

**EIGHTEENTH HEALTH SCIENCES CENTRE
POSTER CONFERENCE 2013**

**Under the Patronage of
The President of Kuwait University**

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Organizing Committee

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- Prof. Yunus Luqmani, *Coordinator, Finance, Dept. of Pharmaceutical Chemistry, FOP*
- Prof. Michael Diejomaoh, *Dept. of Obstetrics & Gynecology, FOM*
- Prof. Elijah Kehinde, *Dept. of Surgery, FOM*
- Prof. Ziauddin Khan, *Coordinator, Printing & Information Technology, Dept. of Microbiology, FOM*
- Prof. Richard Simonsen, *Dept. of Restorative Dentistry, FOD*
- Dr. James Craik, *Dept. of Biochemistry, FOM*
- Dr. Sana Al-Mutairi, *Dept. of Medicine, FOM*
- Dr. Waleed Renno, *Dept. of Anatomy, FOM*
- Dr. Lukman Thalib, *Dept. of Community Medicine, FOM*
- Dr. Gursev Dhaunsi, *Coordinator, Social & Logistics Sub-Committee, Dept. of Pediatrics, FOM*
- Dr. Salah Al-Humood, *Coordinator, CME Officer, Dept. of Pathology, FOM*
- Dr. Laila Qadan, *Dept. of Medicine, FOM*
- Dr. Shaima Karam, *Dept. of Pharmacology & Toxicology, FOM*
- Dr. Anwar Al-Banaw, *Dept. of Med. Lab Sciences, FAHS*
- Mr. Jassim Al-Khorafi, *Administration Manager, FOM*
- Mr. Dheya H A Al-Hasan, *Finance Manager, FOM*
- Mrs. Amna Safar, *Technical Service Administration, HSC*

Special Acknowledgements

- Prof. Adel K Ayad, *Dean, Faculty of Medicine*
- Mr. Adel Al-Moosad, *Director, Service Department*
- Mrs. Teena Sadan, *Technical Staff, CRC, Faculty of Medicine*

Photographs of Organizing Committee



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Vice Dean for Research
& Postgraduate Studies*



*Prof. Peter Lucas,
Chairman*



*Prof. Yunus Luqmani,
Coordinator, Finance*



*Prof. Michael
Diejomaoh*



Prof. Elijah Kehinde



*Prof. Ziauddin Khan,
Coordinator, Printing &
Information Technology*



Prof. Richard Simonsen



Dr. James Craik



Dr. Sana Al-Mutairi

Photographs of Organizing Committee



Dr. Waleed Renno



Dr. Lukman Thalib



*Dr. Gursev Dhaunsi,
Coordinator, Social &
Logistics Sub-Committee*



*Dr. Salah Al-Humood,
CME Officer*



Dr. Laila Qadan



Dr. Shaima Karam



Dr. Anwar Al-Banaw



Mr. Jassim Al-Khorafi



Mr. Dheya HA Al-Hasan

Message from the Dean, Faculty of Medicine



It gives me great pleasure to write the introductory remarks of the Abstract book for the 18th Poster Conference 2013. The Poster Conference throughout the years has continued to achieve the goals of fostering high quality medical research, stimulation of scientific endeavor and collaboration and interaction of faculty and students. This meeting is important as it provides a forum for all researchers to present and discuss basic and clinical research conducted in Kuwait.

We are extremely fortunate for this year to have one of the pioneers in the field of neural stem cells, Professor Freda D. Miller from the Department of Molecular Genetics, University of Toronto, as our keynote speaker who will present to us “Stem Cells: Building and Rebuilding the Nervous System”. This talk will address: One, how neural stem cells are regulated both during normal development and in genetic disorders? Second, can we provide therapies for the injured or degenerating adult nervous system?

The total number of research abstracts accepted this year is 236, which reflects the good progress in research in the Health Sciences in Kuwait. I am grateful to the Vice Dean Research and Postgraduate Studies Prof. Widad Al-Nakib for his continuing support for the Poster Conference. I also thank the Chairman of the 18th Poster Conference Organizing Committee, Prof. Peter Lucas, and the Organizing Committee from HSC Faculties. They have all worked so hard to ensure the good quality of selecting abstracts and to make this conference successful.

Professor Adel K. Ayed
Dean, Faculty of Medicine

Message from the Vice Dean for Research & Postgraduate Studies Faculty of Medicine



The first Poster Conference was introduced in April 1996 in the Faculty of Medicine. We have since held this conference annually with great success with staff and students of all the faculties of Health Sciences Centre participating and presenting their research. Strong research is a prerequisite for academic excellence, and this concept was clearly understood when the First Poster Day was held 17 years ago, in April 1996, in the Faculty of Medicine. The founders of Poster Day started with a premise that scientific knowledge and therefore progress depends on investigation and critical analysis, and that exchange of ideas and information is an essential part of this continuous process. The Poster Day started with an aim of stimulating communication between scientists in various health-related specialties and has grown progressively to involve diverse scientific fields in all the faculties of the Health Sciences Center (HSC).

In continuing the tradition of inviting internationally recognized Scientists whose work has great impact upon the Health Sciences, this year we would like to welcome Prof. Freda D. Miller, Senior Scientist, Development and Stem Cell Biology, Department of Molecular Genetics, University of Toronto, who will give the keynote speech on “Stem Cells: Building and Rebuilding the Nervous System”. This year we have 236 poster abstracts and I have no doubt the 18th HSC Poster Conference will be a great success. I thank Kuwait University for the continuing support and sponsorship of the Poster Conference. Prof. Freda Miller for accepting our invitation as a keynote speaker in this year Poster Conference. I would like to express my appreciation to the Vice-President Health Sciences Centre, Deans of different Faculties of HSC for their



encouragement and support and to all HSC technical and support staff who assisted in the organization and implementation of this meeting. I am especially very grateful to the Chairman and the members of the Organizing Committee for their commitment and efforts to make this a very successful event.

Prof. Widad Al-Nakib

Vice-Dean for Research & Postgraduate Studies

Faculty of Medicine

Message from the Chairman



Welcome to the 18th Annual Health Science Centre Poster Conference, an HSC tradition that extends back to 1996! The vibrant support that the conference receives both from within the Health Sciences Centre, from other faculties at Kuwait University and also internationally, indicates its vitality. This year, we have 236 posters that cover a huge range of biomedical topics. As a meeting place for basic and clinical science, the conference forms the central bond that ties the HSC together. It is an important venue for our students to present and we hope that the event stimulates much new and exciting research.

This year, we welcome Dr Freda Miller as our keynote speaker. She is one of the world's leading researchers on stem cells in neurobiology, holding an appointment as a Senior Scientist at The Hospital for Sick Children Research Institute as well as being a Professor at the University of Toronto. She is a Howard Hughes Medical Institute International Research Scholar, a Canada Research Chair in Developmental Neurobiology, a Fellow of the Royal Society of Canada and a Fellow of the American Association for the Advancement of Science. Her central interests involve factors involved in the development and maintenance of the nervous system, and in the use of stem cells to assist in its regeneration after injury.

No chairman organizes anything alone. I must thank the members of the organizing committee for the first-rate work that they have put in. I also thank all the judges for the very difficult task of selecting the best posters in their category. Kuwait University have financed the event, for which we offer my deepest



thanks. But my biggest debt is to the Centre for Research Support and Conferences under Professor Widad Al-Nakib for the infrastructure that made this work so pleasurable. Ms. Teena Sadan and her team have worked tirelessly, efficiently and enthusiastically to make this event such a big success. Lastly, thanks to everyone for coming and joining in. It is the participants who make this conference the success that it is.

Prof Peter Lucas
Chairman, 18th HSC Poster Conference

Keynote Speaker: Professor Freda Miller

*Senior Scientist, Research Institute, Developmental & Stem Cell Biology,
University of Toronto*



Dr. Freda Miller is Senior Scientist in the Developmental & Stem Cell Biology program at The Hospital for Sick Children Research Institute, a professor at the University of Toronto, and holds the Canada Research Chair in Developmental Neurobiology. She has authored more than 100 scientific papers, reviews and book chapters and has 13 patents (issued and pending).

Dr. Miller is best known for her studies of neuronal stem cells and of neuronal growth, survival and apoptosis. Major findings from her lab have provided evidence that mammalian dermis contains a multipotent stem cell that can be isolated and purified, that the p75 neurotrophin receptor is apoptotic in neurons, and that a p53 family member, truncated p73, plays an essential anti-apoptotic role in the nervous system.

Dr. Miller is a fellow of the Royal Society of Canada, Secretary-Elect of the American Society for Neurosciences, and a Howard Hughes Medical Institute International Research Scholar. She obtained her PhD in Molecular Biology from the University of Calgary in 1984 and completed her post-doctoral research at the Scripps Research Foundation with Dr. F. E. Bloom. She accepted her first faculty position as an Alberta Heritage Foundation Scholar at the University of Alberta. Five years later Dr. Miller moved to the Montreal Neurological Institute and McGill University as the Coordinator for the Centre for Neuronal Survival. She has held her current position in Toronto for the last five years. Dr. Miller is also a founder of Aegeira Therapeutics Inc. , a biotechnology company based in Montreal and Ottawa.

Keynote Abstract

Stem Cells: Building and Rebuilding the Nervous System

Professor Freda Miller

*Senior Scientist, Research Institute, Developmental & Stem Cell Biology,
University of Toronto*

One of the fundamental questions in human biology is how a pool of proliferating neural stem cells in the embryonic brain can ultimately generate the complex functional neural circuitry that comprises the adult mammalian brain. This lecture will address that question, focusing upon the cerebral cortex, one of the key centers for cognition, and will ask how neural stem cells are regulated both during normal development, and in genetic disorders that cause cognitive dysfunction. A second key question is whether or not the information that we derive from the study of developing stem cells can ultimately provide therapies for the injured or degenerating adult nervous system. In this lecture two examples of the potential success of such a strategy will be discussed. The first example involves identification of pharmacological stem cell activators that can be used to recruit the endogenous neural stem cells that are present in the adult mammalian brain and in so doing to enhance cognition. The second example involves an accessible population of stem cells from the dermis that can give rise to peripheral neural progeny and that can potentially be used for transplantation in spinal cord injury.

References

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precursors and exhibit properties of adult dermal stem cells. *Cell Stem Cell* 5, 569-570.

- Vessey J. P. , Amadei G. , Burns S. , Kiebler M. A. , Kaplan D. R. and Miller F. D. (2012) An asymmetrically-localized Stauf2-dependent RNA complex regulates maintenance of mammalian neural stem cells. *Cell Stem Cell* 11, 517-528.
- Wang J. , Gallagher D. , DeVito L. M. , Cancino G. I. , Tsui D. , Keller G. M. , Frankland P. W. , Kaplan D. R. , and Miller F. D. (2012) Metformin activates atypical PKCs to promote rodent and human neurogenesis and enhance spatial memory formation. *Cell Stem Cell* 11, 23-35.

Best Poster Award Winners -2012

17th HSC Poster Conference Award Winners

MSc and Undergraduate

- **Levosemendan improves cardiac recovery from ischemia in diabetic and/or hypertensive rat models**

Al-Turki A, Benter I

Department of Pharmacology & Toxicology, Faculty of Medicine,
Kuwait University

- **Effect of increased extracellular pH on morphological behaviour of breast cancer cells**

Almohri IM, Luqmani YA

Department of Pharmaceutical Chemistry, Faculty of Pharmacy,
Kuwait University

- **The effect of Shisha smoking on oxygen saturation level and heart rate**

Al-Osaimi A, Obaid O, Al-Asfour Y, Yousef A, Razouki M, Rajab SH, Longenecker JC

Department of Community Medicine, Faculty of Medicine, Kuwait
University

- **A genetic association study of angiotensin converting enzyme (ACE) polymorphisms and essential hypertension in the Kuwaiti population**

Al-Ahmad M, Al-Bustan SA, Al-Qattan A

Department of Biological Sciences, Faculty of Science, Kuwait
University

Graduate Resident Original Research and Case

- **Eye opening look at eye makeup hygiene: Practice, risk factors, ocular symptoms and microbiological evidence**

Alsaadoun W, Bouhaimed M

Al-Bahar Eye Centre, Ibn Sina Hospital, Ministry of Health and
Department of Community Medicine and Behavioural Sciences,
Faculty of Medicine, Kuwait University

- **Laparoscopic sleeve gastrectomy for the treatment of type 2 DM: Experience from Kuwait**

*Al-Mulla, Al-Sabah S, Juma T, Mousa M, Al-Sharhan A, Al-Haifi M,
Al-Enizy K, Bastaki W, Murad A, Buhaimed W, Al-mossawi A, Al-
Manfohi H, Parakash B*

Department of Surgery, Amiri Hospital, Kuwait

- **Acute abdomen and Schistosomiasis**

Alkandari M, Hamza A, Zayed M, Junaid TA

Departments of Pathology, Surgery and Radiology, Mubarak Al-
Kabeer Hospital, Kuwait

Past Poster day Keynote Speakers and Lectures

2012

Cardiovascular health in the 21st century.

Professor Barry McGrath, Professor of Vascular Medicine & Medicine, Southern Clinical School, Monash University, Australia

2011

Cardiovascular Outcome Trials in Diabetes.

Prof. Rury Holman, Director of the University of Oxford Diabetes Trials Unit, University of Oxford, Canada

2010

New mycobacterial vaccine candidates: from lab to clinical trials.

Prof. Abu Salim Mustafa, PhD, FRC Path. Department of Microbiology, Faculty of Medicine, Kuwait University

2009

Evidence-Based Medicine and Knowledge Translation Research for Better Health Care.

Prof. Brian Haynes, Professor of Clinical Epidemiology and Medicine, Chief of the Health Information Research Unit at McMaster University, Hamilton Ontario, Canada

2008

What Ails The World? How Do We Respond?

Prof. Abdallah S Daar, D. Phil (Oxon), FRSC, FRCP (Lon), FRCS (Eng), FRCS (Ed), FRCS (C), Director of Ethics and Policy, McLaughlin Centre for Molecular Medicine, Professor of Public Health Sciences and Professor of Surgery, Senior scientist and Co-director, Program on Life Sciences, Ethics and Policy, McLaughlin Rotman Centre for Global Health, University of Toronto, Ontario, Canada

2007

From Molecular Imaging to Molecular Medicine.

Prof. Henry N. Wagner, Jr. MD, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA

Past Poster day Keynote Speakers and Lectures

2006

Stem cell research.

Prof. Sir Martin Evans FRS, DSc (Nobel Laureate), Director of the School of Biosciences and Professor of Mammalian Genetics at Cardiff University, UK.

2005

How Corticosteroids Work in inflammatory Diseases: New Molecular Insights.

Prof. Peter Barnes is of Thoracic Medicine at the National Heart and Lung Institute, Head of Respiratory Medicine at Imperial College and Honorary Consultant Physician at Royal Brompton Hospital, London, UK.

