress of Law and Mental Health
Date of Publication	July 13, 2015

Abstract
Significant advancements in the understanding and treatment of mental illnesses through basic and clinical research have paved the way for the improvement in mental health

care. Concurrently mental health legislation in different countries across the world has also changed. However these changes have created many controversies, making it difficult to achieve a consensus across different societies. Despite existing international consensus on the principles of mental health legislation, mental health acts continue to vary on a global level. This presentation will aim to review those international principles whilst overviewing some of the global controversies regarding mental health legislation particularly in the context of the development of the first Saudi Arabian Mental Health Act. Some of the first Act's unique features will also be highlighted such as its clinical and collaborative language, the right to treatment, the right of receiving a faith healer and the legislative ability for other non-MD professionals to temporarily hold a patient for a psychiatric assessment.

4-2-439	
Title	**Quantitative and Three-dimensional Analysis of the Antimicrobial Efficacy of Different Calcium Hydroxide Preparations Against Biofilms at Different Stages of Biofilm Development**
Authors	Dr. Hadi M. Alamri Dr. Markus Haapasalo Dr. Ya Shen
Program	Endodontics
University	The University of British Columbia
Conference	The 51st Annual General Meeting of the Canadian Academy of Endodontics
Date of Publication	August 27, 2015

Abstract

Objective: to quantify and assess the antibacterial effect of different medicaments on young and aged biofilms, and to modify the medicaments in order to increase their antibacterial effect. Methodology: Collagen coated hydroxyapatite disks were immersed in plaque suspension solution and incubated for one and three weeks to culture a young and an aged biofilm, respectively. The tested medicaments were Iodine Potassium Iodide, Cetrimide, Iodine Potassium Iodide + Cetrimide, Calcium Hydroxide, Calcium Hydroxide + Iodine Potassium Iodide, Calcium Hydroxide + Cetrimide, Calcium Hydroxide + Iodine Potassium Iodide + Cetrimide. After treatment for one day, one week, and two weeks, biofilms on disks were stained with a LIVE/DEAD viability stain and imaged using confocal scanning electron microscopy, micrographs were then statistically analyzed and three-dimensional reconstruction of the images was done. Results: Aged biofilms had more thickness compared to the younger ones. All tested medicaments showed reduced antibacterial activity on the aged biofilms compared to the younger ones. Combining Iodine Potassium Iodide to Cetrimide had an additive effect and increases the antibacterial effects of Calcium hydroxide. Conclusions: Aged biofilms are more resistant to antibacterial agents compared to young biofilms. Combining Iodine Potassium Iodide and Cetrimide to Calcium Hydroxide resulted in an antibacterial solution that is more potent compared to using Calcium Hydroxide along.

4-2-440	
Title	**Referral Patterns and Outcomes of Atypical Meningioma Patients Treated with Surgery with and without Radiotherapy**
Authors	Majed Alghamdi, Haocheng Li, John Kelly, Jay Easaw, Robert Nordal, Gerald Lim
Program	Radiation Oncology
University	University of Calgary
Conference	Canadian Association of Radiation Oncologists
Date of Publication	September 11, 2015

Abstract

Purpose: Meningiomas accounts for up to 20% of all brain tumors. There is no consensus on the role of postoperative radiotherapy for grade 2, atypical meningiomas (AM). Radiation Oncology (RO) referral patterns for this group of patients vary widely even though retrospective series suggest a benefit from postoperative radiotherapy (PORT) especially for subtotally resected (STR) tumours. This study was to determine referral patterns, use of PORT and outcomes among AM patients. Methods: A retrospective review of all meningioma patients (n=526) treated at a large regional cancer centre between 2003 and 2013 was undertaken. 86 AM patients were identified. Using the provincial medical electronic record, data were abstracted on demographic characteristics, extent of surgical resection (ESR), use and timing of PORT, date of first recurrence, and treatment for recurrences. Kaplan-Meier progression-free survival (PFS) according to ESR was assessed by the Log-Rank test. The relationships between survival outcomes and variables of interest were evaluated using a multivariate Cox regression model. Results: The median age at diagnosis was 57. 60% were female. Forty-four patients had gross total resection (GTR), 37 patients had subtotal resection (STR) and 5 patients had an unknown ESR. Twenty-two patients (26%) were referred to RO at initial diagnosis, 5 patients (6%) after GTR and 17 (20%) after STR. Only 7 patients (8%) received PORT after the initial diagnosis of AM. One patient was treated with PORT after GTR and 6 after STR. At a median follow up of 29 months (4.3-188 months), recurrences occurred in 28 patients (33%) of whom 4 had initial GTR, 21 had STR and 3 had an unknown ESR. Among those receiving PORT, 2 (29%) had recurrence both after an initial STR. The 5-year PFS rates were 61% and 33 % after GTR and STR, respectively (P=0.002). Based on Cox regression results, older age and STR were associated with inferior PFS rate, while receiving RO referral was statistically significant for better PFS. Referral rate to RO after first recurrence was 62%. Conclusions: Ina regional population, the referral rate of atypical meningioma patients for a radiotherapy consult over the last 10 years was low (25%). Even after recurrence, only 62% of patients were referred for an RO consultation. Subtotal resection of atypical meningiomas conferred a much higher risk of recurrence. Given the growing evidence supporting the use of PORT in such patients, a multidisciplinary approach, including RO consultation and selective use of PORT, is needed.

4-2-441	
Title	**Stereotactic Body Radiotherapy for Inoperable Liver Tumors: Results from a Single Institutional Experience on Sbrt.**
Authors	Authors: Hijazi H[1 2], Campeau M-p[1], Lapointe R[3], Roberge D[1], Donath D[1], Chan G[4], Bujold A[5], Taussky D[1], Boulva K[3], Delouya G[1]
Program	Radiation Oncology
University	Université de Montréal
Conference	Caro 2015
Date of Publication	September 12, 2015

Abstract

Introduction: Stereotactic body radiation therapy is an emerging treatment option for liver tumors unsuitable for ablation or surgery. We report our experience to evaluate the feasibility and safety of SBRT in the treatment of liver tumors unsuitable for standard local treatment. Materials and methods: From July 2009 to January 2015, all patients with inoperable primary or secondary liver cancer treated with SBRT were reviewed. Patients who had previous surgical resection, chemotherapy, TACE or radio frequency ablation were eligible. The primary end point of this study was in-field local control (LC). The secondary end points were progression free survival, overall survival (OS) and toxicity. Results: A total of 66 patients with 70 liver lesions were treated in this study. The median age was 71 years (27-89 years). Hepatocellular carcinoma represents 31.4% (21 patients) of treated lesions with 47% CHILD A, 33% CHILD B and 10% CHILD C , while 69.6% (49 patients) were metastatic liver lesions. Colorectal adenocarcinoma was the most common pathological type and represents 48.6% (32 patients) of liver lesions. Median size of lesions was 3cm (1-8cm). Median prescribed dose was 45Gy (16-50Gy) in a median of 4,5 Fractions (2-8). Median follow up time was 8 months (1-37 months). Distant progression free survival was 8 months. Local control at one year was 81%. Treatment was well-tolerated with G1 acute GI toxicity in 3 patients, G3 nausea in 1 patient and G3 acute dermatitis in another patient. No late toxicity was noted during follow up. Conclusion: Stereotactic body radiotherapy is a safe and effective alternative option for inoperable patients with low toxicity and favorable early LC.

4-2-442	
Title	**A Slippery Slope? declining Radiation Oncology Referral Rates for High Risk Prostate Cancer Between 2005 and 2012**
Authors	Majed Alghamdi, Amandeep Taggar, Marc Kerba, Derek Tilley, Xanthoula Kostaras, Michael Sia
Program	Radiation Oncology
University	University of Calgary
Conference	Canadian Association of Radiation Oncologists
Date of Publication	September 12, 2015

Abstract

Purpose: Published practice guidelines, including those from Alberta since January 2005, recommend referral of all high risk prostate cancer patients to a radiation oncologist (RO) to discuss non-surgical options including androgen deprivation therapy (ADT) and radiation therapy (RT). We hypothesized that RO referrals would increase over time in keeping with guideline recommendations. Our objective was to determine RO referral, ADT+RT and prostatectomy rates in 2005 and 2012 and to examine associated patient, disease and treatment factors. Methods: The provincial cancer registry was used to identify the records of patients >18 yo diagnosed with prostate cancer in Alberta in 2005 (n=1792) and 2012 (n=2148). High risk disease was defined as Gleason score (GS) =8 or PSA >20. Patient age, clinical risk group CRG score, a proxy for comorbidities, GS, pre-treatment PSAs, and occurrences of a radiation oncology consultation and treatment were abstracted from the electronic medical record. Logistical regression modeling was used to determine the association between the observed RO referral rates and the available data elements. Results: High risk disease was identified in n=295 patients in 2005 and n=504 in 2012. Median age was 71 years in both periods with no differences in CRG and Gleason scores. PSA scores varied (p=0.002) from 2005 and 2012. PSAs >20 were noted in 62% (05) vs. 50% (12). Referral rates to RO decreased from 63% in 2005 to 56% in 2012 (p=0.06). Median time to referral was significantly shorter in 2012 (1.1 months vs. 2.0 months, p<0.001). In 2005, 61% of patients were treated with RT+ADT compared to 35% in 2012 (p<0.001). The radical prostatectomy rate was 10% in 2005 and increased to 18% in 2012 (p=0.002). On regression analysis, older age or 0.60 (95%CI: 0.49-0.73) and 2012 year of diagnosis or 0.54 (95%CI:0.37-0.79) were associated with lower RO referral rates. Conclusions: Despite both shorter wait times for RO referral in 2012 and guideline implementation in 2005, RO referral rates and ADT+RT use declined between 2005 and 2012. Radical prostatectomy rates increased. These observations suggest that compliance to provincial and international guidelines could be improved. Greater efforts need to be undertaken to improve the multidisciplinary management of high risk prostate cancer in Alberta.

4-2-443	
Title	**Investigating the Role of Tnfr1 in Gastric Adenocarcinoma Peritoneal Metastasis**
Authors	M. Alzahrani, R. Kayano, B. Giannias, F. Bourdeau, L. Ferri.
Program	Experimental Surgery
University	Mcgill University
Conference	2015 Canadian Surgery Forum
Date of Publication	September 18, 2015

Abstract

Gastric adenocarcinoma is one of the fastest rising malignancies in North America and is associated with a high rate of peritoneal recurrence. The mechanism of this process is poorly understood; however, there are emerging evidences to suggest that postoperative infection may increase the risk of metastasis. TNF-α is a key mediator common to many inflammatory pathways. The influence of this cytokine and its receptor (TNFR1) on gastric cancer peritoneal metastasis is still entirely unknown. We hypothesize that TNFR1 activation increases the potential of gastric cancer peritoneal metastasis. The influence of TNFR1 activation on the adhesion and invasion of gastric cancer cells to human peritoneal mesothelial monolayers were assessed both in vitro and ex vivo after coincubation with TNF-α in the presence of functional monoclonal blocking antibody to TNFR1 or isotype control antibodies. Anovel ex vivo peritoneal metastasis model was developed to further validate in vitro results. The peritoneal lining from C57Bl6 or TNFR1−/− knockout mice was placed in 24 well plates and coincubated overnight with TNF-α. Adhesion of SNU-5 to the treated peritoneum was assessed in the presence of TNFR1 monoclonal antibodies. TNF-α incubation of mesothelium increased both SNU-5 and MKN-45 adhesion 2- to 4-fold, and this effect is completely attenuated with anti- TNFR1 blockade but not with isotype control antibodies. Similarly, invasion is increased with TNF-α by 3- to 4-fold. TNF-α incubated murine peritoneum increases ex vivo cancer cell adhesion. This effect is completely attenuated when antibody blockade of TNFR1 is added or when peritoneum derived from TNFaR1−/− knockout mice is used. TNF-α–TNFR1 interaction appears to be a central cellular player in promoting cancer cell progression by enhancing gastric cancer cell adhesion and invasion to human mesothelium. Therefore, TNFR1 can be considered as a potential therapeutic target for this devastating manifestation of gastric adenocarcinoma.

4-2-444	
Title	**The Role of Neurotrophin Receptor P75ntr in Gliomagenesis**
Authors	Mana Alshehri 1,3, Bo Young Ahn1,3, Xiuling Wang,1,3, Tanveer Shiekh 1,3, Jennifer Chan1,2,3 Donna L Senger1,2,3 and Stephen M Robbins1,2,3
Program	Medical Science / Cancer Biology
University	University of Calgary
Conference	The 2nd Middle East Molecular Biology (membs) Conference
Date of Publication	September 18, 2015

Abstract

Human glioblastoam is a heterogeneous tumor composed of tumor cells and a small population known as brain tumor initiating cells (BTICs) or glioblastoma stem-like cells. BTICs appear to drive tumor progression, underlie therapeutic resistance and have been highlighted as therapeutic targets for patients with malignant glioma. The ability of glioma cells to invade into the surrounding brain parenchyma is a major clinical issue rendering glioblastoma incurable by conventional therapies. In a previous study, we found that the p75 neurotrophin receptor (p75NTR) significantly enhanced invasion and migration of genetically distinct glioma by a cell autonomous mechanism. In addition, p75NTR was frequently observed in a highly invasive population of cells from freshly resected patient specimens. Importantly, p75NTR was found to mediate glioma invasion by neurotrophin-dependent regulated intramembrane proteolysis (RIP). Blocking of p75NTR proteolysis by the generation of cleavage-resistance mutants, or treatment of animals bearing p75NTR-postive intracranial tumors with γ-secretase inhibitors, significantly inhibited glioma invasion and prolonged survival. Using a large panel of patient-derived-BTICs we have investigated the role of p75NTR in the stem-like compartment. Here we investigate the biological effects of p75NTR down-regulation on glioma derived BTICs. Immunocytochemical studies western blot analysis reveal that p75NTR is variably expressed on BTICs and that treatment with γ-secretase inhibitors significantly decreases BTIC invasion in 3D cultures in vitro. Down-regulation of p75NTR using shRNA significantly decreases BTICs invasion, proliferation and self-renewal ability. Moreover, p75NTR was present on as a component of BTIC-derived extracellular vesicles (EVs) that are implicated in tumor cell invasion through a cell non-autonomous mechanism. We found that p75NTR containing EVs promote invasion of non-invasive glioma cells. The composition of p75NTR containing EVs and their roles in glioma invasion are currently been investigated

4-2-445	
Title	**How Does Singleton Birth Weight and Gestational Age of Delivery of Modified Natural Ivf (nivf) Conceived Babies Differ from Naturally Conceived (nc) Singleton Babies?**
Authors	Wael Jamal M.d, Adwaa Khudhari M.d. ; Simon Philips.,maria Velez M.d., Robert Hemmings .m.d.
Program	Reproductive Endocrinology and Infertility
University	Université de Montréal
Conference	Canadian Fertility and Andrology Society
Date of Publication	October 02, 2015

Abstract

Study question: It has been suggested that the fresh transfer of single embryo following ovarian stimulation is associated with smaller birth weight than naturally conceived singleton for a similar gestational age. Does nIVF singleton birth weight differ from NC singleton for a similar gestational age? Summary answer: We found that the mean birth weight of nIVF conceived singleton babies did not differ significantly from the NC singletons. The average gestational age at delivery was comparable with no influence on the average birth weight of the two cohorts. What is known already: Perinatal outcomes from a large Danish database (Fertil Steril, Oct.2014) showed that the birth weight of stimulated IVF singleton babies is significantly smaller than naturally conceived ones. Asub-analysis for crude and adjusted risk suggest that ovarian stimulation was associated with a higher risk of low birth weight compared to natural cycle for intra-uterine insemination There is no data on the birth weight and the average gestational age at birth of natural IVF conceived babies. Study design: A retrospective cohort of 225 modified natural IVF singleton babies conceived at OVO fertility clinic over the last 10 years were compared to 13,138 naturally conceived singleton babies delivered at a community hospital in 2011, 2012 and 2013. The average gestational age at delivery were also compared between these two groups. Participants, settings and methods: Singleton nIVF babies were conceived following the aspiration of the single dominant ovarian follicle and subsequent fresh embryo transfer on day 2, 3 or day 5 post-fertilisation. All nIVF conceived singleton babies were conceived in one IVF center in Montreal (OVO) Naturally conceived singleton babies data were obtained from a community hospital database in Montreal. . Main results: The average gestational ages at delivery were not different: 39.0 weeks of gestation for nIVF babies versus 39.1 of gestation for naturally conceived babies P= 0.20. Average birth weight for nIVF conceived singleton was 3,310 grams versus 3354 grams for naturally conceived singleton babies P= 0.06. Limitations, reasons for caution: This is the first report of obstetrical outcomes of nIVF conceived singleton. Given the limited number of these births, a larger sample of natural IVF conceived babies could lead to different findings. The population of patients who are candidates for natural IVF treatment is likely to differ from the average population undergoing stimulated IVF treatment. Wider implications of these findings: The absence of ovarian stimulation and the recruitment of the single dominant follicle for IVF conception may decrease the risk of negative obstetrical outcome including smaller birth weight. Study funding: None Trial registration number: not applicable.

4-2-446	
Title	**Does Cervical Cerclage Affect the Rate of Caesarean Section?**
Authors	I. Babic, Md1, F. Al –washahi, Md2, S. Al-Ameri, Md2, M. Al- Nemer, Md2
Program	Maternal - Fetal Medicine
University	University of Ottawa Postgraduate Medical Education
Conference	Figo 2015
Date of Publication	October 05, 2015

Abstract

Objective: to determine the relationship between cervical cerclage and delivery by Caesarean section in general and secondary due to cervical dystocia. Method: This is a retrospective cohort study of women who were high risk for preterm birth, analyzed in two groups; women who underwent cervical cerclage and women who did not. Outcomes: 1. Rate of emergency Caesarean section due to cervical dystocia or failure of cervical suture removal. 2. Impact of BMI and parity on Caesarean section after cervical cerclage. Results: There was significant difference in the overall emergency Caesarean section rate between the groups (RR 2.02, 95%CI 1.33- 3.07). Risk of cervical dystocia was higher in cerclage group, but did not translate into statistical significance (RR 3.08, 95% CI, 0.81 – 11.61). BMI has no significant impact on the rate of emergency Caesarean section for cervical dystocia in cerclage group. Primigravida women with cerclage had higher rate of Caesarean section and these decrease rate as the number of pregnancies increase ($p<0.05$). Conclusion: Pregnancies with cerclage are in higher risk of delivering by caesarean section. We did not find positive correlation between cerclage and cervical dystocia. Low parity plays important factor in mode of delivery after cerclage, but BMI does not.

4-2-447	
Title	**Genetic Variation in Human Carboxylesterase 1d/triacylglycerol Hydrolase (ces1d/tgh) Confers Protection Against Nonalcoholic Fatty Liver Disease**
Authors	Wesam Bahitham1,2,3, Jihong Lian1,2, Rashmi Panigrahi4, Randal Nelson1,2, Lena Li1,2, Aducio Thiesen5, M Joanne Lemieux4 and Richard Lehner1,2,6 1group on Molecular and Cell Biology of Lipids, 2department of Pediatrics, 4department of Biochemistry, 5department of Laboratory Medicine and Pathology, 6department of Cell Biology, University of Alberta, Alberta, Canada. 3king Abdullah International Medical Research Center (kaimrc), Jeddah, Saudi Arabia.
Program	Pediatrics
University	University of Alberta
Conference	Canadian Lipoprotein Conference
Date of Publication	October 15, 2015

Abstract

Nonalcoholic Fatty Liver Disease (NAFLD) is the most common chronic liver disease in the Western world. NAFLD is associated with insulin resistance and hyperlipidemia and can progress to non-alcoholic steatohepatisis (NASH). Inactivation of murine carboxylesterase 1d/triacylglycerol hydrolase (Ces1d/TGH) reduces lipogenesis, decreases VLDL production, augments fatty acid oxidation and improves insulin signaling. Anumber of SNPs have been identified in the human CES1D. ASNP in the coding region of the CES1D gene results in G143E amino acid substitution and reduction of CES1D/TGH lipolytic activity by ~80%. The effect of G143E substitution on hepatic lipid metabolism was investigated in vivo using adeno-associated virus mediated expression of wt CES1D/TGHwt (control), CES1D/TGHG143E and catalytically dead CES1D/TGHS221A (negative control) in mice lacking endogenous Ces1d/Tgh expression. Metabolic studies revealed that mice expressing CES1D/TGHG143E had decreased VLDL-TG secretion, decreased de novo lipogenesis, increased fatty acid oxidation and increased hepatic LDLR levels and reduced liver triacylglycerol. Therefore, metabolic phenotype of the allele in humans that decreases CES1D/TGH activity by 80% provides a beneficial effect on hepatic lipid metabolism and implicates CES1D/TGH as a potential therapeutic target for NAFLD management.

4-2-448	
Title	**Quasi Static Ultrasound Elastography Characterization of Thrombus Maturation in the Aneurysmal Sac After Embolization of Endoleaks with Chitosan Gels**
Authors	Husain Alturkistani 1,2 , Antony Bertrand-grenier 1 , Eli Salloum 1 , Guy Cloutier 1 , Sophie Lerouge 1 , Gilles Soulez 1 1. Centre De Recherche Du Centre Hospitalo-universitaire De Montréal, Crchum, Montréal, Canada 2. King Saud University, Riyadh, Saudi Arabia
Program	Interventional Radiology
University	Université de Montréal
Conference	Journée Francaise De Radiologie 2015
Date of Publication	October 18, 2015

Abstract

Purpose: to study with quasi static ultrasound elastography (QSUSE) the maturation of thrombus and the mechanical properties of embolizing gels after endoleak embolization following endovascular aneurysm repair (EVAR). Methods and materials: Common iliac artery aneurysms were created on 9 Mongrel dogs (18 iliac arteries). Then EVAR were performed with creation of a Type I endoleak. Two types of embolization gels [Chitosan (Chi) or Chitosan-Sodium-Tetradecyl-Sulfate (Chi-STS)] were injected equally in the aneurysmal sac to promote healing. Aneurysm healing and endoleak evolution were followed by Doppler ultrasound and QSUSE at 1-week (1W), 1-month (1M), 3-months (3M) and for 3 dogs at 6-months. At sacrifice, DSA, CT-scan and macroscopic and histological analyses were done to identify residual endoleaks (DSA, CT-scan) and segment different regions of interests (ROI) (thrombus, Chi and Chi-STS gel, and sac). Organized and fresh thrombi (OT and FT) were segmented at sacrifice. Elasticity values (principally MaxAxStrain) expressed as strain in percentage were obtained by QSUSE and compared between ROIs and during time evolution. Results: A significant thrombus maturation was achieved by 1M (P=0.002). Concerning embolic gels, an important difference was noticed between 1W and 3M (P ranging from 0.006 to 0.01). Significant differentiationbetween the 2 types of gel was registered (P=0.0001). Important sac maturation was demonstrated when comparing results of 1W and 3M (P=0.006). And as expected, significantly higher MaxAxStrain values for FT compared to OT (P=0.02). Conclusion: QSUSE was able to show thrombus maturation post-EVAR. In addition, it was useful to characterize the elasticity of embolizing gels and their degradation over time.

4-2-449	
Title	**Isolated Tracheobronchial Amyloidosis: A Report of Two Cases**
Authors	Sultan Qanash Nadir Kharma Stephen Corne
Program	Sleep
University	University of Manitoba
Conference	The American College of Chest Physicians (chest) Chest 2015
Date of Publication	October 24, 2015

Abstract

INTRODUCTION: Amyloidosis is an uncommon disease, which affects multiple body organs. Localized forms of amyloidosis can involve the lung in various ways. Of these, tracheobronchial amyloidosis (TBA) is the most common but still a rare entity. TBA has diverse manifestations and may present insidiously. This may lead to misdiagnosis and may delay the diagnosis in the presence of other chronic respiratory diseases. CASE PRESENTATION: We describe two patients with isolated TBA. The patients were male and were 47 and 62 years old. They are both presented with progressive shortness of breath and cough. Chest x-ray demonstrated right upper lobe (RUL) collapse and left upper lobe (LUL) collapse respectively that was confirmed by computed tomography scan (image-1). Bronchoscopy showed endobronchial lesions in both patients (image-2). Pathologies were consistent with amyloid light chain amyloidosis. Systemic amyloidosis was excluded in both patients after extensive investigations. The first patient underwent right upper lobectomy after unsuccessful laser ablation. He refused further invasive managements and his disease has progressed slowly over 20 years.The second patient was observed closely after an unsuccessful trial of argon plasma coagulation and local resection. DISCUSSION: Tracheobronchial amyloidosis results from amyloid deposition from plasma cells surrounding the airway. It does not occur in systemic amyloid. It can produce submucosal plaques or tumor like masses, which may be localized, diffuse or multifocal. Its clinical presentations depend on the anatomical distribution1. There are three identified patterns of involvement: proximal, mid bronchial or distal bronchial tree. Both of our cases presented initially with evidence of localized lung collapse. In one patient, amyloidosis has progressed to involve the proximal trachea and subglottic area. CONCLUSIONS: Although TBA is a localized disease process; the course may not be benign and varies according to the degree of involvement. Different treatment modalities have been attempted such as bronchoscopic debridement and debulking, external beam radiation therapy and laser ablation, but there is currently no fully effective treatment. Herein we describe two cases of TBA with differing presentations, to draw attention to this uncommon entity, its clinical presentation, and available management. Reference #1: Utz JP, Swensen SJ, Gertz MA. Pulmonary amyloidosis.The Mayo Clinic experience from 1980 to 1993. Annals of internal medicine.1996;124(4):407 13.Epub1996/02/15.PubMed PMID:8554249

4-2-450	
Title	**Population and Peripheral Arterial Diseases: The Effect of an Awareness Campaign**
Authors	Musaad Al Hamzah
Program	Vascular Surgery
University	University of Toronto
Conference	Cardiovascular Health: From Knowledge Translation to Application. AGlobal Perspective from New Technologies to Prevention
Date of Publication	November 05, 2015

Abstract

Despite the advancements in peripheral arterial disease (PAD) treatment modalities, the disease continues to have a significant impact on the quality of patients' lives. Globally, PAD prevalence has increased 23% over the last decade. This pattern will likely continue due to the significant increase of the prevalence of PAD risk factors that include diabetes mellitus, hypertension, dyslipidemia, as well as the risk factors of these diseases (e.g. obesity). Major gaps in knowledge and practice among healthcare provide have been identified and thought to be a potential cause of underdiagnosis and undertreatment of PAD patients. In addition, studies have also shown that the public knowledge of PAD is generally poor, even in the developed nations. We present the outcomes of a simple intervention that aims to enhance PAD knowledge among a sample of the general public.

4-2-451	
Title	**Endonasal Endoscopic Approach for Hypophseal Adenoma. (Approche endoscopique endonasale pour adénomes hypophysaires)**
Authors	S. Alsaiari[1],w. Alissawi[1], I Nikolaidis[1], A. Najjar[1], M. Desrosiers[2], S. Valette[3], O. Serri[3], C. Beauregard[3], A.lacroix,r[3]. Moumdjian[1]
Program	Neurosurgery
University	Université de Montréal
Conference	Association Neurochirurgie Du Quebec(ancq)
Date of Publication	November 06, 2015

Abstract

Objectifs: Présenter notre expérience (courbe d'apprentissage et évaluer taux de complications) dans le traitement des adénomes hypophysaires traités par voie

endoscopique endonasale pure. Méthodes :les premiers 160 patients (84 Hommes ,76 Femmes, âge moyen 56,5 ans) qui ont subi une résection d'adénomes hypophysaires par voie endoscopique endonasale entre 2007 et 2013 ont été étudies. La courbe d'apprentissage et le taux de complications ont étécomparés entre le premier groupe de 80 patients et le deuxième. Résultats :il existait 101 patients avec d'adénomes non-secrétants, 32 avec acromégalies, 24 avec maladie du cushing et 3 avec prolactinome. Entre le premier groupe et le deuxième, il y avait une diminution dans la durée moyenne d'opération (de 167 minutes à 137 minutes),et la durée d'hospitalisation (de7.3 jours à 4.5 jours).Le taux de complications postopératoires avait bien diminué (ex. fuite de LCR de 8.75% à 3.75% ,synéchies de 23.8% à 3.75% ,diabète insipide transitoire de 22% à 13% et permanent de 12% à 6.3%). Amélioration visuelle postopératoire avait progressée entre les deux groupes de 88% à 97%. Le taux de rémission endocrinologie reste inchangé. La résection chirurgicale complèteétait de 47% dans le premier groupe et de 61% dans le deuxième groupe. Conclusion Quoique le débatsur le nombre de casnécessaire pour optimiser la technique chirurgical continue, nous croyons que la difficulté de travailler par endoscopie diminue drastiquement à 80 cas. En révisant nos premier et nos dernier 80 cas, le rendement de la chirurgie endoscopique augmente drastiquement au chiffre 80. Cette étude confirme la présence d'une courbe d'apprentissage qui augmente exponentiellement á 80 cas ; ce qui rejoint l'expérience de plusieurs grosses séries (Cappabianca P. J. Neurosurgery. 2002).

4-2-452	
Title	**Good Syndrome**
Authors	Rayan Alkhodair Jan Dutz
Program	Deramtology
University	University of British Columbia
Conference	Rheumatology Dermatology Society (rds) San Francisco
Date of Publication	November 07, 2015

Abstract

Good syndrome was first describes by Dr.Robert Good in 1954. Since then less 200 cases have been reported in the literature. The clinical features of this syndrome include thymoma and immunodeficieciency involving B cells, T Cells and hypogammaglobulinemia. Patients are at increased risk of infections and autoimmunity. We presnt a case with dermatophytosis and a history of excised thymoma in addition to decreased B cell count detected by flow cytometry.

4-2-453	
Title	**Femtosecond Flap Lasik Enhancement After Primary Prk Regression**
Authors	Mohammed Taha, Md, Eser Adiguzel, Phd, Mark Cohen, Md, Avi Wallerstein, Md
Program	Ophthalmology
University	Mcgill University
Conference	Aao/isrs
Date of Publication	November 13, 2015

Abstract

Background statement: This study was performed as outcomes on LASIK enhancements on primary PRK regressions are largely lacking in the literature, with most from 15 years ago, utilitzing older technology, with inadequate reporting and subpar outcomes. Purpose: to determine the outcomes of femto flap LASIK enhancements (enh) after primary PRK regression. Methods: Retrospective chart review of eyes having enh after initial PRK. Standard outcomes analysis and Quality of Vision (QoV) questionnaire administered. Results: 8 eyes. Avg time to enh, 86±96 mths (7-249 mths). Avg pre-enh pachymetry 461±44um. Avg flap thickness 105±14um. Avg F/U time 13±2 mths. Post-enh sphere -0.13±0.35D, cyl -0.28±0.28D. 50, 88, 100% within ±0.25, ±0.50, ±0.75D. Cumulative UDVA 20/20, 20/25 in 75, 100%, pre-op CDVA in 83, 100%; efficacy index 1.0±0.1. CDVA loss: 0% lost ≥1 lines, 17% gained 1 line; safety index 1.0±0.1. 100% indicate QoV better than pre-op. Conclusion: Femto flap LASIK enhancement for PRK regression demonstrates excellent accuracy, efficacy, safety, and satisfaction.

4-2-454	
Title	**Effect of Timing of Request on Imaging Approach to the Diagnosis of Acute Appendicitis in a Group of Teaching Hospitals with 24/7 Availability of Ultrasound Technologist**
Authors	H a Alzahrani, Md, Dammam, Na Saudi Arabia; M Atri, Md; R Menezes, Phd
Program	Radiology
University	University of Toronto
Conference	Rsna 2015
Date of Publication	November 29, 2015

Abstract

PURPOSE to determine if time of the day and day of the week influence the type of imaging request to evaluate for acute appendicitis and the performance of different modalities during and after regular hours. METHOD and MATERIALS This is an REB approved retrospective study of consecutive patients operated with pre-operative diagnosis of acute appendicitis between Feb 2013 and August 2014 in three teaching hospitals with 24/7 US technologist coverage. Acquisition of consent was waived. Data collected included: a) the rate of US only, CT only and US followed by CT performed between 8AM and 5PM during the regular hours and after this period during the week, and weekend and holidays, and b) performance of each imaging approach. US examinations were all initiated by a technologist and reviewed by a staff/fellow during regular hours and by a resident/fellow after hour. RESULTS Three hundred and thirty seven patients were operated during this period. They included 152 women and 185 men, ranging in age from 18 to 85 (mean 36±15) years old. One hundred thirteen (33.5%) of patients were imaged before and 224 (66.5%) after regular hour (p=0.001). Eigtheen (5.3%) had negative appendectomy, 5 (4.4%) during regular hour and 13 (5.8%) after hour (p>0.05), and 319 patients had appendicitis or a condition of appendix requiring surgery. Regular hour imaging included 59 (52%) US only, 32 (28%) CT only, and 22 (20%) US followed by CT. The corresponding numbers for after-hour examinations were 109 (48%), 98 (44%), 17 (8%) (p =0.006). Sensitivity of US during regular hour was 72% (56/78), and CT was 76% (40/53). The corresponding sensitivities for after hour examinations were 86% (101/118) (p=0.018) and 95% (106/111) (p<0.001). CONCLUSION in spite of comparable sensitivity of US to CT, significantly higher number of CTs was requested after regular hour to evaluate for acute appendicitis. CLINICAL RELEVANCE/ APPLICATION There are more CTs performed after regular hour to evaluate for acute appendicitis because of the wrong perception of lower accuracy of US being performed after regular hour. Disclosures: Nothing to disclose: Hassan Alzahrani Nothing to disclose: Mostafa Atri Nothing to disclose: Ravi Menezes Questions: 1. Financial Meeting Support: As an ACCME provider, RSNA strives to maintain the highest standards in development of its educational programming to ensure it remains free of commercial influence. In addition to providing statements of financial disclosure we are requiring that all presenters complete the following information: I attest to the fact that I am receiving no financial support in conjunction with my RSNA presentation(s) except from my employer. Please list below who you are receiving financial support from: No response 2. Submission of Manuscript: An important part of scientific progress is the timely publication of new research; also important is the thorough peer review of all manuscripts prior to acceptance for publication. If you choose to submit your manuscript to Radiology, please do so electronically at mc.manuscriptcentral.com/rad, and to submit electronically to Medical Physics, go to http://medphys.peerx-press.org/cgi-bin/main.plex. Please tell us to which of the following journals you plan to submit your work (select one): Radiology If you marked Other please indicate the name of the journal: No response

4-2-455	
Title	**The Role of Peak Enhancement Values in Differentiating Pheochromocytomas from Adrenal Adenomas on Contrast Enhanced Ct**
Authors	M F Mohammed, Mbbs; D Ferguson, Mbbch; a C Harris, Mbchb; W C Yee, Md,frcpc
Program	Radiology
University	University of British Columbia
Conference	Rsna 2015
Date of Publication	November 29, 2015

Abstract

Purpose: The purpose of this study is to establish the role of the peak enhancement value of focal adrenal lesions in differentiating potential pheochromocytomas from adrenal adenomas. Materials and Methods: The peak enhancement CT numbers of histologically confirmed pheochromocytomas (n = 24) were compared with those of histologically confirmed adrenal adenomas (n = 28) on 1-minute contrast enhanced phases and compared utilizing a chi-square test. CT numbers were also measured on unenhanced (n = 34) and 15-minute delayed contrast enhanced (n = 27) phases. Measurements were obtained by drawing a region of interest over the target lesion. Peak enhancement values were recorded and absolute washout, relative washout and degree of enhancement (1-minute enhanced minus unenhanced) were also calculated whenever applicable. Mass size and cystic change was also recorded. The Student t test was used for comparing degree of enhancement and mass size. Results: 79.2% (n = 19) of pheochromocytomas demonstrated a peak enhancement value of 90 HU or greater, compared to 10.7% (n = 3) of adrenal adenomas ($p < 0.001$). The degree of enhancement of pheochromocytomas was also higher than that of adrenal adenomas (66.2 HU [range, 51-95 HU] vs 48.1 HU [range, 18-74]; $p < 0.005$). Of those pheochromocytomas imaged with a triphasic protocol (n = 9), 77.8% (n = 7) met absolute washout criteria for the diagnosis of a lipid-poor adenoma. Pheochromocytomas were significantly larger than adrenal adenomas (mean diameter, 4.5 cm [range, 1-8.3 cm] vs 1 cm [range, 0.8-6.2 cm]; $p < 0.0001$). Conclusion: Peak enhancement values of 90 HU or greater in an adrenal lesion on the 1-minute contrast enhanced phase strongly suggest a diagnosis of pheochromocytoma rather than adrenal adenoma, regardless of whether or not the lesion demonstrates absolute or relative washout compatible with a lipid poor adenoma. Clinical Relevance: Peak enhancement values should be routinely assessed in the workup of an adrenal lesion as to avoid missing a pheochromocytoma.

Humanity & Social Sciences

4-4-456	
Title	**Phonological, Semantic, and Root Activation in Spoken Word Recognition in Arabic: An Eye Tracking Study**
Authors	Abdulrahman Alamri and Tania Zamuner
Program	Linguistics
University	University of Ottawa
Conference	Canadian Linguistic Association
Date of Publication	May 30, 2015

Abstract

Studies on phonological and semantic activation have provided evidence that words are recognized faster when primed by phonologically or semantically related words (Allopenna, Magnuson, and Tanenhaus, 1998; Huettig & Altmann, 2005; Mani and Plunkett, 2011;Yee and Sedivy, 2006; Zwitserlood 1989). However, this evidence has been developed based on studies of Indo-European languages, which only constitute a subset of the languages of the world. Moreover, studies based purely on Indo-European languages do not investigate lexical properties found in other languages. To date, few studies have investigated phonological and semantic activation in Arabic (Boudelaa and Marslen-Wilson, 2000, 2001, 2004; Boudelaa, Hauk, Shtyrov and Marslen-Wilson, 2009, Perea, Abu Mallouh and Carreiras, 2014), and even fewer have investigated the role of the Arabic consonantal root in spoken word recognition (SWR) (Boudelaa and Marslen-Wilson, 2005). Of the studies that do exist, all have used priming or cross-modal tasks, with no studies looking at SWR using eye-tracking methodology. This research explores phonological, semantic and root activation in Arabic using the visual world paradigm (VWP) with eyetracking. The goal was to investigate whether similar effects of phonological and semantic activation are found in Arabic as found in previous research in Indo-European languages using the VWP. Furthermore, the goal was to determine whether effects of root activation are also found using the VWP. The last goal was examine the time course of phonological, semantic and root activation, as the VWP provides a fine-grained measures of ongoing cognitive processing during SWR (Huettig and McQueen, 2007). The present study examined the time course of phonological, semantic and root activation SWR in Arabic. Participants were 31 adult speakers of Arabic, who saw four images and were instructed to click on a named object. The objects in each trial included a target, a related distractor (phonological, semantic, or root distractor) and two unrelated distractors. Each target (e.g., ʃubbak 'window') appeared once in each of the three conditions: phonological cohort distractor (beginning with the same onset and vowel as the target, e.g., ʃurbah 'soup'; semantic distractor (e.g., ba:b 'door'); and root distractor (sharing phonology, semantics and with the same consonantal root with the target, e.g., ʃabakah 'net'). Aquasi-logistic Growth Curve Analysis method (Mirman, 2014) was used to analyze the time course of fixations to the target image across the different conditions to explore whether the presence of a distractor (phonological, semantic or root) affected the fixation proportions to targets. Time course measures revealed significantly different fixations to the target across the three conditions. The earliest peak was for the targets in the phonological condition, followed by the semantic condition, and the latest peak in fixation to the target was in the root condition. This demonstrates that target fixation proportions were affected by the presence of root distractors more than by the presence of phonological or semantic distractors. This study is the first eye-tracking investigation into the time course of phonological, semantic and root activation in Arabic. Its results confirm previous findings that have found graded competition for related distractors based on the amount of phonological and semantic overlap with targets (Huettig and Altman, 2005; Huettig and McQueen, 2007; Huettig et al, 2006; Mirman and Magnuson, 2009; Yee and Sedivy, 2005). The significant effect of root distractors on fixation proportions of targets providing converging evidence for the assumption that the Arabic consonantal root is an important unit in lexical access. These results correspond with and provide support for the previous findings that have found an effect for the consonantal root in both spoken and visual word recognition in Arabic (Boudella and Marslen-Wilson,2000, 2001, 2005, 2011). References Boudelaa, S., & Marslen-Wilson, W. D. (2000). Non-concatenative morphemes in language processing: evidence from Modern Standard Arabic. Proceedings of the Workshop on Spoken Word Access Processes (pp. 23-26). Nijmegen: Max Planck Institute for Psycholinguistics. Boudelaa, S., & Marslen-Wilson, W. D. (2001). Morphological units in the Arabic mental lexicon. Cognition, 81, 65-92. Boudelaa, S., & Marslen-Wilson, W. D. (2004). Abstract morphemes and lexical representation: The CV-Skeleton in Arabic. Cognition, 92, 271-303. Boudelaa, S., & Marslen-Wilson, W. D. (2005). Discontinuous morphology in time: Incremental masked priming in Arabic. Language and Cognitive Processes, 20, 207-260. Huettig, F., & Altmann, G. T. M. (2005). Word meaning and the control of eye fixation: Semantic competitor effects and the visual world paradigm. Cognition, 96, B23-B32. Huettig, F., Quinlan, P. T., McDonald, S. A., & Altmann, G. T. M. (2006). Models of high-dimensional semantic space predict language-mediated eye movements in the visual world. Acta Psychologica, 121, 65-80. Huettig, F., & McQueen, J. M. (2007). The tug of war between phonological, semantic and shape information in language-mediated visual search. Journal of Memory and Language, 57(4), 460-482. Mani, N. & Plunkett. K. (2011). Phonological priming and cohort effects in toddlers. Cognition, 121,196-206. Mirman, D. (2014). Growth Curve Analysis and Visualization Using R. Florida, USA: Chapman & Hall/CRC. Mirman, D., & Magnuson, J. S. (2009). Dynamics of activation of semantically similar concepts during spoken word recognition. Memory & Cognition, 37(7), 1026-1039. Yee, E., & Sedivy, J. C. (2006). Eye movements to pictures reveal tran-sient semantic activation during spoken word recognition. Journal of Experimental Psychology: Learning, Memory, & Cognition, 32 , 1-14. Zwitserlood, P .(1989). The locus of the effects of sentential-semantic context in spoken-word processing. Cognition, 32, 25–64.

4-4-457	
Title	**The History of Using Technology in Teaching and Learning English Language in Saudi Arabia**
Authors	Fawaz Alqarni
Program	Ph.d. / Education
University	Memorial University of Newfoundland
Conference	Csse
Date of Publication	June 01, 2015

Abstract

Since the late 1950s modern information and communications technologies (ICTs) have been used in education. Various theories such as behaviorism and constructivism have often guided their use and development. Starting in the 1980s the Kingdom of Saudi Arabia began adopting ICTs into both teaching and learning. In this paper, I will illustrate the social and cultural history of this adoption of technology and specifically, how have learning theories informed the use of educational technologies in language learning across the Kingdom of Saudi Arabia.

4-4-458	
Title	**Saudi Families' Visual Arts Awareness: The Role of Children's Art Workshops"**
Authors	Maha Alkhudair
Program	Education
University	University of Ottawa
Conference	Congress 2015, Csse
Date of Publication	June 01, 2015

Abstract

For the majority of the Saudi society, art creativity is not accepted easily because it is out of the traditionally and religiously guided norm, many are either suspicious of it, as it does not fit with their religious understanding, or do not see the benefit of wasting their children's time at the expense of other more important matters. The research was focused on the relationship between visual arts and Saudi Families and titled by: "Saudi Families' Visual Arts Awareness: The Role of Children's Art Workshops". It addresses the following questions: to what extent is the Saudi family aware of Visual Arts? What are the reasons for this level of awareness of Visual Arts among some Saudi families? What is the role of children's Art workshops in increasing Visual Arts awareness of Saudi families? and to answer these questions, I conducted two children's art workshops in public places in Riyadh to examine how they can affect the awareness of visual art among Saudi families. The descriptive research approach was followed for the methodology and a survey was conducted using a questionnaire, with a combination of closed and open-ended questions, for the parents to fill in, a copy of which was handed to each family. As for the findings, parents were proud of their child's art creativity and over 85% of the parents agreed that Art Workshops provide their child with self prove, feeling of importance and emotion release. The majority also believe that visual art influences the aesthetic taste of their children, but almost half the percentage of participants' parents do not think visual art is related to the academic achievement, social behavior or psychological stability. Parents were interacting with their children, and they also gave their children the chance to participate and take their time. They found that their children felt free to express themselves and be more creative during similar workshops than they were at school. The study findings addressed new issues might be strongly related to the Saudi family awareness of visual arts, like: art education at schools and the efforts of the Arts and Culture Ministry which can be considering not only the artists community but the Saudi community in general.

4-4-459	
Title	**Confronting the Obstacles: Canadian Media Depictions of Muslim Women and Their Professional Potential in Stem Disciplines**
Authors	Honaida A. O. Shahbar
Program	Institute of Feminist & Gender Studies
University	University of Ottawa
Conference	Women & Technology Conference, Carleton University, Ottawa
Date of Publication	June 19, 2015

Abstract

Women's equal access to visibility, acceptance, and recognition in society is a persistent challenge; this struggle is further amplified for women of a minority race, religion, culture, or ethnicity. Thus, minority women face interlocking oppression—they can be discriminated due to their gender and their race, religion, culture, or ethnicity. Canada, a nation that is highly multicultural, is home to a vast population of minority women, many of whom continue to seek to participate and contribute to a variety of disciplines, such as the STEM fields. These contributions, however, are commonly burdened by the false representations, depictions, and societal understandings of these women.

This paper will seek to look specifically at the ways in which Muslim women in Canada struggle to gain equal inclusion and recognition as professionals, especially in the STEM disciplines. Though a variety of factors contribute to this trend, this paper will look specifically at the ways in which negative, false, or inaccurate representations of Muslim women in the Canadian media act as inhibitors in their ability to mobilize and succeed as equals in these fields. Drawing on current literature and reflections of these trends, this paper will present an analysis of contemporary discussions of Muslim women in the Canadian media and reflect on the ways in which these depictions obstruct their professional and academic development in traditionally male-dominated fields (e.g., STEM fields). Though this paper will focus mainly on this trend for Muslim women, it is believed that this discussion is relatable or potentially relevant to Canadian women of other religious, ethnic, racial, or cultural minority.

4-4-460	
Title	**Toward Genuine Transformations: The Internationalization of Higher Education in Saudi Arabia**
Authors	Rami Khayat
Program	Leadership, Higher, Adult Education
University	University of Toronto- the Ontario Institute for Studies in Education
Conference	The 3rd 21st Century Academic Forum
Date of Publication	September 21, 2015

Abstract
Sponsoring qualified Saudis to study abroad is considered a key pillar in improving the conditions' of Saudi people and Saudi Arabia in general. The objectives of King Abdullah Scholarship Program (KASP) are: developmental, educational, social and cultural. This study investigates through interviewing KASP 2015 graduates if developmental and cultural objectives been met. In regards to the developmental objective, which concerns with supplying the local Saudi market with its demands via qualified Saudi human capital, the researcher will conduct two sets of interviews in order to highlight graduates' hopes and then realties facing the graduates once they return home. Regarding the cultural objective, which focuses on enhancing the cultural communication with other civilizations and the introduction of the Saudi culture and values, the researcher will explore that during the 1st set of interviews. In discussing KASP previous cohorts, the literature review utilizing Human Capital Theory proved those two objectives were met in terms of reducing unemployment with quality workers and the creation of global citizens. Nevertheless, the impact caused by the KASP graduates on the Saudi nation has not been methodologically researched, at least not that the public is aware of. This research proposes to understand "How do KASP undergrad & postgrad graduates perceive KASP objectives in regard to the making of global citizens and employment?" the interviews will take place starting September 2015 and the second set will be held in 3 to 6 months period from then via Skype with the same individuals from the 1st set of interviews. Summary King Abdullah Scholarship Program (KASP) is sparking change in Saudi Arabia and that change has never been researched. Through interviewing KASP graduates, this study will explore if the program is meeting its developmental and cultural objectives. Its assumed in the literature that the two goals been met, yet never been methodologically investigated.
Keywords Human Capital Theory, Internationalization, Employment, Global Citizenship, International Education, Nation-Wide Change.

4-4-461	
Title	**«La segmentation de l'univers physique ne mène à une théorie du monde physique»: problèmes de la recherche universitaire en linguistique et de ses liens avec des disciplines voisines chez é. Benveniste. L'exemple de la zoologie**
Authors	Sarah Alharbi
Program	Département des littératures de langue française
University	Université de Montréal
Conference	La science du mot / The Science of Words University of Victoria
Date of Publication	October 16, 2015

Abstract
''When we opened our eyes to the importance of the consequences that the current debates in linguistics can have for other disciplines, one is tempted to think that the discussion on linguistics methodological issues could only be the prelude to a review which ultimately encompass all human sciences'' in "Recent trends in general linguistics" (1966 [1954]), É. Benveniste describes the problem of the academic research on traditional methods of linguistics, a research that highlights least the object of linguistics than the place where certain of its aspects are neglected. The proliferation of academic work on the inventory of forms or the language features may well be significant, it "masks [...] the profound transformations in the method and spirit of language in recent decades." Because words, their nature and the structure of relationships which establish knowledgeable at many levels invite us to question the tools currently available to the "Science of the word", therefore the territories themselves that must be fixed in language. Once the skills and tools to be developed by linguists as well as the disciplinary concept that they have of their subject are placed in the center of the investigation, we will face problems that go "beyond the scope of linguistics ". Now the question that arises here, to which this communication will help to focus and develop, is less about the design of this science as an effort to "atomize language" and to "mechanize history" than its "latent mechanism" that allows us to perceive the extent of the disciplines to which it refers. In this perspective lies a fruitful research idea that the French linguist was developing: he took account of the broad nature of the field of linguistics, and proposed a theory of possible combinations of words, a theory that places the research center in the metalanguage in order to perceive the words in their speeches, their knowledge, and their forms. However, what about if the "exceptional" case which had strengthened this review, or "reorganization", of linguistic research was, paradoxically, that of a people who do not communicate by words but who is capable of "exchanging real messages," a people in whom linguistics as a science has been able to shine, "not a science of empirical facts, but a science of relationships and deductions"? The exemplary case, to Benveniste, was the mode of communication among the people of the bees. How do the bees get to let their companions know about their discoveries and how do they give them indications? How can this analysis tell us about the infinite diversity of disciplinary territories where the language can be central? Academic and scientific recognition of this place was evident in the work that Benveniste had conducted along with the observations of a zoology professor, K. von Frisch (1948); it has demonstrated that such multidisciplinary understanding of linguistics has the merit of showing us, in the end, that "we will see better where the language begins and how it defines the man ."

4-4-462	
Title	**Pharyngealization Spread in Urban Najdi Arabic**
Authors	Abdulaziz Alarifi
Program	Linguistics
University	University of Alberta
Conference	Alberta Conference on Linguistics at the University of Lethbridge
Date of Publication	October 31, 2015

Abstract
Arabic possesses a set of phonemes that has a secondary constriction located in the pharynx in addition to a primary one in the dental/alveolar areas. It is well established that these sounds, referred to as pharyngealized consonants, affect adjacent vowels by lowering their F2 values. Interestingly, the pattern of the spread varies across Arabic dialects. This paper examined the speech of 5 female and 5 male speakers of Urban Najdi Arabic, a dialect spoken in Saudi Arabia. Specifically, the F2 values of low vowels in disyllabic and trisyllabic were measured to determine the extent and the manner of pharyngealization spread. The results revealed, among other things, that the feature lowered the F2 of all vowels in bisyllabic and trisyllabic words both regressively and progressively. However, progressive spread exhibited more sensitivity to distance than regressive spread. Overall, the findings will address the question of whether pharyngealization is a phonological or a phonetic process in Arabic.

4-4-463	
Title	**Lexeme or Root: The Diminutive and Super-diminutive in Bna Nominals**
Authors	Mohammad Alsamaani
Program	Linguistics
University	University of Calgary
Conference	Alberta Conference of Linguistics 2015
Date of Publication	October 31, 2015

Abstract
There are two opposing theories on whether the lexeme or the root is the successor in Arabic vocabulary. Aronoff (2013) explores both theories, and claims that while the root-based account is expressed by meaning, the lexeme-based theory has been constructed on form rather than meaning. Benmamoun (2003) asserts that there is room to consider the word-based theory for Arabic since according to his data, building blocks of words is possible (e.g. The imperfective is the base for deriving some nominal and verbal forms). Moreover, Alshdaifat (2015) argues that Arabic active and passive participles are based on the stem-theory and can be derived from the verb. In this paper, I present a sample of diminutives and super-diminutives (e.g., natives and loans) extracted from the Buraydawi dialect of Najdi Arabic to examine both theories. The total of nominals are randomly gathered and transcribed, which reveals a high frequency in the inconsistency of the vocalic melodies of its words. However, with some partial morphological reduplication, the final outcome of the data favors the root-based theory.

4-4-464	
Title	**Reflective Practice, Possibilities & Challenges**
Authors	Dalia Jamal Alghamdi
Program	Curriculum, Teaching and Learning
University	University of Toronto- the Ontario Institute for Studies in Education
Conference	International Conference on Arts, Social Science, Economics and Education
Date of Publication	November 04, 2015

Abstract
The purpose of this paper is to legitimatize the possibility of implementing the concept of reflective practice in the Saudi

Arabian educational system. Reflective practice is a western concept and it is not yet introduced to the education system in Saudi Arabia. In Saudi Arabia, teachers go to professional development workshops if they want, so it is not mandated. However, some teachers reported that they don't really get what they need to improve their practices in classrooms. Those workshops are disconnected to the daily life of teachers in schools and classes. Those workshops don't sound realistic for example a work shop for "smart reading" or "creative ideas to improve the classes". Teachers have challenges and face difficulties in teaching. These issues need to be addressed before we think about creative ideas to improve the classes or look for ways for smart reading. Teachers need support and guidance to improve themselves first in order to be able to improve their classes. Teachers need to have people who they trust, so they can talk openly about different issues they have. They need people who listen to them and give them critical, helpful and significant feedback. What teachers really need is to become reflective practitioners where they can reflect critically about their daily work tensions, conflicts, difficulties, problems and different obstacles. They need to reflect on their experiences to reach a deep understanding. This paper legitimizes the possibility of implementing the reflective practice in Saudi educational system. It also proves that nothing can prevent researchers from trying this concept with teachers according to Islam. It suggests introducing reflective practice for better teaching and learning improvement and for professional development with consideration to the Islamic religion and culture.

4-4-465	
Title	**The East Meets the West: Integrating Islamic Beliefs and Western Understandings Regarding Educational Leadership**
Authors	Rami Khayat
Program	Leadership, Higher, Adult Education
University	University of Toronto- the Ontario Institute for Studies in Education
Conference	Fall Global Conference on Education, by the University of Riverside
Date of Publication	November 14, 2015

Abstract
This analytical study combines the Islamic beliefs and Western understandings in relation to the best for the learning journey through the practices of school principals. The aim of this research is to overcome the mistaken stereotypes about the Islamic teachings and Muslims' existence in the West. The analysis showed the closeness of the educational practices in regards to the Western framework, Sustainable improvement: Building communities that endure by Mitchell and Sackney (2009), to the Islamic practices and beliefs through studying Al-Lahham's book (2001) entitled Guidance of the prophetic biography to the social change. The study has resulted in guiding school principals in the Canadian school settings toward practicing certain leadership roles, which will keep the existence of diversity in the schooling systems in Canada alive and promise the best possible schooling outcomes. Furthermore, school principals would generate a different sense of leadership in implementing the Islamic-Western crossing points as it would broaden their knowledge and lead to greater principalship.

4-4-466	
Title	**The Role of Social Media in Learning a Second Language**
Authors	Nouf Aloraini
Program	Applied Linguistics, Department of Education
University	Concordia University
Conference	Speaq 43rd Annual Convention - Designing a Future for Learning
Date of Publication	November 28, 2015

Abstract
The purpose of this paper is to propose an idea that could enhance second or foreign language acquisition, through the use of social media. It was noticed that students spend a great deal of their day tweeting, instagraming or facebooking. It was suggested that making use of the tools available in students hands (social media, and particularly Instagram application) would promote their language learning. The first step is. However, to investigate factors that might affect their perceptions towards tweaking social media for education purposes.

CHAPTER 5
Poster Presentations

Engineering & Sciences

5-1-467	
Title	**Theoretical Analysis and Experimental Verifications of Solar-thermoelectric Liquid-chiller System.**
Authors	Yazeed Alomair, Muath Alomair, Shohel Mahmud, and Hussein Abdullah.
Program	Ph.d in Mechanical Engineering
University	University of Guelph
Conference	The 3rd Annual Graduate Engineering Symposium, University of Guelph, Guelph.
Date of Publication	March 23, 2015

Abstract
In this work a hybrid solar-thermoelectric water chiller based air-conditioning system is constructed and characterized using both theoretical and experimental analyses. The main motivation behind current investigation is to design a low cost system which can be utilized for the people living in desert areas and remote location where electricity is not readily available. Such system can be potentially utilized to condition tents and living areas and also supply cold water when required. The proposed hybrid solar-powered thermoelectric water chiller based air-conditioning system is based on the thermoelectric Peltier cooling/refrigeration effect available in the literature. Such effect produces a finite temperature difference across the cold plate heat exchanger and heat sink type evaporator of the thermoelectric cooling/refrigerator system. The cooling effect produced at the cold plate (or the evaporator) by the thermoelectric module is utilized for removing the heat (or the cooling load) from the circulating water. In turns, this circulating cold water is utilized for the air-conditioning purposes; provide cooling to the living space. The cold water is allowed to flow through an air-water tube and fin type cross flow (unmixed) heat exchanger. Heat from the hot side (or the condenser) of the thermoelectric cooling/refrigerator system is rejected to the surrounding environment using a heat sink and fan arrangement. Aprototype condition space is constructed to carry out the air-conditioning experiment. While a constant temperature bath is used for storing the chilled water which could be heated to create an artificial cooling load. The experimentally obtained performance of the designed solar thermoelectric cooling/refrigerator system is verified with the analytical calculation.

5-1-468	
Title	**Usability Testing of an Nfc-based Application for Drug Allergy and Drug Interaction Checking**
Authors	Maali Alabdulhafith, Srinivas Sampalli
Program	Computer Science
University	Dalhousie University
Conference	Cra-w
Date of Publication	April 10, 2015

Abstract
Medication administration errors are a critical issue that leads to significant clinical consequences. They can be prevented by developing an efficient healthcare system integrated with technology. Several wireless technology applications have been developed to prevent medication errors. This study used the Near Field Communication (NFC) wireless technology and presented an NFC-based application that helps nurses in preventing two types of medication errors: Drug Allergy and Drug Interactions. The study tested the usability of this application and focused of the following criteria: usefulness, learnability, efficiency, and satisfaction.

5-1-469	
Title	**Development of Self-healing Calcium Phosphate Coating on Biodegradable Metallic Implant Materials**
Authors	Al Hegy, A; Gray- Munro, J
Program	Material Science Ph.d
University	Laurentian University
Conference	2015 Annual Meeting of the Canadian Biomaterials Society
Date of Publication	May 27, 2015

Abstract
In recent years, magnesium and its alloys have received much attention as a new biomaterial in orthopedic applications due to their biodegradability, biocompatibility, and their mechanical properties that are similar to natural bone. The most common problem associated with magnesium as a biomaterial is low corrosion resistance in physiological solutions. This decreases the mechanical integrity of the implants in the early stages of healing and has a negative impact on the overall biocompatibility. Coatings can be used to control the degradation rate and provide optimum biocompatibility of these implant materials. Mesoporous silica materials have been shown to have good bioactivity and the ability to stimulate osteoblast proliferation and differentiation at implant surfaces. Furthermore, they have been shown to be nontoxic and non-inflammatory to mammalian tissues.

5-1-470	
Title	**Microstructure and Micromechanical Mapping of Retinal Tissue**
Authors	Asia A. Alhasawi Lucas D. Stewart Erika F. Merschrod S
Program	Chemistry
University	Memorial University of Newfoundland
Conference	Canadian Biomaterials Society
Date of Publication	May 28, 2015

Abstract
Natural tissues' nanomechanical mapping is useful in providing an in depth knowledge about the detailed microstructure and the mechanical features of the materials. The objective of this study is to investigate the structures and mechanical properties of mouse eye in correspondence with their functions. Moreover, the retina and Bruch's membrane are important parts of the eye as they are associated with several diseases. Forlocating the interphases and interfaces of the microstructure of tissues, eye samples of mice (5-micrometer thick) was taken and analyzed utilizing Force Spectroscopy to determine the Young's modulus, force mapping of the sample was done by nanoindentation (force curves) and force imaging, and Atomic Force Microscopy(AFM) was used to image the topography of our sample. This poster presents the first complete atomic force microscopy mapping of the eye in cross section from the cornea toward the optic nerve for better understanding of the structure beyond the optical microscope. We have established this structure in correlation to the traditional histological structure (in collaboration with Dr. R. Gendron, Faculty of Medicine, Memorial University). Force mapping of samples has been conducted for measuring the mechanical response, especially the Young's Modulus in order to find out the minute differences between the eye samples. Overall, AFM and force mapping provides key information on the nanoscale mechanical properties and structure of normal tissue. This fine level of detail provides insight on a length scale relevant to e.g. An individual cell. Our results also provide a baseline against which to compare data from diseased tissue, to enable the identification of mechanical indicators for disease.

5-1-471	
Title	**Fourth-order-accurate Finite Difference Scheme with Non-uniform Grid in Von Mises Coordinates**
Authors	S. Alharbi and M. Hamdan
Program	Phd / Mathematics and Statistics
University	University of New Brunswick (saint John Campus)
Conference	The 2015 Cms Summer Meeting
Date of Publication	June 04, 2015

Abstract
In this work, we develop and test a standard, five-point, fourth-ordera-ccurate forward finite difference scheme for the boundary vorticity using uniform and non-uniform grids. The scheme is suitable for use when coordinate transformation is employed, and is tested in the computation of corner vorticity in the case of viscous fluid flow through a two-dimensional curvilinear channel that has been mapped onto a rectangular computational domain using von Mises coordinates.

5-1-472	
Title	**Mathematical Modelling of Dusty Gas Flow Through Isotropic Porous Media with Forchheimer Effects**
Authors	Saleh Alzahrani and M.h. Hamdan
Program	Department of Mathematical Sciences
University	University of New Brunswick (saint John Campus)
Conference	The 2015 Cms Summer Meeting
Date of Publication	June 06, 2015

Abstract
In this work, dusty gas flow through isotropic porous media is considered. The equations governing dusty gas flow through free space are intrinsically averaged in order to derive a comprehensive model that describes flow of a dusty gas through porous media. The developed model has features that distinguish it from other models available in the literature. These include its capability of describing the more general time-dependent flow of a non-uniform number density mixture through a variable porosity medium, while taking into account the porous microstructure and both the Darcy resistance and the Forchheimer micro-inertial effects.

5-1-473	
Title	**Analytical Characterisation of Chitosan Nanoparticles for Controlled Delivery of Pentetic Acid Using an Inhaler**
Authors	Almalki, Manal and Lai, Edward. Chemistry Department. Carleton University
Program	Chemistry
University	Carleton University
Conference	98th Canadian Chemistry Conference and Exhibition
Date of Publication	June 14, 2015

Abstract
Recent pharmaceutical research studies have attempted to develop new drug delivery systems that offer high therapeutic potential. Natural biodegradable polymeric nanoparticles are attracting attention for controlled drug delivery. Chitosan nanoparticles are particularly suitable due to their biodegradability, biocompatibility, bioactivity and polycationicity. Pentetic acid (DTPA) is a decorporation drug that has many active centres for chelation with metal ions. Oral or parenteral administration of pentetic acid salts shows efficiency in removing heavy and rare earth metals for both in-vitro and in-vivo applications. My present work involves preparation and characterization of chitosan nanoparticles that will be used as a DTPA carrier. The use of DTPA-loaded chitosan nanoparticles for removal of radionuclides is beneficial and warrants further investigation. Characterization of DTPA-loaded chitosan nanoparticles has been performed with the aid of transmission electron microscopy. Their drug loading capacity and release kinetics can be determined by capillary electrophoresis.

5-1-474	
Title	**Hydroxypropyl Methacrylate Interaction and Chitosan Coating for Enhanced Uv Detection Sensitivity of Colloidal Nanoparticles in Capillary Electrophoresis Analysis**
Authors	Samar Alsudir, Edward Lai
Program	Chemistry
University	Carleton University
Conference	Csc 2015 Conference and Exhibition
Date of Publication	June 14, 2015

Abstract
The binding interactions between silica (SiO2), titania (TiO2) or polymeric nanoparticles with hydroxypropyl methacrylate (HPMA) were investigated for enhancing the ultraviolet (UV) detection sensitivity of these nanoparticles in capillary electrophoresis (CE) analysis. HPMA interacted with colloidal SiO2 nanoparticles, producing a larger CE-UV peak at a slightly shorter migration time. An increase in particle size with HPMA binding was validated using dynamic light scattering. The interaction was selective as HPMA did not interact with TiO2 nanoparticles in aqueous suspension. Chitosan coating of SiO2 or TiO2 nanoparticles produced significantly larger hydrodynamic diameters to further enhance the sensitivity of their UV detection. The analytical technique, which involves coating SiO2 nanoparticles with chitosan first and binding with HPMA next, is novel. It has allowed us to achieve a significant enhancement of 50 folds in detection sensitivity.

5-1-475	
Title	**Synthesis of Annulated 1,7-diarylhepta-1,6-diene-3,5-diones As Curcumin Analogs**
Authors	Salma A. Alharbi, Prabhu P. Mohapatra, and Amitabh Jha
Program	Master of Organic Chemistry
University	Acadia University
Conference	98th Canadian Chemistry Conference and Exhibition
Date of Publication	June 15, 2015

Abstract
Synthesis of Annulated 1,7-Diarylhepta-1,6-diene-3,5-diones as Curcumin Analogs S. A. Alharbi, P. P. Mohapatra and A. Jha*$, Department of Chemistry, Acadia University, Wolfville, NS, Canada Curcumin is the active ingredient in turmeric, a heavily consumed spice in the Indian subcontinent. Curcumin has significant anticancer properties. However, it has poor bioavailability. To address this predicament, cyclic analogs of curcumin are being synthesized while retaining the diarylheptanoid framework of curcumin. Unlike most reports, our procedure is capable of installing the same or different aryl rings on the molecule. The results obtained thus far will be presented.

5-2-476	
Title	**A Systematic Review and Meta-analysis of Noninvasive Biomarkers for Assessing Disease Activity in Inflammatory Bowel Disease**
Authors	M.h. Mosli*1, 2, G. Zou1, 3, S.k. Garg4, S.g. Feagan1, J.k. Macdonald1, W.j. Sandborn1, 5, N. Chande6, B.g. Feagan1, 3, 7
Program	Medicine
University	The University of Western Ontario
Conference	European Crohns and Colitis Organization (ecco) Meeting
Date of Publication	March 01, 2015

Abstract

Background: Endoscopic disease activity in inflammatory bowel disease (IBD) is associated with poor outcomes. Endoscopic evaluation is the gold standard for the assessment of disease activity, but is invasive, expensive and potentially time consuming. Identification of noninvasive biomarkers of disease activity in IBD is a research priority. Methods: The primary objective was to evaluate the diagnostic accuracy of 3 non-invasive biomarkers (fecal calprotectin [FC], stool lactoferrin [SL] and C-reactive protein [CRP]) used for the evaluation of disease activity in IBD. MEDLINE, EMBASE, the Cochrane Library, the ISI Web of Knowledge and conference abstracts were searched from inception to November 2014 for relevant studies. Grey literature databases (e.g. SIGLE) were also searched to identify studies not indexed in traditional databases. All cohort and casecontrol studies that evaluated the diagnostic accuracy of FC, SL or CRP for assessment of disease activity in symptomatic patients with previously diagnosed IBD (ulcerative colitis and Crohn's disease) were included. True positive, true negative, false positive and false negative rates were extracted for each biomarker and used to construct 2X2 tables for each cutoff. Sensitivity, specificity and area under the curve (AUC) estimates for FC, SL and CRP were calculated for each study based on different cut-offs and pooled together into single estimates for each test. Receiver operator characteristics (ROC) curves were then used to identify the cut-off values for each biomarker that best predicted endoscopic disease activity. Results: Nineteen studies (2456 participants) met our inclusion criteria. Sensitivity, specificity, and AUC values for the 3 biomarkers are summarized in Table 1. The best cut-off values to detect endoscopically active disease in IBD determined by ROC analysis were 50 µg/g, 7.25 µg/mL and 10 mg/ dL for FC, SL and CRP, respectively. Conclusions: FC and SL are highly accurate biomarkers that can be used to screen symptomatic IBD patients for endoscopic disease activity prior to colonoscopy.

5-2-477	
Title	**Link N Activates Smad1/5 Pathway by Stimulating the Release of Bmp by Disc Cells**
Authors	Sultan Aldebeyan, Laura M Epure, Michael Grant, Abdulrahman Alaseem, Hong Tian Wang, John Antoniou, Fackson Mwale
Program	Experimental Surgery
University	Mcgill University
Conference	The 2015 Aaos Annual Meeting
Date of Publication	March 01, 2015

Abstract

Introduction: Link N peptide is the N-terminal region of link protein which stabilizes the interaction between aggrecan and hyaluronan in proteoglycan aggregates. It has been shown that human Link N (DHLSDNYTLDHDRAIH) can act as a growth factor and stimulate the synthesis of proteoglycans and collagen by IVD cells in vitro and improve disc height and proteoglycan levels in vivo in a rabbit model of IVD degeneration. To date, there have been no reports on the effect of bovine Link N (DHHSDNYTVDHDRVIH) on disc cells. The specific aim of this study is to compare the effects of bovine Link N (BLN) and human Link N (HLN) on bovine IVD cells in order to determine whether substitution of residues, as occurs in the BLN sequence, can alter Link N function. Materials and Methods: Isolated nucleus pulposus (NP) and annulus fibrosus (AF) cells from bovine coccygeal IVDs were either immediately embedded in 1.2% alginate beads for proteoglycan synthesis or were plated in 6 well plates for protein extraction. Proteoglycan synthesis: Alginate beads were placed in 24 well plates and were incubated for 18 days in media supplemented with 1µg/ml of either HLN or BLN. Beads cultured in media alone for the same period of time were used as the control (CTL). The sulfated glycosaminoglycan (GAG, predominantly aggrecan) content of the media was analyzed using the DMMB dye-binding assay. Canonical SMAD-Mediated Signaling: AF and NP cells were expanded in culture medium into 6 well plates. The cells were incubated in 1µg/ml HLN or BLN for different time points up to 6 hours. Cells incubated in medium alone were use as the control (CTL). Western blots were used to measure protein expression using specific antibodies directed against P-Smad1/5, which was then normalized to the SMAD1. Results Both NP and AF cells incubated with Link N (BLN or HLN) had an increased rate of GAG release. This was significantly higher for AF cells incubated with BLN or HLN compared to the AF control cells after 9 days of incubation. On the contrary, the NP cells had a significant and consistent increase only for HLN. Protein expression revealed that HLN activates SMAD1/5 in bovine AF cells within 5 minutes, while the activation with BLN occurred within 10 minutes, achieving maximum activation at 30 minutes. In NP cells, BLN and HLN significantly stimulated SMAD1/5 after 30 minutes and continued to increase with time. However, for both IVD cells, HLN appeared to be more effective at SMAD1/5 activation than BLN. Discuusion and Conclusion: BLN is also capable of stimulating GAG release in vitro in bovine IVD cells by activation of SMAD1/5. Therefore in principle, BLN supplementation could also be an option for treating disc degeneration. However, HLN at the concentration of 1ug/ml is more effective at stimulating proteoglycan synthesis and can directly activate SMAD1/5 signaling (within 5 min) in the AF, which is the main source of proteoglycan synthesis with age and degeneration. In conclusion, HLN supplementation could be a better option for treating disc degeneration during its early stages, while the AF is still intact.