2004

The Nitric Oxide/Cyclic GMP Pathway: Targets for Drug Development

Prof. Ferid Murad, Nobel Prize recipient, Chairman, Department of Integrative Biology and Pharmacology, Director, Institute of Molecular Medicine, University of Texas Medical School, Houston, Texas, USA

2003

The Post-Genomic Era: Global Impact on Medicine and Health Care Delivery

Prof. Seyed E. Hasnain, Director, Centre for DNA Fingerprinting & Diagnostics (CDFD) Hyderabad, India

2002

Genetics and World Health: Fact or Fantasy

Prof. (Sir) David J Weatherall, Emeritus Professor, Weatherall Institute of Molecular Medicine, University of Oxford, UK

2001

Genomic View of Human History

Prof. Mary-Claire King, American cancer Society Research Professor, Department of Medicine and Genetics, University of Washington, Seattle, Washington, USA

2000

Molecular Mechanisms and Biomedical Implications of Apoptotic Cell Death

Dr. Sten Orrenius, Professor and Chairman, Division of Toxicology, Institute of Environmental Medicine, Karolinska Institute, Stockholm, Sweden



Past Poster day Keynote Speakers and Lectures

1999

Nutrition, Immunity and Infection: Basic Considerations and Public Health
Significance

Dr. Ranjit Kumar Chandra, Professor & Director, Allergy, Asthma and Immunology
Centre, Gurgaon, India

1998

Futurology in Biomedical Research: From Crystallography to Crystal Gazing Prof.
Jasbir S. Bajaj, All India Institute of Medical Sciences, New Delhi, India

1997

The Impact of Research on the Development of an Academician

Dr. Elia Ayoub, Distinguished Professor of Pediatrics, Department of Pediatrics,
Pediatric Immunology and Infectious Diseases, College of Medicine, University of
Florida USA.

Original Research Abstracts List By Subject Area

Allied Health

- 1 Al-Awadhi AM, Jadaon MM, Al-Sayegh F, Al-Sharrah SK: Smoking and ADAMTS-13 levels in healthy males
- 2 Alkandari S, Alkandari M, Loche C, Gracies JM: Effects of self-rehabilitation contracts together with repeated botulinum toxin injections on walking speed in chronic hemiparesis. A prospective open-label study.
- 3 Alkandari S, Alkandari M, Tlili L, Gracies JM: Unilateral botulinum neurotoxin injections and self-rehabilitation in spastic paraparesis
- 4 Al-Meqbel A: The Auditory Cortical Responses of School-aged Children with Normal Hearing to Different Speech Sounds
- 5 *Al-Otaibi S, Al-Banaw A: The Expression of HER-2/neu in Autoimmune Thyroid Disorders
- 6 Al-Salahi OSA, Chan KL, Abdul Majid AMS, Abdulallah WZ, Yusoff NM: Anti-angiogenic quassinoids from Eurycoma longifolia modulate endothelial cell function
- 7 ALyouthah A, Al-Banaw A: The Role of Anti-Apoptotic And Stress Proteins in Ductal Breast Carcinoma

Anaesthesiology

- 8 Mohammed I, Al Refai, Dehrab N, Botev S, Nagi: Labor epidural analgesia and its outcome: A retrospective study of 9228 parturients

Anatomy

- 9 Al-Hussaini H, Al-Mulla F: Gene expression in central and peripheral retinal pigmented epithelial cells
- 10 Al Shimali HM, Rao MS, Renno WM, Smitha S: Neuron and astrocyte protection against lead toxicity by [(-)-Epigallocatechin-3-Gallate - (EGCG)] in hippocampal primary cell culture

- 11 Hedaya OM, Rao MS, Renno WM, Smitha S: Nigella Sativa seeds extract protects hippocampal neurons, enhances neurogenesis and increases astrocytes in kainic acid model of temporal lobe epilepsy
- 12 Khan KM, Rahman A, Attur S, Al-Shemary T, Srikumar TS: Lead-induced deficits in learning and memory: how important are divalent metals?
- 13 Kilarkaje N, Mousa AM, Al-Bader MM, Khan KM: Effects of antioxidants on bleomycin, etoposide and cisplatin (BEP)-induced testicular dysfunction and altered pituitary-gonadal axis in rats
- 14 Mujaibel LM, Narayana K: Lead Imparts Cytotoxic and Mitogenic Effects on Hepatocytes in a Dose and Time-dependent Manner in the Rat Liver
- 15 Rao MS, Hanna L, Renno WM, Smitha S: Enhancement of neurogenesis in middle aged rats by green tea extracts
- 16 Renno WM, Rao MS, Smitha S, George P: Green tea extract (-)-epigallocatechin-3-gallate (EGCG) protects the spinal neurons from degeneration by enhancing GAP-43, Bcl-2 and decreasing Bax expression in spinal cord in sciatic nerve crush model of nerve injury

Biochemistry

- 17 Al-Failakawi AT, Al-Fadhli SM, Al-Muhana AG: Profiling the expression of 84 genes related to the Th17 Regulatory Network in SLE Patients
- 18 Alshammari H, Craik J, Khan I: Erythrocyte Membrane Transporter Polypeptides in Sickle Cell Disease
- 19 Odeh A, Craik J, Benov L: Mitochondria-targeting properties and photodynamic efficacy of Zn(II) N-alkylpyridylporphyrin-based photosensitizers
- 20 Thomas M, Batinic-Haberle I, Benov L: Mechanism of Fe porphyrin-induced antibacterial effect
- 21 Thomas M, *Benov L: Tempol is not a superoxide dismutase mimetic

Community Medicine

- 22 Al-Asousi A, *Al Mousawi F, Al-Isa A, Al Qattan J, Al Sarraf F, Al Shamali H, Kabli F: The prevalence of obesity among Employees of Kuwait Government Ministries
- 23 Alfaddagh A, Al-Isa A: Nutritional Knowledge among College Students: Identifying Determinants and Correlations between nutritional Domains
- 24 AlHaddad H, AlAkool R, AlDakheel L, *AlJasser M, AlOusta D, AlMutairi A, Moussa M: Awareness of diabetes mellitus and its complications among diabetic patients in Kuwait
- 25 Al-Isa A, Al-Mutawa N, Jaafar J, Al-Shamali S, Eliwa N, Al-Jamaan S: The Prevalence and Factors Associated with the Use of Complementary and Alternative Medicine among Ministry Workers in Kuwait
- 26 Al-Taiair A, Thalib L: Effect of dust storms on the risk of respiratory and cardiovascular mortality in Kuwait
- 27 Al-Taiair A, Al-Sabah R, Elsalawy E, Shehab D, Al-Mahmoud S: Attitudes to knee osteoarthritis and total knee replacement in Arab women: a qualitative study
- 28 Bouhaimed M, Al-Sa"adoun W, Al-Yami H, Suresh A, Jacob S: Listen to the voice of our residents: The future of Ophthalmology training and care in Kuwait.
- 29 Bouhaimed M, Al-Jazzaf L, Baqer F, Salem F, Jacob S: Would you trust future health care providers with your life? Perception of Euthanasia among our HSC students!
- 30 Farouk N*, Gheith O, Farahat M, EL-Derea H, Abd EL-Moneim AL-Ahwal: Origanum Majorana as an Organic Food Preservative in Milk Products and Cereals

Dentistry

- 31 Al-Ali F, Nazar H, Al-Mutawa S, Ariga J, Soparkar P: Seven Year Sealant Retention in School Oral Health Program, Kuwait-Forsyth
- 32 Al-Asfour AA, Andersson L, Kamal M, Joseph B: Dentin-Induced New Bone Formation In Tibia Marrow In Rabbits
- 33 Alkharafi L, Tolarova M, *Alhajery D, Alrayes F, Abousheta T, Deshmukh S, Burezq HA: Orofacial Clefts and Polymorphism of 677CT Methylenetetrahydrofolate reductase
- 34 Al-Menezaa E, Nazar H, Al-Mutawa S, Ariga J, Soparkar P: Evaluation of Oral Health Promotion Presentations at School Oral Health Program, Kuwait.
- 35 Al-Mutawa S, Nazar H, Ariga J, Al-Duwairy Y, Soparkar P: Oral Health Knowledge and Behavior among Parents Visiting Vaccination Clinic in Kuwait.
- 36 Al-Mutawa S, Nazar H, Ariga J, Al-Duwairy Y, Soparkar P: Oral Health Status among Adult Employees in Kuwait.
- 37 Al-Mutawa SA, Shyama M, Honkala S, Honkala E: Dental Visits among Disabled Schoolchildren in Kuwait
- 38 Al-Otaibi JS, Behbehani MS, Omar R: Patterns of Posterior Tooth Loss in Kuwait University Dental Clinic: A Retrospective Cross Sectional Study
- 39 Anwiegi L, Finbarr Allen, *Hassan Ziada: Evaluation of resin bonded bridges in hypodontia patients
- 40 Bhardwaj R, Philip P, George S, Inbamani AR, Karched M, Asikainen S: Anaerobic culture and Real-Time PCR quantification of major periodontal pathogens: New prospects for dental researchers in Kuwait

- 41 Curtin S, Trace A, *Ziada H, Crowley E: Motivational interviewing in dental education & practice.
- 42 Ellepola ANB, Joseph BK, Chandy R, Khan ZU: Impact of nystatin on adhesion attributes of oral *Candida dubliniensis* isolates
- 43 ElSalhy M, *Varghese A, Honkala S, Soderling E, Honkala E: The Effect of 5 Weeks Xylitol Intervention on Salivary mutans streptococci (MS)
- 44 Honkala S, Al-Yahya H, Freeman R, Humphris G: Dental anxiety among adolescents in Kuwait
- 45 Honkala E, Makinen KK, Saag M, Honkala, Runnel, Olak J, Nommela R, Vahlberg T: The Caries Preventive Effect of Erythritol, Xylitol and Sorbitol
- 46 Inbamani AR, George S, Philip P, Karched M, Asikainen S: In vitro biofilm formation by the periodontal pathogen *Aggregatibacter actinomycetemcomitans* and its phylogenetic relative *Aggregatibacter aphrophilus*
- 47 Lucas PW, Omar R, Al-Fadhalah K, Almusallam AS, Henry A, Michael S, Thai L, Watzke J, Strait D, Atkins: The wear of mammalian dental enamel
- 48 Shyama M, Honkala S, Al-Mutawa SA, Honkala E: Oral Health-Related Quality of Life among Parents and Teachers of Disabled Schoolchildren in Kuwait
- 49 Ziada H *, Murphy C, Allen E, Curtin S, Tabirca S, Stack G: DentLearn Periodontics: clinical skill development for undergraduate dental students

Hematology

- 50 Hassan S, Varghese N: Lewis antibody mainly found in pregnant women and can be clinically significant

Medical Education

- 51 Al-Halabi B, Marwan Y, Hasan M, Alkhadhari S: Research practices among senior medical students in Kuwait: experiences, attitudes and barriers
- 52 Marwan Y, Ayed A: Selection criteria of residents for residency programs in Kuwait

Medicine

- 53 Abdella NA, Mojiminiyi OA, Al-Mohammedy H, Pinto C, Al-Rammah T: Low serum concentrations of Sex Hormone Binding Globulin (SHBG) as a Marker of categories of Glucose Intolerance and undiagnosed Diabetes in First Degree Relatives (FDR) of Type 2 Diabetic (T2DM) patients.
- 54 Abuatteya H, Al-Otaibi T, Halim M, Said T, Nair MP, Balaha MA, Abd-el-tawab K, Zakareya Z, Hosni W: Outcome of critical illness polyneuromyopathy in renal transplant recipients after successful weaning from ventilator for broncho-pneumonia
- 55 Akanji AO, Al-Shammri SN, Bhattacharya A, *Girgis M, Mathew R, Madala C: Determinants of Nutritional Abnormalities in Patients with Multiple Sclerosis
- 56 Akanji AO, *Al Shammri SN, Girgis M, Mathew R, Bhattacharya A, Madala C: Metabolic bone disease in drug naive patients with multiple sclerosis
- 57 Al-Adsani AMS, Shalla HA, Abdelkareem MRK, Hassanein REA, Khouzam SYA: Patients factors and disparities in the quality of diabetes care
- 58 Alazmi W, Omar S: Endoscopic treatment of post laparoscopic sleeve gastrectomy leaks: An experience from Kuwait
- 59 Al Dhafiri A, BoAbbas B, Gomez J, Jacob S, Bouhaimed M: Self-perception of visual functioning among diabetic patients in Kuwait
- 60 Al Dhafiri A, *BoAbbas B, Gomez J, Jacob S, Bouhaimed M: Do you think a patient will forget about an injection in the eye? Discrepancies between patients' self-reported ocular history and recorded data in their charts at the primary care diabetes clinics in Kuwait.

- 61 Awadain WH, Nair MP, Nampoory MRN, Said T, Halim MA, Moneim MA, Vareed B, El-sayed A, Al-Otaibi T: Long-term follow up of Zero-HLA mismatched renal transplants
- 62 Awadain WH, Hassan A, El-Deeb S, Hassan N, el-Agroudy A, Fouda A, Ghoneim M: Risk Factors for Steroid-Resistant T-Cell Mediated Acute Cellular Rejection and Their Effect on Kidney Graft and Patient Outcome
- 63 Al-Jarallah K, Shehab D, Al-Azmi W, Al-Fadli A: Rheumatic complications of Inflammatory Bowel Disease among Arabs: A hospital based study in Kuwait
- 64 Al-Shammri SN, Ahmad, AL Shaifan F, Al Sherada SN, Girgis M, Amro AS, Chada G, Madala C, Bhattacharya A: Clinical feature of meningitis, its risk factors, complications and outcome. A hospital based study.
- 65 Al-Shammri SN, Bhattacharya A, Girgis M, Mathew R, Madala C, Akanji AO: Environmental risk factors of multiple sclerosis in Kuwait: Evidence of association of Vit D deficiency with multiple sclerosis.
- 66 Bhattacharya A, Al-Shammri SN, Madala C, Mathew R, Akanji AO: Hypovitaminosis D in multiple sclerosis: Possible influence of circulating vitamin D binding protein levels.
- 67 Elsayed A, Al-Otaibi T, Nair P, Said T, AbdelHalim M: Kidney Transplantation in the Elderly
- 68 Gheith O, Al-Otaibi T, Nampoory MRN, Mosaad A, Al-waheeb S, Halim M, Saied T, Balaha M, Hosni W, Abu-Ateya H, Prasaad Nair: Acute antibody-mediated rejection in paediatric renal transplant recipients: single centre experience.
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- 70 Marouf R, Behbehani N, Zubaid M, Mojiminiyi OA, Al Wazzan H, El-Muzaini H, Abdulla R, Adekile AD: Pulmonary hypertension in patients with sickle cell anemia in Kuwait
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Original Research Abstracts By Subject Area

Allied Health

Category: Graduate MSc: Basic Science

1

Smoking and ADAMTS-13 levels in healthy males

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Introduction:

The procoagulant protein von Willebrand factor (vWF), which has prothrombotic activity, was reported to be elevated in smokers leading to increase incidence of thrombosis. vWF is down-regulated by ADAMTS-13 protease. No reports on the effects of smoking on ADAMTS-13 are currently present, particularly in Arab ethnicity. Aim of this study is to determine the effects of smoking on ADAMTS-13 antigen and activity levels in healthy Arab

Methods:

Venous blood samples from 80 smoker and 80 nonsmoker healthy male subjects were collected after asking subjects to fast and refrain from smoking for 8 hours. Similar sampling was done for 40 smokers, who were asked to smoke one cigarette immediately before taking blood (termed "acute smokers"). For all blood samples, plasma was used to measure ADAMTS-13 antigen and activity levels, as well as vWF collagen binding activity levels using commercial ELISA kits.