5-2-478	
Title	**Cone Beam Ct Perfusion Blood Volume (pbv) in Hepatic Embolotherapy: Pearls and Pitfalls**
Authors	Mohammed T Alshammari Darren Klass A. Punzalan David Liu
Program	Interventional Radiology
University	University of British Columbia
Conference	Sir 2015
Date of Publication	March 05, 2015

Abstract

Learning Objectives: This educational exhibit is intended to highlight techniques that allow for technical optimization of acquisition of PBV imaging utilizing cone beam CT. Background: Recent advances in the understanding of perfusion and physiology of both hepatic parenchyma and tumor vasculature has led to interest in targeting tumoral microenvironment. PBV is defined by the amount of arterial blood that is delivered to the target tissue, allowing for functional and metabolic analysis, as opposed to cone beam CT which only provides a structural assessment. PBV may permit further interrogation of preprocedural vascular capacitance of targeted vascular beds/tumors and predict optimal embolic load and endpoint when performing embolotherapy. However, technical and logistical aspects of PBV for hepatic embolotherapy present with challenges in imaging acquisition and processing that are unique to mesenteric imaging. Acquisition and optimization of the images are based on commercially available software and angiography suite (Artis/PBV, Siemens, Forchheim Germany) in patients undergoing various forms of hepatic embolotherapy. DSA aquisitions consisting of 248 2D images, are reconstructed on a 3D work station with triplanar projections using volume rendered technique with false color mapping of PBV. Clinical Findings/Procedure Details: Imaging Acquisition Optimization: Optimization of image acquisition requires a combination of patient compliance as well as technical optimization. Factors that affect optimization of imaging that will be reviewed/ discussed include: Power injector contrast concentration Breath hold timing Mask sweep timing Contrast rate and trigger Acquisition speed/time Artifacts and Technical Limitations: A number of artifacts arise that may result in suboptimal imaging and possible misinterpretation and include: Shift Subdiaphragmatic/phrenic lesions. Lipiodol staining subtraction. Shift/Breathing Artifact. Nondilute contrast injection spray Coil artifact Conclusion and/or Teaching Points: PBV has the potential to improve hepatic embolotherapy however prior to further investigation of this novel technology optimized techniques must be established.

5-2-479	
Title	**Hirsutism Revealing Concomitant Mature Cystic Teratoma and Papillary Thyroid Carcinoma of Both Ovary and Thyroid Gland**
Authors	Muhammad Mujammami, Md1,2, Ahmad Alghamdi, Md1, Roger Tabah, Md1, and Line Vautour, Md1
Program	Endocrinology and Metabolism- Endocrine Tumors
University	Mcgill University
Conference	Endocrine Society 97th Annual Meeting
Date of Publication	March 07, 2015

Abstract

Introduction: Benign cystic teratomas are the most common ovarian germ cell tumors. However, they are only rarely associated with hyperandrogenism and hirsutism. Similarly, struma ovarii is an uncommon teratoma in which thyroid tissue is the dominant component. Furthermore, malignant struma ovarii is a quite rarely encountered clinical entity. Here, we describe a patient who manifested these rare diagnoses concurrently. Clinical Case: A 59-year-old woman presented with severe hirsutism, hair loss and a symptomatic right pelvic mass. Laboratory evaluations, an endovaginal ultrasound and a CT scan were performed and revealed bilateral ovarian tumors. The patient underwent a total abdominal hysterectomy, bilateral salpingo-oophorectomy, omentectomy and bilateral pelvic lymph node dissection. The final pathological analysis revealed a malignant struma ovarii with a 6.5 cm follicular variant papillary thyroid carcinoma in the right ovary and a 1.4 cm mature cystic teratoma in left ovary. Following ovarianectomy, the biochemical hyperandrogenism resolved. Ultrasonography of the thyroid showed multiple bilateral thyroid nodules, with a dominant 1.7 cm nodule in the right thyroid lobe. As the ovarian tumor was large and peritoneal seeding

could not be excluded, the patient underwent a total thyroidectomy to prepare for possible 131I therapy and to assist in her follow-up. Histology of the thyroid gland revealed bilateral 1mm incidental micro-papillary thyroid carcinomas. After the thyroidectoidectomy, she underwent a rhTSH-stimulated Tg measurements and whole body scan (WBS). The peak stimulated Tg was 2.3 ug/L and the WBS failed to show any significant uptake in the neck, abdomen or pelvis. We elected against radioactive iodine ablation but the patient is maintained on suppressive thyroxine therapy Conclusion: This case emphasizes the importance of keeping a high index of suspicion for rare etiologies such as an androgen-producing neoplasm in a patient with unexplained hyperandrogenism. Malignant struma ovarii is a rare clinical entity and there are no established guidelines to direct its management. This case highlights our support of performing a thyroidectomy whenever 131I therapy is either considered or possibly indicated in a patient with malignant struma ovarii. As far as we know, the simultaneous presence of hyperandrogenism in association with a mature cystic ovarian teratoma, in addition to a papillary thyroid carcinoma of the ovary concurrent to that in the thyroid gland has not been reported in the literature yet.

5-2-480	
Title	**Quantifying Aortic Valve Calcification from a Contrast-enhanced Cardiac Computed-tomography Angiography Study**
Authors	Abdulrahman M Alqahtani Md, Kevin E Boczar Md, Vinay Kansal, Kwan Chan Md, Girish Dwivedi Dm, Benjamin J.w. Chow Md
Program	Cardiology
University	University of Ottawa
Conference	Acc 2015
Date of Publication	March 14, 2015

Abstract

Background Aortic valve calcification (AVC) has been associated with major adverse cardiovascular events and severity of aortic stenosis. Quantification of AVC has been previously performed using non-contrast enhanced ECG-gated CT. With the adoption of transcutaneous aortic valve implantation (TAVI), pre-TAVI contrast enhanced ECG-gated CT are being commonly performed to determine valve sizing. We sought to develop and validate a method to quantify AVC using cardiac CT angiography (CCTA). Methods Patients who underwent both AVCStandard and CCTA scans were identified. AVCStandard images were scored using the Agatston method. Aderivation cohort of 25 patients was identified and analysed. An additional 34 patients were identified for the validation cohort. AVCCCTA scans were scored for AVC (AVCCCTA), whereby AVC was defined as plaque with attenuation 2 SD above the mean attenuation value of the ascending aorta (HUaorta)1. The correlation between AVCStandard and AVCCCTA was determined with the slope used to derive a correction factor for the conversion of AVCCCTA results to a AVCStandard Agatston score (AS). To test applicability, the correction factor was assessed in a separate validation cohort. Results a total of 25 patients (age =62.6±12.5 yrs, 56% men) and 34 patients (age =69.8±12.3 yrs, 58% men) were analyzed in the derivation and validation cohorts, respectively. In the derivation cohort, the correlation between AVCStandard and AVCCCTA was excellent (r =0.982). The slope (y = 1.868 × AVCCCTA score) measured in the derivation cohort was used to adjust AVCCCTA measured in the validation cohort. Forthe validation cohort, the AVCStandard score was 2721.7±1668.9 and the mean AVCCTA score was 1101.3±1186.2. The AVCCCTA-corrected was calculated using the equation derived from the derivation cohort (AVCCCTA-corrected = 1.868 X AVCCCTA). Inter-observer variability for both AVCStandard and AVCCCTA in the derivation cohort was excellent (ICC=0.995 and 0.951, respectively) (Table 1). Using previously published thresholds for categorizing aortic stenosis using Doppler echocardiographic evaluation into Severe AS (Female: AVC >/=1274; Male: AVC >/=2065)3 or not, the inter-observer agreement for AVCCCTA-corrected in Derivation cohort was excellent (kappa =0.828; 95% CI: 0.603–1.00) with 92% of reads scored within the same AS severity category. In the Validation cohort, inter-observer agreement for AVCCCTA-corrected was excellent (kappa =0.941; 95% CI: 0.827–1.00) with 97% of reads scored within the same AS severity category. Bland-Altman plot shows no significant bias between AVCStandard and AVCCCTA-corrected. Conclusion the quantification of AVCCCTA-Corrected using contrast-enhanced CTA is feasible using a systematic approach with very good reliability and accuracy compared with AVCStanda§rd. Larger-scale validation studies are needed to determine whether the use of AVCStandard can be eliminated in favour of AVCCCTA-Corrected.

5-2-481	
Title	**Ssris Hinder Implant Osseointegration and Bone Healing**
Authors	Al Subaie1, 2, M. Laurenti1, M. Abdallah1, M. Chan1, X. Zhang1, H. Eimar1, F. Yaghoubi3, F. Tamimi1
Program	Oral & Maxillofacial Surgery
University	Mcgill University
Conference	International Association for Dental Research, Boston, Mass., Usa. March 11-14,2015.
Date of Publication	March 14, 2015

Abstract

Background: Recent studies have shown that Selective Serotonin Re-uptake Inhibitors (SSRIs), the most widely used medications for depression, have negative effects on bone accruals and increased risk of bone fractures. Moreover, our group has recently demonstrated that SSRIs treatment is associated with higher risk of dental implants failure. Accordingly, we hypothesised that SSRIs could have a negative effect on bone healing and implant osseointegration. This in vivo study was designed to investigate the effect of SSRIs on bone healing and implant osseointegration. Methods: Twenty four Sprague Dawley rats were anesthetised and two unicortical defects were created in both tibial metaphysis of each animal. Acustom made titanium implant was placed in the left metaphysis while the right defect was left empty. After surgery, rats were divided equally into two assigned groups and treated daily by either Sertraline (SSRIs) (5 mg/Kg) or saline as control. Two weeks after surgery, the animals were euthanized and the tibias were assessed for bone healing and osseointegration using micro-CT. Result: Micro-CT analysis revealed that the bone defects were larger in Sertraline-treated rats (2.6+0.8 mm3) compared to the controls (2.11 + 0.36 mm3). Moreover, the average percentage of osseointegration in Sertraline-treated rats (34.4 + 7.17 %) were lower compared to control treated rats (40.2 + 13.3 %). Conclusion: Our pilot data suggest that SSRIs may have a negative impact on bone healing and implant osseointegration. Therefore, these drugs should be considered as potential risk factors for osseointegration and bone healing in dental and orthopedic interventions.
Keywords: Selective Serotonin Re-uptake Inhibitors, SSRIs, osseointegration, bone healing, Sertraline.

5-2-482	
Title	**The Clinical and Angiographic Outcomes in Coronary Artery Bypass Surgery Using Grafts with Multiple Versus Single Distal Targets**
Authors	Aws Alherbish, Colleen Norris, Jayan Najendran, Michelle Graham, Sean Van Diepen
Program	Critical Care
University	The University of Western Ontario
Conference	American College of Cardiology Foundation (64th Annual Scientific Session). San Diego. March 14-16, 2015
Date of Publication	March 16, 2015

Abstract

Background: Coronary artery bypass grafting (CABG) improves survival in patients with multivessel coronary artery disease. Bypass grafts with multiple distal targets (MDTs) require less graft material and reduce cardiopulmonary bypass time. Secondary analyses of clinical trials have reported higher major adverse cardiac events associated with MDT grafts, However, a contemporary real-world analysis reporting long term outcomes associated with MDT grafts is lacking. Methods: Inthe Alberta Provincial Project for Outcome Assessment in Coronary Heart Disease (APPROACH) registry a total of 6,262 consecutive patients who underwent an isolated first CABG between 2004 and 2012 were included. Median follow-up was 7 years. Apropensity score was used to match CABG patients with and without MDTs and multivariable logistic regression was used to adjust for completeness of revascularization. Outcomes of interest included mortality at 30-days and 1 year. In the subgroup of 360 patients who underwent a follow-up angiogram during the study period, the incidence of graft failure in MDT and single distal target (SDT) grafts, defined as >70% stenosis, was described. Results: A total of 549 (8.8%) CABG patients had a MDT and were matched with 482 patients SDTs. Patients with MDTs were more likely to have diabetes, heart failure, renal failure, triple vessel disease, longer mean cardiopulmonary bypass times and more distal targets (mean of 4.75 vs 3.35, p< 0.001). No differences in mortality were observed at 30 days (2% vs 2.7%, adjusted or [aOR] 0.74, 95% CI 0.32-1.66) or 1-year (3.8% vs 4.3%, aOR 0.87, 95% CI 0.47-1.61, p= 0.67). The incidence of graft failure was numerically higher in MDTs grafts (37.8% vs 27.6%, p=0.18). Conclusion: Ina large unselected cohort, no differences in mortality were observed between coronary bypass patients with MDTs and SDTs despite a numerically higher incidence of graft failure. Our findings suggest that CABG with SDTs are more durable; however these results also support the safety of MDTs to facilitate complete revascularization when graft material is limited.

5-2-483	
Title	**Assessment of the Effect of Systemic Delivery of Sclerostin Antibodies on Wnt Signaling in Distraction Osteogenesis Using Immunohistochemistry**
Authors	Mohammad M. Alzahrani, Mbbs, Msc, Asim M. Makhdom, M.d,msc (c), Dominique Lauzier, Maria Kotsiopriftis, Reggie C. Hamdy, Mb, Chb, Msc, Frcsc.
Program	Orthopedic Surgery
University	Mcgill University
Conference	Ors
Date of Publication	March 28, 2015

Abstract

Introduction Sclerostin is an inhibitor of the WNT signaling pathway (Fig.1). Therefore when sclerostin is inactivated, bone formation is stimulated. One of the potential ways of inactivation of this molecule is the administration of sclerostin antibody. This antibody has been shown to improve fracture healing in the mouse model but to our its effect has not been previously studied in the context of

distraction osteogenesis (DO). Objective the objective of this study was to assess – using immunohistochemistry - the effects of sclerostin antibody injection on the protein expression of members of the Wnt signaling pathway, at various time points during bone formation in a wild-type mouse model of DO. Materials and Methods Tibial DO was conducted on a total of 24 wild type mice, which were then divided into 2 groups; saline injection group (control) and anti-sclerostin (Scl-Ab) injection group (TA). The mice in the treatment group received 100mg/kg intravenous injections of the antibody weekly till sacrifice. The 12 mice in each group were subdivided into four time points post-osteotomy. These were 11 days (mid-distraction), 17 days (late distraction), 34 days (mid-consolidation) and 51 days (late consolidation) with 3 mice per subgroup. The tibia specimens post-sacrifice were then collected for immunohistochemical analysis (Fig.2). This analysis included WNT pathway ligands (WNT4, 10a), receptors (Frizzled (FZD) 1,2 and low density lipoprotein receptor (LRP) 5,6), the activator B-catenin and inhibitors (sclerostin, FRP-1,2 and CTBP1,2), in addition to BMP agonists (BMP-2,7, Smad-1,5,8 and RUNX2) and antagonists (chordin, noggin and gremlin). Results Our results showed that the treatment group had an earlier peak of expression (day 11) in the distraction phase of the osteogenic molecules (B-catenin, WNT ligands, FZD 1, 2 and LRP-5, 6) in comparison to the placebo group (Fig. 3-4). In addition, our results showed downregulation of the inhibitors of this pathway (sclerostin, FRP-1, 2, CTBP1, 2 and gremlin) in the treatment group when compared with the placebo group (Fig. 3-4). Conclusion Sclerostin inhibition has a significant effect on the DO process through its effect on the WNT pathway. This effect was evident through the decreased effect of sclerostin on LRP-5 and earlier upregulation of the osteogenic molecules involved in this pathway. Clinical Relevance to the best of our knowledge , this is the first report evaluating the effect of sclerostin antibody injection in DO using immunohistochemistry. This could be a potential treatment modality to accelerate healing of the regenerate created during the process of DO.

5-2-484	
Title	**Mesenchymal Stem Cells Locate & Differentiate to the Trauma Site in a Blunt Rat Liver Trauma Model – Preliminary Results**
Authors	Mostafa Alhabboubi, Zu-hua Gao, Minh Duong, Dan Deckelbaum,tarek Razek, Dominique Shum-tim, Kosar Khwaja
Program	General Surgery
University	Mcgill University
Conference	Trauma Association of Canada Conference 2015
Date of Publication	April 11, 2015

Abstract
Background: The liver is commonly injured in abdominal trauma. Healing from liver injuries requires a long time. Stem cells have shown promising results in treating non-traumatic pathologies. However, using stem cells in blunt liver trauma may be a novel approach. We hypothesize that stem cells can locate and differentiate to liver-like cells in a blunt rat liver trauma model. Methods: Mes- enchymal stem cells (MSCs) were injected into 6 rats subjected to blunt liver trauma. The MSCs were transfected with LacZ retrovirus to express B-galactosidase enzyme, which gives their nuclei a blue colour on microscopy. Trauma was induced to the left lobe using Kelly clamp. MSCs were injected through the tail vein (TV) in 4 rats, portal vein (PV) in 2. In the TV group, 3 rats were euthanized 48 hours post-trauma while the third was euthanized 2 weeks post- trauma. In the PV group, the two rats were sacrificed 48 hours post- trauma. Liver and lung were examined under microscopy. Results: MSCs were found in the lungs of the TV group that were eutha- nized after 48 hours. However, no MSCs were found in their livers. No MSCs were found in the rat euthanized 2 weeks post-trauma. Examining the PV group reveals successful localization of the MSCs to the liver. MSCs began migrating from liver blood sinusoids to traumatic area. Labelled MSCs localized to traumatic area, showing evidence of differentiation to liver-like cells. Conclusion: MSCs can locate and differentiate to the livers subjected to blunt trauma. Fur- ther investigation is required to identify the outcome benefit of using this novel technique.

5-2-485	
Title	**Characterization of Lipid Droplets by Evaluating Neutral Lipid and Phospholipid Contents in Peroxisome-deficient Cell Lines**
Authors	Wedad Fallatah, Joseph G Hacia, Nancy E Braverman
Program	Human Genetics
University	Mcgill University
Conference	The 4th Annual Canadian Human and Statistical Genetics Meeting
Date of Publication	April 20, 2015

Abstract
Introduction. Peroxisomes and lipid droplets (LDs) are distinct subcellular organelles that play an integral role in regulation of intracellular lipid homeostasis. While the main function of LDs is storage of excess lipids as a source of energy for cellular growth and metabolic activities, they also play a vital role in prolongation of cell survival during stress conditions like starvation. LDs accumulate in C. elegans with defective peroxisomal β oxidation (MAOC-1/DHS- 28/ DAF-22 genes) and defective peroxisome assembly (PRX10, the ortholog of the human PEX10 gene). LD accumulation was also observed in liver tissue from mice with defective peroxisome assembly (Pex11α). Thus peroxisomes are likely to play a role in regulating lipid droplets. Here we evaluate LDs in mammalian cells with peroxisomal dysfunction. Methods. We studied LD numbers by their content of either neutral lipids or phospholipids in normal Chinese Hamster Ovary (CHO) cells and CHO cells with PEX2 and AGPS null alleles; the former representing deficiency in peroxisome assembly and the latter in a single peroxisome metabolic pathway that synthesizes a unique ether phospholipid class, plasmalogens. We compared LDs in wild type (WT) and mutant CHO cells, under normal and starvation conditions, by immunofluorescence using green neutral lipid and red phospholipid specific staining (LipidTOX™). Results. Thus far, we found that the number of LDs assessed by neutral lipid content was similar in all 3 cell lines in normal conditions. In contrast, under starvation conditions, we observed a significant reduction in LDs in WT and AGPS null cells, but not in PEX2 null cells. Taken together, this study suggests that normal peroxisome assembly is critical for mobilizing neutral lipids from LDs during starvation. This study highlights another pathway of intracellular organelle communication between peroxisomes and LDs, and helps us to understand pathophysiology in the peroxisomal biogenesis disorders

5-2-486	
Title	**Appropriateness of Echocardiography Ordering in an Ambulatory Internal Medicine Resident Clinic**
Authors	Abdulaziz R. Algethami1, Rajan S. Bhatia2, Brian Wong3, Debaroti M. Borschel4
Program	Internal Medicine
University	University of Toronto
Conference	Society of General Internal Medicine 38 Annual Meeting
Date of Publication	April 23, 2015

Abstract
Introduction the American College of Echocardiography has published criteria for appropriate use of echocardiography (AUC) to ensure echocardiography services are utilized in ways that will most impact patient care (1). Previous studies have suggested increasing rates of inappropriate ordering of echocardiography in the ambulatory environment, but to date there is little data about echocardiography appropriateness in a resident teaching clinic. Intervention during training will impact future physician practice. Objectives Look at the appropriateness of echocardiography ordering by Internal Medicine residents in a teaching clinic and compare that to previously published data. Materials and Methods This is a retrospective chart review at Women's College Hospital (CACE Complex Care Clinic) to examine outpatient transthoracic echocardiogram ordering by Internal Medicine residents over a 12 month period. 61 echocardiograms were ordered and those charts were reviewed to determine the indication for ordering the echocardiograms. We classified echocardiograms ordered into three categories: Appropriate (A), Inappropriate (I) and Uncertain (U) as per the 2011 AUC criteria for transthoracic echocardiography (1). Two reviewers reviewed the data to ensure agreement of the appropriate use criteria score. Results the median patient age was 62 ±18 years (65.5% female). 82% of the Echocardiograms were classified as appropriate. Others inappropriate and uncertain orders 8%, 10% respectively (figure 1). The indications for ordering are listed in Table. There was no difference in appropriateness between men and women. Common inappropriate indications were repeated evaluation of ischemic heart disease with recent stress test or angiogram (5%), presyncope without symptoms or signs of cardiac disease (2%) and for initial diagnosis of pulmonary embolism (2%). Conclusion C Overall, the proportion of inappropriate echocardiograms ordered in this resident clinic was lower than has been previously reported in outpatient studies. It is possible that education and initiatives such as the Choosing Wisely campaign have improved appropriate ordering. Reference 1. Douglas PS, Garcia MJ, Haines DE, et al; ACCF/ ASE/ AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 appropriate use criteria for echocardiography. J Am Coll Cardiol. 2011;57(9):1126-1166. 2. Bhatia RS, Dudzinski DM, Malhotra R, et al: Educational intervention to reduce outpatient inappropriate echocardiograms: A randomized control trial. JACC Cardiovasc Imaging. 2014 Sep;7(9):857-66.

5-2-487	
Title	**Intraventricular Hemorrhage in the Asphyxiated Newborns Treated with Hypothermia: A Centre Experience.**
Authors	Ghalia Alyazidi, Elodie Boudes, Michael Shevell, Pia Wintermark
Program	Child Neurology
University	Mcgill University
Conference	American Academy of Neurology Meeting 2015
Date of Publication	April 23, 2015

Abstract
Aim: to assess the incidence, the timing, and the risk factors of intraventricular hemorrhage (IVH) in asphyxiated term newborns treated with hypothermia. Method: Prospective study of asphyxiated newborns treated with hypothermia between 2008 and 2013. Results: 9% of these newborns developed IVH. Fifty-three percent had hemorrhage limited to the choroid plexus vessels or IVH without ventricular dilatation; 47% had IVH with ventricular dilatation with or without parenchymal extension. Sixty-seven percent had an initial normal brain imaging; the diagnostic brain imaging that demonstrated the IVH was obtained either

during cooling (in 30%), within 24 hours of the rewarming (in 30%), or 24 hours after rewarming (in 40%). Recurrent seizures were the presenting symptom of IVH during the rewarming in 20% of the newborns. Coagulopathy was more frequent in the asphyxiated newborns developing IVH ($p < 0.001$). Asphyxiated newborns developing IVH also presented more frequently with persistent pulmonary hypertension, hypotension, thrombocytopenia and coagulopathy ($p = 0.03$). Interpretation: Asphyxiated newborns treated with hypothermia appear to be at increased risk of IVH, especially those with significant hemodynamic instability. IVH seems to develop during late hypothermia and rewarming. Efforts should be directed towards maintaining hemodynamic stability in these patients, even during the rewarming.

5-2-488	
Title	**Preoperative Chemotherapy with the Flot Regimen in Esophagogastric Junction (egj) Adenocarcinoma: Preliminary Results of a Pilot Trial**
Authors	Ali Alfakeeh, Nasser Mulla, Lorenzo Ferri, Mara Leimanis, Monisha Sudarshan, Marie-claude Joncas, Tonia Doerksen, Thierry Alcindor.
Program	Medical Oncology
University	Mcgill University
Conference	Canadian Association of Medical Oncology(camo) Annual Meeting
Date of Publication	April 30, 2015

Abstract

Introduction: Perioperative chemotherapy in GEJ adenocarcinoma improves survival. The DCF regimen (docetaxel/cisplatin/fluorouracil) also relieves dysphagia, making stenting unnecessary. Because of DCF toxicity (grade 3-4 mucosal toxicity rate of 40-50%), preoperative FLOT (fluorouracil/oxaliplatin/docetaxel or Taxotere®) is assessed in this pilot trial. Methods: A pilot trial with FLOT is being performed in 10 GEJ adenocarcinoma patients, in anticipation of a randomized trial with DCF, if safety and efficacy results are encouraging. Endpoints include grade 3-4 mucosal toxicity and dysphagia improvement. Principal inclusion criteria: adenocarcinoma of the GEJ (Siewert I, II, III), presence of dysphagia (at least 1 on score 0-4, 0 for no dysphagia to 4 for complete dysphagia) and no metastases. Principal exclusion criteria: other histology, adenocarcinoma not limited to GEJ, ECOG PS ≥ 3 and previous radiotherapy or stenting. All study patients fill out questionnaires on quality of life (FACT-E) at baseline and after each of the 4 preoperative chemotherapy cycles. FLOT is given every 2 weeks: fluorouracil 2600 mg IV/m2 over 24h, leucovorin 200 mg IV/m2, oxaliplatin 85 mg IV/m2, docetaxel 50 mg IV/m2. G-CSF is optional. Results: Nine patients have been enrolled, 7 are evaluable. Preoperative staging is cT3N0 in 5 patients, cT3N1 in 4 patients. Dysphagia scores ranged between 1 and 3 (mean 2). One patient's dysphagia worsened, requiring stenting. Eight have experienced dysphagia improvement (at least 1-point decrease in dysphagia score) after one chemotherapy cycle. One patient had disease progression through chemotherapy and was taken off protocol. Chemotherapy complications include: grade 1 stomatitis in 1/7 patients, grade 1-2 diarrhea in 4/7, grade 1-2 fatigue in 5/7. The only grade 3-4 toxicity observed was uncomplicated neutropenia in the first 2 patients. One patient experienced staphylococcal line sepsis without neutropenia. Seven patients have undergone esophagectomy and pathologic complete response or near-complete response(microscopic residual disease) was achieved in 2/7 (29%).R0 resection was achieved in all 7/7. Conclusion: These preliminary data indicate an encouraging efficacy and safety profile for FLOT as preoperative regimen for GEJ adenocarcinoma.

5-2-489	
Title	**Ly49:mhc-i Interactions Are Deleterious During Influenza Virus Infection: Superior Protection by Unlicensed Nk Cell**
Authors	Ahmad Bakur Mahmoud, Megan M. Tu, Haggag S. Zein, Andrew Wight, Mir Munir A. Rahim, Seung-hwan Lee, Harman S. Sekhon, Earl G. Brown, Andrew P. Makrigiannis
Program	Microbiology and Immunology Pogram
University	University of Ottawa
Conference	Nk2015 – 15th Meeting of the Society for Natural Immunity (conference).
Date of Publication	May 02, 2015

Abstract

NK cells play an early role in the destruction of tumors and virally-infected cells. During NK cell maturation, interactions of NK cell inhibitory Ly49 receptors with their MHC class-I ligands results in two types of NK cells: licensed ("functional") or unlicensed ("hypofunctional"). Here we demonstrate that mice bearing unlicensed NK cells (Ly49-deficient NKCKD and MHC-I-deficient β2mKO mice) survive influenza infection better than WT mice. Importantly, transgenic expression of an inhibitory self-MHC-I-specific Ly49 receptor in NKCKD mice restores WT influenza susceptibility, confirming a direct role for Ly49. After infection, MHC-I expression on lung epithelial cells was upregulated, suggesting a protective role; however, F(ab')2-mediated blockade of MHC-I interactions with self-MHC-I-specific Ly49 receptors protected WT mice from influenza virus infection. Mechanistically, perforin-deficient NKCKD mice succumbed to influenza infection rapidly, indicating that direct cytotoxicity is necessary for unlicensed NK cell-mediated protection. Our findings demonstrate that unlicensed NK cells are not anergic or hypofunctional, but possess potent antiviral activity, and are key to successful influenza virus clearance. Ly49:MHC-I interactions play a critical role in influenza virus pathogenesis. We suggest a similar role may be conserved in human KIRs and their blockade may be protective in humans.

5-2-490	
Title	**Gonadotropin Releasing Hormone Receptor is Expressed in Retinoblastomas and a Retinoblastoma Cell Line**
Authors	Sultan Aldrees, Pablo Zoroquiain, Mohammed F. Qutub, Sarah Alghamdi, Taylor Nayman, Miguel N. Burnier.
Program	Pathology
University	Mcgill University
Conference	The Association for Research in Vision and Ophthalmology (arvo). May 3 - 7, 2015. Denver, Colorado
Date of Publication	May 03, 2015

Abstract

Purpose: Despite the fact that retinoblastoma treatment has dramatically increased the survival and vision preservation in these patients, it is still important to pursue new therapeutic targets to minimize the side-effects of current therapy. Gonadotropin releasing hormone (GnRH) has been shown to exert a direct antiproliferative effect on many types of reproductive tissue cancers, such as breast cancer, skin melanoma, and glioblastoma. The aim of this study is to describe the presence of GnRH receptor (GnRHR) in retinoblastoma in order to identify a new possible therapeutic target for this disease. Methods: Protein expression of GnRHR was studied by immunohistochemistry in 32 eyes with retinoblastoma and in the Y79 retinoblastoma cell line. Expression was scored according to intensity (1–3) and distribution (1–4), which were multiplied to generate an immunoreactive score (IRS). Low expression was considered an IRS score of 1 to 4, moderate 5 to 8, and high 9 to 12. GnRHR mRNA expression in Y79 cells were analyzed using reverse transcription polymerase chain reaction (RT-PCR). The Student's t-test was used to compare GnRHIRS cases with or without each morphological high risk features. Results: GnRHR was expressed in all retinoblastoma cases and in the Y79 cell line. There was no expression in normal ocular structures. High, moderate, and low expression according to IRS score was evident in 16%, 36%, and 48% of cases. There were no differences in GnRH IRS with respect to uni- versus multifocal tumors, type of growth (mixed/endophytic), rosette formation, choroidal invasion,extraocular extension or extension to the sclera, or optic nerve invasion. In Y79 cells, RT-PCR showed amplification of GnRHR mRNA. Conclusions: GnRHR is expressed in differing degrees in retinoblastomas, but did not correlate with prognostic factors of this particular tumor. Therefore, GnRHR may be a novel therapeutic target for the treatment of retinoblastoma. Further studies to analyze the response of the Y79 cell line to agonist and antagonist drugs are required to confirm the functionality of this receptor.

5-2-491	
Title	**The Frequency of Postoperative Vitreous Hemorrhage in Eyes Treated with Pars Plana Vitrectomy for Retinal Vein Occlusion**
Authors	Alhumaid, Sulaiman; Kapusta, Michael
Program	Department of Ophthalmology
University	Mcgill University
Conference	Arvo the Association for Research in Vision and Ophthalmology
Date of Publication	May 06, 2015

Abstract

Purpose: Retinal vein occlusion (RVO) is the second most common retinal vascular disorder after diabetic retinopathy. RVOs are divided into central (CRVO), hemi-retinal (HRVO), and branch retinal vein occlusions (BRVO). Vitrectomy, a common surgical modality used to treat RVO, can potentially cause vitreous hemorrhage (VH). The frequency of VH following RVO vitrectomy has not been well established. We aim to evaluate the frequency of postoperative vitreous hemorrhage (VH) in eyes that have been treated with primary pars plana vitrectomy (PPV) for non clearing VH resulting from RVO. Methods: Medical records of all patients who underwent vitrectomy for RVO at a McGill university affiliated hospital, between January 2011 and December 2013, were reviewed. The collected data included: age, gender, type of RVO, lens status, previous photocoagulation, use of IntraVitreous bevacizumab (IVB), postoperative Intra-Ocular Pressure (IOP), presence of postoperative VH, time and management of VH. The history of anticoagulant/antiplateletes use was also noted. Results: 33 cases were studied including 15 CRVO (46%), 13 BRVO (39%), and 5 HRVO (15%). The mean age was 68 (range 20-86). Male:Female is 2.3:1. The average time of follow-up is 24 months. The postoperative IOP was above 7 in all cases. Post-vitrectomy VH was found in 15 cases (46%): 7 CRVO, 5 BRVO, and 3 HRVO. Eight cases (50%) of post-vitrectomy VH occurred within a day of the procedure, six (37.5%) occurred within 1-20 weeks postoperatively, while 2 cases (12.5%) happened a year after the vitrectomy. Majority of the VH (12/16) were treated with observation, 2 cases were managed with gas-fluid exchange, and PPV was performed to treat the two VH that occurred a year later. Analysis of potential risk factors (gender, lens status, use of anticoagulant/antiplatelet, previous photocoagulation and IVB) did not show a statistically significant difference between the VH and non-VH cases (P=.28, .44, .48, 1.0,

.73, respectively). Conclusions: Vitreaous hemorrhage following Vitrectomy done for RVO is a common complication seen in 46% of the cases, particularly in the first 24 hours after the procedure. Majority of the cases are managed with observation. No significant association was observed between the development of VH in eyes treated with vitrectomy done for RVO, and the use of previous photocoagulation, IVB or anticoagulants/antiplatelet.

5-2-492	
Title	**A Database of Retinal Fundus Images for Glaucoma Analysis (RIGA)**
Authors	A.almazroa, S.alodhayb, E.othman, E.ramadan, M.hummadi, M.dlaim, M.alkatee, K.raahemifar, V. Lakshminarayanan
Program	Vision
University	University of Waterloo
Conference	Arvo 2015 Denver
Date of Publication	May 07, 2015

Abstract

Fundus camera consists of a specialized low power microscope with an attached camera • it has many models:- Portable model. Smartphone model. • Fundus camera used to diagnose glaucoma by: 1-Calculating the VCDR. 2- Calculating the ISNT • to share clinical reference retinal images with the public • to provide open access database to be used for research and educational purposes • to benchmark the computer segmentation techniques with reliable outcome.

5-2-493	
Title	**The Importance of Sox-10 Expression in Uveal Melanoma**
Authors	Sarah Alghamdi, Ana Beatriz T. Dias, Mohammed Qutub, Julia Caminal, Josep M. Marti, Miguel N. Burnier, Jr
Program	Henry C Witelson Ocular Pathology Lab
University	Mcgill University
Conference	The Association for Research in Vision and Ophthalmology Arvo
Date of Publication	May 07, 2015

Abstract

Purpose: An immunohistochemical panel of S100 protein, Melan a and HMB-45 is commonly used to confirm the diagnosis of malignant melanoma due to the lack of adequate specificity and sensitivity of a single marker. Sox10 is a neural crest transcription factor crucial for specification of Schwann cells and melanocytes. Sox-10 has been shown to be a sensitive marker of cutaneous melanoma, including spindle and desmoplastic subtypes, which are known to be negative for melanocytic markers such as Melan a and HMB-45. This study aimed to evaluate Sox-10 expression in uveal melanoma. Methods: Thirty-nine uveal melanoma cases over a period of 35 years (1980–2014) were retrieved from the Henry C. Witelson Ocular Pathology Laboratory. Formalin-fixed, paraffin-embedded blocks of enucleated eyes with uveal melanoma were cut and stained using an anti-Sox-10 mouse monoclonal antibody. The staining was scored based on the extent of the nuclear expression: diffuse when staining was seen in more than 50% of cells, and focal when it was seen in less than 50% of cells. Results: Of the 39 uveal melanomas studied, 12 were epithelioid (31%), 13 were spindle (33%), and 14 were mixed (36%) subtypes. The mean age of diagnosis was 69 with no gender predilection. Thirty-five showed diffuse nuclear positivity for Sox-10 (90%), two showed focal nuclear staining (5%), while two were negative (5%). Positivity for Sox-10 was also noted in the inner and outer nuclear layers of the retina in 78% of enucleated eyes. Overall, 17% of cases showed Sox-10 nuclear staining in retina pigmented epithelium. The uninvolved ciliary body, choroid, and iris showed focal positivity in 48%, 44%, and 11%, respectively. Five cases expressed Sox-10 in Schwann cells of the scleral nerves (13%). Conclusion: to the best of our knowledge, Sox-10 expression in uveal melanoma has never been investigated. Sox-10 expression was a sensitive, easily recognizable marker for uveal melanoma; however, it was also positive in normal ocular structures. This study suggests that Sox-10 can be incorporated in the panel for diagnosing uveal melanoma tumors. Furthermore, the observation of distinct, diffuse nuclear Sox-10 expression in retinal inner and outer nuclear layers, is a finding that warrants further investigation.

5-2-494	
Title	**Perinephric Fat Distribution and Anatomical Considerations When Performing Percutaneous Nephrolithotomy in Obese Patients**
Authors	Tarek Alzahrani, Daniela Ghiculete, Alaina Garbens, Kenneth Pace, R. J. D'a. Honey
Program	Urology
University	University of Toronto
Conference	American Urology Association Meeting 2015
Date of Publication	May 16, 2015

Abstract

Introduction and Objectives Knowledge of renal and retroperitoneal anatomy is essential to performing percutaneous nephrolithotomy (PCNL) with minimal patient morbidity. The kidneys are oblique in reference to the sagittal, coronal, and axial planes of the body with the lower pole more anterior and freely mobile, accounting for the difficulty in puncture as the lower pole may move away from the needle and dilators during PCNL and also resulting in a longer and more oblique access that requires more torque on the kidney when performing a rigid PCNL. Our objective is to study the difference in the distribution of perinephric fat and its impact on the skin – calyx length and renal angle during PCNL in obese patients. Methods We reviewed 38 consecutive abdominal CT scans done at our institution with 76 kidneys included. We performed several measurements in relation to the anatomy of the kidneys including: Renal Angle, upper pole to skin (UPS), lower pole to skin (LPS), upper pole to muscle (UPM) - representing the upper pole perinephric fat - and lower pole to muscle (LPM). We excluded patients with missing demographic data such as BMI or any abnormality on CT that would change the position of the kidney in the retroperitoneum such as large renal cysts. Results the mean age was 60.5 ± 17.4 (55.3% were male patients) and the mead body mass index (BMI) was 27.5 ± 7.5. The UPS distance was significantly higher in the obese patients (BMI>30) compared to the non-obese (82.5 ± 21.9, 56.8 ± 11; P value <0.01), the same was noticed in the LPS distance (134.4 ± 37.6, 93.3 ± 18.2; P value <0.01). The perinephric fat distribution measured by the UPM and LPM were both significantly higher in the obese population (P value <0.01 for both) but the obese patient had significantly more fat surrounding the lower pole (P value = 0.011), which caused the lower pole to shift more anterior in the obese population changing the renal angle from 22.2 ± 8 to 30.6 ± 9.7 on the sagittal access (P value <0.01). Conclusions There is a significant change in the perinephric fat distribution in the obese patients which is more pronounced in the lower pole making lower pole access longer and at a more difficult angle in these patients. This supports our recommendation for an upper pole approach in the obese patient. Date & Time: May 16, 2015 3:30 PM-5:30 PM Session Title: Stone Disease: Surgical Therapy III Sources of Funding: none

5-2-495	
Title	**Uroflow Stop Test at Time of Catheter Removal is a Novel and Strong Predictor of Early Recovery of Erectile Function After Robotic-assisted Radical Prostatectomy (rarp): A Pilot Study**
Authors	Abdullah M. Alenizi, Marc Bienz, Emad Rajih, Naif Al-hathal, Serge Benayoun, Thierry Lebeau, Kevin C. Zorn, Assaad El-hakim
Program	Robotic Urology
University	Université de Montréal
Conference	American Urological Association (aua) Annual Conference
Date of Publication	May 17, 2015

Abstract

Objective to study the relation between uroflow Stop Test and early recovery of potency following RARP. We recently showed that the ability to completely stop urine flow during voiding, measured objectively by uroflowmetry at the time of catheter removal (uroflow Stop Test) can predict early urinary continence recovery following RARP. Methods in this prospective observational cohort, data was collected on 108 patients operated by a single surgeon (AEH). Eighty patients had a positive uroflow Stop Test (group one) and 28 had a negative Stop Test (group two). Patients were followed for a minimum of 2 years. Covariates included age, BMI, IPSS and SHIM scores, PSA, tumor stage, prostate volume, nerve sparing status and EBL. Results Preoperative characteristics were comparable between both groups except nerve sparing and PSA which were statistically higher in group one ($p<0.05$). Early 3- and 6-months recovery of erectile function was significantly higher in group one. Potency rates in group one and two at 1, 3, 6, 9, 12, 18 and 24 months were 25% vs. 14.3% (p 0.241), 54.5% vs. 18.5% (p 0.001), 55.4% vs. 18.5% (p 0.001), 56.4% vs. 36% (p 0.084), 66.6% vs. 50% (p 0.141), 65.5% vs. 56% (p 0.404) and 73.2% vs. 57.7% (p 0.160) respectively. Uroflow Stop Test was independent predictor of early potency recovery on multivariate regression analysis at 6 months [OR 6.042 (CI95% 1.496-24.413) p= 0.012]. Conclusion Although simple, Uroflow stop test may help predict early potency recovery post RARP.

5-2-496	
Title	**Should Patients with Hepatocellular Carcinoma Complicated by Portal Vein Thrombosis Be Anticoagulated?**
Authors	Tahar Mahmoudi, Ahmed Kayal, Rebeca Carvalho, Alan Weiss
Program	Internal Medicine
University	The University of British Columbia
Conference	Digestive Disease Week 2015
Date of Publication	May 18, 2015

Abstract

Portal vein thrombosis (PVT) is a seen in about 14.3% of patients with hepatocellular carcinoma (HCC). There is presently no evidence based guideline on the need for anticoagulation in this particular group of patients. The aim of this retrospective study was to investigate the clinical outcome of patients with HCC complicated by portal vein thrombosis. Patients and methods: 54 patients who were diagnosed with HCC and PVT from July 21st 2001 to September 131st, 2014 were retrospectively evaluated. Nine patients were excluded secondary to lack of follow up. HCC and PVT diagnosis and follow up was determined with contrast enhanced CT or MRI. Most of the patients were initially treated with a single or a combination of the following treatments: transarterial chemoembolization,

radiofrequency ablation, surgical resection, systemic therapy with Sorafenib. Characteristics and results are shown in table 1. 38 patients were males and mean age was 62.8. Liver disease etiology was HCV in 42%, HBV in 40%, ETOH in 11% and hemochromatosis in 2%. Results: Average survival after HCC diagnosis was 28 months and 15 months after PVT diagnosis. Among the 45 patients evaluated, 6 patients received anticoagulation while 39 did not. Progression happened in 19 (49%) of the non anticoagulated group, and 4 (67%) of the anticoagulated group. Right portal vein involvement was seen in 18 (40%) patients with progression in 67% of the time, Left PVT in 13 (28%) with a progression in 54%, and Main PVT 6 (13%) with a progression in (67%). In 1 case, PVT progressed from the main PVT to Superior mesenteric vein (SMV) and in 2 other cases from the Left portal vein to SMV. Ascites was present in 2 patients, at the time PVT diagnosis but no symptoms or adverse clinical sequalae directly related to PVT development were reported in the other 43 patients. Conclusion, in our review of 45 patients with HCC complicated by chronic PVT, there was no adverse clinical consequence. The rate of progression of PVT determined by contrast enhanced CT or MRI imaging was similar in the group treated with anticoagulation and the non anticoagulated group of patients. Thus, the need for anticoagulation, considering its risks in patients with HCC and PVT, needs to be carefully assessed. The usefulness of anticoagulation in this patient population needs to be further studied.

5-2-497	
Title	**Portance of Intraoperative Assessment of Sperm Identification in Predicting the Final Sperm Retrieval Outcome with Microdissection Testicular Sperm Extraction**
Authors	Khalid Alrabeeah*, Audrey Wachter, Evelyne Boulet, Simon Phillips, Naif Alhathal, Francois Bissonnette, Isaac Jacques Kadoch, Armand Zini
Program	Urology
University	Mcgill University
Conference	American Urology Association Annual Meeting 2015
Date of Publication	May 18, 2015

Abstract

Introduction and Objectives to determine whether assessment of sperm recovery at the time of microdissection testicular sperm extraction (microTESE) can predict final microTESE sperm retrieval outcome and guide intra-operative planning. Methods We conducted a retrospective study of 81 consecutive men with non-obstructive azoospermia who underwent a primary (first) microTESE-ICSI between March 2007 and October 2013. Final assessment of sperm recovery (reported on the day of ICSI) was recorded as (1) successful (available sperm for ICSI) or (2) unsuccessful (no sperm for ICSI). The decision to perform a unilateral or bilateral microTESE was guided by the intra-operative evaluation of sperm recovery from the first testicle. Results Overall, sperm recovery was successful in 56% (45/81) of the men. Aunilateral microTESE was performed in 47% (38/81) of the men and in 100% (38/38) of these men, sperm was found on final assessment. Of the 43 men who underwent a bilateral microTESE (because no sperm or rare sperm were found on intra-operative assessment of unilateral microTESE), 16% (7/43) had sperm identified on final assessment. The ICSI pregnancy rates (per cycle started and per embryo transfer) were 47% (21/45) and 60% (21/35), respectively, with a mean (±SD) of 1.9 ± 1.0 embryos transferred. Conclusions the data indicate that intra-operative assessment of sperm recovery can correctly identify those men that require a unilateral microTESE. Moreover, with assessment of sperm recovery at the time of microTESE, a bilateral microTESE can be avoided in nearly 50% of cases.

5-2-498	
Title	**Efficacy and Safety of Electronic Cigarettes for Smoking Cessation: Systematic Review**
Authors	Riyad Allehebi, Mbbs1, M. Hashim Khan, Mbbs, Matthew B. Stanbrook, Md, Phd1
Program	Respirology
University	University of Toronto
Conference	American Thoracic Society
Date of Publication	May 18, 2015

Abstract

Rationale: Electronic-cigarettes (e-cigarettes) are battery-powered electronic nicotine delivery devices designed to deliver nicotine in a similar manner to tobacco without tobacco's other harmful constituents. We systematically reviewed the evidence to date regarding the efficacy and safety of e-cigarettes. Methods: We searched MEDLINE and EMBASE from 1946 to May 2014. Studies of efficacy were included if they enrolled current smokers and compared e-cigarettes to placebo, active control or no therapy. Studies of safety were included regardless of design if they reported any adverse events associated with e-cigarette use. Results: Of 4569 abstracts identified, 297 articles underwent full-text review. Forefficacy, 4 studies (2 randomized trials, 2 uncontrolled before-and-after studies) met inclusion criteria. Forsafety, 22 articles met inclusion criteria. Meta-analysis showed that point prevalence abstinence was significantly better for e-cigarettes vs. placebo at 1 month (RR 1.71, 95% CI 1.08-2.72, I2 = 0%). However, differences for point prevalence abstinence did not reach statistical significance at 3 months (RR 1.95, 95% CI 0.74-5.13, I2 = 65%) or 6 months (RR 1.32, 95% CI 0.59-2.93, I2 = 59%), with large heterogeneity between studies rendering the validity of these pooled estimates uncertain. The only study to evaluate continuous abstinence found low rates at 6 months, with no significant differences seen between e-cigarettes compared with placebo (7.3% vs. 4.1%, RR 1.77, 95% CI 0.54-5.77) or open-label nicotine patch (7.3% vs. 5.8%, RR 1.26, 95% CI 0.68-2.34). Respiratory adverse effects among e-cigarette users included dry cough (incidence range 26-32%), throat irritation (7-32%), and shortness of breath (2- 20%), although incidence of these events tended to decrease over time. Case reports have documented serious adverse events in e-cigarette users including death, lipoid pneumonia, and recurrent atrial fibrillation. In comparative studies, incidence of serious adverse events did not differ between e-cigarettes and placebo e-cigarettes (19.7% vs. 13.9%, RR 1.36, 95% CI 0.54-3.42), but were more frequent with e-cigarettes than open-label nicotine patch (19.7% vs. 11.8%, RR 1.97, 95% CI 1.05-3.68). Conclusions: Electronic cigarettes achieve higher rates of smoking cessation at 1 month than placebo, but limited available data suggest that this effect may not be sustained over longer time periods. E-cigarettes are associated with frequent short-term respiratory adverse events and may pose a higher risk of serious adverse events than nicotine patch. Given the paucity of existing data, long-term studies of the efficacy and safety of e-cigarettes are needed to determine their possible role in smoking cessation.

5-2-499	
Title	**The Impact of Implementing an Institutional Policy Promoting Single Red Cell Unit Transfusion**
Authors	Mohammed Almohammadi1, David Conrad1, Eiad Kahwash1,2
Program	Stem Cell Processing Fellowship
University	Dalhousie University
Conference	International Society for Lab Hematology Annual Conference in Chicago
Date of Publication	May 19, 2015

Abstract

Introduction: The practice of transfusing two tandem units of RBCs in asymptomatic patients has been discouraged since the early 1990s. We conducted this study to examine the incidence of two at the time unit RBC transfusions in our institution and to see the impact of a single unit policy. Methods: We reviewed all episodes of two-RBC unit transfusions in our institution over a two-month period (June 1 to July 31, 2011). We excluded Patients in operating room, actively bleeding, medical day unit hematology/oncology patients and Instances when Hgb data is not available/incomplete. We considered a patient to be symptomatic in the following situations: Acute coronary syndrome, Signs or symptoms of impaired oxygen delivery at the time of transfusion and those with active peripheral vascular disease. We subsequently implemented an institutional policy requiring transfusion of subsequent units of RBCs to be supported by clinical or laboratory data obtained after the first unit was transfused. The policy was in action in January 1st, 2013. The effect of this policy was then assessed by retrospectively comparing all red cell utilization after implementation (January 1st to August 31st 2013) to the same period in 2012. Results: Based on two months study (June & July 2011) 116 patients were transfused after all exclusions. Of the 232 units included, 154 units were transfused to asymptomatic patients with Hgb >70g/- needed not to be transfused at all, and 39 units were transfused to patients with Hgb< 70g/L but as a unnecessary second unit yielding a total of 193 units. The 154- 193 units identified as being unnecessarily administered account for 6-8% of the 2,464 total RBC units transfused in the same time period. Post policy implementation, the reduction in RBC requests was at ~20 % which is more than double of what was expected. The 2112 less units transfused (10624 versus 8521 units) resulted in an approximately >$1,000,000 saving in the blood budget for the province. The estimated decrease per year is >3000 units resulting in an approximate $1,500,000 saving in the blood budget for the province. The decrease in reported adverse reactions was 15%. Conclusions: The development and implementation of an institutional policy promoting single red cell unit transfusion for stable patients is a very efficient tool for appropriate red cell utilization. The impact of the policy can be amplified by education and appropriate communication with blood requesting physicians around the time of implementation.

5-2-500	
Title	**A Case Report of T-lgl Leukemia with Rare Double Positive Cd4+/cd8+ Immunophenotype**
Authors	Mohammed Almohammadi, Dietrich Werner,mary-margaret Keating
Program	Stem Cell Processing Fellowship
University	Dalhousie University
Conference	International Society for Lab Hematology Annual Conference in Chicago
Date of Publication	May 19, 2015

Abstract

Introduction: T-Cell large granular lymphocyte leukemia (T-LGL leukemia) is a disease characterized by typically indolent clonal proliferation of large granular lymphocytes. This condition is also associated with many clinical and serologic autoimmune findings. The classical immunophenotype of cases of T-LGL Leukemia is CD8+/CD4-CD3+ T-cells. Methods: Here we are reporting a case of T-LGL leukemia where the neoplastic CD3+T-cells are CD8+/ CD4+. Our case is that of 55 years old male who presented to the outpatient hematology clinic referred from his home hospital for cytopenia not yet diagnosed. The patient has been followed for few months for asymptomatic

neutropenia and thrombocytopenia in the absence of anemia. The peripheral blood showed a white blood count of 4.2 x 10e9/L, hemoglobin 154 g/L, neutrophil absolute count of 0.7 x 10e9/L, and platelet count of 93 x 10e9/L. There is no absolute lymphocytosis. However, large granular lymphocytes (LGL) represented ~90% of lymphocytes. The estimated number of LGL cells is > 2 x 10e9/L. The patient underwent a bone marrow aspirate and biopsy. Flow cytometric studies identified a neoplastic T-LGL proliferation with the following immunophenotype: Positive for CD45 (strong) CD3, CD5 (abnormally weak), CD2, CD4, CD8 (slightly weak), CD7, CD52, CD16, CD57, and HLA-DR; and negative for CD1a, CD56, CD34, CD26, CD25, and CD56. The diagnosis was confirmed by molecular TCR clonality study in a bone marrow sample. Results: This immunophenotype is rare and only few cases are found reported in the literature. Please see figure 1. Conclusions: Our patient remains asymptomatic with gradually worsening neutropenia and thrombocytopenia. He is considered for treatment at the moment in order to control his cytopenia and to avoid its complications T-LGL leukemia. It is not clear at the moment if this rare immunophenotype represents a distinct clinicopathological entity within the cases of T-LGL leukemia. However, publishing more cases is the only way to clarify this notion.

5-2-501	
Title	**Chronic Scrotal Pain Syndrome: Clinical Characteristics of This Common But Poorly Understood Condition**
Authors	H. A. Mustaneer, A. Gordon, K. Jarvi, T. Smeenk, D. Panaduro, S. Lau
Program	Wasser Pain Management Centre
University	University of Toronto
Conference	36 Anuual Canadian Pain Society
Date of Publication	May 21, 2015

Abstract

Introduction: Chronic scrotal pain syndrome (CSPS) is a common, but very poorly characterized condition. The goal of this study was to study the clinical characteristics of a large cohort of men with CSPS. Methods: A retrospective chart review of 80 patients with CSPS who presented to the Multidisciplinary Orchialgia Clinic (MOC) at Mount Sinai Hospital was conducted. Patient's medical history, physical examination, and results of investigative and treatment modalities prior to presenting to our clinic were reviewed. Results: The mean age of pain onset was 38.06 years (SD = 13.44) and the mean pain severity was 6.34 (SD = 2.33). The average reported pain duration was 4.42 years and most patients (80%) reported that their pain began between 21 and 50 years of age. The pain was described as being in the scrotum only in 26.25%, and radiated to adjacent areas, mainly the inguinal region, thighs, and abdomen in 62.5%. The epididymis was tender in 76.25% of patients, more than twice the prevalence of tenderness being found in the testes (36.25%), with most men reporting tenderness in the head of the epididymis (n = 55). The most common identified cause was vasectomy (22.5%), although the majority of patients did not have an identifiable etiology (52.5%). Approximately 46% of patients reported neurological signs and symptoms. Conclusion: Most patients diagnosed with CSPS have tenderness principally in the epididymis and nearly half of patients present with features of neuropathic pain. Commonly used investigative approaches are not useful for diagnosing the etiology of CSPS.

5-2-502	
Title	**Ultrasound Guided Phenol Block of the Obturator Nerve for Severe Adductor Spasticity: A Pilot Study**
Authors	Ayman Alsuhabani, Md, Karen Ethans, Md Frcpc, Alan Casey, Md Frcpc, Ryan Skrabek, Md Frcpc, Dan Chateau, Phd, Eric Sutherland, Md Frcpc
Program	Physical Medicine and Rehabilitation
University	University of Manitoba
Conference	Capmr 63rd Annual Scientific Meeting
Date of Publication	May 22, 2015

Abstract

Institution Affiliation: University of Manitoba, Health Sciences Centre, Department of Physical Medicine & Rehabilitation Objective: to assess the efficacy of phenol block of the obturator nerve in treating severe adductor spasticity. Design: A prospective pilot study. Setting: Outpatient rehabilitation clinics. Participants: We recruited 5 subjects with severe adductor spasticity. All subjects completed the study; all subjects were women and had an average age of 60.4 years; four subjects had bilateral severe adductor spasticity and one had unilateral severe adductor spasticity. Interventions: A total of 9 phenol blocks of the obturator nerve were performed. Five were performed with ultrasound guidance, followed by localization of the obturator nerve by peripheral nerve stimulator. Four were performed using anatomic landmark and peripheral nerve stimulator for localization. Outcome Measures: The primary outcome measure was the Modified Ashworth Scale of the hip adductor at 1 month. The secondary outcomes measures include Modified Ashworth Scale of the hip adductor at 6 months, Distance between the medial femur condyles in hip extension, Disability Assessment Scale, Goal Attainment Scale, Spasticity Numeric Rating Scale and Subject and Physician Global impression of changes. Results: There was statistically significant decrease in the Modified Ashworth Scale score at 1-month compared to baseline (2.43 vs. 4; P=. 001). There was no statistically significant difference in the secondary outcomes. Conclusion: This study suggests that phenol block of the obturator nerve is effective in treating severe adductor spasticity. We recommend a larger study and longer follow up period to allow further assessment of the efficacy of the phenol obturator nerve block. Key Words: Phenol; Adductor spasticity: Obturator nerve; Rehabilitation; Ultrasound.

5-2-503	
Title	**Regulation of Hepatic Gene Expression in Mice During Acute Inflammation: The Involvement of Nf-κb and Pregnane X Receptor**
Authors	Walaa Abualsunun and Micheline Piquette-miller
Program	Pharmaceutical Science
University	University of Toronto
Conference	Csps
Date of Publication	May 26, 2015

Abstract

Purpose: Endotoxin-induced inflammation is known to alter the expression and activity of several drug transporters and drug-metabolizing enzymes in the liver. Since these pronounced changes in hepatic transporters contribute to altered drug disposition during inflammation, it is important to understand the underlying regulatory mechanisms. Many key transcription factors involved in regulating transporters and metabolic enzymes are modulated during inflammation including the nuclear factor NF-κB and the pregnane X nuclear receptor (PXR). NF-κB activation is known to be a major mediator of endotoxin signaling, and a reciprocal repression or cross talk-between PXR and NF-κB activation has been reported. The role of PXR and NF-kB signaling pathways on the regulation of transporters during inflammation has not been clarified. Hence, our objective was to examine whether NF- κB directly regulates the expression of drug transporters or exert its effect indirectly via PXR. Method: Ten to twelve weeks old PXR deficient [PXR (-/-)] or wild-type [PXR (+/+)] male mice were treated with endotoxin (LPS, 5 mg/kg i.p) or saline 30 minutes after i.p administration of the NF- κB inhibitor: PHA408 (40 mg/kg) or vehicle (n=4-8/group). Animals were sacrificed and livers collected 6 hr later. Gene expression was measured in liver samples using qRT-PCR and cytokine levels were measured in serum using ELISA. Results: Following administration of endotoxin, the NF- κB target genes TNF-α, IL-6, IL-1β mRNA and serum levels were induced to a similar extent in PXR (-/-) and PXR (+/+) mice. Likewise, as comparted to saline controls, LPS administration imposed 30-70% significant decreases in the expression of Abcb11, Abcc2, Abcc3, Abcg2, Slc10a1, Slco2b1, Slco1a4, Mdr1a and Mdr1b in PXR (+/+) and (-/-) mice to a similar extent. Pre-administration of the NF- κB inhibitor, PHA408significantly attenuated endotoxin-mediated changes in the expression of proinflammatory cytokines and hepatic transporters in both PXR (+/+) and (-/-) mice. Conclusion: Our results indicate that NF- κB is the major signaling pathway involved in endotoxin-mediated down regulation of hepatic transporters and acts independent from PXR.

5-2-504	
Title	**Local Delivery of Zoledronate Mitigates Bone Destruction in a Mouse Model of Bone Metastasis.**
Authors	Nooh A, Zhang Y, Sato D, Fortin M, Siegel Pm, Barralet Je, Weber Mh
Program	Experimental Surgery
University	Mcgill University
Conference	2015 Annual Csps/cc-crs Conference
Date of Publication	May 28, 2015

Abstract

Background: Bone metastases are the most common cause of cancer-related pain and often lead to other complications such as pathological fractures and spinal cord compression. Surgery is the main treatment option for bone cancers and metastasis. However, proximity to vital structures often prevents complete tumor resection. Bisphosphonates are potent antiresorptives commonly prescribed to retard osteoporosis progression. Interestingly, BPs have been suggested to have anti-tumor properties through interacting with macrophages, endothelial cells and matrix metalloproteinase (MMP). However, the use of bisphosphonates for cancer therapy is generally restricted to high dose intravenous infusion, which may in some instances be associated with devastating side effects. The purpose of this study was to investigate the effects of local delivery of zoledronate at a dose below systemic chemotherapeutic levels, directly to the tumour site in a mouse cancer model. Methods: An intra-tibial xenograft model of bone metastasis was established in severe combined immunodeficiency (SCID) mice by injecting 1× 105 of breast cancer cells (MDA-MB-231) in the right and left tibia (n=17). Five days after implantation, mice were treated with a local injection of 2μg Zoledronate in the right tibia only. Zoledronate treatments were repeated 3 times a week, for a period of 3 weeks. Following treatment, the mice were sacrificed, and micro-CT images of the right and left tibia were obtained. Bone Volume (BV) and bone volume to tissue volume ratio (BV/TV%) were determined using μ-CT biomarkers. Histological analyses of the tibia were performed using Von Kossa, tartrate-resistant acid phosphatase (TRAP) stain and alkaline phosphatase stain (ALP) staining of non-decalcified resin embedded sections. Results: There was a statistically significant ($P<0.001$) increase in the mean bone volume (BV) in the treated tibia (8.9 mm3) compared to the untreated tibia (7.03 mm3). The ratio of BV to tissue volume (TV) was also significantly greater ($P<0.001$) in the treated leg (BV/TV=4.8%) as

compared to untreated leg (BV/TV=3.8%). Histological analysis correlated well with Micro-CT. Conclusion: These preliminary results suggest that local injection of zoledronate can lead to a significant inhibition of tumor-induced osteolysis. It remains to be seen how long lived the effect is and the minimum dose required. This may have application to situations where only partial tumour resection is feasible. Future experiments on regrowth of partially resected tumours will be performed using live animal fluorescence to better standardize tumour size.

5-2-505	
Title	**Cell Autonomous and Cell Non-autonomous Roles of P75 Neurotrophin Receptor (p75ntr) in Glioma Invasion.**
Authors	Mana Alshehri , Bo Young Ahn, Xiuling Wang, Tanveer Shiekh, Jennifer Chan, Donna L Senger, and Stephen M Robbins,
Program	Medical Science
University	University of Calgary
Conference	Advances in Brain Cancer Research
Date of Publication	May 28, 2015

Abstract

Human glioblastoam is a heterogeneous tumor composed of tumor cells and a small population known as brain tumor initiating cells (BTICs) or glioblastoma stem-like cells. BTICs appear to drive tumor progression, underlie therapeutic resistance and have been highlighted as therapeutic targets for patients with malignant glioma. The ability of glioma cells to invade into the surrounding brain parenchyma is a major clinical issue rendering glioblastoma incurable by conventional therapies. In a previous study, we found that the p75 neurotrophin receptor (p75NTR) significantly enhanced invasion and migration of genetically distinct glioma by a cell autonomous mechanism. In addition, p75NTR was frequently observed in a highly invasive population of cells from freshly resected patient specimens. Importantly, p75NTR was found to mediate glioma invasion by neurotrophin-dependent regulated intramembrane proteolysis (RIP). Blocking of p75NTR proteolysis by the generation of cleavage-resistance mutants, or treatment of animals bearing p75NTR-postive intracranial tumors with γ-secretase inhibitors, significantly inhibited glioma invasion and prolonged survival. Using a large panel of patient-derived-BTICs we have investigated the role of p75NTR in the stem-like compartment. Here we investigate the biological effects of p75NTR down-regulation on glioma derived BTICs. Immunocytochemical studies western blot analysis reveal that p75NTR is variably expressed on BTICs and that treatment with γ-secretase inhibitors significantly decreases BTIC invasion in 3D cultures in vitro. Down-regulation of p75NTR using shRNA significantly decreases BTICs invasion, proliferation and self-renewal ability. Moreover, p75NTR was present on as a component of BTIC-derived extracellular vesicles (EVs) that are implicated in tumor cell invasion through a cell non-autonomous mechanism. We found that p75NTR containing EVs promote invasion of non-invasive glioma cells. The composition of p75NTR containing EVs and their roles in glioma invasion are currently been investigated

5-2-506	
Title	**Comparison Between Osteoarthritic and Osteonecrotic Bone Marrow-derived Mesenchymal Stem Cells: Differences in the Expression of the Extracellular Calcium-sensing Receptor and Osteogenesis**
Authors	Hussam Al Majed1,3, Michael P Grant1,2, Laura M Epure2, F Mwale1,2, John Antoniou1,2 1 Department of Surgery, Mcgill University, Montreal, Qc, Canada, 2 Orthopaedic Research Laboratory, Lady Davis Institute for Medical Research, Smbdjewish General Hospital, Mcgill University, Montreal, Qc, Canada 3 King Saud Bin Abdulaziz University for Health Sciences , Riyadh, Saudi Arabia
Program	Experimental Surgery
University	Mcgill University
Conference	21st Canadian Connective Tissue Conference
Date of Publication	May 30, 2015

Abstract

INTRODUCTION: Osteonecrosis of the femoral head (ON) is a painful disorder that often leads to the collapse of the femoral head and subsequent total hip replacement. Risk factors include corticosteroid therapy, alcohol abuse and sickle-cell anaemia. Core decompression of the hip is often performed to treat early-stage ON, however, in later stages of the disease it does not prevent the inevitable, arthroplasty. The use of bone marrow-derived mesenchymal stem cells (MSCs) to treat on has been explored in small trials. The procedure involves decompressing the femoral head followed by injection of autologous bone marrow obtained from the patient's iliac crest. Although improvement was demonstrated, the procedure appeared to temporarily delay the need for surgery in a number of patients during follow-up. Evidence suggest that on MSCs are deficient in the ability to differentiate into osteoblasts, secrete growth factors, and maintain survival. In addition, the environment of the on hip may not be suitable for MSC survival and differentiation. Therefore, priming on MSCs toward an osteoblastic lineage may improve survival in the affected joint. The extracellular calcium-sensing receptor (CaSR) has recently emerged as a target in the osteogenic differentiation of MSCs, as demonstrated in several studies. In this study we plan to investigate the role of CaSR in the differentiation of on and OA MSCs. METHODS: Osteoarthritic (OA) and on MSCs were isolated from the bone marrow of osteonecrosis patients undergoing total hip replacement and expanded in culture in regular growth medium. OA and on MSCs were cultured in osteogenic differentiation medium without or with 5 μM CaSR agonist (Cincalcet). Media was changed every 3 days up to a period of 21 days. CaSR expression was evaluated by Western blotting from on and OA MSCs collected from several donors. Osteogenic differentiation was monitored by von Kossa for mineralization, and Western blotting for the expression of calcification markers: type X collagen, alkaline phosphatase, and osteopontin. RESULTS: The expression of CaSR was downregulated in on MSCs. On MSCs had a reduced capacity in becoming osteogenic when compared to OA MSCs, as determined by mineralization potential and expression of osteogenic markers. CONCLUSION: CaSR activation may provide a simple means of enhancing osteogenic differentiation in on MSCs and improve transplantation survival in on patients. ACKNOWLEDGEMENTS: We thank the Canadian Institute of Health Research (CIHR).

5-2-507	
Title	**When the Reward is Great the Effort to Adhere is Great: Medication Adherence Reminder Mar**
Authors	Khalid Tearo Mohamed Aaqib Derek Reily
Program	Idphd
University	Dalhousie University
Conference	Halifax Gi 2015
Date of Publication	June 03, 2015

Abstract

Patients with long-term prescriptions often rely on traditional medication adherence techniques such as pillboxes. Over the past several years, many smartphone applications have been released that are meant to facilitate adherence. Anumber of these applications rely on rewards like electronic medals and ribbons to motivate patients, however research suggest that these types of rewards do little to change patient behavior. We are exploring a new approach that utilizes smartphones application, which relies on a non-traditional rewarding system and smart reminder features. We assume that our rewards system and smart reminder have a positive impact on patients' adherence compared to traditional adherence techniques. Afield study will be conducted to explore the impact of our prototype and it's non-traditional rewarding system on patients' adherence level. We also would like to explore how our Medication Adherence Reminder (MAR), might compliment current traditional strategies followed by patients.

ملخص المشروع باالغة العربية إن
الازدياد المطرد لعدد المرضى المعتمدين على وصفات دوائية طويلة الأمد، يزيد الحاجة لتوفير أدوات معلوماتية تساعدهم على الانتظام في تعاطي الدواء. يعتمد تطبيق تنظيم الدواء الذي قد تم تصميمة في هذا البحث على عناصر غير تقليدية كتحديد الموقع الجغرافي و وقت النوم بالإضافة إلى ابتكار نظام تحفيز جديد من نوعه والذي بدوره يعتمد على نظام النقاط ذات القيمة الفعلية

5-2-508	
Title	**Variations in the Anatomical Structures of Guyon's Canal**
Authors	Zahir Fadel, Osama Samargandi, David T Tang
Program	Plastic Surgery
University	Dalhousie University
Conference	69th Annual Meeting of Canadian Society of Plastic Surgeons
Date of Publication	June 05, 2015

Abstract

PURPOSE: Several anatomical variations of structures related to Guyon's canal have been reported in the literature. Athorough knowledge of the normal contents of Guyon's canal is essential during surgery and exploration. This allows the surgeon to avoid potential complications and ensure optimum surgical planning. The aim of this paper is to review the recognized anatomical variations within and around Guyon's canal. METHODS: This study is a narrative review in which relevant papers, clinical and anatomical studies, were selected by searching the electronic database of PubMed. Relevant articles published from the year 1861 up to 2014 were reviewed. Extensive manual review of references of the included studies was performed. RESULTS: This study identified several variations in the anatomical structures of Guyon's canal reported in the literature. Variations of the ulnar nerve involved its course, branching pattern, deep motor branch, superficial sensory branch, dorsal cutaneous branch and the communication with the median nerve. Ulnar artery variations involved its course, branching pattern, the superficial ulnar artery and the dorsal perforating artery. Aberrant muscles crossing Guyon's canal were found to originate from either the antebrachial fascia, flexor carpi radialis, flexor carpi ulnaris, or palmaris longus; these muscles may insert into the common origin of the flexor digiti minimi and abductor digiti minimi muscles or blend with one or more of the hypothenar muscles. CONCLUSION: Several variations in the anatomical structures of Guyon's canal have been described in the literature. Taking these variations into consideration may prevent inaccurate clinical interpretation and allows for better surgical planning. Learning Objectives: Reviewing the normal anatomy of Guyon's canal and recognizing the anatomical variations affecting the course and branches of the ulnar nerve and artery, in addition to the muscles of the same region.

5-2-509	
Title	**Acute Mastoiditis Post Cochlear Implantation: Two Case Reports**
Authors	Mohammed K. Alnoury Khaled I. Al-noury Sam J. Daniel
Program	Otolaryngology- Head and Neck Surgery
University	Mcgill University
Conference	Canadian Society of Otolaryngology- Head and Neck Surgery
Date of Publication	June 07, 2015

Abstract
Cochlear implantation (CI) is a common surgical procedure for children with severe to profound hearing loss Many studies discuss the medical and/or surgical approaches to manage acute mastoiditis (AM) post CI with the aim to prevent complications and to preserve the implanted device. Aconservative approach is recommended which includes antibiotic administration with or without ventilation tube insertion, and incisional & drainage (I&D) in the presence of subperiosteal abscess. We report 2 cases with AM post CI and discuss management strategies to avoid meningitis and to preserve the implanted device.