Results:

No difference in ADAMTS-13 antigen level was found between smokers at rest and nonsmokers, but ADAMTS-13 and vWF activities were significantly lower in smokers ($p < 0.018$). Compared to smokers at rest, acute smokers had significantly higher levels of vWF activity and ADAMTS-13 antigen and activity levels ($p < 0.01$).

Conclusions:

The increase in vWF activity in smokers is an acute mechanism that occurs in response to endothelial injury caused by cigarette consumption. High vWF activity is accompanied by an increase in ADAMTS-13 activity as a natural physiological mechanism to degrade the elevated vWF molecules. If not followed by a subsequent smoke, the activities of both proteins subside. The repeated increase in vWF and constant degradation by ADAMTS-13 results in lower overall levels of both proteins in smokers (at rest) compared to nonsmokers who do not experience a similar (repeated) injury to the endothelium.

Key Words: von Willebrand factor; Smoking

Funding Agency: Sanofi Company, France

Allied Health

Category: Clinical

2

Effects of self-rehabilitation contracts together with repeated botulinum toxin injections on walking speed in chronic hemiparesis.

A prospective open-label study.

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Introduction:

Objective: Evaluation of walking speed in patients with chronic hemiparesis treated by a guided self-rehabilitation contract (GSRC) together with repeated botulinum toxin (BoNT) injections.

Methods:

Design: Open label trial.

Setting: Tertiary rehabilitation outpatient center.

Patients: Fourteen patients (9F, 5M) with chronic hemiparesis (mean delay to GSRC onset 52 months, 7-150) consecutively treated with a GSRC with 3 BoNT injections.

Intervention: GSRC involving prolonged daily stretching postures and exercises of unassisted rapid alternating movements of maximal amplitude, in combination with 3 consecutive BoNT injections (including onabotulinumtoxinA, abobotulinumtoxinA, incobotulinumtoxinA or rimabotulinumtoxin B) in selected lower limb muscles (including plantar flexors, rectus femoris) over a 9-month period.

Main Outcome Measures: Comfortable and maximal barefoot 10m walking speed was assessed 6 times over a 9-month period (pre and post injection assessments). A multivariable analysis tested the effects of Visit (passage of time under GSRC) and Status pre or post injection as predictors of walking speed variations.

Results:

Walking speed increased in the 9-month period (comfortable +49±14%, mean±SEM, p<0.001; maximal, +65±13%, p<0.001). While the first injection improved walking speed (comfortable, +9.9%, p=0.019; maximal, +16.5%, p<0.001), this effect weaned in subsequent injections. Overall, the factor Visit (passage of time) was a predictor of walking speed variations (p<0.001) while the status pre/post injection was not. At baseline, unlike comfortable walking speed, maximal walking speed was a predictor of subsequent walking speed variations (comfortable, p=0.024; maximal, p=0.006).

Conclusions:

Hemiparetic patients meaningfully improve walking speed in chronic stages once agreeing to a Guided Self-Rehabilitation Contract, together with botulinum toxin injections.

Key Words: Spasticity guided self-rehabilitation contract.; Botulinum toxin; Guided self-rehabilitation contract

Funding Agency: None

Allied Health

Category: Clinical

3

Unilateral botulinum neurotoxin injections and self-rehabilitation in spastic paraparesis

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Introduction:

Objective: Evaluation of walking performance, spasticity and subjective impression after a single, unilateral botulinum toxin (BoNT) injection into the more affected limb while following a Guided Self-Rehabilitation Contract (GSRC) in ambulatory patients with spastic paraparesis.

Design: Retrospective chart review.

Methods:

Patients: 22 ambulatory patients with spastic paraparesis due to non-progressive lesions (NP; n=14) and to multiple sclerosis (MS; n=8) consecutively injected unilaterally between January 2008 and July 2009 in the Neurorehabilitation Clinic.

Intervention: Assessment before and 6 weeks after one unilateral BoNT injection on the more affected side. Toxin types and doses included Botox® (units in \pm SD) (200-400U; 302 \pm 71U), Dysport® (1000-1500U; 1000 \pm 408U) and Neurobloc® (10,000U). Muscles were targeted as per clinical judgment; soleus (n=17) and rectus femoris (n=15) were most often injected. The GSRC involved stretching postures and rapid alternating movement exercises on muscles identified with the physician/therapist.

Main Outcome Measures: (1) 10-meter fast barefoot walking test; (2) Lower limb spasticity (Tardieu Scale); (3) Subjective patient impression (negative, positive or not sure).

Results:

In the NP group, every patient improved walking performance (barefoot speed pre-BoNT 0.67 \pm 0.08 m/s, post-BoNT 0.79 \pm 0.09 m/s, $p < 0.001$; step length pre-BoNT 0.45 \pm 0.04 m, post-BoNT 0.49 \pm 0.04 m, $p < 0.001$; cadence pre-BoNT 1.43 \pm 0.10 step/s, post-BoNT 1.55 \pm 0.12 step/s, $p < 0.05$), 93% reported positive impression while spasticity decreased in injected muscles, particularly rectus femoris (Catch angle pre-BoNT 23 \pm 6°, post-BoNT 40 \pm 3°, $p = 0.04$). In the MS group, 3/8 patients improved walking performance and 4/8 reported positive impression.

Conclusions:

In non-progressive spastic paraparesis, unilateral BoNT injections in the more affected leg while following guided self-rehabilitation may produce objective and subjective walking improvement.

Key Words: Spastic paraparesis; Botulinum toxin; Guided Self-Rehabilitation Contract

Funding Agency: None

Allied Health

Category: Graduate PhD (Basic Science)

4

The Auditory Cortical Responses of School-aged Children with Normal Hearing to Different Speech Sounds

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Introduction:

The current study determined whether naturally produced speech stimuli /m/, /g/, and /t/ evoke distinct cortical auditory evoked potential (CAEP) responses patterns that can be reliably recorded and differentiated from each other based on their spectral information. These three speech stimuli were chosen because they encompass frequency informational emphasis in the low-, mid- and high-frequency regions, respectively, and thus they have the potential to provide information about the perception of it at the level of the auditory cortex in different frequency regions.

Methods:

CAEPs were recorded from eighteen children with normal hearing, aged 5-12 years in response to speech stimuli presented at a conversational level (65 dB SPL) via loudspeaker.

Results:

Cortical responses were reliably elicited by each of the speech sounds dominated by its frequency and were different in their P1 & N2 latencies and amplitudes. The largest amplitude of the P1 and N2 component was for /g/ and the smallest was for /t/.

Conclusions:

This study demonstrates that the spectrally different speech sounds are encoded differentially at the cortical level, and evoke distinct CAEP response patterns. Further, CAEP latencies and amplitudes may provide an objective indication for how speech sounds are encoded differently at the cortical level.

Key Words: Cortical auditory evoked potentials (CAEP); Electroencephalogram (EEG); P1, N2 components

Funding Agency: None

Allied Health

Category: Basic Sciences

5

The Expression of HER-2/neu in Autoimmune Thyroid Disorders

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Introduction:

The thyroid gland is responsible for regulating the body metabolism through secreting thyroxine (T4) and triiodothyronine (T3) [2]. Thyroid cancer pathogenesis might differ from other cancers because it could evolve from autoimmune thyroid disorders such as Hashimoto thyroiditis. Only few researchers studied Her2/neu expression and its relation to thyroid cancer. Their data are still scanty and contradicting and no link was made in regard to autoimmune thyroiditis. Aim: to investigate and compare the expression of HER-2/neu and TPO immunohistochemically in different pathological thyroid tissue samples, both benign and malignant.

Methods:

Immunohistochemistry was performed using HER2/neu antibody on 31 archival thyroid tissue samples (9 MNG, 7 Hashimoto thyroiditis, 3 Graves disease, 7 Thyroiditis, 3 Thyroid carcinoma). TPO IHC was performed on 27 thyroid tissue samples (10 MNG, 6 Hashimoto thyroiditis, 2 Graves disease, 6 Thyroiditis, 3 Thyroid carcinoma). HER2/neu and TPO evaluation was done semi-quantitatively using Allred method for scoring cytoplasmic and membrane staining.

Results:

The expression of HER-2/neu was seen in 97% (30/31) of thyroid samples and only 3% (1/31) showed no reaction. The expression was mostly confined in the cytoplasm and the membrane of thyroid follicular cells. Strong reaction was seen in Graves Disease and Thyroiditis. TPO expression was mainly conserved in the cytoplasm of all positive samples, but it was also present in the membrane of few other sections.

Conclusions:

HER-2/neu is constitutively expressed in high amounts in the thyroid follicular cells of both benign and malignant samples. The expression was both cytoplasmic and membranous. Due to the fact that, HER-2/neu expression is highly seen in both breast and stomach cancer patients and are treated with anti-HER-2/neu. Such treatment could affect their thyroid function as early studies have suggested. Therefore our findings imply that the treatment of breast and stomach cancer patients with anti-HER2-neu antibodies could have an effect on the thyroid gland and may cause cellular damage. Consequently, these patients should be screened for thyroid function and antibodies when they are taking the treatment course.

Key Words: Human epidermal growth factor receptor 2; Thyroperoxidase

Funding Agency: None

Allied Health

Category: Graduate MSc (Basic Science)

6

Anti-angiogenic quassinoids from *Eurycoma longifolia* modulate endothelial cell function

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Introduction:

Targeting angiogenesis could be an excellent strategy to combat angiogenesis-dependent pathophysiological conditions such as cancer, rheumatoid arthritis, obesity, systemic lupus erythematosus, psoriasis, proliferative retinopathy and atherosclerosis. Recently a number of clinical investigations are being undertaken to assess the potential therapeutic application of various anti-angiogenic agents. Many of these angiogenesis inhibitors are directed against the functions of endothelial cells, which are considered as the building blocks of blood vessels. Similarly, roots of a traditional medicinal plant, *Eurycoma longifolia*, can be used as an alternative treatment to prevent and treat the angiogenesis-related diseases.

Methods:

In the present study, antiangiogenic potential of partially purified quassinoids-rich fraction (TAF273) of *E. longifolia* root extract was evaluated using ex vivo and in vivo angiogenesis models and the anti-angiogenic efficacy of TAF273 was investigated in human umbilical vein endothelial cells (HUVEC).

Results:

TAF273 caused significant suppression in sprouting of microvessels in rat aorta with IC₅₀ 11.5 µg/ml. TAF273 (50 µg/ml) showed remarkable inhibition (63.13%) of neovascularization in chorioallantoic membrane of chick embryo. Tumor histology also revealed marked reduction in extent of vascularization. In vitro, TAF273 significantly inhibited the major angiogenesis steps such as proliferation, migration and differentiation of HUVECs. Phytochemical analysis revealed high content of quassinoids in TAF273. Specially, HPLC characterization showed that TAF273 is enriched with eurycomanone, 13α(21)-epoxyeurycomanone and eurycomanol.

Conclusions:

These results demonstrated that the antiangiogenic activity of TAF273 may be due to its inhibitory effect on endothelial cell proliferation, differentiation and migration which could be attributed to the high content of quassinoids in *E. longifolia*.

Key Words: Quassinoids,; Anti-angiogenic; Endothelial cells

Funding Agency: This work was supported by the Short Term Grant, U

Allied Health

Category: Clinical

7

The Role of Anti-Apoptotic And Stress Proteins in Ductal Breast Carcinoma

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Introduction:

To plan the course of treatment for ductal breast carcinoma, the oncologist depends heavily on the outcome of breast cancer panel performed in the pathology laboratory. Estrogen and progesterone receptors determine the susceptibility of the tumor to anti-hormonal therapy, Ki67 measures the cellular proliferation index, Her2/neu positive tumors are more aggressive but can be treated with Herceptin, while high positive p53 demonstrates the mutagenicity of the tumor. Aim: to investigate the correlation between breast cancer profile markers (Her2/neu, ER/PR, Ki67 and p53) with cytoprotective molecules such as Hsp27 and Bcl-2 which could give a better understanding for the disease progression.

Methods:

Immunohistochemistry was performed using Hsp27 and Bcl-2 antibodies on sixteen archival ductal breast carcinoma tissue samples. The slides were evaluated semi-quantitatively (- = negative, += weak, ++= moderate, +++=strong).

Results:

15/16 samples were positive for Hsp27 and 9/16 were positive for Bcl-2. The majority of the tissues were positive for Ki67 and Her2/neu. Only half of the samples were positive for p53. ER and PR had almost similar positivity in different tissues.

Conclusions:

The cellular elements of ductal breast carcinoma may behave differently from sample to another and the oncologist should be careful when planning the treatment for the patient. Hsp27 is expressed in most malignant conditions and as it is not expressed in normal conditions, it should be considered as target for therapy. Ductal breast carcinoma with Bcl-2 positive cells, high levels of Her2/neu, Ki67 and low ER/PR could be classified as the most aggressive forms compared to others.

Key Words: Breast cancer panel; Heat Shock Protine 27

Funding Agency: None

Anaesthesiology

Category: Clinical

8

Labor epidural analgesia and its outcome: A retrospective study of 9228 parturients

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Introduction:

Labor pain is one of the most severe varieties of pain and epidural analgesia is one of the best methods of pain relief available to pregnant females. We did a retrospective study of 9228 parturients (between Jan 2012 - Dec 2012) comparing the incidence of spontaneous vaginal deliveries, instrumental deliveries (Forceps and Vacuum) and Cesarean section (CS) in parturients with labor epidural analgesia (LEA) and without epidural (Non Epidural-NE).

Methods:

Labor delivery records were checked from Jan 2012 to Dec 2012. Parturients were divided into two groups. The study group was with epidural (LEA) and the control group was without epidural (NE). The incidence of spontaneous vaginal delivery, instrumental delivery and CS was noted. In an attempt to make both the groups comparable, parturients with more than one previous CS, breech, refusing VBAC, Transverse lie, placenta previa, triplets, brow presentation, footling, macrosomic babies were excluded from the study.

Results:

There were 4954(53.68%) patients in the LEA group and 4274(46.31%) in NE group. 3552(71.69%) in the LEA and 3604(84.32%) in NE group had spontaneous vaginal delivery. The incidence of instrumental delivery was 519(10.47%) in LEA and 114(2.66%) in NE Group. Rates of CS were 903(18.22%) in LEA and 556(13%) in NE group.

Conclusions:

Labor epidural is considered the gold standard for pain relief during labor with high maternal satisfaction rates. Our study showed that it is associated with increased rates of Instrumental delivery (almost five times) and Cesarean section (25% increased rates).

Key Words: Epidural; Instrumental; Cesarean

Funding Agency: None

Anatomy

Category: Basic Sciences

9

Gene expression in central and peripheral retinal pigmented epithelial cells

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Introduction:

As the retinal pigmented epithelium (RPE) is implicated in a range of degenerative eye diseases, an understanding of its renewal is critical for the development of therapeutic strategies. Previously we have demonstrated that a proportion of mature RPE cells have the capacity to replicate and divide in peripheral retinal regions but not in central retina. Our objective was to investigate the gene expression in central and peripheral RPE cells in rat retina.

Methods:

RNA was isolated from both central and peripheral RPE tissues of Dark Agouti rat using Trizol method. Micro-array analysis was then performed in the two samples as per the procedure described by the manufacturer (Affymetrix, Santa Clara, California). Gene Ontology Enrichment Analysis and Visualization tool (Gorilla) was used to determine Gene Ontology categories.