5-2-510	
Title	**Neutralizing Antibodies Associated with Intra-glandular Onabotulinum Toxin a Injection in Children with Sialorrhea: A Case Report**
Authors	Mohammed K. Alnoury Isabel Cardona Sam J. Daniel
Program	Otolaryngology- Head and Neck Surgery
University	Mcgill University
Conference	Canadian Society of Otolaryngology- Head and Neck Surgery
Date of Publication	June 07, 2015

Abstract
Sialorrhea (drooling) is defined as unintentional excessive pouring of saliva from the mouth due to either decrease clearance or excessive production of saliva [1]. It is usually presented in children with chronic neurological disorders. In Children with cerebral palsy (CP) approximately 10 – 38% suffer from sialorrhea which is related to poor oral muscle control leading to decrease clearance of saliva rather than excessive production [2]. Sialorrhea causes medical, clinical and social problems which has a negative impact on the quality of life of children and their families. Sialorrhea is best managed by a multidisciplinary team approach that includes primary health care providers, occupational therapists, dentists, orthodontists, neurologists, and otolaryngologists [3]. Several treatment options to manage sialorrhea include oral motor therapy, behavioral therapy, anticholinergic medication, surgeries and recently intra-glandular Botox (OBTXA) injections. Many studies has shown effectiveness of OBTXA injections into salivary glands for sialorrhea control since reported by Bushara [4]. With the increase use of OBTXA, cases of therapy failure after injections have been reported [5]. One of the main reasons of failure was attributed to the production of neutralizing antibodies against botulinum toxins [6]. Children with neurological disorders require repeated injections to control sialorrhea which raises a concern regarding production of antibodies against OBTXA and failure of therapy. Several treatment strategies have been identified to overcome OBTXA antibodies. However, there are no clear guidelines regarding management of OBTXA resistance. We report a case of a female patient with sialorrhea managed with OBTXA injections into her salivary glands who became a secondary non-responder to discuss the management of OBTXA resistance.

5-2-511	
Title	**Computer Assisted Surgery is an Effective Educational Tool for the Training of Orthopaedic Surgery Residents in Pedicle Screw Placement**
Authors	Ahmed Aoude, Md, M.eng Hamzah Alhamzah, Md, Mph Maryse Fortin Phd, Cat(c) Peter Jarzem, Md, Frcsc Jean Ouellet, Md, Frcsc Michael H. Weber, Md, Phd, Frcsc
Program	Orthopaedic Surgery
University	Mcgill University
Conference	The International Society for the Study of the Lumbar Spine
Date of Publication	June 08, 2015

Abstract
INTRODUCTION: The accurate placement of pedicle screws in vertebral pedicles is very complex and pedicle screw malposition can have significant complications. The training of orthopedic residents in adequate pedicle screw placement is therefore very important. The purpose of this study was to investigate the effectiveness of computer assisted surgery (CAS) as a tool for the training of orthopedic residents in pedicle screw placement. METHODS: A total of 24 orthopedic residents participated in this study. Each resident was randomly assigned to place a screw using the free hand technique (FH) and CAS technique on one of three cadavers (Cobb angles 5°,15° and 67°), at randomly selected thoracolumbar vertebral levels. All residents were blinded to their colleagues' pedicle screw placements and were asked to fill a short questionnaire at the end of the session to evaluate their 247 experience. Computed tomography images were obtained for each cadaver to assess pedicle screw placement accuracy and classified as follows: A) screw completely in pedicle, B) screw outside of pedicle < 2mm, C) screw outside of pedicle 2-4mm, D) screw outside pedicle > 4mm. RESULTS: Five screws were classified as grade a or B (safe zone) and 19 as grade C or D (unsafe zone) using FH in comparison to 15 and 9 using CAS, respectively (p = 0.008). Severe spine deformity (Cobb angle 67°) was associated with lower accuracy using FH (p=0.03). Agreater number of screws were placed in the unsafe zone while using FH in the lumbar spine (p=0.004). The self-reported survey showed that 65% of the residents still preferred using FH. DISCUSSION: CAS improved screw placement accuracy and can be successfully used as an educational training tool for orthopedic surgery residents. However, CAS may need to be more user friendly in order to improve resident's self-perception of its use.

5-2-512	
Title	**Impact of Endotoxin on the Expression of Drug Transporters in the Placenta of Hiv-1 Transgenic (hiv-tg) Rats**
Authors	Ragia Ghoneim Dea Kojovic Micheline Piquette-miller
Program	Pharmaceutical Sciences
University	University of Toronto (school of Graduate Studies)
Conference	Journal of Population Therapeutics and Clinical Pharmacology/canadian Society of Pharmacology and Therapeutics
Date of Publication	June 09, 2015

Abstract
Background: Subclinical endotoxemia has been reported in HIV infected individuals and immune activation may be exacerbated in these patients due to immune dysregulation. As infection- induced inflammation can alter the expression of placental drug transporters, it is plausible that this may be potentiated in HIV pregnant women. Similar to humans the HIV-Tg develops immune disorders and AIDS associated conditions. Therefore, our objective was to examine the impact of low-dose endotoxin on the expression of placental drug transporters in HIV-Tg rats. Methods: 3-5 month pregnant HIV-Tg rats or wild-type littermates (WT) were treated with low dose endotoxin (0.1 or 0.25 mg/kg) on GD18 (n=4-8/group) and placentas harvested 18 hr later. Gene expression was measured using qRT-PCR and serum cytokine levels were measured using ELISA. Results: Following endotoxin administration, there was a dose-dependent increase in pro-inflammatory cytokine levels in both HIV-Tg and WT rats, but to a greater extent in HIV-Tg. Endotoxin administration decreased the expression of Abcb1a, Slco2b1 and Slco4a1 in a dose dependent manner in HIV-Tg but not WT rats. Changes in transporter expression significantly correlated to cytokine induction. Endotoxin was associated with higher expression of Abcg2 in HIV-Tg and WT but only reached significance in HIV-Tg. Abcc3 expression was increased in endotoxin-treated WT but not HIV-Tg. Endotoxin administration did not impose significant changes in the expression of Abcb1b, Abcc1, Abcc2 and Abcc4 in HIV-Tg and WT rats. Conclusion: Our results indicate that the inflammatory response is augmented in HIV-Tg rats following low dose exposure to endotoxin. Immune activation is associated with significant changes in the expression of several drug transporters in the placenta of HIV-Tg rats. Overall, our data suggests that placental transfer of drugs may be altered in the HIV population due to subclinical endotoxemia and other co-existing infections.

5-2-513	
Title	**Acute Stress Decreases Bimanual Psychomotor Performance During Resection of Simulated Brain Tumors**
Authors	Bajunaid K,(1,2) Winkler-schwartz A,(1) Fares J,(1) Baggiani M,(1) Christie S,(4) Alotaibi F,(1,3) Al Zharni G,(1,3) Sabbagh A,(1,3) Azarnoush H, (1) Werthner P,(4) Del Maestro Rf.(1)
Program	Neurosurgery
University	Mcgill University
Conference	Canadian Neurological Sciences Federation
Date of Publication	June 11, 2015

Abstract
Background: Objective methods to assess the influence of significant stress on neurosurgical bimanual psychomotor performance have not been developed. We utilized NeuroTouch, a virtual reality simulator, to answer two questions: 1) What is the impact of significant stress on bimanual psychomotor performance during the resection of a simulated tumor? 2) Does stress influence performance immediately following the stressful episode? Methods: During the resection of simulated tumors uncontrollable 'intraoperative' bleeding occurred, resulting in simulated patient cardiac arrest provided the acute stress episode. Six neurosurgeons, 6 senior and 6 junior neurosurgical residents along with 6 medical students were studied. Evaluated advanced tier 2 metrics were efficiency index, ultrasonic aspirator path length index, suction coordination index and ultrasonic aspirator bimanual forces ratio. Results: The stress scenario significantly decreased the efficiency index of all groups and significantly decreased performance for many groups for suction coordination index and ultrasonic aspirator path length index. Performance in all advanced tier 2 metrics returned to pre-stress levels in post stress resection scenarios. Conclusions: Our results are consistent with the concept that acute stress initiated by severe intraoperative bleeding significantly decreases bimanual psychomotor performance during the acute episode but had no significant influence on immediate post stress operative performance.

5-2-514	
Title	**Pure Immature Teratoma of the Ovary: 30-year Experience of a Single Tertiary Care Center**
Authors	Ahmad Alwazzan Md, Robert Lotocki Md, Frcsc , Shaundra Popowich Md, Frcsc Erin Dean Md, Frcsc, Christine Robinson Md, Frcsc, Alon Altman Md Frcsc
Program	Obstetrics and Gynaecology (gynaecology Oncology)
University	University of Manitoba
Conference	Goc's 36th Annual General Meeting
Date of Publication	June 12, 2015

Abstract

Objective the aim of this study was to evaluate clinicopathologic characteristics, treatment outcome and reproductive function in women diagnosed with ovarian immature teratoma. Our standard chemotherapy regime is currently Cisplatenium/Etoposide (EP), creating a unique opportunity to evaluate this protocol in ovarian immature teratomas. Material and Methods: This study is a Retrospective analysis. Between 1983 and 2013 twenty-seven women older than 18 years with ovarian immature teratoma stages IA to IIIC were identified and included in this study. Patients were treated at one institution; Health Sciences Center, Women hospital, Winnipeg, Manitoba, Canada Result: The median age at diagnosis was 27.0 years (range: 18–36 years). Twenty-two (82%) presented with FIGO stage I disease, three (11%) had stage II, and two patients (7%) had stage III disease. The histologic grade distribution was: grade I in nine patients (33%), grade II in three patients (11%), and grade III in fifteen patients (56%). Initial management was surgical for all patients: 3 (11%) hysterectomy and bilateral salpingo-oophorectomy, 1 (4%) cystectomy only, and 23 (85%) unilateral salpingo-oophorectomy. Twenty-one (78%) patients received adjuvant therapy. The median follow up was 60 months (range 36-72 months). One patient recurred (histological grade 3) 6 months after surgery and had a complete clinical response to 4 cycle of EB chemotherapy. 12 patients reported an attempt to conceive resulting in 10 pregnancies. (8 post chemotherapy). Conclusion: Ovarian immature teratoma is a curable disease. Fertility sparing surgery should be offered. Adjuvant treatment with cisplatinum-based chemotherapy, typically with BEP, is still considered the standard in stages greater than stage Ia grade 1. EP as a primary chemotherapy regime for early or advanced stage disease is an effective treatment with minimal side effects and high tolerability. This is the first published study examining EP as a primary treatment modality for immature teratoma. Further studies are needed to strengthen these findings.

5-2-515	
Title	**Malignant Transformation of Mature Cystic Teratoma (mct): 30-year Experience of a Single Tertiary Care Center**
Authors	Ahmad Alwazzan Md Robert Lotocki Md, Frcsc , Shaundra Popowich Md, Frcsc Erin Dean Md, Frcsc, Christine Robinson Md, Frcsc, Alon Altman Md Frcsc
Program	Obstetrics and Gynaecology (gynaecology Oncology)
University	University of Manitoba
Conference	Goc's 36th Annual General Meeting
Date of Publication	June 12, 2015

Abstract

Objective: to review our experience with this rare disease and describe our management modality and the outcome. Material and Methods:. From January 1983 to December 2013, 13 patients with malignant transformation arising in ovarian MCT were treated at the Division of Gynecologic Oncology in the university of Manitoba.Demographic characteristics, symptoms, signs, stage, mode of therapy, and results of follow-up were reviewed retrospectively Results: Median age at diagnosis was 53 years (range 25-65) years. The most common presenting symptom was a palpable mass 9 cases. Squamous cell carcinoma was found in 38% (5 cases), adenocarcinoma in 15% (2 cases), anaplastic carcinoma in 8%(1case), and papillary thyroid carcinoma in 38% (5 cases). 8 cases were stage I, 2 cases were stage II, and 3 cases were stage III.All patients underwent surgery. Five patients received adjuvant treatment with platinum-based chemotherapy +pelvic radiation. Four patients had recurrent disease (2 squamous cell carcinoma and 2 adenocarcinoma). Three patients died of disease after recurrence. The median follow up period of the entire patient population was 60 months, with a 3 year overall survival of 76%. Conclusion: Malignant transformation of MCT is large ovarian tumors that mainly occur in patients in their 5th and 6th decades of life. Often present as incidental pathologic findings after surgery for MCT. Squamous cell carcinoma (SCC) has traditionally been the most common pathology, however in our series, we found that papillary thyroid carcinoma was equally common.Platinum-based chemotherapy, with pelvic radiation, in early stage (including stage IA) and locally recurrent disease should be offered. Advanced stages and mucinous adenocarcinoma represents a poorer prognosis despite adjuvant treatment. In patients with papillary thyroid carcinoma, conservative surveillance in early stage and adjuvant total thyroidectomy with radioactive iodine treatment in advanced stage disease appears to be an effective treatment.

5-2-516	
Title	**Bioinformatic Analysis of Pathways Mediating Clusterin Functions in Kidney Cells Under Normoxia and Hypoxia**
Authors	Ghida Dairi, Qiunong Guan, Anne Haegert, Colin Collins, Chris Ong2, Martin Gleave, Chris Nguan and Caigan Du
Program	Experimental Medicine
University	The University of British Columbia
Conference	9th Annual Lorne D.sullivan Lectureship an Research Day
Date of Publication	June 16, 2015

Abstract

Background: Clusterin (CLU) is a chaperone-like protein and contributes to the resistance of the kidney to ischemia-reperfusion injury (IRI), but its pathways are not fully understood. This study investigated CLU-mediating pathways in kidney cells by using bioinformatics analysis. Materials and Methods: CLU null renal tubular epithelial cells (TECs) expressing human CLU cDNA (TEC-CLUhCLU) or empty vector (TEC-CLU-/-) were exposed to hypoxic condition (1% O2). Transcriptome profiling of these cells under both hypoxia and normoxia was performed using gene expression microarray, and the signaling pathways was mapped using Ingenuity pathway analysis. Results: Expression of human CLU in CLU null kidney cells increased cell survival under hypoxia, and promoted cell growth but inhibited migration under normoxia. Bioinformatic analysis showed that under hypoxia, more cell survival in TEC-CLUhCLU cells compared to TEC-CLU-/- cells was associated with HIF-1α-PI3k/AKT signaling (up-regulation of CTMP and ARNT) and with activation of endoplasmic reticulum (ER) stress-unfolded protein response (UPR) (up-regulation of IRE1, XBP1 and CHOP). Under normoxia, the promotion of cell growth or cell cycle progression in TEC-CLUhCLU cells compared to TEC-CLU-/- cells was related to down-regulation of p21/CIP1 and 14-3-3∂ in PI3K/AKT and of PAC1 in ERK/MAPK signaling, while the suppressed migration of TEC-CLUhCLU cells was correlated with down-regulation of VCL and/or up-regulation of GSK3 in PI3K/AKT and PKC-α Conclusion: CLU in kidney cells promoted the cell proliferation, restored cell cycle progression and inhibited cell migration under normoxia mainly through PI3K/AKT, and increased cell survival under hypoxia through activated ER stress/UPR in addition to PI3K/AKT signaling.

5-2-517	
Title	**Examining the Potential for Vitamin D Deficiency in Young Saudi Women Living in Canada: A Qualitative Approach**
Authors	Student Presenter (first Author): Reem Alomari , University of Saskatchewan Supervisor (second Author): Dr. Susan Whiting
Program	Master
University	University of Saskatchewan
Conference	International Institute for Qualitative Methodology/15th Thinking Qualitatively Workshop Series
Date of Publication	June 16, 2015

Abstract

More than a billion people worldwide may suffer from vitamin D deficiency or insufficiency. The purpose of this study was to examine the risk for vitamin D deficiency in a sample of young Saudi women living in Canada by exploring their knowledge, attitudes, and practices. Health professionals with experience in both Canada and Saudi Arabia acted as key informants. This study examined topics related to the knowledge of vitamin D sources, feelings regarding the importance of vitamin D, and practices indicating if knowledge and attitudes were being implemented. The study was conducted in Canada. Eight Saudi women living in Canada for no more than 5 years, between the ages of 18- 45 were recruited. Ten health professionals presenting physicians, nutritionists and nurses agreed to participate. Preliminary data show that Saudi women showed a limitation in their knowledge about the sources of vitamin D, supplementations, and food fortifications. They had limited sun exposure due to long winter in Saskatoon and culture reasons for wearing hijab. Health professionals recommended increase awareness about vitamin D. In depth analysis is ongoing. This work when completed should add to research regarding vitamin D status in Saudi women who are living in a country such as Canada.

5-2-518	
Title	**Does Hospital Discharge Within the First Two Days Following Total Hip & Knee Arthroplasty Increase 30-days Readmission?**
Authors	Mohammed Alattas1,3, Stephane Bergeron2, Laura M Epure2, Olga L Huk1,2, David J Zukor1,2, John Antoniou1,2
Program	Orthopedic
University	Mcgill University
Conference	Canadian Orthopaedic Association Annual Meeting
Date of Publication	June 17, 2015

Abstract

NTRODUCTION: The average length of in-hospital stay after total joint arthroplasty has decreased in recent years through the use of improved postoperative clinical pathways. However early hospital discharge has been suggested to increase unplanned readmission rates. The aim of the present study was to query the National Surgical Quality Improvement Program (NSQIP) database to compare the 30-day readmission rates between patients discharged by postoperative day two to those discharged between days three and four. The secondary objectives were to compare patient characteristics, intraoperative variables, and postoperative complications between the two groups. METHODS: The NSQIP database is the first nationally validated, risk adjusted, outcomes based program, collecting data on preoperative risk factors, intraoperative variables, and 30-day postoperative mortality and morbidity outcomes for patients undergoing major surgical procedures. Using the Current Procedural Terminology (CPT) codes we selected from the 2011 and 2012 NSQIP database, the patients who underwent elective primary total knee arthroplasty (TKA, CPT 27447) and total hip arthroplasty (THA, CPT 27130). We excluded all patients who underwent bilateral procedures, those with operative times under 25 and over 300 minutes, and those with incomplete or incongruous demographic information. Furthermore patients with a length of hospital stay over four days were excluded. Atotal of 29,000 patients with TKA and 19,441 patients with THA met our selection criteria and were used for analysis: 6,585 TKAs / 6,428 THAs discharged between 0-2 days and 22,415 TKAs / 13,013 THAs discharged between 3-4 days. Patient demographics, comorbidities, intraoperative variables, 30-day postoperative complications as well as 30-day readmission rates were compared between the two groups. Multivariate logistic regression analysis was used to assess the length of hospital stay as a risk factor for postoperative complications and 30-day readmission rate. RESULTS: Patients in the early discharge groups were significantly younger. The incidence of all recorded patient co-morbidities was lower in the early discharge groups with histories of COPD, dyspnea, hypertension, a previous stroke, and angina within a month prior to surgery reaching statistical significance. Some 21.9% of THA patients and 17.3% of TKA of patients in the late discharge group received a postoperative blood transfusion compared to 8.6% and 7.0% respectively in the early discharge group. All recorded postoperative complications had lower rates in the early discharge groups, without reaching any statistical significance compared with the late discharge groups. The unplanned 30-day readmission rate was significantly lower in the patient group discharged prior to day 3 (2.3% vs. 3.7% for THA, p<0.0001 and 2.85% vs. 3.68% for TKA, p<0.0001). Multivariate regression analysis identified a length of stay of 3-4 days as a risk factor for unplanned 30-day hospital readmission only in the THA group (OR 1.58 p<0.0001). CONCLUSION: These results demonstrate that early hospital discharge does not increase 30-day readmission rate following total joint arthroplasty. This finding is validated by the use a large multi-institutional database over a recent two-year period. Given that the demand for joint arthroplasty procedures continues to increase there has been a significant focus on expediting recovery for appropriate patients in attempt to reduce costs and improve patient outcomes. Discharge within the first two postoperative days for risk stratified younger patients appears to be safe without increases in hospital readmission or postoperative complications.

5-2-519	
Title	**Does Warming Up Improve Surgical Outcome in Total Hip Arthroplasty?**
Authors	Asim M.makhdom. Md, Msc, Abdulaziz Almawi. Md, Frcsc, Dylan Tanzer Bsc, Michael Tanzer. Md, Frcsc
Program	Orthopaedics
University	Mcgill University
Conference	Canadian Orthopaedic Association
Date of Publication	June 18, 2015

Abstract

Purpose: Many professionals, such as athletes, musicians and singers typically warm up before their performance to decrease errors, reduce the time to achieve the task and improve performance. In the surgical feild, the concept of warming up has been primarily examined before conducting laparoscopic procedures and has shown that warming up can result in enhancing surgeon's technical, cognitive, and psychomotor performance. The aim of this study is to investigate the effect warming up on intraoperative outcomes when performing cementless total hip arthroplasty (THA). We hypothesized that THAs following a "warm up procedure" would result in a better intraoperative results as compared to THAs done without a warm up procedure. Methods: We retrospectively reviewed all patients with primary osteoarthritis who underwent primary cementless THA using identical implants and performed by the senior author (MT) between 2009-2014. The surgical case order was randomly determined and only the first two consecutive cases during each day were included in the study. The patients were divided into 2 groups, Group 1 (first case during the day) and Group 2 (second case during the day). The first case of the day served as the "warm up procedure" while the second case of the day was the post-warm up case. Patients' demographics, operative time, stem alignment, cup abduction and anteversion angles, postoperative leg length discrepancy (LLD), femoral stem canal fill, femoral offset and hip center of rotation were reviewed. These variables were compared between the groups. Chi-square, Student t test and Pearson correlation coefficients were used for the statistical analysis. Results: A total of 82 patients were eligible for analysis and divided equally into group 1 (n=41) and group 2 (n=41). There was no significant difference between the groups in terms of patients' age, BMI (body mass index) and gender (P>0.05). We found no statistically significant difference when we compared cup abduction and anteversion angles, femoral offset, post operative LLD, stem alignment, hip center of rotation and femoral stem canal fill between the two groups (P>0.05). The mean operative time was significantly higher in Group 2 (78 minutes) when compared with Group 1 (71 minutes) with P =0.03. BMI was significantly correlated with operative time (p=0.017), but no correlation was found with cup abduction and anteversion angle, LLD, femoral offset and stem alignment (P>0.05). Conclusion: Warming up prior to performing surgery does not make a difference for the intraoperative results of primary cementless THA when performed by an experienced arthroplasty surgeon. However, these results may not reflect its effect on procedures that require fine motor skills or done by less experienced surgeons.

5-2-520	
Title	**Interface Design Models Based on Psychological Theories**
Authors	Ghdeer Tashkandi
Program	Health Informatics
University	Dalhousie University
Conference	Ishimr 2015
Date of Publication	June 25, 2015

Abstract

1. Introduction Patient portals websites facilitate interaction between physicians and patients, empower and engage patients to participate in the decision making process [1]. Despite being useful tools, they frequently fail to realize their full potential due to usability issues related to user interface (UI) design. Poorly designed interfaces may lead to stress, confusion, frustration, mistranslation of knowledge, and eventual abandonment of the application [2]. AUI can be designed using general UI design guidelines, but it might not be tailored towards user's perceptual and cognitive abilities and health care needs. Such personalization can be achieved by integrating psychological theories that concentrate on users' needs and cognition. User-centric (UC) model is concerned about knowing the users' needs, goals, and what are the requirements needed to fulfill their goals [2,3]. Cognitive load (CL) model is mainly about the human short-term memory that might affect the human ability to memorize or complete a certain task, improve the productivity, usability, and benefit from the application [4,5]. The objective of this research is to integrate UC and CL models in UI design of a patient portal application and study its impact on user's satisfaction and experience. 2. Methods General UI guidelines were gathered from the literature review. UI design specifications were then derived from UC and CL models. These specifications were integrated with general UI guidelines to create two individual and comprehensive sets of UI specifications. These were used to implement two patient portal UI prototypes based on the two psychological theories (i.e. UC and CL). Although both UI prototypes, encompass similar features in terms of task specification, system and interface functionality, the actual representation of these features is different and in accordance to the two sets of specifications. Acognitively-based usability testing such as Think Aloud Protocol will be used to gather user feedback on the two prototypes [6]. 3. Results Two models for UI design were created based on UC and CL theories. The UC interface exhibit a background picture, personal photo and information about the patient in the header section; which make it more personalized and user oriented. Presentation of information is done in a table format to facilitate the user's needs and goals. On the other hand, CL model included less information on each page and used color coding to connect categories and subcategories together. It also contains more visualization and navigational options of data to reduce the cognitive load on users. 4. Conclusions UI specifications based on two psychological theories were used to design and develop the two interfaces for a patient portal. The impact of these theories on the acceptability and usability of the interfaces will be studied through a usability study. The study will also enable us to compare the two theories in regard to the user's satisfaction and preferences in UI design of a health care application. Usability testing will be done with patients to gather their feedback and compare the two models in regard to ease of use, screen layout design and navigation, and overall satisfaction of users. References [1] Urowitz S, Wilijer D, Dupak K, Kuehner Z, Leonard K, Lovrics E, et al. Improving Diabetes Management with a Patient Portal: Qualitative Study of a Diabetes Self-Management Portal. Journal of Medical Internet Research. 2012; 14(6). [2] Johnson CM, Johnson TR, Zhang J. Auser-centered framework for redesigning health care interfaces. Journal of Biomedical Informatics. 2005; 38: p. 75-87. [3] Makina T, Sazilah S. User Interface and Interaction Design Considerations for Collaborative Learning Using Augmented Reality Learning Object. Software Engineering and Computer Systems. 2011;: p. 179-187. [4] Cooper G. Research into Cognitive

Load Theory and Instructional Design at UNSW. Sydney: School of Educational Studies, the University of South Wales; 1998. [5] Hasler BS, Kersten B, Sweller J. Learner Control, Cognitive Load and Instructional Animation. Applied Cognitive Psychology. 2007; 21(6): p. 713-729. [6] Bergstrom JCR, Olmsted-Hawala EL, Chen JM, Murphy ED. Conducting Iterative Usability Testing on a Web Site: Challenges and Benefits. Journal of Usability Studies. 2011; 7(1): p. 9-30.

5-2-521	
Title	**Effect of Sclerotin Depletion on Fracture Healing in the Mouse Model**
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Program	Orthopedic Surgery
University	Mcgill University
Conference	Aoa
Date of Publication	June 25, 2015

Abstract

Purpose: Sclerostin is a secreted glycoprotein that inhibits the intracellular Wnt signaling pathway, which when inactivated bone formation is stimulated. This stimulation has been proven in fracture studies, showing larger and stronger calluses with accelerated fracture healing, both in sclerostin knockout and sclerostin antibody injection models. The effects of these two mechanisms have not been compared to assess the accurate effect of the Scl-Ab injections. Therefore we designed a study to compare the effect of sclerostin depletion (sclerostin knockout) and inhibition (Scl- Ab injection). Methods: 10-week-old male SOST knockout (KO) (N=20) and Wild-type (WT) (N=40) mice underwent insertion of a tibial intramedullary pin after which a midshaft tibial osteotomy was performed. The mice were divided into three groups: SOST KO (N=20), WT with Scl-Ab injection "intravenous dose of 100mg/kg weekly" (N=20) and WT with saline injection (N=20). Each group was managed and sacrificed according to the specified protocol (Fig.1). Results: Both Scl-Ab and KO groups showed significantly increased trabecular bone volume/ total volume at the fracture site compared to the saline group at all time points and also showed no significant difference between them (except at 28 days postoperative) (Fig.2). On biomechanical testing the Scl-Ab and KO groups showed significant increased strength in stiffness at days 14, 28 and 35 compared to the saline group (Fig.3). Discussion and Conclusion: Scl-Ab injections showed promising results, which were comparable to the complete depletion of sclerostin, especially at earlier stages of the healing process and thus completing the process of healing at an earlier time point.

5-2-522	
Title	**Factors Predicting Prolonged Operative Time for Individual Surgical Steps of Robot-assisted Radical Prostatectomy (rarp): A Single Surgeon's Experience**
Authors	Abdullah M. Alenizi1,3, Roger Valdivieso1, Emad Rajih1, Malek Meskawi1, Cristian Toarta1, Marc Bienz1, Mounsif Azizi1, Pierre Alain Hueber1, Hugo Lavigueur-blouin1, Vincent Trudeau1, Assaad El-hakim2, Kevin C. Zorn1
Program	Robotic Urology
University	Université de Montréal
Conference	Canadian Urological Association
Date of Publication	June 29, 2015

Abstract

Introduction and Objectives: Acquiring robotic skills is not a simple task for residents and fellows as it is demonstrated by the lengthy learning curve. Despite the use of simulation, a standardized robotic prostatectomy curriculum has yet to be established. In order to demonstrate a benchmark to aim for during apprenticeship we describe the time required to complete each step of our surgical technique. We also sought to evaluate preoperative risk factors that would predict a prolonged surgical step. Methods: We retrospectively identified patients who underwent RARP, performed by an experienced robotic surgeon at a single institution (CHUM). Duration of steps and baseline characteristics were recorded. Amultivariable logistic regression model was performed to predict factors of prolonged individual steps. Results: Inmultivariable analysis, obesity was a significant predictor of prolonged operative time (OT) in: docking (Odds Ratio [OR]: 1.96), urethral division (OR: 3.13) and vesico-urethral anastomosis (VUA) (OR: 2.63). Prostate volume was also a significant predictor of longer OT in: dorsal vein complex ligation (OR: 1.02), bladder neck division (OR: 1.03), pedicle control (OR: 1.04), urethral division (OR: 1.02) and VUA (OR: 1.03). Finally, the presence of a median lobe was a predictor of a prolonged bladder neck division (OR: 5.03). Only obesity (OR: 2.56) and prostate volume (OR: 1.04) were predictors of a longer overall or time. Conclusions: Obesity and prostate volume were powerful predictors of longer OT time. The presence of a median lobe was a strong predictor of a longer time of bladder neck division. Obesity was a predictor of longer OT of three different steps and prostate volume at TRUS was a predictor in five surgical steps. These results should be taken into consideration when acquiring robotic surgical skills and also should be considered when constructing a learning curriculum.

5-2-523	
Title	**Erectile Function Recovery After Robotic-assisted Radical Prostatectomy (rarp): Long Term Exhaustive Analysis Across All Preoperative Potency Categories**
Authors	Abdullah M. Alenizi1,2, Marc Bienz1, Emad Rajih1, Naif Al-hathal1, Kevin C. Zorn1, Assaad El-hakim1
Program	Robotic Urology
University	Université de Montréal
Conference	Canadian Urological Association (cua)
Date of Publication	June 29, 2015

Abstract

Objective: to evaluate erectile function recovery following robotic-assisted radical prostatectomy according to preoperative SHIM score stratification. Materials and Methods: We prospectively collected data on 250 consecutive patients who underwent RARP by a single fellowship-trained Robotic urologist (AEH) between October 2006 and October 2012. We excluded 36 patients because of lack of preoperative SHIM score. All patients had a minimum follow up of 2 years. Patients were divided into 4 groups according to their preoperative SHIM score: group one with normal potency (SHIM 22-25), group two with mild ED (SHIM 17-21), group three with mild-moderate ED (SHIM 12-16) and group four with moderate-severe ED (SHIM 1-11). Patients were followed at 3,6,9,12,18,24 months intervals and twice yearly thereafter. SHIM questionnaire and EHS score were collected at each visit. Potency was defined as successful penetration during intercourse with or without PDE5-I (EHS score 3-4). Results: After exclusions, 214 patients were evaluated. The number of patients in Group 1, 2,3 and 4 were 95, 59, 26 and 34, respectively. At 3, 6, 9, 12, 18, 24 months, SHIM scores and potency rates were statistically higher for those with better preoperative SHIM score ($p<0.05$ table 1), Potency rates at 24 months for groups 1 to 4 were 95.5%, 55%, 50%, and 28%, respectively ($p<0.001$, table 2). Conclusion: For proper patient counseling and better prediction of erectile function recovery after RARP, it is important to stratify patients according preoperative SHIM scores.

5-2-524	
Title	**Uroflow Stop Test and Potency Recovery: A Surrogate for Pelvic Floor Integrity Post Robotic-assisted Radical Prostatectomy**
Authors	Alenizi, Abdullah M.1; Bienz, Marc1; Rajih, Emad 1; Alesawi, Anwar 1; Al-hathal, Naif1; Benayoun, Serge1; Lebeau, Thierry1; Zorn, Kevin C.1; El-hakim, Assaad1
Program	Urology
University	Université de Montréal
Conference	Canadian Urology Annual Meeting
Date of Publication	June 29, 2015

Abstract

Introduction and Objectives: We recently showed that the ability to completely stop urine flow during voiding, measured objectively by uroflowmetry at the time of catheter removal (uroflow Stop Test) can predict early urinary continence recovery following RARP. Our objective is to evaluate the relation between uroflow stop test and early potency recovery after RARP. Methods: Inthis prospective observational cohort, data was collected on 108 patients operated by a single surgeon (AEH). Eighty patients had a positive uroflow Stop Test (group one) and 28 had a negative Stop Test (group two). Patients were followed for a minimum of 2 years. Covariates included age, BMI, IPSS and SHIM scores, PSA, tumor stage, prostate volume, nerve sparing status and EBL. Results: Preoperative characteristics were comparable between both groups except nerve sparing and PSA which were statistically higher in group one ($p<0.05$). Early 3- and 6-months recovery of erectile function was significantly higher in group one. Potency rates in group one and two at 1, 3, 6, 9, 12, 18 and 24 months were 25% vs. 14.3% (p 0.241), 54.5% vs. 18.5% (p 0.001), 55.4% vs. 18.5% (p 0.001), 56.4% vs. 36% (p 0.084), 66.6% vs. 50% (p 0.141), 65.5% vs. 56% (p 0.404) and 73.2% vs. 57.7% (p 0.160) respectively. Uroflow Stop Test was independent predictor of early potency recovery on multivariate regression analysis at 3 and 6 months [OR 6.70 (95%CI: 1.36-32.97, p0.019) and or 5.46 (95%CI: 1.84-16.20, p0.025), respectively]. Conclusion: Uroflow Stop Test is a simple, yet strong predictor of early potency recovery following RARP.

5-2-525	
Title	**Mitochondria Targeting Hydrogen Sulphide Protects Renal Epithelial Cells from Hypoxia Re-oxygenation Injury**
Authors	Ghaleb Aboalsamh, Ian Lobb, Manujendra Saha, Matthew Whiteman, Patrick P. Luke, Alp Sener
Program	Transplant
University	The University of Western Ontario
Conference	Cua 2015
Date of Publication	June 29, 2015

Abstract

Introduction: Kidneys procured from donors after circulatory death (DCD) often results in delayed graft function (DGF) in over 30% of recipients. DGF has been shown to increase morbidity and worsen short and long term graft survivals. Hydrogen sulphide (H2S), has been shown to have many physiological effects including a significant protective effect on renal transplantation induced IRI, at least in animal models. Although several H2S donor molecules are in existence, many have significant systemic effects, thus potentially precluding them from clinic use. Given the importance of mitochondria in the control of cell death, our objective was to determine if a newly derived mitochondrial targeting H2S donor molecule (AP39) would be more efficacious in protecting porcine kidney tubular epithelial cells (LCC-PK1) against IRI compared to the commonly used H2S donor (GYY 4137). We hypothesized that AP39 would be more efficacious than GYY4137. Methods: LCC-PK1 were exposed to warm ischemic stress (Glucose and nutrient deficient media, 37°C, in a hypoxia chamber at 1% O2 saturation) for 24 hours, without any treatment (control), with AP39 or GYY4137, followed by 24hr of re-oxygenation (21% O2 in a glucose and nutrient rich media at 37°C). Cells were subsequently assessed for cell viability, apoptosis, necrosis, reactive oxygen species (ROS) production and for the expression of mitochondrial derived pro-apoptotic and anti-apoptotic genes. Results: After warm hypoxia re-oxygenation, both AP39 and GYY4137 showed better cell viability when compared to control. However, AP39 was significantly superior (P<0.002). AP39 limited cell death after hypoxia to levels similar to normoxic samples with a significant reduction in cell apoptosis. Atwo-fold greater decline in ROS in favor for 200nM AP39. AP39 increased the anti-apoptotic protein Bcl-2 and reduced the pro-apoptotic protein BID but did not reduce Bax. Conclusion: This is the first in vitro study testing the effects of mitochondrial targeting H2S donor molecules on renal epithelial cells in warm IRI. AP39 appears to have a more potent protective effect against hypoxia compared to GYY4137, and this benefit appears to be attributable to reduction in apoptosis. Further studies using animal models are needed to validate these novel findings

5-2-526	
Title	**The Effect of Stone Prevention Counseling at the Initial Consultation on 24-hour Urine Collection Results (“clinic Effect”)**
Authors	Tarek Alzahrani, Daniela Ghiculete, Kenneth T. Pace, Jason Y. Lee, R. John D’a. Honey
Program	Urology
University	University of Toronto
Conference	Canadian Urology Association (cua) 2015
Date of Publication	June 29, 2015

Abstract

INTRODUCTION and OBJECTIVES: 24-hour urine collections are integral to long-term management of patients with recurrent urolithiasis and identifying treatable metabolic risks for urolithiasis (stone prevention). However, by the time a patient is seen in follow-up, some stone prevention counseling is likely to have occurred, altering the second 24-hour urine collection results “clinic effect”. At our institution, patients bring a 24-hour urine collection to the initial assessment for extracorporeal shockwave lithotripsy (SWL); they are then given general dietary advice and brochures about stone prevention before knowing the initial 24-hour urine results. Our objective was to determine if there are differences in 24-hour urine parameters between the first 2 consecutive samples collected if stone prevention counseling did or did not occur at the time of the initial 24-hour collection, reflecting a possible “clinic effect”. METHODS: Data for 24-hour urine collections for new patients were reviewed. There were two groups of patients: those who had stone prevention counseling at the time of the initial 24-hour collection and those who did not. Patients were included if they had at least two complete collections, not more than 6 months apart. The rates of abnormal 24-hour urine collection parameters (e.g. low urine volume, hypercalciuria, hypocitraturia, hyperoxaluria, urinary pH, and hyperuricosuria) were determined by comparing the percentage of normal and abnormal results between the two samples. RESULTS: We collected data from 225 patients (79 had counseling at initial presentation and 146 did not). Percentages of patients with urinary lithogenic risk factors at base line were similar in both groups. There was a significant improvement in the urine volume in the repeated samples in both groups ($P < 0.01$). The rate of abnormal oxalate and citrate levels in patients who had counseling decreased in the repeated collections but did not reach statistical significance ($P = 0.064$ and 0.052 respectively); this change was not seen in patients who did not get stone prevention counseling. CONCLUSIONS: First 24- hour urine collections prior to counseling are important to pick up some abnormalities such as low fluid intake or hyperoxaluria that could be missed in the second sample due to the “clinic effect”. Improvements in the 24-hour urine parameters can be noticed even after simple general dietary advice at the initial consultation prior to the results of the 24-hour urine parameters are known.

5-2-527	
Title	**Feasibility of Planned Mini-laparotomy and Adhesiolysis at the Time of Robotic-assisted Radical Prostatectomy in Patients with Prior Major Abdominal Surgery: Preliminary Results**
Authors	Emad Rajih Naif Alhathal Abdullah Alenizi Assad Elhakim
Program	Robotic Urology
University	Université de Montréal
Conference	Canadian Urology Association
Date of Publication	June 30, 2015

Abstract

Introduction and Objective: Robotic assisted radical prostatectomy (RARP) has overwhelmingly been used and many surgeons have abandoned the open approach. Herein we report our experience on the feasibility of completing radical prostatectomy robotically at time of planned open adhesiolysis for prior major abdominal surgery with lower midline scar. Methods: We searched our prospectively collected RARP database of 250 patients performed by a single surgeon (AEH) for patients who underwent planned open mini-laparotomy at time of RARP. We included all demographic, intraoperative and perioperative data. Descriptive analysis was used. Results: A total of 5 patients (group 1) had planned open mini-laparotomy and adhesiolysis at time of RARP among 250 RARP patients (group 2). All patients had prostatectomy completed robotically. The mean values (ranges) of patients’ demographics for group 1 versus 2 were as follows: Age 61.8 years (54-69) vs. 60.2 years (41-74); PSA 5.2 ng/ml (1.75-7.90) vs. 7 (0.7-26.4); BMI 30.7 (24.3-45.3) vs. 27.9 (19.5-46); prostate volume 41.5 cc (30.8-54) vs. 35.8 (12-101). Mean operative time (skin to skin) was 245 min (190-280) compared to 224 min , estimated blood loss 410 ml (300-650) compared to 317 ml (50-1000), and hospital stay was 2.8 days compared to 1.2 days in group1 and 2, respectively. There were no intraoperative complications in group 1. Postoperatively, there were one prolonged ileus which resolved spontaneously and one myocardial infarction treated medically. Conclusion: Robotic completion of radical prostatectomy after open adhesiolysis is feasible. This approach maintains the minimally invasive advantages of RARP, despite a slightly longer hospital stay. Furthermore it precludes the need to refer patients with previous major abdominal surgery for radiation therapy or to surgeons with more experience in open radical retropubic prostatectomy.

5-2-528	
Title	**Histopathological Examination of the Foreskin After Circumcision for Clinically Suspected Bxo in Children: is It a Waste of Resources?**
Authors	Alyami, Fahad; Odeh, Raken; Heidari Bateni, Zhoobin; Farhat, Walid A.; Koyle, Martin
Program	Pediatric Urology
University	University of Toronto
Conference	The 70th Annual Meeting of the Canadian Urological Association Meeting
Date of Publication	June 30, 2015

Abstract

Introduction and Objectives: Circumcision is one of the most widely practiced procedures in the world. It is primarily for religious and cultural reasons. One of the unique medical indications for circumcision is Balanitis xerotica obliterans (BXO). The natural history of the disease in adults is well documented; progression of the disease can cause meatal stenosis and urethral stricture. In paediatric patients the natural history and the disease progression is not well documented and it is based on few reports in the literature. The appearance of the meatus at circumcision for BXO has been used by surgeons to predict the pathological diagnosis. Our aim is to assess the concordance between the clinical and pathological diagnosis and to assess the need for sending the foreskin for pathological examination. Methods: A retrospective analysis of the medical records and histopathological findings of 70/420 boys who underwent circumcision with the foreskin sent for pathology due to the clinical suspicion of BXO from June 2005 to June 2013. The clinic visit notes and operative notes were reviewed for the age, presenting symptoms, previous medical treatments, intraoperative and postoperative management, subsequent outcome and follow up. Results: The median (range) age of children was 9.4 (3-20) years. All the children who had circumcision for presumed BXO diagnosis were symptomatic, 48 (68.5%) boys had spraying, 32 (46%) boys had straining, 49 (70%) had ballooning of the foreskin, 11 (16%) had urinary retention, 10 (14%) had history of UTIs and 23 (33%) had recurrent balanoposthitis. Balanitis xerotica obliterans (BXO) was confirmed in 53 out of 70 foreskins (76%). In 13 and 6 of the 53 BXO, the histopathological examination revealed focal BXO and early BXO respectively. There was suspicion of BXO in the physical examination in 47 (88%) out of the 53 patients. Chronic inflammation was reported in 15 (21%) patients and normal foreskin was found in 2 (3) patients. Follow up date will be updated. Conclusions: Inour series in the majority of the cases the clinical diagnosis correlated with the pathological diagnosis, which questions the need for sending the foreskin for pathological assessment. Knowing the diagnosis of BXO

is important and can effect the management and follow up and can help counseling the patients and their parents. If we can suspect the diagnosis of BXO clinically we should follow the patient closely without the need to send the foreskin for pathological assessment and this can reduce the overall cost on the health care system.

5-2-529	
Title	**Immediate Loading of 2-unsplinted-implant Mandibular Overdenture: Disease-oriented and Patient-oriented Outcomes**
Authors	Elham Emami (1), D. Cerutti-kopplin (2), A. Alesawy (1,3), N. Audy (1), M. Menassa (1), R. Durand (1), N. Kodama (4), B. P. Singh (5), P. Rompre (1), P. De Grandmont (1)
Program	Oral Health Science
University	Université de Montréal
Conference	Network for Canadian Oral Health Research (ncohr)
Date of Publication	July 30, 2015

Abstract

Immediate Loading of 2-unsplinted-implant Mandibular Overdenture: Disease-oriented and Patient-oriented Outcomes Elham Emami (1), D. Cerutti-Kopplin (2), A. Alesawy (1,3), N. Audy (1), M. Menassa (1), R. Durand (1), N. Kodama (4), B. P. Singh (5), P. Rompre (1), P. de Grandmont (1) 1-Université de Montréal, Montréal, Canada, 2- Federal University of Rio Grande do Sul, Porto Alegre, Brazil, 3- Saudi Arabian Cultural Bureau in Canada SACB, Ministry of Higher Education, 4- Okayama University, Okayama, Japan, 5 Saraswati Dental College, Lucknow, India. Current evidence supports the feasibility and predictability of immediate loading protocols but there is a wide variation in reported implant failure rates for unsplinted implants ranging from 0 to 18% (1). Data on immediately loaded implants in the edentulous jaw is scarce (2). Objectives: to assess disease-oriented and patient-oriented outcomes of immediately loaded implants in individuals wearing a 2-unsplinted-implant mandibular overdenture for up to two years. Materials and Methods: This project is the Phase I trial: 1-group, pre-post design nested in 2 versus 3 implants study in edentulous participants. The inclusion criteria were as following: (1) being at least 18 years old. (2) Wearing complete dentures in both arches for >1 year. (3) Sufficient bone in the anterior mandibular region for placement of 3 implants (min.: Φ: 3.5 -4.1 mm & L: 10mm), without bone graft. The Exclusion criteria were: (1) Having any contraindication for implant surgery (ex.: uncontrolled systemic disease, radiation therapy, heavy smoker, etc.). (2) Being unable to follow study procedures or give informed consent. (3) Inability to achieve primary stability during implant surgery (i.e. insertion torque >35 Ncm and resonance frequency analysis (ISQ) ≥60). According to these criteria 18 edentate individuals (mean age 62.39 ± 7.65 years) have received a 2-implant (unsplinted) mandibular overdenture through an immediate loading protocol. The McGill Denture Satisfaction Instrument, a VAS instrument assessing expectations and the OHIP-20 questionnaire were used to evaluate patients' outcomes at baseline, 2 weeks, 1 and 4 months. Socio-demographic and personality trait data were obtained using the Revised NEO Personality Inventory and a self-administered questionnaire. Outcome variables: • Disease-oriented outcomes: Crestal bone level changes using direct (bone probing) and indirect (digital subtraction radiography) methods measured at baseline (T0), 1-year (T1), and 2-year (T2) follow-up. • Patient-oriented outcomes: The participants' satisfaction scores were evaluated by using the McGill Denture Satisfaction Instrument (3,4). • Exploratory variables: Socio-demographic characteristics were measured by using a standardized self-administered questionnaire. Statistical analysis: • Descriptive statistics used to examine participants' characteristics, frequency, distribution of the variables, and to analyze the data. • Mixed models for repeated measures (Brunner Langer) used to compare participants' satisfaction scores and crestal bone level changes (direct and indirect methods) at different times points. Level of significance was set at $p \leq 0.05$.

Results: The participants had a wide range of expectations regarding the immediate loading protocol. Expectations included short-term positive impact on aesthetics (83.3 %) and social life (55.7 %). Other expectations included negative effects on comfort (5.6%), the ability to chew (11.1 %) and to clean their lower denture (11.1%). At 4 months, the immediate loading protocol had met most patients' expectations regarding aesthetics (94.4%), the ability to chew (83.3%), ability to speak (61.1%), comfort (94.4%), the ability to clean their lower denture (88.9%) and their social life (88.9%). Implant failure rate: 8.3% (per implant) and 11.1% (per patient, n=2) at 2-year follow-up. There was no statistically significant difference regarding Implants stability and change in bone levels between 3 implants at T0, T1, T2. Implant survival rate was 91.7% at 2-year follow-up appointment. Moreover, None of the non-loaded implants failed. Conclusion: No statistically significant differences were found regarding annual failure rates and changes in bone level between loaded and non-loaded implants. Patient-oriented outcomes improved over 2 years. Two immediately loaded unsplinted implants assisting a mandibular overdenture appeared to fulfill the criteria for early implant success considering both disease-oriented and patient-oriented outcomes. Refrences: 1. Schimmel M, Srinivasan M, Herrmann FR, Müller F. Loading protocols for implant-supported overdentures in the edentulous jaw: A systematic review and meta-analysis. Int J Oral Maxillofac Implants 2014; 29 Suppl:271-86. 2. Gallucci GO, Benic GI, Eckert SE, Papaspyridakos P, Schimmel M, Schrott A, Weber HP. Consensus statements and clinical recommendations for implant loading protocols. Int J Oral Maxillofac Implants 2014; Suppl:287-90.

3. Awad MA, Feine JS. Measuring patient satisfaction with mandibular prostheses. Community Dent Oral Epidemiol 1998; 26(6):400-5. 4. de Grandmont P, Feine JS, Taché R, Boudrias P, Donohue WB, Tanguay R, Lund JP. Within-subject comparisons of implant-supported mandibular prostheses: psychometric evaluation. J Dent Res 1994; 73(5):1096-104.

5-2-530	
Title	**Development of Nanostructured Hydrogel for Spatial and Temporal Controlled Release of Active Compounds**
Authors	Shaker Alsharif, Xavier Banquy
Program	Pharmaceutical and Analytical Scinces
University	Université de Montréal
Conference	Icppm 2015 : 17th International Conference on Pharmacology and Pharmaceutical Medicine
Date of Publication	August 06, 2015

Abstract

Controlled drug delivery technology represents one of the most rapidly advancing areas of science in which chemists and chemical engineers are contributing to human health care. Such delivery systems provide numerous advantages compared to conventional dosage forms including improved efficacy, and improved patient compliance and convenience. Such systems often use synthetic polymers as carriers for the drugs. As a result, treatments that would not otherwise be possible are now in conventional use. The role of bilayered vesicles as efficient carriers for drugs, vaccines, diagnostic agents and other bioactive agents have led to a rapid advancement in the liposomal drug delivery system. Moreover, the site avoidance and site-specific drug targeting therapy could be achieved by formulating a liposomal product, so as to reduce the cytotoxicity of many potent therapeutic agents. Our project focuses on developing and building hydrogel with nanoinclusion of liposomes loaded with active compounds such as proteins and growth factors able to release them in a controlled fashion. In order to achieve that, we synthesize several liposomes of two different phospholipids concentrations encapsulating model drug. Then, formulating hydrogel with specific mechanical properties embedding the liposomes to manage the release of active compound.

5-2-531	
Title	**Non-traumatic Head and Neck Emergencies: A Bird's View**
Authors	Algharras A1,2, J Nair2, C Torres3, J Chankowsky3, R Del Carpio3 1 Unaizah College of Medicine, Qassim University, Saudi Arabia, 2mcgill University Health Center, Montreal, Quebec, 3montreal General Hospital ,mcgill University Health Centre, Montreal, Quebec
Program	Radiology
University	Mcgill University
Conference	American Society of Head and Neck Radiology: Ashnr
Date of Publication	September 09, 2015

Abstract

Institutions: 1 Unaizah College of Medicine, Qassim University, Saudi Arabia, 2McGill University Health Center, Montreal, Quebec, 3Montreal General Hospital ,McGill University Health Centre, Montreal, Quebec Purpose: 1) to have an understanding about the common and uncommon but potentially life threatening conditions of the head and neck. 2) to discuss the CT and MRI findings of these emergency conditions and the relevance in patient management. Approach/Methods: Retrospective analysis of the cases retrieved from PACS database (from 2005-2015) was done. Findings/Discussion: The findings included, but were not limited to the following: 1) Neck infections that may compromise the airway and their extensions like retropharyngeal abscess, Ludwig angina and necrotizing fasciitis. 2) Orbital pathologies like pseudo tumor and carotid cavernous fistula which acutely compromise vision. 3) Acute inflammatory conditions like angioedema and calcific longus colli tendinitis. 4) Sinusitis and their complication including intracranial. 5) Vascular conditions like Lemierre's syndrome. Summary/Conclusion: Knowledge of the imaging findings of common and common conditions of the head and neck is essential for prompt diagnosis and optimal treatment. Categories: HEAD and NECK, Deep Spaces, Soft Tissue Neck

5-2-532	
Title	**Tears Are Precious: Imaging of Lacrimal Apparatus**
Authors	Authors: J Nair1, Dupuis I1, Algharras A1,2, C Torres1, J Chankowsky1, R Del Carpio1 Institutions: 1mcgill University Health Center, Montreal, Quebec, 2unaizah College of Medicine, Qassim University, Saudi Arabia
Program	Radiology
University	Mcgill University
Conference	American Society of Head and Neck Radiology: Ashnr
Date of Publication	September 09, 2015

Abstract

PURPOSE: 1) to discuss detailed anatomy of the lacrimal gland and apparatus. 2) Describe the CT and MRI findings of the common and uncommon pathologies. 3) to discuss the importance of imaging with respect to management of patients. DESCRIPTION: Pathologies discussed would include but not limited to: A) Lacrimal gland: 1) Inflammatory: a) Dacryoadenitis, b) Sarcoidosis c) Orbital inflammatory pseudo tumor 2) Neoplastic: a) Pleomorphic adenoma, b) benign reactive lymphoid hyperplasia, c) oncocytoma, d) adenocystic carcinoma, e) adenocarcinoma, f) malignant lymphoma g) squamous cell carcinoma B) Lacrimal apparatus: 1) Inflammatory: a) Dacryocystitis, b) Dacryocystocele 2) Neoplastic: a) Lacrimal sac and duct invasive squamous cell carcinoma, b) mucoepidermoid carcinoma c) lymphoma, d) melanoma and e) granulomatous pseudo tumors SUMMARY 1) Lacrimal gland and lacrimal drainage apparatus can be involved by a wide range of pathologies.Careful examination and systematic imaging approach with knowledge of the pathologies is the key to successful patient management.

5-2-533	
Title	**Quality of Life (qol) Following Sequential Boost Regimen (sb) with Helical Tomotherapy Intensity Modulated Radiotherapy (htimrt) in Patients with Squamous Cell Carcinoma of the Head and Neck Cancer (scchn)**
Authors	Mohammed Y. Almaghrabi, Md. Horia Marginean, Md Ms. Samy El-sayed, Md, Phd
Program	Radiation Oncology
University	University of Ottawa
Conference	Caro (canadian Association of Radiation Oncology)
Date of Publication	September 10, 2015

Abstract

QUALITY of LIFE (QOL) FOLLOWING SEQUENTIAL BOOST REGIMEN (SB) with HELICAL TOMOTHERAPY INTENSITY MODULATED RADIOTHERAPY (HTIMRT) in PATIENTS with SQUAMOUS CELL CARCINOMA of the HEAD and NECK CANCER (SCCHN). Introduction: Radiotherapy delivery using IMRT in SCCHN have become the standard of care for many plausible reasons despite the lack of detailed toxicity data. Randomized data now exists as to the significant impact on the incidence of mucositis. Little data exists as to the impact on QOL. Purpose: This analysis is part of a larger study profiling the toxicity of HTIMRT. The objectives of this analysis is to evaluate the impact of HTIMRT on QOL of patients treated with HTIMRT and to compare that to what is reported in the literature using 3D conformal XRT. Material and method: This prospective study was carried out from 2006 – 2012. HTIMRT delivered in 70 Gy in 35 fractions (XRT) of SB regimen. Patient-rated EORTC QLQ-C30 and EORTC QLQ H&N35 scores has been collected pre-radiotherapy, 2/4/6/7/8 weeks during the treatment, 2/4/6/8/12/24 weeks post-radiotherapy. Scoring procedures was done using EORTC QLQ-C30 scoring manual, 3rd edition. Clinically relevant changes defined as moderate and large changes in quality of life (> 10 scores). Adjustment was performed with pre-therapy scores. Result: QOL Data for 87 evaluable patients were available including pre-therapy baseline (BL) questionnaires. 48 % received concomitant chemotherapy (CRT). ForEORTC QLQ-C30 module, the impact of HTIMRT during radiotherapy was large (>20 scores) at 4th week (on role functioning, appetite loss, and constipation subscales) and 6th week (on Global QOL, social functioning, fatigue, nausea/vomiting, and pain subscales). Significant post-treatment recovery (>10 improved-scores) occurred at 2 weeks (for appetite loss subscales), 4 weeks (for Social functioning, fatigue, pain, and constipation subscales), and 6 weeks (for global QOL, physical functioning, cognitive functioning, role functioning, and nausea/vomiting subscales). Global QOL improved to a level above BL by 24 weeks. All subscales return to BL values except for role functioning, appetite loss, and financial difficulty subscales. Disease-specific problems measured by EORTC QLQ H&N35 divulged the most unpleasant scores. Symptoms such as swallowing, senses, social eating, sexuality, dry mouth, sticky saliva, nutritional supplement, and feeding tube subscales were not reaching BL values. Saliva changes (dry mouth, and sticky saliva subscales) and nutritional supplement had highest post-treatment symptoms scores. During post-treatment time, global QOL, physical functioning, and fatigue subscales tend to be worse after chemo-radiotherapy, with exception of global QOL at 24 weeks evaluation time. Conclusion: Our study confirms the expected outcome of the impact of HTIMRT on QOL. Even though the pattern of worsening followed by recovery is typical and compatible with the reported literature but the rate of recovery seems higher in our study. Detailed analysis will be presented at the meeting. Longer term results will be presented in future meetings.

5-2-534	
Title	**Comparing Rural and Urban Aboriginal People's Oral Health in Canada**
Authors	Basem Danish, Mary Ellen Macdonald, and Christophe Bedos Oral Health and Society Division, Faculty of Dentistry, Mcgill University
Program	Oral Health and Society Division
University	Mcgill University-dentistry
Conference	14th Conference of the Canadian Rural Health Research Society (crhrs): Better Health for Rural Canadian: From Evidence to Practice
Date of Publication	September 21, 2015

Abstract

BACKGROUND: Traditionally, Aboriginal people in Canada lived in rural Aboriginal specific communities. While many today have moved to urban areas for reasons such as education and employment, about half still remain in rural settings. Unlike non-Aboriginal Canadians, many Aboriginal Canadians receive free dental care through the Federal Non-Insured Health Benefits (NIHB) program. Despite this coverage, Aboriginal Canadians have poorer oral health than non-Aboriginal Canadians. While rural/urban oral health inequalities generally exist in Canada, it is yet unclear if oral health inequalities exist between rural and urban Aboriginal Canadians themselves. OBJECTIVES: Our aim is to examine available literature to provide a portrait of the similarities and difference between rural and urban Aboriginal Canadians in terms of oral health status, oral health behaviours, access to oral health care services, and social determinants of oral health (SDOH). METHODS: Authors performed a scoping review using the revised Arksey and O'Malley framework to answer the question: Are there oral health inequalities between rural and urban Aboriginal Canadians? FINDINGS: Studies comparing oral health of rural and urban Aboriginal people are scarce. Rural First Nations children have two times higher rates of dental decay than urban First Nations children. In terms of risk factors to poor oral health, prevalence of smoking and diabetes is higher among rural First Nations than urban First Nations. Unhealthy dietary habits are generally more common in rural areas. Initially, there was no tradition for oral hygiene in rural communities, but recent oral health promotion programs have improved oral hygiene practices. Although NIHB covers more rural than urban Aboriginal people, there is a problem with retention of dentists in rural settings. ForSDOH, social exclusion and racism are common barriers to access oral health care in urban areas. Crowding is reported in both settings but seem to be more in rural areas. Education and income are higher in urban than rural Aboriginal populations. CONCLUSION: Oral health interventions focusing on Aboriginal populations should not follow a one size fits all approach. Determinants of Aboriginal people's oral health differ in rural and urban settings. Further research is needed to illuminate these differences and the reasons behind them.

5-2-535	
Title	**Public Knowledge About Pad: The Gap is Larger Than We Thought**
Authors	Musaad Alhamzah, Mbbs, Mph1, 2 Christo El Morr, Phd 3 Courtney Cole 6 Peggy Ng, Phd, Pstat 4 Mohammed Al-omran, Md, Msc, Frcsc1,2,5
Program	Vascular Surgery
University	University of Toronto
Conference	37th Canadian Society for Vascular Surgery Annual Meeting
Date of Publication	September 25, 2015

Abstract

Objective: Unlike coronary heart disease, peripheral arterial disease (PAD) has not been a major focus in population-based cardiovascular health programs and campaigns. The aim of our study was to examine the knowledge of PAD among the general public. Methods: We conducted a cross-sectional, interview-based survey of 240 adults at multiple public locations in Toronto, Canada, from September, 2014-October 2014. Apre-designed and validated questionnaire was used to examine participant knowledge of PAD within the following domains: signs and symptoms, risk factors, preventive measures, treatment options, and possible complications. Descriptive analysis and correlation tests were carried out. Results: Of the 240 participants surveyed, 65% were women, 44% were ≥60 years old, and 69% had completed post-secondary education (Table 1). Although 21% of the participants had heard about PAD, only 6% knew someone else with the disease. Participants were able to identify at least one PAD knowledge domain variable in the following frequencies (Table 2): signs and symptoms (14%), risk factors (14%), preventative measures (17%), treatment options (14%), and possible complications (15%). Knowing a patient with PAD was associated with better knowledge of all domains. Conclusion: Our results demonstrate poor overall knowledge of PAD among the general population in Toronto. The public is not aware of the risks of PAD, nor are they aware of measures they can take to prevent PAD. Population-based interventions are urgently needed to increase awareness of PAD among the public.

5-2-536	
Title	**Evaluating Neutral Lipid and Phospholipid Contents of Lipid Droplets in Fibroblast Cells from Patients with Peroxisomal Disorders**
Authors	W. Fallatah, P. Dranchak, Jg. Hacia, Ne. Braverman
Program	Human Genetics
University	Mcgill University
Conference	Ashg 2015
Date of Publication	October 08, 2015

Abstract

Peroxisomes and lipid droplets (LDs) are discrete intracellular organelles that play a significant role in regulating cellular lipid metabolism. While the main function of peroxisome is fatty acid beta-oxidation and ether phospholipid biosynthesis, LD has a critical role in regulating intracellular lipid storage. During cellular stress like starvation the cell can survive by utilizing the fat stored in LDs as a source of energy. Accumulation of LDs has been reported in C. elegans with defective peroxisomal β oxidation (MAOC-1/DHS- 28/DAF-22 genes) and defective peroxisome assembly (PRX10, the ortholog of the human PEX10 gene). LDs also accumulate in liver tissue from mice with defective peroxisome assembly (Pex11α). We previously studied the neutral lipid and phospholipid contents of LDs in peroxisome-deficient Chinese Hamster Ovary (CHO) cells and we found that the neutral lipid content of the LDs is significantly higher in PEX2-null CHO cells during normal cellular growth and under starvation compared to wild type CHO cells. Therefore peroxisomes are likely to play a role in regulating LDs. Our objective of the current study is to evaluate the neutral lipid and phospholipid contents of LDs in fibroblast cell lines from patients with peroxisomal disorders under normal and starvation condition. We are studying LD numbers by their content of either neutral lipids or phospholipids in fibroblast cell lines from patients with defective peroxisome assembly in 13 different PEX genes. We will use the green neutral lipid and red phospholipid specific immunofluorescence staining (LipidTOX™) to compare the contents of LDs between control and PEX gene-deficient fibroblast cell lines under normal and starvation conditions. This study highlights another pathway of intracellular organelle communication between peroxisomes and LDs, and helps us to understand pathophysiology in the peroxisomal biogenesis disorders.

5-2-537	
Title	**Benefit of Intra-arterial Milrinone in Subarachnoid Hemorrhage Patients with Refractory Vasospasm**
Authors	Abdullah Alamri 1,2, a Alturki 1,3, M Angle 1,4, D Tampieri 5, B Lo 1,6, M Lannes1,4, Jeanne Teitelbaum 1,7
Program	Neurology
University	Mcgill University
Conference	13th Neurocritical Care Meeting
Date of Publication	October 09, 2015

Abstract

Introduction: Vasospasm causing delayed ischemic neurological deficit (DIND) remains a leading cause of morbidity and mortality in SAH. Newer therapy has moved away from triple H therapy for DIND, and successful use of milrinone, both IV and IA, has been reported. We report our incidence and rate of success using IA milrinone in patients with refractory vasospasm. Methods: Retrospective single center collection of all patients between January 2006 and January 2015 treated with IA milrinone for vasospasm refractory to the MNI protocol consisting of euvolemia, optimum blood pressure and cardiac output and IV milrinone. Results: 560 patients were admitted for SAH. Mean age was 50 years, median Hunt and Hess score 3 and Fisher 4. Vasospasm was diagnosed in 116 (20.71%). Initial loading dose of milrinone = median 8 mg; initial maintenance dose = median 0.75 mcg/kg/min. Of these, 17 had refractory vasospasm (DIND) despite increased IV milirinone (2 mcg/kg/min). They received a loading dose of IA milrinone of 1-10 mg. An additional IA dose in the same range was required in 4/17. Balloon angioplasty was performed in 2 cases (improvement in 1) and stenting was performed in 4 (improvement in 2/4). After IA therapy, the IV maintenance dose was 0.75-2 mcg/kg/min. Vascular improvement was significant in 10, partial in 1, minimal in 2 and absent in 4. Clinical improvement was seen immediately in 13/17, with no side effects related to milrinone. Six of 17 patients had ischemia on CT. Median mRS at discharge was 3, and at 3 months was 2. However, 5 patients were lost to follow-up. Conclusion: Intra-arterial milrinone appears to be effective in this small retrospective series of refractory vasospasm after SAH. Both angiographic vasospasm and clinical picture improved, with permanent ischemia in only 6 of the 17 patients (35.3%). Further prospective study is warranted.

5-2-538	
Title	**Benefits of Intra-arterial Milrinone in Subarachnoid Hemorrhage Patients with Refractory Vasospasm**
Authors	Abdullah Al Amri1,2, a Alturki1,3, D Tampieri4, M Angle5, B Lo6, M Lannes5, Jeanne Teitelbaum.
Program	Neurosurgery
University	Mcgill University
Conference	Neurocritical Care 2015
Date of Publication	October 10, 2015

Abstract

Introduction: Vasospasm causing delayed ischemic neurological deficit (DIND) remains a leading cause of morbidity and mortality in SAH. Newer therapy has moved away from triple H therapy for DIND, and successful use of milrinone, both IV and IA, has been reported. We report our outcomes using IA milrinone in patients with refractory vasospasm. Methods: Retrospective single center collection of all patients between January 2006 and January 2015 treated with IA milrinone for vasospasm refractory to the MNI protocol consisting of euvolemia, optimum blood pressure and cardiac output and IV milrinone. Results: 560 patients were admitted for SAH. Mean age was 50 years, median Hunt and Hess score 3 and Fisher 4. Vasospasm was diagnosed in 116 (20.71%). Initial loading dose of milrinone = median 8 mg; initial maintenance dose = median 0.75 mcg/kg/min. Of these, 17 had refractory vasospasm (DIND) despite increased IV milirinone (2 mcg/kg/min). They received a loading dose of IA milrinone of 1-10 mg. An additional IA dose was required in 4/17. Balloon angioplasty was performed in 2 cases (improvement in 1) and stenting was performed in 4 (improvement in 2/4). After IA therapy, the IV maintenance dose range was 0.75-2 mcg/kg/min. Angiographic improvement was significant in 10, partial in 1, minimal in 2 and absent in 4. Clinical improvement was seen immediately in 13/17 (%), with no side effects related to milrinone. Six of 17 patients had ischemic changes on CT. Median mRS at discharge was 3, and at 3 months was 2 and 5 patients were lost to follow-up. Conclusion: Intra-arterial milrinone appears to be effective in this small retrospective series of refractory vasospasm after SAH. Both angiographic vasospasm and clinical picture improved, with permanent ischemia in only 6 of the 17 patients (35.3%). Further prospective study is warranted.

5-2-539	
Title	**Prenatal Diagnosis of Intrahepatic Porto-systemic Shunt in Intrauterine Growth Restricted (iugr) Fetus: A Case Report**
Authors	Babic I., Md1,5, Ferretti E., Md 2,4,5, Jimenez-rivera C.,md3,4,5, Moretti F., Md1,5, Gruslin A., Md1,5
Program	Maternal - Fetal Medicine
University	University of Ottawa Postgraduate Medical Education
Conference	25th World Congress on Ultrasound in Obstetrics and Gynecology 11 - 14 October 2015, Montréal, Canada
Date of Publication	October 12, 2015

Abstract

Congenital intrahepatic porto-systemic shunts are abnormal communications between hepatic and portal vessels. We present a case of antenatally diagnosed porto-hepatic shunt in IUGR fetus with cardiomegaly. A37 years old primiparous woman was referred at 32 weeks of gestation for evaluation of fetal growth. Ultrasound revealed IUGR fetus with growth on 3rd centile and abnormal Middle Cerebral Artery (MCA) Doppler, suggestive of cerebroplacental redistribution. Fetal liver was enlarged with abnormal circulation consisting of tortuous dilated intrahepatic vessels originating from the umbilical vein and giving off several branches with no clear end point communication sites (Figure 1). Amniocentesis for karyotype was offered but declined. TORCH was negative. Fetal Echocardiography showed mild cardiomegaly due to hyperdynamic flow state or fetal anemia. Weekly ultrasound assessments revealed stable intrahepatic vessel diameter and overall unchanged appearance through the course of the pregnancy. Labor was electively induced at 38 weeks of gestation. The outcome was a vigorous female neonate weighing 2880. Postnatal abdominal ultrasound confirmed mild hepatomegaly with abnormally dilated middle hepatic vein branch communicating with left portal vein, representing intrahepatic porto-systemic shunt (Figure 1). The neonatal course was uneventful and the child was discharged home at two weeks of life. One year follow-up ultrasound showed spontaneous resolution of intrahepatic porto-systemic shunts. The infant is currently 22 months old, healthy with normal growth and development. In conclusion, our case of IUGR was probably related to intrahepatic shunt with increased preload causing cardiomegaly, and not driven by hypoxia. IUGR fetuses without chromosomal or placental related pathologies should have thorough evaluation of the hepatic circulation to detect crucial congenital malformations, provide proper counselling as well as antenatal and postnatal management.

5-2-540	
Title	**Implant Survival Rate in Two Reconstructive Techniques Utilized in Head and Neck Rehabilitation: An Observational Study**
Authors	Authors: Huzaimi, Adel., Nayar, Suresh., Osswald, Martin., Chuka, Richelle., O'connell, Daniel., Harris Jeffrey., Seikaly Hadi., Wolfaardt, Johan
Program	Dentistry
University	University of Alberta
Conference	62nd Annual Meeting American Academy of Maxillofacial Prosthodontics Orlando, Florida- October 17-20, 2015
Date of Publication	October 17, 2015

Abstract

Purpose: The purpose of the study was to assess osseointegrated dental implant survival in two head and neck reconstructive techniques employed at the Institute for Reconstructive Sciences in Medicine (iRSM) and the University of Alberta in Edmonton, Alberta, Canada. Both techniques utilized prefabricated fibular free flap (FFF) jaw reconstruction for head and neck rehabilitation (HNR). Material and Methods: Ethics approval was obtained from the Health Research Ethics Board at the University of Alberta. Aretrospective chart review was conducted of cases that were surgically reconstructed with the Alberta Reconstructive Technique (ART) and a modification of the prefabricated fibula technique pioneered by Dr. Dennis Rohner (Rohner reconstruction), between 2010 and 2014. Twenty-one ART reconstructions were completed between August 2011 and November 2014 and 5 Rohner reconstructions were completed between April 2010 and April 2013. The objective of the study was to assess osseointegrated implant survival rates (defined by implants that were present within the FFF reconstruction at the time of observation) in the two reconstructive techniques utilized. Results: A total of 81 osseointegrated implants were installed in the ART group and 25 in the Rohner reconstruction group. In the ART group, a total of fourteen (17%) implants failed after primary installation; of those, 13 (93%) failed due to flap failure and one implant failed (7%) due to loss of osseointegration. The average time to flap failure was 386 days (range 182-758) and 344 days for the single implant failure. In the Rohner group, 1 (4%) implant failed due to loss of osseointegration 121 days after primary installation. Conclusion: Current observation of osseointegrated implant survival rate in the ART and Rohner reconstruction techniques was 83% and 96%, respectively. Further longitudinal studies need to be carried out to assess the long-term implant survival rate data for these reconstructive techniques.