Results:

Expression levels of 480 genes were different in central and peripheral RPE cells. When functionally classified, the majority of these genes was associated with growth, developmental processes, structural differentiation, cell adhesion and eye development. In general the expression level of most of the developmental and growth associated genes were higher in peripheral RPE cells, which may explain the higher proliferative capacity of these cells.

Conclusions:

Peripheral retinal RPE cells have higher tendency to enter into cell cycle than central RPE cells due to differences in gene expression between the two areas.

Key Words: Proliferation; Gene expression

Funding Agency: Kuwait University. MA02/09

Anatomy

Category: Undergraduate

10

Neuron and astrocyte protection against lead toxicity by [(-)-Epigallocatechin-3-Gallate - (EGCG)] in hippocampal primary cell culture

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Introduction:

Epigallocatechin-3-Gallate(EGCG) the most active component of Green tea, has been shown to have neuroprotective and antioxidant properties. Objective of the present study was to investigate the role of EGCG in protection of newly generated neurons and astrocytes against lead induced toxicity in hippocampal cell culture.

Methods:

Primary culture of fetal hippocampal tissue (E19) was done in the DMEM media. On day 3, cultures were divided into four groups and treated as follows for 4 days: i) Normal Control (NC, n=6) - no treatment, ii) Lead only (LO, n=6) - media was replaced with media containing 20μM lead nitrate, iii) Epigallocatechin-3-Gallate-(EGCG, n=6)- media was replaced with media containing 50μM EGCG, iv) Lead + EGCG, (L+EGCG, n=6) - media was replaced with media containing 20μM lead nitrate and 50μM EGCG. Cell survival was analyzed by counting number of cells in randomly selected fields. Culture dishes were stained for doublecortin and GFAP immunostaining and the number of stained neurons and astrocytes in the culture were quantified. Data were analyzed with one way ANOVA and Bonferroni's test.

Results:

The LO cultures showed significantly decreased number of surviving cells compared to NC, EGCG, and L+ EGCG groups. Cells in the LO group had fewer and shorter processes. The cell death count was significantly decreased (40%, P<0.001) in cultures treated with lead and EGCG, compared to LO group. The cultures treated with L+EGCG showed significantly increased number of doublecortin positive neurons (40%, P<0.001) and GFAP immunopositive positive astrocytes (50%, P<0.001) compared to LO group.

Conclusions:

These data suggest that EGCG can counteract lead toxicity and enhance cell survival and differentiation into neurons and astrocytes in culture. Acknowledgements We acknowledge RCF, Faculty of Medicine, Kuwait University (Grant No. GM01/01&GM 01/05) and Ms. Sunitha Pramod in RCF for technical support for confocal and phase contrast microscopy.

Key Words: Neuron; Astrocyte; EGCG

Funding Agency: None

Anatomy

Category: Undergraduate

11

***Nigella sativa* seeds extract protects hippocampal neurons, enhances neurogenesis and increases astrocytes in kainic acid model of temporal lobe epilepsy**

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Introduction:

Recent studies have shown that the extracts of *Nigella sativa* seeds (NS) have many therapeutic effects. Present study objective was to investigate the effect of alcoholic extract of *Nigella sativa* (NSE) on hippocampal neurons, astrocytes and neurogenesis in kainic acid model of temporal lobe epilepsy (TLE).

Methods:

TLE was developed by injecting kainic acid (0.25µg) into lateral ventricles in adult Wistar rats. Rats were then divided into: i) Lesion only (LO, n=12, received daily 1ml of saline orally for 48 hours or one week) and ii) Lesion + *Nigella sativa* extract (L+NSE, n=12, received daily NSE (400mg/kg) in 1ml of saline orally for 48 hours or one week) groups. Cryostat brain sections were processed for cresyl violet, fluorojade-B, doublecortin (DCX) and Glial fibrillary acidic protein (GFAP) immunostaining. The number of surviving, degenerating (Fluorojade), newly generated neurons (DCX) and astrocytes (GFAP) were quantified in the dentate hilus (DH) and CA3 regions of the hippocampus. Data were analyzed with one-way ANOVA followed by Bonferroni's test.

Results:

At 48 hours Fluorojade-B staining revealed significantly less number (~20%) of degenerating neurons in DH and CA3 regions in lesion + NSE group compared to LO group (P<0.05). At one week, significantly less (~60%) number of degenerating neurons were found in L+NSE compared to LO group, P<0.0001). DCX staining showed significantly increased neurogenesis (~30%) in the dentate gyrus after one week of treatment in L+NSE group(P<0.001). GFAP staining revealed significantly increased astrocytes in DH and CA3 region after 1 week of treatment.

Conclusions:

These data suggest that NSE can prevent the kainic acid induced neurodegeneration and enhances neurogenesis in TLE.

Acknowledgements We acknowledge RCF, Faculty of Medicine, Kuwait University (Grant No. GM01/01&GM 01/05) and Ms. Sunitha Pramod in RCF for technical support for confocal microscopy.

Key Words: Nigella Sativa; Neurogenesis; Epilepsy

Funding Agency: None

Anatomy

Category: Basic Sciences

12

Lead-induced deficits in learning and memory: how important are divalent metals?

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Introduction:

Lead (Pb) is a neurotoxicant which impairs learning and memory. The purpose of this study was to investigate whether exposure to low levels of lead has an effect on the blood and brain levels of the essential divalent metal ions Cu, Mn and Zn.

Methods:

Wistar rat pups (n=10/group) were exposed to 0.2% Pb-acetate via their dams' drinking water from PND 1 to 21 and directly via drinking water from weaning until PND 30. The control group (n=10) was given regular water. Pb, Cu, Mn and Zn in blood and brain tissues were measured by atomic absorption spectrophotometer. Expression of Cu- and Zn-binding protein (MT-3) was studied using immunohistochemical staining.

Results:

Mean values of Pb in blood and brain in Pb-exposed rats were significantly ($p<0.05$) higher than in control animals at PND21 and PND30. At PND21 blood levels of Cu, Mn and Zn decreased in the Pb-exposed rats by 38%, 27% and 34%, respectively. At PND30 the reduction in the respective divalent metal ions was 38%, 23% and 28%. Similarly, brain Cu, Mn and Zn levels were reduced by 40%, 33% and 38%, respectively in Pb-exposed group at PND21. At PND30, brain levels of both Cu and Zn were decreased by 30% in the Pb-exposed rats, whereas, brain Mn was not affected. More neurons in the dentate gyrus and the hippocampus (pyramidal layers CA1, CA2 and CA3) showed positive immunoreactivity for MT-3 in lead-exposed rats in comparison to the control animals.

Conclusions:

These data suggest that higher Pb levels during early postnatal development of brain causes over expression of MT-3 in the hippocampal formation and sequestration of essential divalent metal ions. Cu, Mn and Zn are necessary co-factors for many enzymes in the brain and their sequestration with MT-3 in the brain of Pb-exposed rats may result in metabolic alterations and subsequent functional impairment.

Key Words: Lead, MT-3; Learning & memory; Divalent metals

Funding Agency: This work was supported by Kuwait University grant WF01/07.

Anatomy

Category: Basic Sciences

13

Effects of antioxidants on bleomycin, etoposide and cisplatin (BEP)-induced testicular dysfunction and altered pituitary-gonadal axis in rats

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Introduction:

Cisplatin-based anti-cancer chemotherapy also affects the functions of non-target organs. The present study investigated an antioxidant cocktail (AO) for its possible intervention in the chemotherapy-induced testicular dysfunction.

Methods:

Adult male Sprague-Dawley rats were treated with water, the AO (po; α -tocopherol, 100 mg/kg; L-ascorbic acid, 50 mg/kg; Zn, 40 mg/L and Se, 100 μ g/L), 3 cycles (ip) of 21 days each of bleomycin (0.75 mg/kg), etoposide (7.5 mg/kg) and cisplatin (1.5 mg/kg) (BEP) with or without the AO, and sacrificed at the end of the last cycle or a 9-week-long recovery period. The sperm parameters, testicular histopathology, PCNA and transferrin expression (Western blotting and immunohistochemistry), serum levels of testosterone, LH, FSH, inhibin, IGF1 and IGFBP (ELISA) were investigated. The data were analyzed by one way ANOVA followed by LSD test and $P < 0.05$ was considered significant.

Results:

At the end of the third cycle, the sperm parameters, sperm production, PCNA, transferrin, testosterone and inhibin levels decreased, whereas LH and IGFBP levels increased ($P < 0.05$). The AO normalized to the control level of BEP-induced decrease in sperm motility, germ cell depletion and inhibin, and increase in LH and IGFBP levels ($P < 0.05$). However, in BEP treated groups, testicular atrophy was observed. During recovery, the AO accelerated recovery in sperm parameters, tubular atrophy, transferrin, testosterone and inhibin levels. While LH and FSH levels were still decreased, the IGFBP level was elevated in both BEP and BEP+AO groups.

Conclusions:

The antioxidants accelerate the process of germ cell repopulation and normalization of hormone levels, although not completely, following BEP treatment. The protective effects of the AO are better if given during the recovery period than during the treatment. Thus, antioxidant supplementation, especially during recovery phase, may help normalize the testicular functions.

Key Words: Anticancer drugs; Male infertility; Pituitary-testicular axis

Funding Agency: Kuwait University grant # MA01/08 and GM01/01 and GM01/05

Anatomy

Category: Graduate MSc (Basic Science)

14

Lead Imparts Cytotoxic and Mitogenic Effects on Hepatocytes in a Dose and Time-dependent Manner in the Rat Liver

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Introduction:

Lead exposure is increasingly becoming a serious public health concern. Recent reports indicate that lead may act as a weak mutagen/or carcinogen. The carcinogenic potential of any carcinogen depends on its ability to induce irreparable DNA damage and uncontrolled cell proliferation. However, mitogenic effects of lead on hepatocytes are not well studied. In this view, the objective of the present study was to investigate a putative hepatocyte proliferation in lead-exposed liver.

Methods:

Adult Wistar rats (13-15-week-old; N=8) were exposed via drinking water to 0, 0.5% and 1% lead acetate for 3d, 14d and 35d and the livers were sampled the next day. Histopathological changes in the liver were evaluated in toluidine blue stained thick sections. The expression of PCNA and Ki-67 was evaluated by Western blotting and confocal microscopy. Data were analyzed by one way ANOVA followed by LSD and $P < 0.05$ was considered significant.

Results:

Lead exposure resulted in structural changes in livers such as margination of mitochondria, dissolution of glycogen, vacuolation, sinusoidal swelling and degeneration of hepatocytes. On all sampling days, PCNA activities increased, but in a dose-dependent manner on 15d and 36d, compared to that in control livers ($P < 0.05$). In 0.5% dose groups, a time-dependent decrease and in 1% dose groups, a time-dependent increase in the protein level was observed ($P < 0.05$). The Ki-67 expression also increased on all days. A time-dependent increase in the expression was observed on 36d ($P < 0.05$).

Conclusions:

Lead exposure induces concomitant hepatocyte degeneration and proliferation in the liver. Thus, lead simultaneously acts as a cytotoxic agent and a mitogen for hepatocytes. Long-term lead exposure may stimulate hepatic carcinogenesis. On the other hand, up-regulated PCNA expression may also be involved in DNA damage repair pathways as lead is known to induce DNA damage.

Key Words: Hepatocytes; Cell proliferation; Cell death

Funding Agency: Kuwait University grant # YS05/09 and GM01/01 & GM01/05

Anatomy

Category: Basic Sciences

15

Enhancement of neurogenesis in middle aged rats by green tea extracts

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Introduction:

Hippocampal dentate gyrus neurogenesis is a continuous process in adult brain. Newly formed neurons have been shown to contribute for learning and memory. Adult neurogenesis decreases progressively as age advances. Polyphenols and other constituents of green tea, such as (-)-epigallocatechin-3-gallate (EGCG), have been shown to have diverse activities like neuroprotection, antiinflammatory, antioxidant, antimutagenic and anticarcinogenic activities. Recently a study showed enhancement of dentate gyrus (DG) neurogenesis in very young rats by green tea extract. Objectives: In this study we are aiming to investigate the effect of aqueous extract of green tea (GTE) and EGCG on dentate gyrus neurogenesis in middle aged rats.

Methods:

Wistar rats of 10 months age were divided into three groups and treated as follows: i) Normal control(NC)-no treatment, ii) Green tea extract (GTE)- GTE was fed orally (1ml/day) for 30 days, iii) EGCG group – EGCG was fed orally (25mg/kg) for 30 days (n=6 in all groups). Rats in all groups were sacrificed at the end of treatment protocol. Brain sections (30µm) were processed for doublecortin (DCX) immunostaining, and number of DCX positive cells in DG were quantified. Data were analyzed with one way ANOVA followed by Bonferroni's test.

Results:

There was a significant increase in the newly produced neurons (doublecortin positive) in the dentate gyrus of both GTE and EGCG treated groups compared to NC group (P<0.001). The DCX positive neurons represented morphologically different population of granule neurons which were found to be at different stages of differentiation. The new neurons in GTE and EGCG treated groups were of more mature in nature than those in NC group.

Conclusions:

Results of the present study showed beneficial effect of GTE and EGCG in enhancing the neurogenesis in middle aged rats. GTE and EGCG may be used for treatment of age related decline in neurogenesis and memory disorder in ageing people.

Key Words: Neurogenesis; Middle age; EGCG

Funding Agency: None

Anatomy

Category: Basic Sciences

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Green tea extract (-)-epigallocatechin-3-gallate (EGCG) protects the spinal neurons from degeneration by enhancing GAP-43, Bcl-2 and decreasing Bax expression in spinal cord in sciatic nerve crush model of nerve injury

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Introduction:

(-)-Epigallocatechin gallate (EGCG), has been reported to have neuroprotective and neuroregenerative role in the nervous system. This study was designed to understand the mechanism of EGCG induced neuroprotection in spinal cord neurons after sciatic nerve crush injury.

Methods:

Adult male Wistar rats (n=6) were randomly assigned to: (i) Sham control (SC), (ii) Sciatic nerve crush+Saline (SNC+S) and (iii) Sciatic nerve crush+EGCG (SNC+EGCG) groups. In SNC+S and SNC+EGCG groups, sciatic nerve was exposed and crushed with forceps for 60s and treated with saline(i. p) or EGCG (50mg/kg) respectively for two weeks. Lumbosacral spinal cord (LSC) were harvested, processed for immunostaining for GAP-43, GFAP, Bax and Bcl-2, immunostaining.

Results:

Ventral grey horn (VGH) of SNC+EGCG group of rats showed significantly less number of degenerating neurons ipsilateral to the crush injury compared to SNC+S and SC groups. GAP-43, and Bcl-2 immunoreactivities were significantly increased in SNC+EGCG group. Bax immunoreactivity was significantly decreases in SNC+EGCG group. There was no significant change in the GFAP immunoreactivity in SNC+EGCG compared to SC group.

Conclusions:

Neuroprotection by EGCG may be mediated through enhancing the expression of GAP-43 and other pro and anti-apoptotic markers in the spinal cord. These data suggest possible use of green tea extract for treating the traumatic brain and spinal cord injuries.

Key Words: Green tea; Sciatic nerve; Spinal cord

Funding Agency: None

Biochemistry

Category: Graduate MSc (Basic Science)

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Profiling the expression of 84 genes related to the Th17 Regulatory Network in SLE Patients

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Introduction:

Systemic lupus erythematosus (SLE) is a connective tissue, autoimmune mediated disorder, marked by a wide array of organ system dysfunction and with various clinical presentations. The mechanism of its pathogenesis is unclear. T helper (Th) cells have a big role in the pathogenesis of autoimmune diseases. Recently, many pieces of evidence have emerged showing that inappropriate regulation of type 17 T helper cells (Th17) play a fundamental role in the development of many autoimmune diseases including SLE.

Methods:

Ninety six study subjects, 66 SLE patients and 30 age and sex matched healthy controls, were recruited. Th17 Autoimmunity and Inflammation RT-PCR Array was used for analyses of Th17-related genes expression in peripheral white blood cells from collected samples. IL-17A and IL-17F concentrations were measured in samples serum using ELISA technique. Web-based PCR Array data analysis software (SABiosciences) and GraphPad Prism V.6 software were used for data analysis.

Results:

Out of the 84 targets, 14 genes (IL-17A, IL-17C, IL-17D, IL-17F, IL-18, IL12RB2, IL12R, CCL2, CCL20, CXCL5, MMP3, RORC, STAT4 and TRAF6) were found to be differently expressed in SLE patients and healthy controls. These genes showed statistically significant ($p < 0.0006$) changes and were down regulated ($FC < 1$). No significant difference was observed between SLE patients with and without nephritis. Serum concentrations of IL-17A showed a difference in SLE in compared to LN ($p = 0.032$), and IL-17F showed difference in SLE in compared to healthy controls ($p < 0.0001$).

Conclusions:

To our knowledge, our study is the first to confirm the association of Th17 regulatory network genes to SLE in patients of Arab ethnicity. The difference in Th17 signaling pathway genes indicates that this pathway may be involved in the pathogenesis of SLE.

Key Words: Systemic lupus erythematosus (SLE); T helper cells 17 (Th17); Th17 signaling pathway

Funding Agency: Collage of graduate studies

Biochemistry

Category: Graduate MSc (Basic Science)

18

Erythrocyte Membrane Transporter Polypeptides in Sickle Cell Disease

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Introduction:

Sickle cell disease (SCD) is one of the most common severe inherited haematological disorders. It is caused by a single base mutation that results in the changes a glutamic acid residue to valine at the sixth position of the β -globin chain of haemoglobin giving haemoglobin S (HbS). SCD is characterized by increased oxidative stress and shortened erythrocyte lifespan together with changes in membrane permeability that contributes to abnormal 'sickle cell' morphology driven by polymerization of HbS upon deoxygenation. In many cells, intracellular pH and cell volume are regulated by transmembrane exchange of sodium and hydrogen cations mediated by an integral membrane protein, NHE-1. In this study we investigated the expression of nutrient transporters (hENT-1 and GLUT-1) and ion transporters (NHE-1 and AE-1) in SCD to better understand the role of erythrocyte membrane changes in SCD.

Methods:

Expression of erythrocyte membrane proteins were studied by SDS-polyacrylamide gel electrophoresis, and quantitative immunoblot analysis. Expression of AE-1 was also quantitated by flow cytometry in intact erythrocytes using eosin-5-maleimide as a fluorescent probe. Sodium pump (Na/K ATPase) activity was followed by assay of PNPase activity.

Results:

No change was shown in the expression of hENT-1 in the plasma membrane of erythrocytes in SCD patients while the glucose transporter (GLUT-1) expression was significantly elevated (133.79 ± 5.67 vs. 97.38 ± 7.41 arbitrary units; p -value <0.05). The expression of ion transporters (AE-1 by flow cytometry and immunoblot) and NHE-1 (immunoblot) was not significantly different in SCD patients but PNPase was higher (0.729 ± 0.137 n=7 vs. 1.303 ± 0.211 $\mu\text{mol/mg/ml}$, n=8; p -value <0.05).

Conclusions:

These results demonstrate changes in the erythrocyte membrane in SCD but indicate the changed expression of NHE-1 cation exchanger is not a contributory factor in SCD pathology.

Key Words: Sick Cell Anemia; NHE-1; AE-1

Funding Agency: YM01/12 Research Administration College of Graduate Studies

Biochemistry

Category: Graduate MSc (Basic Science)

19

Mitochondria-targeting properties and photodynamic efficacy of Zn(II) N-alkylpyridylporphyrin-based photosensitizers

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Introduction:

Photodynamic therapy (PDT) is emerging as a promising medical treatment for both neoplastic and non-neoplastic disorders. In PDT, cell destruction is achieved by a combination of visible light and light-sensitive compounds called photosensitizers (PSs), which upon illumination produce cytotoxic reactive species. Since mitochondria play a key role in regulating apoptotic cell death, they are considered a promising PDT target. The aim of this study was to investigate how the structure of specially designed Zn(II) N-alkylpyridylporphyrin photosensitizers (ZnPs) would affect their mitochondrial accumulation and PDT efficacy.

Methods:

A homologous series of ZnPs with increasing length of alkyl chains were synthesized. Their effect on LS174T cells viability was tested by the MTT assay. Effect on mitochondria was determined by measuring respiration, inactivation of a specific mitochondrial marker enzymes (cytochrome c oxidase - Cox), photo-oxidation of cytochrome c and cross-linking of key structural protein of the inner mitochondrial membrane.

Results:

ZnPs were found to be potent photocytotoxic agents. The amphiphilic longer chain hexyl derivatives were more efficient in killing adenocarcinoma cells than the shorter chain derivatives, and were the most efficient in inhibiting respiration. This coincided with both inactivation of Cox and rapid photo-oxidation of ferro-cytochrome c (cyt c-Fe²⁺) to ferri cytochrome c (cyt c-Fe³⁺). Western blot analyses demonstrated photo-induced alterations in mitofilin after photo-treatment with the hexyl analog.

Conclusions:

Increase in alkyl chain length attached at the periphery of the porphyrin ring increased not only ZnP cellular uptake and its ability to reach mitochondria, but also the selectivity in photo-damaging specific mitochondrial components. The combination of positive charges and lipophilicity provides the driving force for efficient uptake and mitochondrial targeting of the hexyl derivatives.

Key Words: Photodynamic therapy; Cytotoxic reactive species; Photosensitizer

Funding Agency: College of Graduate Studies and Research Sector (project number YM03/11)

Biochemistry

Category: Basic Sciences

20

Mechanism of Fe porphyrin-induced antibacterial effect

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Introduction:

Heme is one of the most common cofactors participating in various redox processes and in oxygen transport, storage and utilization. Even though most microorganisms are able to synthesize heme, heme uptake from the host plays an essential role in the success of bacterial pathogenic activity. We have previously reported that modified Fe-porphyrins (FePs) resembling heme exert an antibacterial effect but their mechanism of action is not clear. We hypothesize that FePs interfere with bacterial metabolism by blocking functions that depend on heme-proteins. The aim of the current study was to test this hypothesis.

Methods:

Series of ortho, meta and para Fe(III) N-alkylpyridylporphyrins (alkyl = methyl, ethyl, butyl, hexyl, octyl) were tested. The effect of FePs on cell respiration and metabolism were examined using wild type *E. coli*. Cell viability was determined by plating and counting colonies. All experiments were repeated at least 3 - 5 times with 3 replicates. Results are expressed as means \pm S. E.

Results:

The toxicity of FeP depended on the ratio of FeP/cell number and at low ratio was reversible. It was associated with the suppression of metabolism and cellular respiration. At high FeP/cell number ratio, cell damage was irreversible. FePs taken up by the cells were subjected to demetalation by keeping the porphyrin ring intact, thus generating products acting as photosensitizers. In parallel, redox-cycling of the FePs generated hydrogen peroxide.

Conclusions:

FePs analogous to heme exert both bacteriostatic and bactericidal actions. The former is due to blocking cell metabolism as a result of the resemblance between heme and FePs. The latter depends on the generation of hydrogen peroxide and products acting as photosensitizers.

Key Words: Iron-porphyrin; Heme; Bacteriostatic

Funding Agency: Grant MB01/09 from Kuwait University

Biochemistry

Category: Basic Sciences

21

Tempol is not a superoxide dismutase mimetic

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Introduction:

Half a century of investigations provided unambiguous proof that superoxide and species derived from it play central role in many diseases and degenerative processes. This stimulated the search for potentially applicable pharmaceutical agents capable of preventing oxidative damage. Various commercial compounds, advertised as superoxide dismutase (SOD) mimetics, were reportedly efficient in suppressing oxidative stress in animal models: nitroxide TEMPOL, Mn(III) salen derivative EUK-8, nitron NXY-059, etc. Most of these compounds have low rate constants [$k_{\text{cat}}(\text{O}_2^{\cdot-})$] for reaction with superoxide, but their in vivo effects are attributed to SOD activity. The aim of this study was to investigate this contradiction.

Methods:

Genetically engineered *E. coli* and *S. cerevisiae* strains devoid of cytoplasmic SODs were used in this study. Growth was monitored turbidimetrically at 600 nm. All experiments were repeated at least 3 - 5 times with 3 replicates.

Results:

The lack of SODs imposes phenotypic deficits which can be relieved by compounds scavenging superoxide. None of the compounds with $k_{\text{cat}}(\text{O}_2^{\cdot-})$ smaller than the rate constant of spontaneous $\text{O}_2^{\cdot-}$ dismutation ($5 \times 10^5 \text{ M}^{-1} \text{ s}^{-1}$) showed beneficial effects when tested on the SOD-deficient organisms. In contrast, Mn porphyrins with $k_{\text{cat}}(\text{O}_2^{\cdot-})$ close to that of SOD were able to protect the cells against endogenously generated superoxide.

Conclusions:

SOD-deficient organisms can be used as a highly specific and sensitive bioassay system for studying the in vivo mechanisms of action of antioxidants. The in vivo effects of compounds with low $k_{\text{cat}}(\text{O}_2^{\cdot-})$ cannot be attributed to scavenging of superoxide and therefore they cannot be SOD mimetics.

Key Words: Tempol; Superoxide dismutase; Antioxidant

Funding Agency: Kuwait University Grant MB01/09

Community Medicine

Category: Undergraduate

22

The prevalence of obesity among Employees of Kuwait Government Ministries

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Introduction:

Although obesity is considered the second leading cause of preventable death, and co-morbidities associated with it are well known, its prevalence is increasing substantially worldwide, including in Kuwait. Hence, this study aimed to assess the prevalence of overweight and obesity among employees of Kuwait Government Ministries, and to compare the self-reported to the measured weight and height.

Methods:

A cross-sectional study on 387 employees from four randomly selected ministries was conducted. A self-administered questionnaire was used in data collection to evaluate the participants' socio-demographic status, health related factors, and general nutritional knowledge. Afterwards, the participants' weight and height were measured using two calibrated electronic devices. For the data analysis, a logistic regression model was used to find the factors associated with obesity.

Results:

Out of 537 employees approached, 387 (72%) completed the questionnaire and 78% of them agreed to have their weight and height measured. The results showed that the prevalence of overweight and obesity was 37.3% (95% CI: 31.5% -43.1%) and 39.6% (95% CI: 33.8% -45.4%), respectively. Some of the factors that were significantly associated with overweight and obesity were age, nationality, number of house helpers, and family income. Moreover, after comparing the self-reported to the measured weight and height, it was found that using self-reported data will underestimate the prevalence of overweight and obesity.

Conclusions:

The findings in this study show that the prevalence of overweight and obesity was rather high among the study population. Hence, efforts should be made to control it. Furthermore, measured height and weight are more accurate than self-reported.

Key Words: Obesity; Kuwait; Prevalence

Funding Agency: None

Community Medicine

Category: Undergraduate

23

Nutritional Knowledge among College Students: Identifying Determinants and Correlations between nutritional Domains

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Introduction:

Obesity is high among college students in Kuwait probably due to low nutritional knowledge (NK).

Objectives: To assess the level and determinants of NK among a sample of male college students.

Also, to assess the correlation between NK scores of different nutritional domains.

Methods:

A random sample of 378 college students was asked to answer a questionnaire assessing knowledge on different nutritional domains including vitamins, minerals, fibers, fat, protein, cholesterol, sodium, carbohydrates, weight loss diet, calories and food intake. Questions on socio-demographic and health-related factors were asked. Additionally, the height and weight of participants were measured.

Results:

The overall NK was low in the sample (mean= 56.9%; 95% CI= 55. 7-58. 0). NK on sodium and carbohydrates were the highest in our sample, whereas those of protein and cholesterol were the lowest. Overall NK was not associated with the level of obesity. Only older age (P-value for trend= 0.004), healthier dental status (P-value for trend= 0.001), and higher academic achievement in high school (P-value for trend= 0.035) were associated with high overall NK. Most of the NK scores of different nutritional domains correlated with each other, however, weakly. While the NK on cholesterol correlated with NK on all other domains, NK on calories/food intake correlated with less than half of the domains.

Conclusions:

In college students, NK was found to be low and interrelated. It was, however, not associated with the level of obesity. The reasons hindering this association should be the focus of future studies. Meanwhile, NK education should still aim to improve NK especially in those groups with lowest scores.

Key Words: Nutritional knowledge; College students; Kuwait

Funding Agency: None

Community Medicine

Category: Undergraduate

24

Awareness of diabetes mellitus and its complications among diabetic patients in Kuwait

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Introduction:

Diabetic patients are at a risk of developing complications. Hence, a good level of knowledge about the disease is essential to improve glycaemic control and prevent or delay its complications. The objective of this study was to evaluate the level of knowledge regarding diabetes mellitus and its complications among diabetic patients, and assess its association with socio-demographic characteristics, and practices of preventive measures.

Methods:

This cross-sectional study included 321 patients from randomly selected 11 primary healthcare centres of 3 governorates. A self-administered questionnaire utilized in data collection, the items of which were adopted from a valid research instrument. The research comprised of four sections: socio-demographic, diabetic status, knowledge and practice of preventive measures. A logistic regression model identified the associated factors with poor knowledge.

Results:

The overall level of knowledge about diabetes and its complications was average, median (range) 16(0-30). Participants were deficit in their knowledge about glycosylated haemoglobin, ketones and insulin reaction time. Concerning complications, patients had deficiency in their knowledge about symptoms and management of hypoglycaemia and diabetic ketoacidosis. The logistic regression analysis showed that non-Kuwaiti nationality (adjusted OR= 3.436, $p=0.002$), low level of education (adjusted OR= 3.165, $p=0.025$), short duration of diabetes (adjusted OR= 3.552, $p=0.014$), and treatment with diet or tablets (adjusted OR= 3.165, $p=0.046$) were independently associated with poor knowledge about diabetes and its complications after adjusting for confounding.

Conclusions:

The study identified areas in which knowledge about diabetes were deficient. Accordingly, intervention programs may be organized to remedy such deficiencies which will lead to better glycaemic control and alleviate the burden of diabetes in the population.

Key Words: Awareness; Diabetes; Glycemic control

Funding Agency: None

Community Medicine

Category: Undergraduate

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The Prevalence and Factors Associated with the Use of Complementary and Alternative Medicine among Ministry Workers in Kuwait

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Introduction:

Despite the prominence of the use of scientifically based conventional medical treatment in Kuwait and the availability of free health services, the study was undertaken with the premise that complementary medicine (CAM) may be popular in Kuwait. The objective of this study is to determine the prevalence of CAM use among ministry workers in Kuwait, including factors associated with its use, opinions, and beliefs about it.

Methods:

This is a cross-sectional study targeting ministry workers from five randomly selected Kuwaiti ministries. Data were collected by a specially designed self-administered questionnaire. The sample included 800 ministry workers, of whom 759 responded while 41 workers refused. Accordingly, the refusal rate was 5%.