5-2-541	
Title	**Clinical Impact of Reducing Ptv Margins During Radiation Therapy for Localized Prostate Cancer: Early Outcomes of a Two Stage Prospective Trial**
Authors	Yasir Alayed, Tim Craig, Charles Catton, Padraig Warde, Peter Chung, Andrew Bayley, Tony Panzarella, Cynthia Menard
Program	Radiation Oncology
University	University of Toronto
Conference	Astro 2015
Date of Publication	October 17, 2015

Abstract

Purpose: We sought to determine if a rational reduction in PTV margin with the introduction of advanced image-guidance would reduce dose to organs at risk and improve toxicity and quality of life outcomes in patients receiving external beam radiotherapy for low or low-intermediate risk prostate cancer. Patients and Methods: Patients were enrolled on a prospective two-stage clinical trial, whereby patients in stage 1 were treated with standard PTV margins (10 mm A/RL/SI and 7mmP) and data was collected to determine the appropriate PTV margin for stage 2. Uncertainty data acquired in stage 1 was used to numerically model the change in the delivered dose and determined that a 5 mm AP/SI, 3 mm LR margin was the smallest margin that provided acceptable coverage. This reduced margin was used prospectively for treatment in stage 2. All patients received 78Gy in 39 fractions, and toxicity (CTCAE) and quality of life (Expanded Prostate Cancer Index Composite) data was collected prospectively at baseline, 1 month, 3 months, and 1, 2, and 5 years for both stages. Results: 55 patients were accrued to stage 1 and 23 patients were accrued to stage 2 from 2007 to 2011, with a median follow up of 5.7 and 3.9 years for stages 1 and 2, respectively (Minimum 4 and 3 years). PTV margin reduction reduced the irradiation volume of organs at risk ($p < 0.0001$). Average rectal wall V70 improved from 24.3% in stage 1 to 16.3% in stage 2 and the average bladder wall V70 improved from 24.3% to 14.7%. The rate of grade 2 or higher acute GI toxicity was 16% in stage 1 and 9% in stage 2, and the rate of grade 2 or higher acute GU toxicity was 33% and 17% respectively (p=ns). There was no statistically significant difference in EPIC quality of life scores or late toxicity at 3 months, 1 year and 2 years. Based on the observed difference in acute toxicity, the number needed to treat (NNT) to prevent one grade 2 or higher acute toxicity is 13 for GI and 7 for GU toxicity. Conclusions: A prospective reduction in PTV margin enabled by the integration of planning MRI and daily CBCT resulted in a significant reduction in dose to organs at risk. This may translate into a reduction in grade 2 or more acute toxicity, and must be confirmed with a larger cohort of patients.

5-2-542	
Title	**A Systematic Review on the Use of Oral Agents in the Management of Constipation in Adult Patients with Parkinson's Disease**
Authors	Abdullah Alqaraawi1, 2, Rosemary Martino3, Yvonne Tse1, Louis Wc Liu1 1 Division of Gastroenterology, Department of Medicine, University Health Network, University of Toronto & 2king Faisal Specialist Hospital – Riyadh, Saudi Arabia, 3department of Speech Language Pathology, University of Toronto
Program	Gastroenterology Motility
University	University of Toronto
Conference	American College of Gastroenterology Annual Meeting 2015
Date of Publication	October 18, 2015

Abstract

Background: • Parkinson's disease (PD) is estimated to affect 315/100,000 of the population with an increased prevalence with age. • Constipation is the most common reported non-motor symptom in PD and has been postulated to precede the diagnosis of PD by many years. • Constipation negatively impacts the quality of life of PD patients. • Different mechanisms of constipation in PD has been postulated, including slow transient, decrease rectal contraction with straining, weak abdominal strain, and dyssynergic defecation. Objective: • We aim to conduct a systematic review of the literature to evaluate the effect of oral agents on constipation in adult PD patients. Methods: • a comprehensive literature search in Ovid MEDLINE, Embase, Cochrane Central Register of CT, Cochrane Database of SR and CINAHL was performed up to April 2015 using various MeSH terms and keywords of "Parkinson" & "constipation" alone and in combinations. Two authors (AA, YT) independently reviewed all citations. • Citations were screened and excluded if no abstract (R1), non-English papers (R2), non-human studies (R3), tutorial editorial, letter to the editor, comment, narrative review, conference proceedings, case report (R4), non-adult patients (R5), not all has PD (R6), the focus of treatment is not constipation (R7) & not a study on an oral agent intended to treat constipation (R8). Disagreements were resolved with another author (LL). (See PRISMA flow diagram) • Full text of eligible citations were reviewed and synthesized qualitatively by AA and reviewed by YT. Disagreements were resolved with another author (LL). Data were extracted from final accepted articles. • Methodological quality of studies was assessed using Cochrane's Risk of Bias using a rating of high, low, or unclear. Discussion: • Studies are heterogeneous with small numbers of patients and a high risk of bias. • Treatment effects cannot be certain but osmotic agents may improve bowel motion frequency. • Well-designed studies are lacking. Conclusion: • Well-designed prospective RCT evaluating treatment options of constipation in PD patients are needed to optimize the management of this challenging population. References: • Ashraf W, Pfeiffer RF, Park F, Lof J, Quigley EM. Constipation in Parkinson's disease: objective assessment and response to psyllium. Movement disorders : official journal of the Movement Disorder Society. 1997;12(6):946-51. • Cassani E, Privitera G, Pezzoli G, Pusani C, Madio C, Iorio L, et al. Use of probiotics for the treatment of constipation in Parkinson's disease patients. Minerva gastroenterologica e dietologica. 2011;57(2):117-21. • Eichhorn TE, Oertel WH. Macrogol 3350/electrolyte improves constipation in Parkinson's disease and multiple system atrophy. Movement disorders : official journal of the Movement Disorder Society. 2001;16(6):1176-7. • Zangaglia R, Martignoni E, Glorioso M, Ossola M, Riboldazzi G, Calandrella D, et al. Macrogol for the treatment of constipation in Parkinson's disease. Arandomized placebo-controlled study. Movement disorders : official journal of the Movement Disorder Society. 2007;22(9):1239-44. • Ondo WG, Kenney C, Sullivan K, Davidson A, Hunter C, Jahan I, et al. Placebo-controlled trial of lubiprostone for constipation associated with Parkinson disease. Neurology. 2012;78(21):1650-4. • Jost WH, Schimrigk K. Long-term results with cisapride in Parkinson's disease. Movement Disorders.12(3):423-5. • Sullivan KL, Staffetti JF, Hauser RA, Dunne PB, Zesiewicz TA. Tegaserod (Zelnorm) for the treatment of constipation in Parkinson's disease. Movement Disorders.21(1):115-6. • Liu Z, Sakakibara R, Odaka T, Uchiyama T, Uchiyama T, Yamamoto T, et al. Mosapride citrate, a novel 5-HT4 agonist and partial 5-HT3 antagonist, ameliorates constipation in parkinsonian patients. Movement disorders : official journal of the Movement Disorder Society. 2005;20(6):680-6. • Tateno F, Sakakibara R, Yokoi Y, Kishi M, Ogawa E, Uchiyama T, et al. Levodopa ameliorated anorectal constipation in de novo Parkinson's disease: The QL-GAT study. Parkinsonism Relat Disord. 2011;17(9):662-6.

5-2-543	
Title	**Dosimetric Impact of the Acuros Advanced Dose Calculation Algorithm on Internal Mammary Chain Nodal Covergae in Breast Cancer Patients Receiving Adjuvant Regional Nodal Irradiation**
Authors	Majed Alghamdi, Ivo Olivotto, Rao Khan, Tien Phan
Program	Radiation Oncology
University	University of Calgary
Conference	American Society for Radiation Oncologists (astro)
Date of Publication	October 19, 2015

Abstract

Objective: Several trials have shown a survival benefit from adjuvant regional nodal irradiation (RNI) that included the internal mammary chain (IMC). This has lead to more frequent inclusion of the IMC nodes from intercostal spaces 1 to 3 during RNI. An important goal in radiotherapy planning is to maximize target coverage while minimizing dose to nearby vital structures such as the heart and lungs. The IMC nodes are located in a complex anatomical site surrounded by tissues of highly variable densities thus posing a dosimetric challenge. Recent availability of the advanced dose calculation algorithm Acuros XB (AXB) has provided an opportunity to accurately calculate dose to the IMC nodes. This study evaluated the dosimetric impact of using AXB to assess IMC doses for patients previously planned with the Anisotropic Analytical Algorithm (AAA) 3D pencil beam convolution algorithm. Methods: Twenty patients undergoing adjuvant RNI including the IMCs, between Jan and April 2014 were analyzed. Ten patients had breast conserving surgery and ten patients underwent mastectomy with sentinel lymph node biopsy ± axillary lymph node dissection. All patients received systemic therapy. IMC nodes from intercostal spaces 1 to 3 were contoured as per institutional guidelines. 3D conformal plans were devised using 6 MV and 15 MV photon beams in a 3 field or 4 field arrangements with a mono-isocentre technique. Dosimetric parameters were compared from original plans calculated using AAA 11.0.31 and from plans recalculated using AXB under identical set-up and the same monitor units. IMC nodal coverage using V80%, V90%, V95% and dose heterogeneity were assessed. Original and study treatment plans were calculated using Eclipse software v11 (Varian Medical Systems, Palo Alto, CA.) Results: The IMC nodal contours and target coverage intents were the same between AAA and AXB plan. The V95% and V90% were consistently lower for AXB plans compared to AAA plans (V95 = 82.4% vs. 86.6%; V90% = 93.9% vs. 95.7%, respectively). Heterogeneity was on average 3.3% higher for AXB plans compared to AAA. V80% was similar between AXB and AAA plans (98.7% and 99.1%, respectively) Conclusion: The Acuros XB algorithm has been shown to be a more accurate representation of dose around heterogeneous densities, such as occurs when treating the IMCs during RNI for breast cancer. This study demonstrated that the AAA algorithm consistently overestimated dose to the IMC nodes. Centers using the Acuros XB algorithm for clinical treatment planning, should be aware that IMC target coverage will receive 2%-4% higher dose if applying the same treatment planning goals they would have used with AAA calculations.

5-2-545	
Title	**Saudi Female Nursing Students Sense of Belonging in Clinical Settings: An Interpretive Study**
Authors	Monirah Albloushi Phd(c) Professor Linda Ferguson Rn Phd
Program	Nursing College
University	University of Saskatchewan
Conference	21st Annual Qualitative Health Research Conference
Date of Publication	October 21, 2015

Abstract

Background a sense of belonging is one of the important factors in a student's clinical experience and leads to enthusiasm and a willingness to learn when the student is on a clinical placement. Students who experience a sense of belonging are more likely to have confidence to learn and the ability to ask questions. The literature identified the negative consequences that become apparent with the lack of a sense of belonging on a student's psychological, social, behavioural, and physical well being, as well as the student's competence levels. It has been found that the degree of a sense of belonging is determined by many factors such as preceptorship, duration of clinical placement, and student-staff relationships. Research Objectives to explore and describe the students' sense of belonging on clinical placement and outcomes from the perspective of Saudi nursing students and to identify the factors affecting a student's sense of belonging and the consequences. Research Method Through the Interpretive Description methodology, data were collected by using semi-structured interviews Sittings the study was conducted in three government universities in Saudi Arabia: King Saud University, Princess Norah bint Abdulrahman University, and King Saud bin Abdulaziz University for Health Sciences. Study subjects the total participants were 15 students. Implications This study will explore Saudi female nursing students' sense of belonging experiences from students' perspectives and will help to identify factors that affect student's sense of belonging. Clinical educators and clinical settings will be able to use the findings to design effective clinical experiences and to facilitate the learning process in clinical teaching. This study also will give participants the opportunity to share their positive and negative experience experiences (positive and negative) and make recommendations for future changes.

5-2-546	
Title	**Bizarre Symptoms Due to an Exceptionally Rare Endotracheal Tumor**
Authors	Sultan Qanash Renelle Myers
Program	Sleep
University	University of Manitoba
Conference	Chest 2015
Date of Publication	October 24, 2015

Abstract

INTRODUCTION: Mantle cell lymphoma (MCL) is a subtype of non-Hodgkin's lymphoma. It is most often a very aggressive disease affecting multiple organs including lymph nodes, spleen, liver, gastrointestinal tract and bone marrow. Despite the frequency of extranodal manifestation of MCL, endobronchial involvement is the rarest intrathoracic manifestation even in the presence of advanced disease. CASE PRESENTATION: A 74-year-old gentleman with a previous diagnosis of MCL. He was initially treated by six cycles chemotherapy and continued on maintenance Rituximab. Follow up examination and radiological imaging showed continued remission for 18-months. However, he began having shortness of breath and experiencing a chocking sensation with forward neck flexion, to the point of being unable to sleep. He had a computed tomography of the neck and chest that demonstrated endotracheal nodule arising from the left lateral wall measuring 12x13x13 mm(image-1). Flexible bronchoscopy demonstrated a polypoid lesion projected from the left wall of the proximal part of the trachea and narrowed the tracheal lumen by approximately 50%(image-2). Endobronchial biopsy confirmed the diagnosis of MCL. Chemotherapy was initiated which resulted in rapid tumor response, confirmed in a radiological imaging. DISCUSSION: Endobronchial MCL is exceptionally rare and can be confused clinically with lung cancer, primary tracheal cancers, or other benign endobronchial lesions. It affects middle-aged patients with the median survival ranging from 3-5 years1. Endobronchial lymphoma can be either diffuse submucosal infiltrates originating from hematogenous or lymphangitic spread or localized mass due to direct spread or arising de novo from bronchusassociated lymphoid tissue2. CONCLUSIONS: Endotracheal involvement was rarely reported in newly diagnosed or relapsing MCL. Our case was a relapsing MCL causing a critical airway obstruction, which is exceedingly rare. As most lymphomas respond adequately to systemic chemotherapy and radiotherapy, this may spare the patient a debulking surgical intervention. To our knowledge this is only the second case report of a critical airway lesion from MCL relapse. Reference #1: Verde F, McGeehan A. Endotracheal involvement as an unusual extranodal site of recurrence from mantle cell lymphoma.Radiology Case Reports.[Online] 2008;3:194 Reference #2: Jang M, Choi YW, Jeon SC, Park C, Yoon HJ. Endobronchial non- Hodgkin's lymphoma presenting as an isolated endobronchial mass.Clinical radiology. 2006 Feb;61(2):202-5.PubMed PMID:16439227.pub 2006/01/28.eng

5-2-547	
Title	**Single-centre Analysis of Long Term Effects of Cardiac Support Devices**
Authors	Almufleh A1, Cecere R2, Zingale A3, Giannetti N4.
Program	Internal Medicine
University	Mcgill University
Conference	Canadian Cardiovascular Congress
Date of Publication	October 25, 2015

Abstract

a) Background: Heart failure affects more than 500000 patients in Canada with about 50000 new cases every year and average mortality of 10% per year. Left ventricular remodeling has a central role in development and progression of heart failure. Cardiac Support Devices (CSD) are surgically placed left ventricular diastolic restraint devices which have been studied for their ability to promote reverse remodeling and halt the progression of LV dilation. In this study, we present long-term follow-up for all patients at our institution who either received CSDs or were randomized to the control groups of CSD studies. We assessed NYHA Functional Status, adverse events, frequency of re-hospitalization, echocardiographic measures of reverse remodeling and intervention-free survival defined as sustaining 10 yr or more follow-up with a CSD without need for transplantation, repeat surgery, heart assistance or replacement devices. b) Method/Results: Using a retrospective cohort study design, we reviewed all patients who either had CSD implanted or were randomized to the control group within Acorn CorCap and Paracor device trials in our institution from January 2001-January 2015. Atotal of 10 patients (8 men and 2 women) were reviewed (7 CSD and 3 control) with mean follow-up of 8 years (SD 2.5 years). See table 1. Overall, having a CSD was associated with a trend towards better NYHA class (43% improved vs 0% in control), maintained EF (mean change in EF -0.3% vs -5% in control), lower LV mass index(mean change in LV mass index -16 gm vs +8 in control), more reduction in LVEDV(mean change in LVEDV -36 ml vs –23 in control), and improved intervention-free survival. c) Conclusion: Inour single-centre analysis of long-term outcomes in patients implanted with a CSD, there appears to be no adverse effects. Patients who received a CSD showed improved reverse remodeling and functional status, and

were associated with a reduced need for re-hospitalization or re-intervention. More studies may be warranted to explore the value of CSDs as a therapeutic option in patients with advanced heart failure.

5-2-548	
Title	**Visual Attention, Balance, Mobility, and Xbox Exercise Games**
Authors	Mansour A. Alghamdi, Susan J. Leat
Program	Optometry and Vision Science
University	University of Waterloo
Conference	The Network for Aging Research Inaugural Aging Research Symposium
Date of Publication	October 27, 2015

Abstract

Visual attention, Balance, Mobility and Xbox Exercise Games Studies have shown that visual attention is correlated with certain physical attributes such as balance and mobility and can be improved with training. In this study we are recruiting 30 healthy older adult participants to determine the associations between tests of visual attention, balance and mobility measures, and performance on action video games. Visual attention is measured by two versions of the Useful Field of View (UFOV): A traditional static version and a newly developed dynamic version. In addition, Multiple Object Tracking (MOT) is included as a different visual attention measure. Balance for quiet stance is assessed with a force plate platform with both feet together and on one leg. Afive meter walking test is used for mobility assessment, allowing determination of stride length, stride width, number of steps, and walking speed. Two types of Xbox video games are included which have require more or less visual attention. The relationship between all of these groups of tests will be examined to determine which Xbox video games have better correlation with the measures of visual attention, the associations between different tests of visual attention, mobility and balance, and which types of training might be more effective in future studies.

5-2-549	
Title	**Poorly Differentiated Neuroendocrine Carcinoma of Unknown Primary Site Presenting As Unexplained Hypoxemia: A Case Report and Literature Review**
Authors	Mohhmed Algamdi, Mbbs
Program	Critical Care Medicine
University	The University of Western Ontario
Conference	Chest Journal and Chest Conference 2015
Date of Publication	October 27, 2015

Abstract

SESSION TITLE: Lung Cancer Case Report Posters II SESSION TYPE: Affiliate Case Report Poster PRESENTED ON: Tuesday, October 27, 2015 at 01:30 PM - 02:30 PM INTRODUCTION: Patients with poorly differentiated neuroendocrine carcinoma (PDNEC) usually present with a locally advanced disease or a widespread metastasis. CASE PRESENTATION: A 74-year-old female patient was found to have an incidental pelvic mass. Computed tomography (CT) scan showed small bilateral pulmonary nodules, liver lesions and a right-sided pelvic mass. Pelvic mass biopsy showed a metastatic adenocarcinoma with unknown primary site. After the second cycle of chemotherapy, the patient was admitted to our hospital with prerenal acute kidney injury secondary to decreased oral intake and diarrhea. During hospitalization, hypoxemia with partial response to O2 therapy was identified. Arterial blood gas showed a PaO2 of 51 mmHg, PaCO2 of 29 mmHg and alveolar-arterial gradient of 62 mmHg. Chest film, chest CT scan and ventilation-perfusion scan were unremarkable. Echocardiography revealed severe tricuspid regurgitation (TR) and thickening of the tricuspid valve (TV) leaflets (Fig 1) suggestive of carcinoid heart disease (CHD). Biochemical markers for carcinoid tumor were elevated and otreotide scintigraphy demonstrated liver, cardiac and pelvic mass uptake. Reexamination of the pathology slides revealed positive synaptophysin immunostain suggestive of a neuroendocrine differentiation (Fig 2) with a morphology indicative of a PDNEC. The patient passed away after a course of palliative therapy. She was not a candidate for systemic chemotherapy nor TV replacement due to progressive decline. DISCUSSION: CHD in the setting of PDNEC is extremely rare. Right side heart failure and severe TR characterize severe CHD; both were present in our patient. Severe hypoxemia in the setting of CHD has been previously before. Blick et al and Mottram et al each described a patient with CHD in whom R-L shunt through a patent foramen ovale (PFO) was documented and successfully corrected by surgery. Hart et al reported a case of CHD with a R-L shunt due to a combined PFO and an intrapulmonary shunt. CONCLUSIONS: PDNECs are rarely associated with secretory hormonal syndromes, however, symptoms of such could be the only clue to the diagnosis. Reference #1: Blick DR, Zoghbi WA, Lawrie GM, Verani MS. Carcinoid heart disease presenting as a right to left shunt and congestive heart failure: successful surgical treatment. Am Heart J 1988; 115:201-203. Reference #2: Mottram PM, McGaw DJ, Meredith IT, Peverill RE, Harper RW. Profound hypoxaemia corrected by PFO closure device in carcinoid heart disease. Eur J Echocardiogr. 2008 Jan;9(1):47-9. FREE to VIEW DISCLOSURE: The following authors have nothing to disclose: Mohmmed Algamdi No Product/Research Disclosure Information

5-2-550	
Title	**Training Need for Developmental Pediatrics in Saudi Arabia**
Authors	Basma Al Jabri, Md, Sb-ped Lyn Sonnenberg, Md, Med, Frcpc Debra Andrews, Md, Frcpc
Program	Developmental Pediatrics
University	University of Alberta
Conference	Women & Children Health Institute Research Day
Date of Publication	October 28, 2015

Abstract

Background: Developmental pediatrics (DevPeds) is a core branch of general pediatrics. A1-2 month DevPeds rotation is mandatory in Canada and the United States. Until recently there was no mandated DevPeds rotation in Saudi Arabia; however, in October 2014 this changed. There are few published articles about DevPeds conditions in Saudi Arabia and none about DevPeds training. We evaluated perceived educational needs of practicing Saudi general pediatricians who completed their training in the past five years and current trainees. Methodology: Saudi Arabia trainees who completed pediatric residency training in the last five years (from 2010-2014) or who were still in training were approached for participation through the Saudi Commission of Health Specialties (SCHS). Because many registered Saudi physicians did not give e-mail, both e-mails and text messages with a letter describing study objectives and the survey link were sent out. Results: The response rate was 33% (n=174). Consultant pediatricians (who are in clinical practice more than 2 years after obtaining a Board degree as classified by SCHS) represented 33% of the sample, 12% were specialists (who spent 2 years only in clinical practice after obtaining a Board degree), 15% were subspecialty residents, and 17.5 % were still in training. Forthe whole group: 51% of their practice consisted of developmental conditions. 39% of them believed that they need much more training in this field. Learning opportunities about developmental conditions during residency were available to 55% of the participants. DevPeds training was classified as “important” or “very important” by 95%, and 48% requested to have 2-month rotation during residency training. Conclusion: Practicing pediatricians in Saudi Arabia reported that developmental conditions comprised more than half of their practice, and indicated a need for more DevPeds training in residency. Our study supports a mandatory DevPeds block in pediatric residency training in Saudi Arabia with well-defined training objectives and clear assessment tools of residents’ knowledge and skills.

5-2-551	
Title	**Decision-making Processes for Adopting Non-drug Health Technologies (ndhts) Into Health Organizations: A Literature Review - a Work in Progress**
Authors	Omar Bawhab, Anil Vaidya, Tania Stafinski & Devidas Menon
Program	Phd in Public Health - Health Services and Policy Research/school of Public Health
University	University of Alberta
Conference	Insights’ 15: Focus on Public Health
Date of Publication	October 28, 2015

Abstract

Decision-making processes for adopting Non-Drug Health Technologies (NDHTs) into health organizations: A literature review – a work in progress Introduction Developments in medical sciences have resulted in many Non-Drug Health Technologies (NDHTs). These are challenging health organizations in Canada, where they appear to be adopted in a variety of different ways. Aliterature review is being conducted as the first step to developing a more systematized and uniform adoption of NDHTs into Canadian health institutions. Objective to scope out the exiting literature on structures, processes and outcomes of decision-making on the adoption of new NDHTs. Methods This follows the methods of scoping reviews (1). Asearch strategy has been developed which includes English language sources from six bibliographic databases, published between 2005 and 2015. Modifications to the search strategy have been suggested to increase its relevance, and will be incorporated by the end of September 2015. The search will include searching citations and bibliographies of included studies, grey literature and Health Ministries’ and government agencies’ websites, utilizing Scopus citation count, grey literature database and Google search engine. Utilizing predetermined criteria and data extraction forms, two reviewers will select studies and extract data. Extracted data will be analyzed and summarized qualitatively utilizing thematic analysis and constant comparison technique. Study quality will not be assessed due to the multiple sources of literature. Stakeholder consultations will take place after data analysis. Results Currently, title and abstract scanning is underway, which will be followed by full-text review and data extraction. The search strategy retrieved 1294 papers, of which 969 abstracts have been reviewed and 78 papers selected for full text review. Additional studies will be retrieved from the modified search. Conclusion a summary of existing publicly-available information on how health organizations make decisions on NDHTs will be presented. 1. Arksey H, O’Malley L. Scoping studies: Towards a methodological framework. Int J Soc Res Methodol [Internet]. 2005;19–32. Available from: http://dx.doi.org/10.1080/1364557032000119616.

5-2-552	
Title	**Characterization and Evaluation of Novel β–cyclodextrin Cationic Liposomal Drug Delivery Systems: Efficient Delivery of Poorly Soluble Chemotherapy Agents for the Treatment of Metastatic Melanoma.**
Authors	Waleed Mohammed-saeid1,4, Deborah Michel1, Jackson Chitanda2, Ronald Verrall3, Anas El-aneed1, Ildiko Badea1* 1 Drug Design and Discovery Research Group, College of Pharmacy and Nutrition, University of Saskatchewan, Saskatoon, Saskatchewan, Canada 2 Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, Saskatchewan, Canada 3 Department of Chemistry, University of Saskatchewan, Saskatoon, Saskatchewan, Canada 4 College of Pharmacy, Taibah University, Madinah, Saudi Arabia
Program	Pharmacy
University	University of Saskatchewan
Conference	American Association of Pharmaceutical Scientists (aaps) Annual Meeting 2015
Date of Publication	October 29, 2015

Abstract

Introduction Melphalan, a nitrogen mustard alkylating agent, is clinically used for in-transit melanoma. In addition several clinical trials have been used melphalan in combination with other therapeutic agents as a potential therapy for melanoma metastases management. However, the lipophilic nature of melphalan, the need to use an organic co-solvent, namely ethanol and propylene glycol, and instability of injectable melphalan formulations limited their use to isolated limb perfusion. Thus there is a need for formulation development to maximize the potential of the drug for melanoma therapy. This work focuses on the evaluation of novel lipid-based drug delivery systems composed of phospholipids and a novel β-cyclodextrin-(β-CD) modified cationic lipid (gemini surfactant) [18:1-7N(β-CD)-18:1] [Figure 1]. The β-CD-modified cationic lipid was specifically designed by our group to combine the solubilizing capacity of the β-CD moiety and the cell-penetrating ability of the gemini surfactant. Methods Physiochemical characterization of the novel lipid-based formulations were carried out using particle size distribution, zeta potential measurements, two-dimensional nuclear magnetic resonance spectroscopy (ROESY NMR) and small-angle X-ray scattering (SAXS). MTT assay were used to evaluate the in vitro activates of developed formulation in melanoma cell line (A-375) Results the results show a significant increase in the solubility of melphalan in β-CD-modified cationic lipid dispersion without the need for co-solvent (> 5mg/mL). The β–CD-modified formulations retained positive zeta potential at 4 to 10 fold higher values compared to non-modified systems, enhancing the potential for improved cellular uptake by endocytosis. The particle size measurements showed that all lipid-based formulations had particle size < 250 nm (ranging from 70 to 250 nm) depending on formulation components. This nano-size range can advance the cellular uptake of the drug delivery system by tumor cells. The novel melphalan lipid-based formulations induced apoptosis in two melanoma cell lines (A-375 and MDA-MB-435s) with IC50 values significantly lower than drug alone (> one-fold decrease in IC50 with cationic lipid formulation compared to naked drug). Cell viability assay (MTT assay) showed that the combination of melphalan with [18:1-7N(β-CD)-18:1] gemini surfactant at 1:2 molar ratio (10 μM of drug) was able to induce 70% cell death compared to only 35% cell death when drug used alone. No cellular toxicity was observed for the delivery systems. Conclusion Phospholipid composition and molar ratio influenced the drug delivery efficiency. The highest level of cell toxicity (75% cell death) was observed when a combination of 1,2-dioleoyl-sn-glycero-3-phosphoethanolamine (DOPE):Cholesterol at 5:4 molar ratio was used with drug:[18:1-7N(β-CD)-18:1] 1:2 molar ratio. Further studies to assess the interaction of the drug with β–CD cationic lipid and formulation stability studies are planned. In addition, we will evaluate the efficiency of different peptides to target the delivery system to melanoma (in vitro and in vivo). The ultimate goal of this work is to develop novel drug delivery systems for poorly soluble efficient chemotherapy for in-transit melanoma metastasis.

5-2-553	
Title	**Comorbidity Burden of Kidney Transplant Recipients Predicts Emergency Usage Despite Increased Family Physician Visits**
Authors	Hatem Alnasser, Sita Gourishankar, Kevin Wen
Program	Nephrology
University	University of Alberta
Conference	American Society of Nephrology San Diego
Date of Publication	November 06, 2015

Abstract

Kidney transplant(KTX) recipients utilize many aspects of the healthcare system, especially emergency(ER) visits. Unterman et al showed that within a four year period, 378 KTX recipients generated 828 ER visits1. This study aims to understand factors leading to ER usage by KTX recipients. Methods: This is a single center retrospective study in conjunction with patient questionnaire, collected from March 2012 - 2013. The questionnaire inquired the frequency of the family physician(GP) visits and ER usage within the past year. Patient demographics and comorbidities were collected from chart reviews. Univariate logistic regression was used to define factors that are predictive of ER usage. Significant covariates were then used in multivariate backward stepwise logistic regression model to predict ER visits. Results: Number of GP visits(OR = 1.6, p=0.003), diabetes(OR = 1.7, p=0.016), coronary artery disease(OR = 2.5, p=0.001), below knee amputation(OR = 4.3, p=0.037), and number of comorbidities(OR = 1.35, p=0.001) significantly predict ER visits. Number of transplant clinic visits does not significantly decreased ER visits(p=0.32). By multivariate backward stepwise logistic regression, number of GP visits(OR = 1.5, p=0.007) and coronary artery disease(OR = 2.1, p=0.011) remain significantly predictive of ER usage. Conclusion: This single center study showed that KTX recipients with more comorbidities have increased ER usage, particularly coronary artery disease, despite higher frequency of GP visits. However, kidney transplant recipients with more ER usage are not seen more frequently by our transplant clinic. The results suggest that KTX recipients with higher comorbidity burden may need to be followed more closely by transplant clinics, rather than relying on GP's, to improve effective usage of ER visits. 1. Unterman S, Zimmerman M, Tyo C, et al. Adescriptive analysis of 1251 solid organ transplant visits to the emergency department. West JEM 2009; 10: 48

5-2-554	
Title	**Sirtuin 2 Expression in Uveal Melanoma Correlates with Metastasis in an Animal Model**
Authors	Sultan Aldrees, Juliana Portela Passos, Ana Beatriz Dias1, Pablo Zoroquiain, Christina Mastromonaco, Sarah Alghamdi, Miguel N. Burnier Jr.
Program	Pathology
University	Mcgill University
Conference	Vision Health Research Network
Date of Publication	November 06, 2015

Abstract

But / Goal: Sirtuins (Sirt) are a family of seven enzymes that are involved in the cell cycle. Previous studies have shown that Sirt2 acts both as a tumor suppressor and as an oncogene. In uveal melanoma, we have shown that Sirt2 is preferentially expressed in malignant, but not in normal, uveal melanocytes. The purpose of this study was to analyze Sirt2 expression in primary tumors and metastases from an animal model of uveal melanoma. Methode / Methods: The rabbit model of uveal melanoma with human uveal melanoma cells injected into the suprachoroidal space used in this study has been previously described. Seventeen formalin-fixed, paraffinembedded uveal melanoma eyes from the rabbits were immunostained for Sirt2 and were analyzed. In addition, three lung metastases were all stained and scored. Immunostaining was scored based on the intensity and distribution of the immunoreaction. Intensity was classified as 0, 1, 2, or 3, which corresponds to negative, weak, moderate, or strong staining, respectively. Extent was classified as 0 for negative, 1 for less than 50% positive cells, 2 for cells with positivity between 50% to 80%, or 3 for cells with >80% positivity. Atotal immunoreactive score (IRS) was then generated by multiplying intensity by extent. Résultats / Results: Sirt2 was expressed in 14 of 17 primary uveal melanoma tumors analyzed with an average IRS of 1.71. Three of these animals also had metastases, which had a mean IRS of 2.33. The difference in Sirt2 staining was not statistically different between the primary tumors and metastases (P>0.05). We also compared the IRS in primary tumors from rabbits that did not have metastases (n = 14; IRS = 1.93) to those animals that had metastases (n = 3; IRS = 0.67; P = 0.19). Conclusion(s): Primary tumors that generated metastases had a lower expression of Sirt2 than tumors that did not metastasize. Moreover, metastastic uveal melanoma showed higher expression of Sirt2 than primary tumors. These results strongly suggest that Sirt2 acts as an oncogene in this uveal melanoma animal model. Although our data did not reach statistical significance, this may be a consequence of the limited number of metastases investigated. Future studies are warranted to confirm these findings in human ocular tumors and metastases.

5-2-555	
Title	**Evaluation of Subaortic Right Ventricular Function in Cctga: How Do Echocardiography Parameters Compare to Cmr?**
Authors	Zakariya Albinmousa, Lan-chau Kha, Alessia Di Carlo, Alton Wong, Andrew Crean, Rachel Wald, William Wilson, S. Lucy Roche.
Program	Cardiology
University	University of Toronto - Department of Medicine
Conference	American Heart Association 2015 Scientific Session
Date of Publication	November 09, 2015

Abstract

Background: Subaortic right ventricular (RV) functional assessment in patients with congenitally corrected transposition of the great arteries (ccTGA) is important for both long-term outcome and as an indication for tricuspid valve replacement. Cardiac magnetic resonance (CMR) imaging is considered the reference standard for assessment of subaortic RV systolic function. However, two-dimensional echocardiography (2DE) remains the most frequently used imaging modality in clinical practice. Objective: to compare 2DE and CMR parameters of RV function in patients with

ccTGA. Methods: We identified adults (≥18) with the diagnosis of ccTGA who underwent consecutive CMR and 2DE imaging within 6 months between 2005 and 2015. Patients with tricuspid valve replacement or pacemaker were excluded. 2DE images were reviewed and the following RV parameters re-measured by a single observer: fractional area shortening (FAC), tricuspid annular plane systolic excursion (TAPSE), tricuspid annular systolic velocity (Ts′), the rate of systolic RV pressure increase (dp/dt) and myocardial acceleration during isovolumic contraction (IVA). RVEF as measured by CMR was recorded. Results: There were 82 matched 2DE and CMR studies in 42 ccTGA patients (50% male). Median age at 2DE was 33.1 years (IQR = 22.7- 48.2 year). Pearson correlation analysis demonstrated a weak correlation between FAC and RVEF (r2=0.143, p=0.0005). Other 2DE parameters failed to show any correlation with RVEF (Figure 1). Conclusion: Ingeneral, 2DE parameters for the assessment of subaortic RV systolic function correlate poorly with CMR measured RVEF in patients with ccTGA. This is important information for selection and interpretation of various modalities in the long-term follow-up of this patient population.