Results:

The prevalence of CAM use among ministry workers in Kuwait was approximately 68%. Education and female gender were associated with increased use of CAM. Most of the study participants used CAM to treat their illnesses. Lung and stomach diseases (54%, 44% of CAM users) appeared to be the major complaint treated by CAM. It is worth mentioning that 38.2% of CAM users were advised to use CAM by their physician. The study also revealed that faith healing is the most frequently used and the most effective CAM modality perceived by participants. Family members, internet, and social media networks were the major sources of information about CAM. Most study participants feel safer when taking all natural remedies. Also, a similar proportion of individuals agreed that CAM should be subject to more scientific testing before conventional doctors or the general public can accept it.

Conclusions:

CAM therapy is highly prevalent in Kuwait. CAM appears to have its own major strengths in the improvement of individual satisfaction. It can also help in providing more effective multidisciplinary approach to treat complex and chronic health problems; it is an uprising scientific field that needs further research and attention.

Key Words: Complementary medicine; Prevalence; Kuwait

Funding Agency: None

Community Medicine

Category: Basic Sciences

26

Effect of dust storms on the risk of respiratory and cardiovascular mortality in Kuwait

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Introduction:

Little is known about the impact of dust storm on human health. This study aimed to investigate the impact of dust storms on respiratory, cardiovascular and all-cause mortality over a five-year study period in Kuwait.

Methods:

We analyzed respiratory and cardiovascular mortality as well as all-cause mortality in relation to dust storm events over a five-year study period, using data obtained through a population-based retrospective ecological time series study. Dust storms days were identified when the national daily average of PM₁₀ exceeded 200µg/m³. Generalized Additive Models with Poisson link were used to estimate the Relative Risk (RR) of age-stratified daily mortality associated with dust events, after adjusting for potential confounders including weather variables and long-term trends.

Results:

There was no significant association between dust storm events and same-day respiratory mortality (RR=0.96; 95%CI: 0.88-1.04), cardiovascular mortality (RR=0.98; 95%CI: 0.96-1.012) or all-cause mortality (RR=0.99; 95%CI: 0.97-1.00).

Conclusions:

Our findings suggest that local dust, which most likely originates from crustal materials, has little impact on short-term respiratory, cardiovascular or all-cause mortality.

Key Words: Dust storms; Mortality; Kuwait

Funding Agency: Kuwait University Research Grant MXS001

Community Medicine

Category: Basic Sciences

27

Attitudes to knee osteoarthritis and total knee replacement in Arab women: a qualitative study

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Introduction:

Total Knee Arthroplasty (TKA) is offered to patients with knee osteoarthritis (OA) in Middle East without adequate understanding of their perceptions, preferences or pain experiences. This study aimed to explore the pain experience, mobility limitation and the decision making process to undertake TKA among women with knee pain.

Methods:

We conducted five focus group discussions comprising 39 women with severe knee OA from the waiting list for TKA in the only orthopaedic hospital in Kuwait. All groups were led by a female facilitator fluent in the local dialect. Discussion were tape recorded, transcribed and coded for themes to identify the factors considered to be important in decision-making for TKA.

Results:

Experiencing knee pain was central to daily living and affected patients and their families. Mobility limitation was shaped by a strong sense of expected obligation to take care of the family. Two major sources of delay were identified; one was due to late clinical advice to undergo TKA which in part was due to several consultations from different clinicians. The second delay was after the clinical advice to undergo TKA and was mainly due to ambivalence of patients because of fear of the operation and the lack of verbal or written information about TKA which resulted in unclear expectations of the surgery.

Conclusions:

Both verbal and written information about TKA should be provided as part of preoperative rehabilitation. This is critical to improve doctor-patient interactions and facilitate informed decision about the procedure and thus achieve patient-centred healthcare.

Key Words: Knee replacement; Osteoarthritis; Kuwait

Funding Agency: Kuwait University, grant ID: MC 01/09.

Community Medicine

Category: Clinical

28

Listen to the voice of our residents: The future of Ophthalmology training and care in Kuwait.

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Introduction:

Research about job satisfaction among doctors has pointed out to the impact of dissatisfaction on them, the organization and their patients. There is association between job dissatisfaction and increased levels of stress, burnout, and higher levels of turnover among doctors. Loss of manpower, loss of accreditation and potential cost burden can affect the organization and dissatisfied doctors tend to have riskier prescription profiles and dissatisfied patients. Objectives: to assess the level of job satisfaction among junior medical staff in Ophthalmology in Kuwait.

Methods:

A self-administrative survey was distributed to all 80 junior ophthalmologists in the Ministry of Health. The survey was based on the validated job characteristic model of Hackman and Oldham and the Kings College London hospital job stress and satisfaction questionnaire with a 5-point Likert scale. Quantitative analysis of the data was performed using SPSS and presented as simple frequencies and percentages.

Results:

60 doctors enrolled in the study. In this group, neutral response was found in 37.9%, dissatisfaction in 36.2%, and satisfaction in 25.8%. Global job stability score showed instability in 20.3%, neutral response 35.6%, and stability in 44.1%. The highest levels of satisfaction were found in the relationships with nursing staff, medical staff and patients respectively. Dissatisfaction in the following areas was observed in a descending order: wet lab facility, electronic library, surgical experience, workplace safety, research skills, space/equipment, fairness, effect on home environment, clinical guidelines, promotion, presentation skills, clinical experience, appreciation, salary and job description.

Conclusions:

Immediate attention is needed to the areas of dissatisfaction among junior doctors in Ophthalmology to meet international standards of training, doctors' wellbeing, patients' care, and the organization best interest.

Key Words: Ophthalmology residents; Stability

Funding Agency: None

Community Medicine

Category: Clinical

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Would you trust future health care providers with your life?

Perception of Euthanasia among our HSC students!

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Introduction:

Euthanasia, also known as mercy killing or physician-assisted suicide, is a controversial issue in medical practice worldwide. Euthanasia is defined as "the act or practice of killing or permitting the death of hopelessly sick individuals in a relatively painless way for reasons of mercy". While western approaches dominate in contemporary bioethical discussions involving end of life decisions, more research interest is being demonstrated in different cultures with different societal norms.

Objectives: To investigate the knowledge, attitudes and perception of students currently enrolled at the Health Sciences Center (HSC) in Kuwait regarding Euthanasia and its ethical reasoning in view of the local context of clinical practice, administrative directives, legal rulings, and religious deliberations in the country.

Methods:

Cross sectional study using a self-administered structured questionnaire with a five-point Likert response scale. Quantitative analysis of the data was performed using SPSS. All P values were determined using Chi square test.

Results:

A total of 500 students completed the questionnaire. Older students tend to find Euthanasia morally and medically justifiable compared to younger students with P value of 0.005, 0.016 respectively. More students from the Faculty of Pharmacy thought that Euthanasia is legally, religiously and medically justifiable compared to students from the Faculties of Medicine and Dentistry (P value of 0.012, 0.001 and 0.008). The majority of respondents would not practice any type of Euthanasia themselves in the future with significant variability between the faculties. More students from the Faculty of Medicine showed readiness to practice active Euthanasia and assist suicide than those in the other faculties (P value of 0.002 and 0.013).

Conclusions:

End of life decision making among future health care providers in Kuwait should be explored to prevent potential unethical medical conduct and legal malpractice.

Key Words: Ethics; End of life

Funding Agency: None

Community Medicine

Category: Graduate PhD (Basic Science)

30

***Origanum majorana* as an Organic Food Preservative in Milk Products and Cereals**

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Introduction:

Many food products are perishable require protection from spoilage. The usual food preservatives can be used to reduce the risk of food poisoning but associated with adverse organoleptic changes and nutrients loss. We aimed to evaluate the use of *Origanum majorana* forms - oil, hydrosol and leaves - as an organic food preservative in milk products and cereals after storage for 6 months.

Methods:

In this prospective controlled study, origanum leaves were washed, air-dried and cut into small pieces and properly stored till use. Hydrosol and oil were prepared by hydrodistillation. Different concentrations of different origanum forms were added to milk products (white, ras and kareesh cheeses) but only leaves were mixed with cereals(wheat and corn). Samples with and without additive (control) were assessed microbiologically and organoleptically every month for 6 months.

Results:

High concentration of origanum forms was successful in suppressing mesophilies below the limit of detection in all cheese samples except kareesh. Moreover, the oil was significantly better compared to the control and other forms at different intervals of storage. Medium and high concentrations of leaves showed significant reduction in mesophiles compared to that detected in the control after the 1st month of storage until it could not be detected at the 5th month of corn storage and 6th month of wheat storage. Color of milk products treated with oil or hydrosol was more or less similar to the control samples. Moreover, the lowest acceptance % was in leaves treated samples (medium and high concentrations). Taste, texture and odor of milk products treated with high concentrations of different origanum forms and concentrations showed significantly lower mean score and acceptance % compared to the control.

Conclusions:

Aiming at food hygiene and control, we recommended origanum as an organic food bio-preservative in milk products and cereals. Its oil - especially medium concentration-was more effective microbiologically with milk products than other forms, and was accepted organoleptically.

Key Words: Milk Products; Cereals; Preservative

Funding Agency: None

Dentistry

Category: Graduate PhD (Basic Science)

31

Seven Year Sealant Retention in School Oral Health Program, Kuwait-Forsyth

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Introduction:

In the School Oral Health Program, Kuwait, fissure sealants are used as a caries preventive measure for children from 6-years and above. Sealant retention is crucial for efficacy. Aim of the study evaluated the sealant retention rate on first permanent molars at 7-years after initial placement.

Methods:

In 2004, in 341 children between the ages of 6- 9 year olds, sealants were placed on stained and non-stained occlusal surfaces of permanent first molars. All the sealants were placed after cleaning with pumice and rubber cup, and 20 seconds of etching. Rubber dam or cotton rolls was used to isolate all teeth. In 2011, sealants were examined using mirror and an artificial light source. Sealants were scored as intact, resealed, restored or carious. Also, oral hygiene was recorded as good, fair, and poor.

Results:

At the 7-year evaluation, 200 children (802 sealants) were examined. The gender distribution was 25% female and 74% male with the mean age of 14 ± 2 years. The loss to follow-up rate was 41%. Overall, in seven years, 59% of the sealants were intact, 4. 7% were resealed, 16% restored, 19. 5% carious, and 0. 5% were extracted. Children with good oral hygiene were 32. 5%, 55% were fair, and 12% had poor oral hygiene.

Conclusions:

In the School Oral Health Program, Kuwait, the fissure sealant retention rate at 7- years was satisfactory. Conducting both short-term and one-year evaluation for sealant retention should be an essential part of the program.

Key Words: Sealant retention; Dental caries; Oral hygiene

Funding Agency: None

Dentistry

Category: Clinical

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Dentin-Induced New Bone Formation In Tibia Marrow In Rabbits

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Introduction:

Augmentation of bone deficiencies with grafting is often carried out prior to dental implants. Autogenic bone grafting is the gold standard of bone augmentation in implant dentistry; however it is associated with some morbidity. Xenogenic bone graft materials are alternative to minimize such morbidities. Human dentin possesses osteoinductive properties due to its similarity to bone. Hence Dentin-containing BMP can be used as a bone augmentation material prior to implant placement. The aim of this study was to investigate if xenogenic dentin particles inserted into the marrow space of rabbit tibia would contribute to new bone formation.

Methods:

Dentin chips from human teeth were inserted into tibias of ten New Zealand rabbits. The tibia was then processed for histology after 6 months and new bone formation was quantified.

Results:

Bone formation was seen ranging from 0 to 86% on the dentin fragments and there was minor inflammation. There was more new bone formed the closer the dentin grafts to inner tibia bone was placed. There was a significant correlation ($r=-0.579$, $p<0.001$) between the amount of bone formation around the dentin graft and distance to the inner tibial cortical bone wall.

Conclusions:

Dentin promotes new bone formation and may have a potential as a bone augmentation material. This research was funded by research grant DS01/10, Research Administration, Kuwait University.

Key Words: Dentin; Xenogenic graft; Bone augmentation

Funding Agency: DS01/10, Research Administration, Kuwait University.

Dentistry

Category: Graduate (Resident)

33

Orofacial Clefts and Polymorphism of 677CT Methylenetetrahydrofolate reductase

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Introduction:

Cleft lip and palate are the most common craniofacial anomalies with birth prevalence 1. 48 in 1000 live births in Kuwait. Cleft lip results from the failure of emergence of the median and lateral nasal processes and the maxillary prominence, while cleft palate is caused by a lack of fusion of palatal shelves. Previous studies suggested association of mutations in folate-related genes MTHFR and RFC1 and non-syndromic cleft lip and palate anomalies (NCLP) in different populations. When MTHFR function is altered due to mutations, cell multiplications are compromised, which may contribute to NCLP. The aim of this study is to investigate whether an association between MTHFR 677CT polymorphism and NCLP exists in the Kuwaiti population.

Methods:

Case-control study design was used. Case sample comprised of 32 patients affected with NCLP and 41 case parents. Thirty two unaffected individuals (controls) from the same location and 36 control parents formed the control sample. Five ml of blood and/or saliva specimens were collected from each individual. DNA was isolated and MTHFR 677CT genotypes were established by PAGE (PolyAcrylamide Gel Electrophoresis).

Results:

There was no significant difference when proportions of genotypes were compared between cases and controls. Frequency of mutated T allele was very low in patients (0.187) and also in controls (0.315), and only one TT homozygote was observed in a patient, and another in a control mother.

Conclusions:

T mutation in MTHFR 677 nucleotide may be very rare in the Kuwaiti population. However, the possibility of involvement of the RFC1 gene and environmental factors are still under investigation. We believe that combined results of these studies will contribute to understanding etiology of NCLP in Kuwait.

Key Words: Orofacial; Clefts; Genetics

Funding Agency: None

Dentistry

Category: Graduate PhD (Basic Science)

34

Evaluation of Oral Health Promotion Presentations at School Oral Health Program, Kuwait.

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Introduction:

This study evaluates the oral health promotion presentations that were done by the dental hygienists working at the School Oral Health Program.

Methods:

School Oral Health Program holds evaluation sessions for the oral health promotion department presentations on regularly. These presentations included six different subjects related to health and oral health. The presentations were evaluated by 17 dentists, 15 dental hygienists, and two dental assistants. Self-reported questionnaire was distributed after each presentation during the four days. Questionnaire included 17 questions that aimed to evaluate the content of each presentation and presenters' presentation skills. These questions evaluated various aspects of a presentation, such as: contents and organizations.

Results:

In four days, 181 questionnaire sheets were answered to evaluate nine presenters on seven topics. Overall, 21% of participants were males and 79.4% were females. Of the 34 participants, 7 were male dentists and 10 were females. All the 15 dental hygienists were females. And there were two female dental assistants. All the nine presenters were female dental hygienists. Ninety percent of participants found that the introduction was good and 92% found that the content and organization of the presentations were good. Almost all reported that the visual aids used were good (92%). Most of them (95%) found that the presentations were clear. Also, 90% of participants reported that the delivery was good. Discussions at the end of the presentations were found to be effective (90.4%). Only 9% of the participants think that the duration of the presentations were enough, however, 76.4% of participants finding it too long.

Conclusions:

Most of the presentations were well accepted by the audience and the results of evaluation were very encouraging. We need to conduct more such presentations in future with some modification in the presentations' duration.

Key Words: Oral health promotion; Dental hygienist; Evaluation

Funding Agency: None

Dentistry

Category: Graduate PhD (Basic Science)

35

Oral Health Knowledge and Behavior among Parents Visiting Vaccination Clinic in Kuwait.

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Introduction:

This study was done to assess oral health knowledge and behavior among parents who visited the vaccination clinic during their children's vaccine appointment.

Methods:

This study was done in a specialty health center, Al-Ahmadi governorate, in the State of Kuwait. A self-reported questionnaire was distributed to a convenience sample of parents; either the mother or father. This questionnaire was distributed morning and afternoon in the waiting room. A parent answered the questions before the vaccine was delivered to their children. It included two sets of questions; three knowledge questions and three behavior questions.

Results:

Total number of participants was 235, of which 130 (55.3%) were males (father) and 105 (44.7%) were females (mother). The mean children age was 11.1 ± 2.4 months of which 46% were females and 54% males. Total of 1374 questions was answered. Seventy six percent of participants answered the knowledge questions correctly; 55% of participants knew the proper duration of breastfeeding and 83% reported the causes of dental caries correctly. Most participants had the correct knowledge and information about the fluoride and fluoride importance (86%). Only 24% of participants cleaned their children's teeth of which 15% cleaned more than once a day. The most used feeding method was the bottle (79%).

Conclusions:

Oral health knowledge among these parents was very encouraging; however, it is not being reflected in their oral health behavior towards their children. In future, more efforts should be laid on changing their behavior with more emphasis on promoting oral hygiene practices among infants which will help in reducing the burden of caries among pre-school children

Key Words: Parents knowledge; Oral health behavior; Breastfeeding

Funding Agency: None

Dentistry

Category: Graduate PhD (Basic Science)

36

Oral Health Status among Adult Employees in Kuwait.

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Introduction:

To describe the dental caries prevalence and oral hygiene of adult employees in Kuwait.

Methods:

In 2011-2012, a cross-sectional study was done at the Ministries Complex in Kuwait. Oral health examination was performed to a convenience sample of adult employees during their morning working hours (N=995). Portable dental chairs and light source was used in examinations. Six trained and calibrated dentists performed the examinations. The recording was done on a manual form by trained recorders. Only mouth mirror and periodontal probe (visual examination) was used. Data was entered and analyzed on Epi-info 3. 5.3.

Results:

Total number of participants was N=995 in which 618 (62%) were Kuwaiti and 373 (37. 5%) were other nationalities. Overall, the mean age was 36 ± 10.6 years, with a range from 20-77 years. The gender distribution was 693 (69. 5%) males and 293 (29. 4%) females. Among the participated employees, 86.9% were working at government sector and 11. 7% in private sector. Most (78.8%) of the employees were healthy, 5. 5% were diabetic, and 1.2% were cardiac patients. The mean number of teeth present was $28. 5 \pm 3. 5$. The mean number of teeth with dental caries (coronal and root caries) was $3. 08 \pm 3. 4$. The mean number of filled teeth was $3.9 \pm 4. 4$. The prevalence of adults with caries-free teeth was 25% while 30% had filling-free teeth. Overall, the prevalence of adults with caries was 75%. Almost 16% of employees had good oral hygiene and 33% had fair. Almost half of the employees had poor oral hygiene (48.3%).

Conclusions:

The data suggests that there is high caries prevalence among adults in Kuwait which could be attributed to the poor hygiene. Implementing oral health programs among adult is needed to increase the awareness toward the importance of oral health.

Key Words: Oral hygiene; Adults

Funding Agency: None

Dentistry

Category: Clinical

37

Dental Visits among Disabled Schoolchildren in Kuwait

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Introduction:

The objective of this study was to describe the dental visiting habits of disabled schoolchildren. Previous studies in Kuwait have shown poor oral health in disabled children and young adults.

Methods:

The participants in this study were the parents and the teachers in schools for the disabled children in Kuwait. A total of 308 parents of children with a physical or developmental disability and 112 teachers completed the questionnaire about the dental visits of their children. Information was collected by structured anonymous questionnaires.

Results:

The parents of the disabled children reported more often that their children had visited a dentist during the last two years than the parents of the normal children (65% vs. 57%; $p = 0.003$). Most of the disabled and normal children visited Ministry of Health dental clinics (91% vs. 81%). Disabled children visited the dentist more often due to tooth ache (42%) compared to normal children (25%). Normal children had dental check-ups more often than the disabled children (29% vs. 18%). More disabled children (63%) received curative dental care than normal children (47%); but fewer disabled children (37%) received preventive care compared to normal children (53%) ($p = 0.027$). Disabled children, whose parents visited a dentist more often, had visited a dentist significantly more often than the others ($p < 0.001$). Age, nationality, education and area of residence of the parent were not associated with dental visits of disabled children. Larger proportion of parents of normal children (82%) rated the present dental services as excellent or good compared to 52% of the parents of disabled children ($p < 0.001$).

Conclusions:

Tooth ache and curative treatment need were the main reasons for dental visits among disabled children. Regular dental check-ups and preventive oral health care should be encouraged for comprehensive coverage of school oral health program for the disabled in Kuwait.

Key Words: Disabled; Schoolchildren

Funding Agency: None

Dentistry

Category: Undergraduate

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**Patterns of Posterior Tooth Loss in Kuwait University Dental Clinic:
A Retrospective Cross Sectional Study**

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Introduction:

The pattern of tooth loss has been generally regarded as one of the most critical measures in assessing the standards of oral health care. Finding a pattern of tooth loss in a given population can be highly utilized in both curative and preventive dental care measures.

Objectives:

The purpose of this study was to find and describe the pattern of posterior tooth loss in a specified population in Kuwait and analyze the various associated demographics, social, and health related factors.

Methods:

A retrospective cross sectional study was carried out on a sample of 1493 patients aged 18-88 years old. The total number of patients screened in Kuwait University Dental Clinic (KUDC) during the period from January 2007 to December 2009 was 4917 patients. The sample was obtained by random selection of patients' charts that were coded and stored in the KUDC software system. Data were collected by reviewing digital panoramic radiographs (Planmeca Promax, Romexis 2.9.2. R), medical history, social history, and demographic data. Data collected were entered in Windows Excel spreadsheet and analyzed using Statistical Package for the Social sciences (SPSS version 20.0) software.

Results:

Results have shown that partial edentulism was the most common dental finding (66%). Posterior teeth had higher impermanence than anteriors. The mandibular first molars were the most frequently missing teeth. Age was concluded to be the strongest determinant of tooth loss pattern ($p=000$). Short dental Arch (SDA) was not a common phenomenon in this population.

Conclusions:

Prevalence of partial edentulism among the study subjects was quite high (66%). Posterior teeth were more frequently absent compared to anterior teeth, with the mandibular first molars being the most commonly missing teeth. The study showed an increasing trend of partial and complete edentulism with age. The analysis revealed that smoking was not significantly associated with tooth loss; however, diabetes and CVD were strongly associated.

Key Words: Partial Edentulism; SDA

Funding Agency: None

Dentistry

Category: Clinical

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Evaluation of resin bonded bridges in hypodontia patients

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¹University Dental School and Hospital Cork, University College Cork, Ireland; ²Health Sciences Centre, Faculty of Dentistry, University of Kuwait.

Introduction:

The management of hypodontia is influenced by the patient's choice, age and expectations. Other factors include type of occlusion, level of malocclusion, aesthetic requirements, as well as the presence or absence of any inherent anatomic or soft tissue defects and the psychological status. Resin bonded bridges are considered a conservative option in the management of hypodontia.

Methods:

Following an ethical approval for this study, patients with congenital absence of missing teeth were contacted and invited to participate in the study. The inclusion criteria were patients with non-syndromic hypodontia who received resin bonded bridges. 40 hypodontia patients who received 65 RBBs were identified. Of these, 9 were not contactable and five failed to attend. Accordingly, 26 patients (65%) participated in the study, with a total of 51 RBBs. The abutments and contralateral control teeth underwent the same clinical evaluation and assessment, as a case control format.

Results:

51 RBBs were evaluated on 26 patients during the period 2001 to 2007. After 7-8 months of service, 44 (86%) bridges were still in service while 6 (13%) had debonded on one occasion. Seven had definite failures (14%), the main reason for being repeated debonding on more than two occasions. Four of these failed bridges were in service for 2 years, two were in service for four years and one was in service for 6 years before deemed as failed.

Conclusions:

The success rate of RBBs in hypodontia patients was 86 % in this seven years study. The effect of age, gender, grade of operator and experience, bridge location, design of the bridge, span length and moisture control, could not be demonstrated. The presence of occlusal contact on the pontic, or habits had no significant adverse effects on the survival. Patient's satisfaction with resin bonded bridge is directly influenced by failure rate.

Key Words: Resin bonded bridges; Retrospective

Funding Agency: None

Dentistry

Category: Basic Sciences

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Anaerobic culture and Real-Time PCR quantification of major periodontal pathogens: New prospects for dental researchers in Kuwait

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Introduction:

Periodontitis is a complex infectious disease with numerous associated microorganisms. Rapid developments in genomic and sequencing technologies have resulted in accomplishing a comprehensive picture of the “microbiome” associated with periodontal disease. Objectives: 1) To establish culture and molecular techniques for identifying and quantifying periodontal pathogens and then 2) to assess the abundance of major periodontal pathogens in a pilot group of periodontally healthy subjects.

Methods:

Saliva and paper point samples from 6 tooth sites were collected from 5 periodontally healthy volunteers (age 25-39 yrs). The samples were cultured on blood agar and Tryptic Soy Bacitracin-Vancomycin agar followed by aerobic or anaerobic incubation. Real-Time PCR quantification was performed on ABI Fast RT-PCR machine using Power SYBR Green kit.

Results:

Culture based methods allowed a presumptive identification of only a few species such as *A. actinomycetemcomitans* (Aa), *P. gingivalis* (Pg), and *P. intermedia* (Pi), mainly due to lack of tools required. The presence of Aa, Pg, Pi, *P. nigrescens* (Pn), *F. nucleatum* (Fn), *C. rectus* (Cr), and *P. micra* (Pm) was first detected by PCR and then quantified by RT-PCR. Two of 5 subjects had elevated numbers of Pi both in saliva and paper point samples, mean (SD) ranging from 5.8E+06 (4.9E+05) to 2.65E+08 (7. 4E+06) per ml. Mean (SD) CFUs of Aa ranged from 2.14E+02 (3.87E+00) to 1. 04E+04 (1. 05E+03) per ml. Most subjects harbored low numbers of Pg, Pm, and Cr in the range of 1.37E+01 (1.9E+00) and 1. 01E+02 (24. 5E+00), while one subject had Fn at a concentration of 3.2E+05 (1E+04) CFU per ml.

Conclusions:

Low abundance of most of the periodontal pathogens in healthy subjects in this study is in agreement with a number of previous studies. Anaerobic culture and molecular methods established in the oral microbiology general facility lab may serve as an excellent resource for researchers at the Faculty of Dentistry.

Key Words: oral microbiology; molecular

Funding Agency: Kuwait University, GD01/11

Dentistry

Category: Clinical

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Motivational interviewing in dental education & practice.

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Introduction:

Motivational Interviewing (MI) increases patient motivation and commitment to behavioural change. It is in this sense an 'enabling' process which is one of the key basic strategies for health promotion as identified by the Ottawa Charter (WHO, 1986a). Crucial to this 'enabling' is the presence of a supportive environment, access to information, life- skills, and opportunities to make healthy choices. Dental Educators and Clinicians by participating in the MI programme have the skills necessary to engage with and support the patient in developing personal skills to bring about the necessary healthcare behavioural change. It will also bring about a reorientation of perspectives in relation to healthcare change.

Methods:

An introductory, two-day, intensive MI Level 1 workshop was conducted. This MI workshop built on participants' already acquired skills and practices and aimed to explore a new area of research in relation to dentistry.

Results:

A workshop evaluation survey was completed. Participants were asked to rate the workshop on a Likert scale from 0-5, where 0 represents "strongly disagree" and 5 represents "strongly agree". A qualitative content analysis of the training was undertaken to identify the key benefits of implementing a MI programme in Dentistry.

Conclusions:

From this small sample, overall, the participants indicated the MI programme would be of great benefit for their clinical practice. It is clear that the MI programme is worth developing further. However, further research will need to be undertaken to make a stronger assessment of its effectiveness.

Key Words: Motivational Interviewing; Survey; Behavioural change

Funding Agency: Oral Health Promotion Research Group Bursary sponsored by the Dental Health Foundation, Ireland

Dentistry

Category: Basic Sciences

42

Impact of nystatin on adhesion attributes of oral *Candida dubliniensis* isolates

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Introduction:

Candidiasis is the commonest oral fungal infection. *Candida dubliniensis* is an opportunistic pathogen associated with oral candidiasis. Its adherence to buccal epithelial cells (BEC) is an initial step in the pathogenesis of oral candidiasis. Candidal germ tubes (GT), also facilitates yeast adherence to the oral epithelium. Nystatin is available for topical treatment of oral candidiasis. Diluent effect of saliva and the cleansing effect of the oral musculature tend to reduce the availability of nystatin below that of the effective therapeutic concentrations. Hence, intra-orally, *Candida* undergoes a brief exposure to nystatin. There is no information on the impact of nystatin on adhesion to BEC and GT formation of oral *C. dubliniensis* isolates following such limited exposure. Hence the objective was to determine the adhesion to BEC and GT formation of oral *C. dubliniensis* isolates following brief exposure to sub-cidal concentrations of nystatin.

Methods:

Minimum inhibitory concentration (MIC) of nystatin was determined by the broth dilution technique. Thereafter, 20 oral *C. dubliniensis* isolates were exposed to sub-cidal concentrations of nystatin for 1 hour. Following drug removal by dilution, adhesion to BEC and GT formation was assessed by previously documented adhesion to BEC and GT induction assays.

Results:

MIC ($\mu\text{g/ml}$) of *C. dubliniensis* to nystatin ranged from 0.09 to 0.78. Mean adhesion to BEC (yeasts/50 BEC) of the isolates unexposed to nystatin and following exposure to nystatin was 208.51 and 53.21, respectively (74.45% reduction; $p < 0.05$). Mean percent of GT formation of the isolates unexposed to nystatin and following exposure to nystatin was 25.31 and 1.01, respectively (95.92% reduction; $p < 0.0001$).

Conclusions:

Brief exposure to sub-therapeutic concentrations of nystatin, suppresses *C. dubliniensis* adhesion to BEC and its ability to form GT, thereby potentially suppressing the pathogenicity of this *Candida* species.

Key Words: Adhesion; Nystatin

Funding Agency: Kuwait University Research Grant No DB 02/11

Dentistry

Category: Clinical

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The Effect of 5 Weeks Xylitol Intervention on Salivary mutans streptococci (MS)

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Introduction:

Habitual xylitol consumption decreases both dental plaque and MS counts. Several clinical studies have demonstrated the caries-preventive effect of frequent use of xylitol products. Our objective was to find out whether a short term (5-week) intervention with consumption of xylitol chewing gum three times a day affects salivary MS counts. The control group used sorbitol chewing gum.

Methods:

Altogether 122 children aged 12-13 years were screened with the Dentocult SM® (Orion Diagnostica, Turku, Finland) test. Children with high (>10000 CFU) MS counts in saliva or plaque were included. The children were randomly allocated to the xylitol and control groups, using classrooms as clusters. The MS counts were determined from stimulated and un-stimulated saliva samples with plating on MSB agar at baseline and after 5 weeks intervention (clinicaltrials.gov ID: NCT0528969).