5-2-556	
Title	**Differential Oncogenic Role of Anaplastic Lymphoma Kinase (alk) in Alk-positive Neuroblastoma Cells**
Authors	Abdulraheem Alshareef Raymond Lai
Program	Lab Medicine and Pathology
University	University of Alberta
Conference	Canadian Cancer Research Conference
Date of Publication	November 10, 2015

Abstract

Background: Anaplastic lymphoma kinase (ALK) is a receptor tyrosine kinase that initially discovered in anaplastic large cell lymphoma (ALCL). Recent researches identified ALK mutation and amplification as an additional form of ALK dysregulation in some types of cancers such as neuroblastoma and glioblastoma. Neuroblastoma is the most common childhood malignancy and most patients have aggressive metastatic disease. In neuroblastoma, ALK was identified as a critical oncogene in which ALK amplification accounts for 3.5% of neuroblastoma patients while activating mutations account for 8.4%. Cell lines with ALK amplification shown to be very sensitive to the ALK inhibitor Crizotinib while cell lines with wild-type ALK or mutated ALK were resistant to the inhibitor. Our focus is to understand why these cell lines differentially respond to the ALK inhibitor. Methods: Neuroblastoma cell lines NB-1 (harbor amplified ALK), SKNSH (harbor mutated ALK) and IMR32 (harbor wild-type ALK) were used for this study. The ALK inhibitor Crizotinib used to evaluate the effect of ALK inhibition on ALK downstream effector proteins. Results: Here we report that the Akt was highly phosphorylated at serine 473 in the crizotinib sensitive cells while minimally phosphorylated in the cells that are resistant to crizotinib. Upon siRNA knockdown to ALK or using the ALK inhibitor, the the Akt phosphorylation at serine 473 was abrogated in the sensitive cell line while unaffected in the resistant cell lines. Concurrently, the transcript level of Akt downstream target proteins such as PAK1 (p21 protein (Cdc42/Rac)-activated kinase 1) were substantially downregulated in the sensitive cell line upon ALK knockdown. Additionally, there was a dramatic increase in the transcript of some tumor suppressor genes such as Caspase 9 and CDKN1B (Cyclin-dependent kinase inhibitor 1B) in the sensitive cell line upon ALK knockdown. Conclusion: ALK is a critical oncogene in the pathogenesis of neuroblastoma and plays different roles depending on the form of ALK variant. ALK mediates its oncogenic effect through Akt signaling pathway in ALK-positive neuroblastoma cells that harbor ALK amplification genotype.

5-2-557	
Title	**Risk Factors for Late-onset Thrombosis in Systemic Lupus Erythematosus (sle)**
Authors	Khawla Al-ghanim , Jiandong Su , Stacey E. Morrison , Samar Alharbi , Mohammed Attar , Dafna Gladman , Murray Urowitz and Jorge Sánchez-guerrero , Rheumatology, Twh, Toronto, On, Canada, Rheumatology, University of Toronto, Toronto Western Hospital, Toronto, On, Canada, Div Rheumatology Rm Mp-10-304, Toronto Western Hospital, Toronto, On, Canada, Rheumatology, University Health Network, Toronto, On, Canada, Rheumatology, Toronto Western Hospital, Toronto, On, Canada, University of Toronto, Toronto, On, Canada, Rheumatology, U of Toronto, Toronto Western Hospital, Toronto, On, Canada, Rheumatology, Mount Sinai Hospital and University Health Network, Toronto Canada, Toronto, On, Canada
Program	Rheumatology
University	University of Toronto
Conference	American College of Rheumatology
Date of Publication	November 10, 2015

Abstract

Background/Purpose: Thrombotic events (TE) cause great morbidity and mortality in SLE patients. Studies of TE in SLE focus on early-onset TE. While the incidence of TE remains increased during later-stage disease, no study has assessed the risk factors for late-onset TE. The purpose of this study is to: a) assess the characteristics and risk factors associated with late-onset TE (> 5 years after diagnosis) in SLE; and b) compare these with early-onset TE (< 5 years after diagnosis). Methods: One hundred and fifty-one SLE patients who developed TE after enrolment in a prospective lupus cohort from 1970 to 2014 were identified. They were matched for age, sex and disease duration with non-TE SLE patients (early-onset TE controls: n=151; and late- onset TE controls: n=77). The demographic (age, ethnicity), clinical (disease duration, ACR criteria, SLE manifestations), lab (anti-dsDNA antibody, C3, C4, nuclear antigens, lupus anticoagulant, anticardiolipin antibody), disease activity (SLEDAI-2K), disease damage [SLICC Damage Index with cardiovascular items removed (mod-SDI)] and treatment (prednisone, immunosuppressants, antimalarials, anti-inflammatories), as well as TE type [arterial (ATE), venous (VTE)] and traditional TE risk factor (smoking, cholesterol levels and hypertension) variables were recorded. Results: Fifty (33%) patients developed late-onset and 101 (67%) early-onset TE. In comparison with early- onsetTE, late-onset TE were predominantly ATE (62.0% vs 45%, P=0.02). In univariate analysis, significant variables associated with late-onset TE were hypertension (OR 3.97, P<0.01), oral/nasal ulcers (OR 2.56, P=0.03), CNS manifestations (OR 5.40, P=0.01), vasculitis (OR 3.48, P<0.01), elevated total cholesterol (OR 2.58, p<0.01), and prednisone dose within 3 years of TE (OR 1.07, P=0.02). 1 2 3 4 5 2 6,7 8 1 2 3 4 5 6 7 8 pdfcrowd.com in multivariate analysis, significant predictors of late-onset TE were hypertension (OR 2.85, P=0.03), CNS manifestations (OR = 6.66, P=0.04), vasculitis (OR = 2.96, P=0.049), lupus anticoagulant (OR = 4.73, P=0.02). Risk factors associated with late ATE included a combination of traditional TE risk factor and lupus-related factors; whereas in late VTE risk factors included predominantly lupus-related factors. Variables associated with early-onset TE were also a mixture of traditional and lupus-related risk-factors. Conclusion: Late-onset TE in SLE is predominantly arterial, and result from both traditional and SLE-related risk factors. The risk of thrombosis remains elevated throughout the course of SLE, resulting from the combination of traditional and SLE-related risk factors. In order to reduce the burden of TE, these risk factors need to be continuously evaluated and controlled throughout the disease course. Disclosure: K. Al-Ghanim, None; J. Su, None; S. E. Morrison, None; S. Alharbi, None; M. Attar, None; D. Gladman,

5-2-558	
Title	**Disease Evolution in Late Onset and Early Onset Systemic Lupus Erythematosus (sle)**
Authors	Aljohani R, Gladman Dd, Jiandong Su, Urowitz Mb
Program	Rheumatology
University	University of Toronto
Conference	American College of Rheumatology
Date of Publication	November 10, 2015

Abstract

Background/Purpose: to compare clinical features, disease activity and outcome in late onset versus early onset SLE over 5 years of follow up. Methods: Patients with SLE are followed prospectively according to standard protocol and tracked on a computerized database. Patients entering the cohort within one year of diagnosis constitute the inception cohort. Patients with late onset (age at diagnosis ≥ 50 were identified and matched 1:2 based on gender and first clinic visit (+/- 5) years with patients with early disease onset (age at diagnosis 18- 40 years). Groups were compared at baseline and 5-year follow up. Disease activity was measured by the SLE Disease Activity Index (SLEDAI-2K) and Damage was assessed by the Systemic Lupus International Collaborating Clinics/American College of Rheumatology(SLICC/ACR) damage index. All information is collected prospectively in the database. Results: A total of 86 patients with late onset disease (84.9% female,81.4% Caucasian ,mean age ±SD 58.05 ± 7.30) and 169 patients with early onset disease (86.4% were female , 71% Caucasian, mean age± SD 27.80 ± 5.90) were identified. At enrollment, late onset SLE had a lower total number of ACR criteria, less renal and neurologic manifestations. Mean SLEDAI-2K scores were lower in late onset SLE, especially renal features and anti-DNA positivity. Over 5 years, mean SLEDAI-2K scores decreased in both groups, while mean SDI scores increased more significantly in the late onset group ; they developed more cardiovascular, renal and ocular damage , had higher prevalence of hypertension and hypercholesterolemia. Conclusion: Although late onset SLE group had a milder presentation and less active disease, with the evolution of disease, they developed more organ damage likely a consequence of cardiovascular risk factors and aging.

5-2-559	
Title	**Outcome of Patients with Systemic Lupus Erythematous(sle) After Thrombotic Event**
Authors	Samar Alharbi, Jiandong Su, Stacey E. Morrison, Mohammed Attar, Khawla Al-ghanim, Dafna D. Gladman, Murray B. Urowitz, Jorge Sanchez-guerrero
Program	Rheumatology
University	University of Toronto
Conference	American College of Rheumatology
Date of Publication	November 10, 2015

Abstract

Background/Purpose: to assess the impact of thrombotic events (TE) on 1) mortality, 2) SLErelated damage accrual; and 3) health-related quality of life (HRQoL) in patients with SLE. Methods: We included patients participating in a prospective cohort (1990-2014). Demographic, SLE-related clinical and laboratory data were extracted. The TE

group included patients with any venous or arterial event occurring after enrollment in the cohort. The non-TE group included those with no TE ever. Chi-Square test, t-tests, and Kaplan-Meier survival analysis were used to identify the differences between those with and without TE in terms of: 1) mortality by all causes; 2) damage accrual since TE using the SLICC/ACR Damage Index (SDI) excluding all vascular domains (mod-SDI); and 3) HRQoL using the mental (MCS) and physical (PCS) component summary scores of the SF-36 questionnaire. Results: A total 1015 SLE patients were included in analysis. Aunivariate comparison of TE (n = 151) vs non-TE (n = 864) showed: older age at SLE diagnosis (33.8 ± 14.2 vs 30.9 ± 13.1 years, P = 0.01); lower proportion of females (82.8% vs 88.7%, P = 0.04); higher frequency of antiphospholipid antibody positivity (20.5% vs 14.1%, P = 0.04); no difference in time from SLE diagnosis to first visit to the clinic (13.8 ± 17.6 vs 14.9 ± 17.4 months, P = 0.45); no difference in survival time (75% survival time: 22 vs 27 years, P = 0.70); and more non-vascular damage (mod-SDI >0: 80.8% vs 56.9%, P ≤ 0.0001; mean mod-SDI: 1.8 ± 1.8 vs 1.1 ± 1.5, P ≤ 0.0001). Among 44 patients with TE, no differences in HRQoL MCS or PCS were observed between the groups. These results did not differ by type of TE. Conclusion: Compared to those without TE, SLE patients with TE accrued more chronic nonvascular damage. We found no difference in mortality, and in the subgroup of TE patients assessed, HRQoL did not differ between the groups.

5-2-560	
Title	**Protein Content and Protease Activity in Senescing Roots and Leaves of Wetland Monocot Species with Contrasting Root Turnover Strategies**
Authors	Mona Alsahame and Peter Ryser
Program	Department of Biology in Plant Physiology
University	Laurentian University
Conference	2015 Cspb/scbv Eastern Regional Meeting,university of Toronto
Date of Publication	November 21, 2015

Abstract

Perennial herbaceous monocots in Northern Ontario wetlands can be classified in two distinct types of root turnover strategies: species with a low fine root mortality in the fall and winter, and species which a complete fine root mortality in the fall. Leaves of all species die for the winter, and the species with senescing roots overwinter as rhizomes, bulbs, bulbils, corms or tubers. To understand the adaptive value of the two strategy types, information is needed about the effect of root mortality on plant nutrient balance. Existing data on root nutrient remobilization is based on potential changes in root element content in dying roots, which does not differentiate between remobilization and leaching out. In the present project we investigated three species with fall-senescing root systems (Rhynchospora alba, Sagittaria latifolia, Sparganium americanum) and three species with overwintering root systems (Carex oligosperma, Iris versicolor, Scirpus microcarpus). Forthese species protein content and protease activity was assessed in senescing roots and leaves from September to November. The aim was to confirm and quantify active remobilization processes in the roots. We hypothesize that this process is more pronounced in the fall-senescing roots. Preliminary results support the hypothesized stronger decline of root protein content in the fall for species with fall senescing roots, compared to species overwintering roots.

5-2-561	
Title	**Neoplastic and Non-neoplastic Proliferative Diseases of the Perinephric Space**
Authors	Morooj Al Subhi, Md Maria Tsatoumas, Md Vipul Bist, Md Amer Alaref, Md Benoit Gallix, Md, Phd Caroline Reinhold, Md, Msc
Program	Medical Imaging
University	Mcgill University
Conference	Rsna 2015
Date of Publication	December 01, 2015

Abstract

TEACHING POINTS the purpose of this exhibit is: 1. To review the cross-sectional anatomy of the perirenal space. 2. To describe the interlacing network though which various pathologic processes infiltrate and spread within the perirenal space. 3. To illustrate the specific imaging findings of neoplastic and non-neoplastic processes of the perirenal space. OUTLINE • Cross-sectional anatomy of perirenal space o Anatomic borders o Pathways of spread via interlacing network • Neoplastic conditions o Lymphoma o Plasma-cell neoplasm o Metastases o Primary renal cell carcinoma o Retroperitoneal malignancies • Non-neoplastic conditions o Fluid (hematoma, urinoma, abcess, cysts, lymphangioma) o Inflammatory (pancreatitis, xanthogranulomatous pyelonephritis) o Proliferative (retroperitoneal fibrosis, amyloid, extramedullary hematopoisis, rosai-dorfman and erdheim-chester disease) CONCLUSION 1. Cross-sectional imaging is crucial in diagnosing pathologic processes of the perirenal space. 2. Although considerable overlap of the imaging findings exist, specific imaging features in combination with clinical history, can help suggest the correct diagnosis. 3. Imaging-guided percutaneous biopsy can be performed to establish the diagnosis in indeterminate cases allowing for accurate patient management. Fig was attached in the uploaded files.

5-2-562	
Title	**Addition of Cyclophosphamide "on Demand" to Lenalidomide & Corticosteroids in Patients with Relapsed/refractory Multiple Myeloma – a Retrospective Review of a Single Centre Experience**
Authors	Alahmadi M., Masih-khan E., Atenafu E., Chen C, Kukreti V, Tiedemann R, Trudel S, Prica A, Reece D.
Program	Lymphoma/myeloma
University	University of Toronto
Conference	57th American Society of Hematology Annual Meeting
Date of Publication	December 05, 2015

Abstract

Introduction the lenalidomide + dexamethasone combination (Len-dex) is an established regimen for myeloma patients (pts) with relapsed or refractory disease. in order to prolong the benefit of this effective regimen, the Myeloma Program at Princess Margaret Cancer Centre has routinely added a third agent, oral weekly cyclophosphamide (Cy), to Len-dex at the time of progression. We have now retrospectively analyzed the results of this pt cohort to assess the response rate (RR), duration of response (DOR), progression-free survival (PFS), overall survival (OS) and toxicity of the Len-dex-Cy regimen subsequent to progression on Len-dex. Methods the Princess Margaret Myeloma Database identified 54 patients that received Len-dex-Cy for a minimum of 4 weeks following Len-dex as a doublet between 12/2007-12/2014. Hematologic responses were assessed using modified IMWG consensus criteria. Survival times were measured in months both from the start of Len-dex and the time of addition of Cy up to date of event of interest or end of follow-up. The impact of diagnostic and clinical variables on PFS and OS were also assessed in both cases using the log rank test. Results Baseline pt characteristics at addition of Cy included: median age 66 yrs; Hgb 107 g/L; creatinine 76 umol/L; albumin 36g/L; ANC 2.5 109 /L; and median platelet count 158 109 /L . Myeloma isotypes were IgG (61%), IgA (19%), and FLC (20%). the median number of prior regimens including Len-dex was 2; 80% pts had undergone prior ASCT. The dose of added Cy ranged between 250-500mg once weekly. Twenty-six percent patients experienced dose reductions primarily due to cytopenias. Overall, Len-dex-Cy was well tolerated with grade 3-4 toxicities in < 20% (Table 1). The mean duration of Len-Dex-Cy therapy was 8.9 months (range 0.9 – 37.7). The overall RR (≥ PR) was 41%; however clinical benefit was seen in 85% (≥ SD) pts. the median PFS was 8 months (95 % CI 5.8- 10.3 months) from addition of Cy and 25 months (95 % CI 17.3- 32.5 months) from start of Len-dex. The median OS was 24.5 months (95 % CI 15.2-41.8 months) from addition of Cy and 50.1 months (95 % CI 40.6-70.4 months) from start of Len-dex (Figure 1). Significant adverse factors for PFS were del(13q) from start of Len-dex and presence of anemia at the time of addition of Cy (p=0.027) and (p=0. 031) respectively. Decreased baseline serum albumin at the time of addition of Cy was identified as a significant factor for shorter OS (p=0.004). Conclusions 1) the addition of Cy in pts with myeloma progressing on Len-dex resulted in a clinically meaningful extension of disease control with an acceptable safety profile; 2) the effectiveness of adding a third agent to pts with progression on a doublet regimen raises the possibility that only a limited number of resistant myeloma clone(s) is/are responsible for the progression; 3) Although subject to many limitations, the results of this sequential "on demand" approach compare favorably with our previously reported phase 2 study of the Len+ prednisone+ Cy ("CPR") regimen in which triple-drug therapy was given throughout (PFS: 25 vs 16.1 months; OS: 50.1 vs 27.6 months) (Reece et al, Br J Haematol 2015; 168: 46-54); 4) future prospective studies evaluating a strategy of adding a third agent to a doublet (such as Len-dex) "on demand" versus using triple therapy throughout the relapse would be worthwhile; a number of potential agents, including Cy as well as other newer anti-myeloma drugs, might be candidates for such studies.

5-2-563	
Title	**Angelman Syndrome: Review of Clinical and Eeg Findings**
Authors	Muthaffar, Osama1, 2; Minassian, Berge1 1. The Hospital for Sick Children, Toronto, On, Canada. 2. King Abdulaziz University, Jeddah, Saudi Arabia.
Program	Neurology/epilepsy
University	University of Toronto
Conference	American Epilepsy Society 2015
Date of Publication	December 09, 2015

Abstract

Background: Angelman Syndrome (AS) is a neurogenetic disorder that is associated with developmental delay, speech impairment, seizures, microcephaly, inappropriate frequent excitability, laughing and smiling. EEG is one of the important diagnostic tools in AS. Methods: We retrospectively reviewed the charts of 13 patients with genetically confirmed AS. EEG abnormalities were classified according to previously established classifications (Type I, II and III) (table1). Results: Patients were 12 months to 12 years old (mean 6.5 years), 6 were males and 7 females. Of the thirteen patients with AS, 3 (23 %) had no seizures and were not on antiepileptic medications. Patients had multiple types of seizures (including myoclonic seizures, generalized tonic clonic, tonic, absences and others). EEG findings were compatible with types I and III (table 2). Interestingly, five

patients (38%) had sleep issues (difficulties in falling asleep and some had frequent awakening), which can be seen in AS patients. Conclusions: AS has a wide spectrum of signs and symptoms. It may not manifest clinically until after 12 months of age. Delta and posterior (delta-theta) EEG types were the commonest finding in our cohort, which is similar to previous studies. EEG abnormalities when observed early can guide physicians to diagnose AS.

Humanity & Social Sciences

5-4-564	
Title	**Syntactic Processing of Subjects in Different Word Orders in Arabic: Do Arabic Heritage Speakers Differ from Native Speakers When Processing Svo/vso Order**
Authors	Saleh Alqahtani Laura Sabourin
Program	Linguistics
University	University of Ottawa
Conference	Canadian Linguistic Association 2015
Date of Publication	May 31, 2015

Abstract

The aim of this study is to investigate the preference and processing of Arabic word order, namely, Verb-Subject-Object (VSO) or Subject-Verb-Object (SVO) by two different groups: native speakers of Arabic (NSs) and heritage speakers of Arabic (HSs) living in Canada. In Arabic, two different word orders can be used: (1) kataba wrote Pal-walad-u the-boy-NOM Pal-wadZib-a the-homework-ACC 'The boy did the homework.' VSO (2) Pal-walad-u the-boy-NOM kataba wrote Pal-wadZib-a the-homework-ACC 'The boy did the homework.' SVO Some linguists argue that VSO is more dominant than SVO (Abdul-Raof, 1998; Althwaini, 2008, among others). We can take this preference as evidence to argue that VSO linear order is easier to process than SVO order since the former requires only one movement (V-to-T) (Fassi-Fehri, 1993; Ouhallah, 1994); the subject remains in situ however; see (3). (3) [TP [T' katxaba [VP Pal-walad-u [V' .... Pal-wadZib-a]]]]. [TP [T' wrxote [VP the-boy-NOM [V' .... the-homework-ACC]]]]. ForSVO, one additional movement is required; the subject may need to move from [Spec: VP] to [Spec: TP]; see(4). (4) y [TP Pal-walad-u [T' kaxtaba [VP .... [V' .... Pal-wadZib-a]]]]]]. Within the realm of experimental syntax and building on Chomsky's (1995) idea that E-language is an extensional form of I-language (mental form), we administered two tasks (a sentence reordering writing task and an online self-paced reading task). 10 HSs, whose dominant language is English, and 20 NSs of Arabic participated in the study. The writing task is to check for the preferred word order by each group. The reading task is to check for syntactic subjects processing time; a participant reads a sentence that appears word by word on a computer screen. The reaction time (RT) from the onset appearance until the participant presses the SPACE-BAR is calculated. Target items are definite subjects in SVO, definite subjects in VSO and indefinite subjects in VSO. The writing task results showed that there is a preference towards using VSO order to SVO by both groups (HSs: mean difference = 5.87; $p < .05$; NSs: mean difference = 9.40; $p < .01$). In the reading task, NSs showed a significant difference ($p < .05$) in RT between preverbal and postverbal subjects. Precisely, subjects in VSO took a shorter RT than subjects in SVO. No significant difference was found between the definite and indefinite subjects in VSO. ForHSs , there is no significant difference between the subject RT in VSO and SVO. When comparing the two groups, a significant difference ($p < .05$) in RT was found; NSs were faster in processing than HSs. In conclusion, the writing task results offered evidence of VSO preference over SVO. The difference in RT between processing times shown by NSs suggests that VSO is easier to process which supports the claim that there is only one syntactic movement (V-to-T) to derive VSO. The longer RTs required to process subjects in SVO might resemble more syntactic movements. Another important finding is that slower RT shown by HSs might be attributed to processing two different grammatical systems (Arabic and English).

5-4-565	
Title	**Purification of Mycobacterium Tuberculosis Membrane-associated Multi Copper Oxidase and Its Potential Role in Inhibiting Macrophage Respiratory Burst**
Authors	Ayat Kinkar, Eyad Kinkar, Pejman Hanifi-mogahhdam, and Mazen Saleh
Program	Master of Microbiology/ Biology
University	Laurentian University
Conference	Canadian Society of Microbiologists
Date of Publication	June 17, 2015

Abstract

Mycobacterium tuberculosis is an acid-fast Gram-positive pathogenic bacterium that causes Tuberculosis disease (TB), a severe pulmonary. TB affects more than one-third of the world population. Although M. tuberculosis was discovered in 1882, scientists are still striving to find the key components that contribute to the bacterial pathogenicity, which could be used to device an effective therapeutic strategies to control its devastation. M. tuberculosis has an elaborate enzymatic system, which includes some of its virulence factors that are involved in its survival during the phagosomal processes. Secreted acid phosphatase of mycobacterium (SapM) is one of the virulence factors that interrupts the phagosomal maturation. New possible virulence factor is a membrane associated enzyme called Multi Copper Oxidase (MCO).

MCO has been shown to enable M. tuberculosis to resist copper toxicity but the potential role of MCO in macrophage respiratory burst has not been investigated. One possibility would be that MCO in macrophages may interfere with oxidative burst by preventing the production of Reactive Oxygen Species (ROS).

5-4-566	
Title	**Shifts in Soil Bacterial Functional Gene Composition in Response to Willow Planting and Contamination Level**
Authors	Fahad Alotaibi, Terrence Bell, Saad El-din Hassan, Etienne Yergeau, Mohamed Hijri, Marc St-arnaud
Program	Biological Sciences
University	Université de Montréal
Conference	Soil Interfaces for Sustainable Development
Date of Publication	July 07, 2015

Abstract

Environmental pollution by petroleum hydrocarbons (PHC) has become a serious global problem due to modern societies reliance on fossil-fuels by-products to generate energy. Remediation of petroleum hydrocarbons contaminated soil is costly and inappropriate management can lead to environmental complications. Over the last two decades, however, phytoremediation has emerged as a less invasive biological approach to degradation of toxic contaminants in soil into less toxic and/or non-toxic substances. We studied bacterial functional diversity in the rhizosphere of willows (Salix spp.) growing in petroleum-hydrocarbons contaminated soils, as well as in non-contaminated soils. Our hypothesis was that functional gene composition would vary based on plant identity and contaminant level, as was observed previously when looking at the taxonomic composition of the microbial communities (bacterial 16S rRNA and fungal ITS genes). In this study, we used high-throughput 454 pyrosequencing of two key functional genes related to petroleum hydrocarbons biodegradation, namely biphenyl dioxygenase (BphA) and alkane monoxygenase (alkB), as well as nitrogen fixation genes (nifH), which play a key role in determining the amount of nitrogen available to both microorganisms and plants. Preliminary analysis of our sequence data suggests that distinct bacterial populations of petroleum-hydrocarbon degrading bacteria and N-fixers where present across willow rhizospheres and bulk soil.

5-4-567	
Title	**Reconstruction of Existing Constructs: A Personal Construct Theory Approach for Cross-cultural Construing of Quantitative Measures**
Authors	E. Hamad, A. Johnson, E. Kinsella
Program	Health and Rehabilitation Sciences, Field of Measurement and Methods
University	The University of Western Ontario
Conference	Issid 2015 the International Society for the Study of Individual Differences
Date of Publication	July 28, 2015

Abstract

Although conditions causing cognitive impairment and behavioural changes (e.g., dementia) have similar diagnostic criteria across cultures, the experience of caring for individuals living with such conditions may not be universal. Furthermore, literal translations of an English version of a caregiver burden scale into another language may not account for different meaning schemes within diverse cultural groups. Developing a culturally equivalent translated instrument requires identifying and understanding some of the common belief systems underpinning the culture under investigation. We contend that personal constructs should be explored within an embedded research design that includes a preliminary qualitative phase, in order to examine common perspectives of groups of people within the targeted culture. This presentation introduces personal construct theory with its underlying concepts and methods of assessment as a constructivist approach to reconstruct existing measures through the examination of personal and group construct systems. These concepts and assessment procedures are illustrated by describing the translation process of Montgomery's Caregiver Burden Scale into Arabic, and the use and testing of the Arabic version with a Saudi Arabian caregiver sample in a study of family caregiver burden of persons with Alzheimer's Disease and related dementia.

5-4-568	
Title	**The Effect of Andrographis Paniculta on the Growth of the Malignant Melanoma Cell Line B16-bl6 and Its Potential Benefits Towards Cancer Treatment**
Authors	Albalawi,ghadah A.
Program	Biology
University	Advanced Medical Research Institute of Canada
Conference	Natural Health Product Society of Canada
Date of Publication	August 14, 2015

Abstract

There are a variety of plants that have been recognized and used in traditional medicine for their health benefits. Among these plants is Andrographis paniculta,commonly known as king of bitters because of its bitter taste.In the past,Andrographis paniculta has been used to treat various ailments including:respiratory tract infection,common cold,diarrhea,snakebite and inflammation. This research tests the effect of andrographis paniculta on the growth of the malignant melanoma cell line B16-BL6 and its potential benefits towards cancer treatment. We treated B16-BL6 mouse melanoma cells with a 70% ethanol extract and an aqueous PBS extract of Andrographis paniculta. Treatment with the ethanol extract of Andrographis paniculta potential inhibited cells growth and concentrations of 0,25%,0.50%,0.75%,1% while the aqueous extract was less potent and inhibited cells growth at 1%.Treatment of B16-BL6 cells with the PBS extract of Andrographis paniculta for 3 days induced apoptosis using the acridine orange/ethidium bromide cell staining assay. Treatment with the ethanol extract had a much stronger effect and cell staining showed late stage apoptosis and loss of membrane integrity.We also showed that treatment of B16-BL6 cells with Andrographis paniculta extracts altered cell survival pathways and promoted apoptosis by using western blot analysis with three different antibodies;ERK1/2,P-ERK and caspase-3.

5-4-569	
Title	**Toxicogenomic Effects of Diluted Bitumen on Developing Fathead Minnow (pimephales Promelas)**
Authors	F. Alsaadi, Queens Univ/ Biology; B.n. Madison, Royal Military College of Canada / Dept of Chemistry and Chemical Engineering; P.v. Hodson, Queens Univ/ School of Environmental Studies; V.s. Langlois, Royal Military College of Canada/ Dept. Of Chemistry/ Chemistry and Chemical Engineering
Program	Biology Department
University	Queen's University
Conference	Society of Environmental and Chemistry Toxicology (setac) North America 36th Annual Meeting
Date of Publication	November 04, 2015

Abstract

The development of Canada's oil sands industry has led to a significant increase in the use of diluted bitumen (dilbit), created by mixing bitumen with diluents from oil-gas condensates to facilitate its transport through pipelines. While the toxicological effects of a variety of crude and refined oils on fish have been broadly assessed, little is known about the toxicity of dilbit to early life stages of fish due to its varied chemical composition tailored to the conditions and season of transport. Species of fish most likely to be exposed to dilbit during a spill would be those that inhabit rivers and lakes along the current and proposed pipeline routes. This study determined the toxicity of two dilbit blends: Access Western Blend (AWB) and Cold Lake Blend (CLB) to fathead minnow (Pimephales promelas) embryos. Fertilized embryos were exposed to a range of concentrations of water accommodated fractions (WAF) and chemically enhanced WAF treated with the dispersant Corexit' 9500A (CEWAF) prepared from both AWB and CLB. After exposure, newly hatched fish were scored for signs of blue sac disease and sampled for gene expression analysis. Transcriptional analysis was used to quantify the effects of dilbit toxicity on the cellular stress response, which regulates the detoxification mechanisms responsive to oil-derived polycyclic aromatic hydrocarbons (PAHs), among others. Data produced by this study provide perspective on the effects of dilbit on a model fish species native to North America and the importance of investigating the biological impacts of a potential spill in watersheds critical to aquatic species.

CHAPTER 6
Master Projects

Engineering & Sciences

6-1-570	
Title	**Interference Mitigation in Multi-tier Heterogeneous Network Using Reinforcement Learning**
Author	Abdullah Alqhtani
Program	Electrical and Computer Engineering
University	University of Victoria
Date of Publication	April 20, 2015

Abstract
Efficient resource allocation in femtocell networks has become necessary owing to the enormous advantages of having femtocells deployed in a heterogeneous network. However, the interference arising from this deployment necessitate a mechanism for mitigation and optimal control of resource allocation. Q-learning, as an example of a reinforcement learning technique has been widely used for this purpose with more emphasis on downlink interference problems. Using a simplified heterogeneous model comprising of one macrocell and two femtocells, we extend the use of Q-learning to specifically model and address the uplink interference problem. We show by means of controlled experiments, that the proximity of the users in the network to their respective base stations, and the available power transmission levels plays a significant role in the total capacity of the network. This has the potential to enable networks to act in an improved manner. Results from the simulation can be used to configure any realistic network model.

Health Science

6-2-571	
Title	**The Role of Simulation in Training for Arthroscopic Knee Surgery**
Author	Dr. Bandar Hetaimish
Program	Master of Health Science of Education
University	Mcmaster University
Date of Publication	April 17, 2015

Abstract
Arthroscopy is defined as minimally invasive surgery that incorporates a specialized tiny camera and instruments to treat joint disorders. After World War II, technology in arthroscopy evolved to support its use in orthopedic surgery. Nowadays, arthroscopic knee surgery is the most common surgical procedure in the United States. In the United States, 700,000 arthroscopic knee surgeries are performed per year at an estimated cost of $4 billion. This was accompanied by an increase in the demand to train surgeons to become independent in performing knee arthroscopic procedures. Therefore, academic institutions and orthopaedic professional societies developed arthroscopy fellowship training programs, training courses, and workshops to meet the growing demand. The objectives of this study are to: • Review and summarize the reported outcomes for measuring the effectiveness of simulation during knee arthroscopy training. • Identify and discuss the validity of the reported outcomes and their correlation with improvement in trainee performance in the operating room. • Assess the methodological quality of the knee arthroscopy simulation studies in the literature.

Business & Management

6-3-572	
Title	**Jeddah Chamber of Commerce and Industry- Implementing Customer Relationship Management (crm) for Improving Service Quality**
Author	Amjad Waleed Malaka
Program	Mba
University	Vancouver Island University
Date of Publication	February 28, 2015

Abstract
Jeddah Chamber of Commerce and Industry is considered as one of the oldest businesses and services organizations in the Kingdom of Saudi Arabia and has been offering its services for the business community, supporting the national economy, and helping local companies toward development and progress. However, helping members and clients effectively and efficiently to attain their required service quickly and with high quality remains a significant challenge for Jeddah Chamber. The purpose of this report is to explore new ways of delivering services at the Chamber that reduce costs while improving quality and boosting customers' satisfaction. In addition, the report will investigate the importance of Customer Relationship Management (CRM) in the success of service organization and apply the research to Jeddah Chamber of Commerce and Industry in the Kingdom of Saudi Arabia. First, the current situation of Jeddah Chamber was analyzed and it was concluded that most of members and clients complain about the long process of the service in the organization where service policies and procedures are performed in different departments. In addition, Jeddah Chamber's stakeholder base was identified

to consist mainly of four groups which are members and regular clients who represent the largest segment, government, foreign entities, and business community and community at large. Analyzing the economic environment, it can be described as an attractive environment where the government is encouraging the economy diversification to include other means of business activities in order to reduce the unemployment among the Saudi nationals. However, the “Saudisation” program remains the main challenge for companies aiming to operate and invest in Saudi Arabia. The internal analysis of Jeddah Chamber was conducted by analyzing some internal issues that illustrate the weaknesses of the Chamber. These issues were identified to be protracted service delivery process, low employees performance, outdated structure, and poor IT infrastructure. In addition, the service delivery process was mapped using process mapping tool and Fishbone Diagram to display the many potential causes for the protracted process of serving the Chamber’s members and clients. These causes include employees’ attitude, conflicting polices, long cycle time, outdated IT system, and the shortage of employees’ critical skills and competence. It was recommended for Jeddah chamber to consider changing its existing strategy to be more customer-focus strategy. To help the Chamber to improve its service, CRM program was recommended to be installed to help the Chamber to focus on the needs of its clients, integrate its clients’ needs into its vision, mission, and marketing process, and involve the employees in the process of building customer relationships that last based on high quality service and positive attitudes. In the meanwhile, the Chamber has to consider critically developing strategic plan to ensure the success of the CRM program at its departments and to provide the real solutions. Jeddah Chamber’s management is advised to review the critical steps of CRM strategic plan. By considering these steps, Jeddah Chamber can be ensured that a huge positive change is occurred in the way members and clients are served and ensure that high quality service is offered to them. Finally, Potential International Context was discussed to explain how adopting CRM system to improve customer service have been applied internationally and particularly in the Canadian context. Many examples of high quality services provided by the Canadian Chamber of Commerce to ensure members’ satisfaction were introduced. The Canadian Chamber of Commerce is adopting cloud dynamic CRM systems in its different departments to ensure the highest quality service provided to its members across Canada. The most important feature of the system is the public-facing web-based mechanism for membership self-service which offers a dynamic internal tool for managing stakeholder relations and service expectations.

وزارة التعليم | الملحقية الثقافية السعودية في كندا

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