Results:

The initial mean log CFU in stimulated saliva of the xylitol group was 4.9(SD=1.3) and 4.4(1.7) in the control group. After intervention, this fell to 4.3(1.7) in the xylitol group and 3.8(1.8) in controls. The respective mean log CFU values for un-stimulated saliva were 3.6(1.7) and 2.6(2.0) in the xylitol group and 3.9(1.2) and 2.9(1.9) in controls. The decline was statistically significant for both xylitol (p=0.006) and control (p=0.012) groups in stimulated saliva, and also for the un-stimulated saliva of both xylitol (p=0.002) and control (p=0.003) groups. In the xylitol group, 27 children and 22 children in the control group had lowered stimulated salivary MS counts after intervention. Un-stimulated salivary MS declined in 26 children in the xylitol group and by 27 children in the control group.

Conclusions:

The salivary MS counts declined significantly in both xylitol and control groups.

Acknowledgements:

Key Words: Clinical trial; Xylitol; Mutans streptococci

Funding Agency: Kuwait University grants DD02/10, GM01/05, GD01/11.

Dentistry

Category: Clinical

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Dental anxiety among adolescents in Kuwait

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Introduction:

Dental anxiety is one of the most important reasons for avoiding dental visits. The aim of the study was to determine the self-reported prevalence of dental anxiety among adolescents in Kuwait.

Methods:

Structured questionnaires in Arabic were filled in anonymously at schools during regular classes supervised by teachers and researchers. Dental anxiety was measured by the Modified Dental Anxiety Scale (MDAS). Schoolchildren from grades 8 and 9 (aged 13 to 15 years) from one Government girls' school (n=371) and two boys' schools (n=427) were invited to participate. Response rate was 94%. One-way analysis of variance was used for comparing the means of dental anxiety items. Level of significance was set at $p < 0.05$. The internal consistency of the anxiety items was measured by Cronbach's alpha.

Results:

The highest mean values of the MDAS were for the items "feel about to have a tooth drilled" (mean 2.9; SD 1.3) and "feel about to have a local anesthetic injection in your gum" (2.8; 1.4). The lowest mean was reported for "feel about to have your teeth scaled and polished" (1.6; 0.9). Total mean for MDAS was 11.5 (SD 4.6; range from 5 - 25). On average, every tenth person could be described as highly dentally anxious (MDAS score ≥ 19) that may require assistance to receive dental treatment. Girls reported statistically significantly higher MDAS scores in all items as well as in the total score ($p < 0.001$). Between the grades, no significant differences were found in the MDAS scores. Internal consistency for the MDAS was 0.82 (95%CI=0.80-0.84).

Conclusions:

One in ten respondents was highly dentally anxious. Girls were more afraid of dentistry and of different dental procedures than boys. The highest fear arising items were drilling a tooth and a local anesthetic injection in the gum.

Key Words: Dental anxiety; Dental fear; Adolescence

Funding Agency: Kuwait University, Research Grant No. [DI01/10]

Dentistry

Category: Clinical

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The Caries Preventive Effect of Erythritol, Xylitol and Sorbitol

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Introduction:

Caries preventive effect of erythritol (tetritol) has been tested only in short-term clinical trials, but xylitol (pentitol) has been shown to have stronger effect than sorbitol (hexitol). Objective: This randomized clinical trial aimed to test the efficacy of long-term (3 years), daily intake of erythritol-, xylitol - and sorbitol pastilles.

Methods:

Altogether 485 first and second grade children were examined in 2008 and were randomly allocated by classrooms as a cluster into three intervention groups: erythritol, xylitol and sorbitol. The intake (3 x day) of these polyols was around 7g. The additional control group without any intervention was drawn from the same sample frame and clinically examined with the same ICDAS criteria in 2011. Informed consent was signed by the parents/guardians. The Research Ethics Committee of the University of Tartu approved the study (Clinical Trials. gov Identifier is NCT01062633). The four clinical examiners had high consistency (kappa's>0.9).

Results:

The number of dentine caries teeth (d4-6t+D4-6T) and surfaces (d4-6s+D4-6S) were lower in the erythritol than in the xylitol and sorbitol groups after the 2nd year of intervention. This difference remained significant after the 3rd year of intervention between the erythritol and xylitol groups. There were no statistically significant differences between the intervention groups in the numbers of teeth or surfaces with initial caries (d1-3t+D1-3T, d1-3s+D1-3S), restorations (ft+FT) or caries experience teeth (dmft+DMFT) or surfaces (dmfs+DMFS). All the caries indices were higher in the end-point control group than in the intervention groups, except the numbers of restorations (ft+FT, fs+FS).

Conclusions:

After 2- and 3 years of intervention, the erythritol had significantly higher caries preventive effect on dentine caries than xylitol and sorbitol. All the children with the tested daily use of polyols had clearly lower level of enamel and dentine caries.

Key Words: Dental caries; Polyols; Preventive dentistry

Funding Agency: This study was funded by Cargill R&D Center Europe (Vilvorde, Belgium).

Dentistry

Category: Basic Sciences

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**In vitro biofilm formation by the periodontal pathogen
Aggregatibacter actinomycetemcomitans and its phylogenetic relative
Aggregatibacter aphrophilus**

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Introduction:

Aggregatibacter actinomycetemcomitans (Aa) is an oral bacterium associated with aggressive periodontitis. Its ability to form tenacious biofilm on surfaces is an important virulence trait. A close phylogenetic relative of Aa, Aggregatibacter aphrophilus, is a member of HACEK group of organisms which infrequently cause systemic infections. Biofilm formation by A. aphrophilus is not known. Objective: The aim was to compare in vitro biofilm formation by A. actinomycetemcomitans and A. aphrophilus.

Methods:

Standardized numbers of Aa strains D7SS, NJ9500, SA269, and A. aphrophilus ATCC 33389 were seeded into tryptic soy broth (TSB) in the wells of 24-well plates and incubated for 2-3 days. Bacterial viability was checked before and after the experiment. Biofilms were quantified by a standard crystal violet staining method. Similar biofilm culture setup was also performed for protein analysis of the biofilms by SDS-PAGE.

Results:

Biofilm quantification using crystal violet staining showed that A. aphrophilus ATCC 33389 formed 3-4 fold more biofilm than did the Aa strains. Among the Aa strains, the rough strain SA269 formed more biofilm than did D7SS or NJ9500. All strains formed more biofilm after 3-day compared to 2-day culture. Biofilm mass harvested from these experiments will also be analyzed by RT-PCR. Preliminary data from SDS-PAGE analysis showed predominant bands of approximately 25-, 37- and 75-kDa in the case of A. aphrophilus. Additionally, several bands in the size range 10-15 kDa were unique to A. aphrophilus. Whether expression of these proteins is biofilm-specific will be investigated. Furthermore, samples will be comprehensively analyzed by 1D- and 2D SDS-PAGE and differentially expressed proteins will be identified by mass spectrometry.

Conclusions:

The results suggest that A. aphrophilus forms more biofilm than does Aa. Our future experiments will attempt to unravel mechanisms behind superior biofilm forming ability of A. aphrophilus.

Key Words: Periodontitis; Virulence

Funding Agency: Kuwait University, GD01/11

Dentistry

Category: Basic Sciences

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The wear of mammalian dental enamel

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Introduction:

Tooth wear limits the lifespan of wild mammals. Dental enamel, the principal contact tissue, is extremely hard, but vulnerable to physicochemical assault. Characteristics of worn teeth are tiny scratches on the enamel surface. Only very hard particles such as those made of silica, can produce these marks. There are two possibilities: dust particles or phytoliths (plant silica, laid down in outer tissues as a defence). In this study we investigated their properties to determine how they may affect enamel.

Methods:

Grass phytoliths (*Ampelodesmos mauritanicus*) and dust particles found in the atmosphere of Kuwait were embedded in resin, polished, and subjected to nanoindentation (Hysitron Ubi 1) using a diamond cube corner tip. The indentation hardness H of the particles and reduced elastic modulus E were derived from loading/unloading force-displacement curves, while fracture toughness T was obtained from measuring lengths of cracks produced. Individual particles were mounted on a customized nanoindenter tip and slid against a polished enamel surface, of known H at measured vertical and lateral forces. Results were imaged by AFM (Agilent 5500).

Results:

For phytoliths ($n = 14$), the means (\pm s. d.) of each property were $H = 3.03$ GPa (± 0.10); $E = 21.56$ (± 2.51) GPa; $T = 0.22$ (± 0.05) MPa m^{0.5}, while silica dust ($n = 13$) had $H = 13.53$ (± 0.19) GPa; $E = 94.16$ (± 2.29) GPa; $T = 0.68$ (± 0.08) MPa m^{0.5}. For comparison, the enamel surface ($n = 117$) had $H = 5.00$ (± 0.28) GPa. When individual phytoliths were slid against enamel at forces ~ 1 mN, there was rubbing with pile-up of excavated enamel. In contrast, angular silica dust abraded the enamel, removing microscopic chips via fracture.

Conclusions:

Plant silica is much less hard, stiff and tough than dust. Phytoliths rubbed enamel, but silica dust could abrade it, making it a far more dangerous wear agent. Calculations suggest that even rounded dust particles will break at low forces between the teeth, thus generating sharp abrasive fragments.

Key Words: Wear; Abrasion

Funding Agency: General Facilities Project GE01/07 from Kuwait University

Dentistry

Category: Clinical

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Oral Health-Related Quality of Life among Parents and Teachers of Disabled Schoolchildren in Kuwait

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Introduction:

Measures of oral health-related quality of life are essential for oral health studies in order to provide accurate data for health promotion programs and allocation of health resources. The objective of this study was to assess the oral health-related quality of life between the parents and the teachers of disabled schoolchildren in Kuwait.

Methods:

The three category response version of the General Oral Health Assessment Index (GOHAI) (12 questions, always, sometimes, never) was used in the questionnaires in Kuwait. GOHAI is a questionnaire designed to assess the impact of oral conditions on quality of life of the elderly population, but later validated and widely used in a variety of adult sample groups of all ages. Three hundred and eight (308) parents and 112 teachers of disabled schoolchildren were enrolled in this study.

Results:

The mean age of the parents was 45 (SD = 9.9) years and of the teachers 38 (8.4) years. The mean GOHAI was 27.2 (3.5) among the parents and 27.8 (3.3) among the teachers ($p = 0.091$). GOHAI was higher in the older age groups ($p = 0.002$) and among the parents with a university education ($p < 0.001$). GOHAI was also higher with increasing toothbrushing frequency among the parents ($p = 0.047$) and the teachers ($p = 0.003$). Altogether, 203 (66%) of the parents and 85 (76%) of the teachers were always able to swallow comfortably; 123 (40%) of the parents and 41 (37%) of the teachers were able to eat without discomfort. Overall, 132 (43%) of the parents and 41 (37%) of the teachers were always pleased and happy with the look of their teeth and gums, or dentures. The Cronbach's alpha (0.83) indicated a high degree of internal consistency between different GOHAI items.

Conclusions:

There seemed to be no difference in the impact of oral health on the quality of life between the parents and the teachers of disabled schoolchildren. Oral health had a relatively weak impact on the quality of life of these adults.

Key Words: Teachers; Parents; Disabled children

Funding Agency: None

Dentistry

Category: Clinical

49

DentLearn Periodontics: clinical skill development for undergraduate dental students

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Introduction:

Dental students are becoming reliant on educational web based resources to support their learning. The aim was to develop an interactive web based educational tool (IWET) that will allow for an on demand flexible delivery of educational material that supports students' learning and be complementary to the pedagogy. IWET would have the added benefit of bridging the gap between theoretical knowledge and development of psychomotor skills. Calculus removal, an essential part in the management of periodontal diseases, requires a psychomotor skill that may take years of practice to attain, particularly for subgingival calculus. Its removal relies on tactile sensation, and in effect is a blind procedure. This also requires the knowledge of and the use of various types of instruments, depending on the location in the mouth and whether the calculus is supragingival or subgingival. The initial stage of development of the skill requires repeated practice on clinical mannequins/simulators.

Methods:

Research collaboration saw the development of an interactive web-based educational tool and a phone application. The methodology employed the development of a repository of interactive e-learning materials populated dynamically with new content. A core e-learning tool was a content player that displays video and the slides associated with a procedure in a synchronized manner.

Results:

A technology of synchronization of an enhanced player controls with visual elements was produced. The player was successful in being designed with the player allowed to swap between video and slides in the central panel of displaying the e-learning content.

Conclusions:

A repository that contains e-learning core Periodontics teaching is user friendly and allows for further new content to be added to it. This initiative would see the foundation of an International collaboration between University College Cork and the Faculty of Dentistry, University of Kuwait.

Key Words: Education; Periodontics; Interactive web-based tool

Funding Agency: None

Hematology

Category: Clinical

50

Lewis antibody mainly found in pregnant women and can be clinically significant

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Introduction:

Lewis is a classification system of blood typing that focuses on the Lewis antigens and antibodies. Lewis antibodies are produced by different body cells and can be absorbed by red blood cells. Lewis antibodies rarely cross the placenta in pregnancy and are not known to cause hemolytic disease in the fetus¹. Both anti-Lea and anti-Leb are usually IgM class and IgG class has been reported in some cases. Lewis antigen levels on RBCs are often diminished during pregnancy due to change in plasma lipoprotein². The aim of this study is to prove that Lewis antibodies are mostly found in pregnant women and that Lewis can be clinically significant in some cases.

Methods:

The files of pregnant women, all antibody positive, presenting to the Kuwait Central Blood Bank in 2012 were analyzed for the presence of Lewis antibodies and compared to remaining antibody-positive patients.

Results:

A cross-sectional comparison between pregnancy and the presence of Lewis antibodies showed that 11.4% of the pregnant patients had Lewis antibodies. Of all patients with Lewis antibodies, 62.3% were pregnant women and, of those women, 48.1% had a high risk of hemolysis.

Conclusions:

The high prevalence of Lewis antibodies in pregnancy may be due to the decrease in Lewis antigen levels on RBCs. While Lewis antibodies are commonly considered clinically insignificant and are ignored for transfusion purposes, several cases reports show that Lewis antibody may cause hemolysis. Consequently, pregnant women may be the most vulnerable patients for hemolytic disease due to Lewis antibody. Further studies are needed to determine whether hemolysis due to Lewis antibodies is clinically significant.

Key Words: Lewis antibody; Hemolytic disease; Pregnant women

Funding Agency: None

Medical Education

Category: Undergraduate

51

**Research practices among senior medical students in Kuwait:
experiences, attitudes and barriers**

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Introduction:

Research is the foundation of scientific advancement and improvement in quality of health care that ensure the good health of the community, and thus its wealth and wellbeing. Authors aim to explore the experiences, attitudes and barriers of medical students in Kuwait University (KU) regarding research activities.

Methods:

A questionnaire was used to collect data from senior medical students (years 6 and 7). Sociodemographic characteristic of the participants, practice of extracurricular research activities (included publishing community medicine project and participating in other research activities), attitudes and barriers for participation in research were gathered.

Results:

150 students participated in the study. 26 students (17.3%) published their community medicine project in indexed journals, while 52 (34.7%) participated in extracurricular research activities. When studying both outcomes combined (all extracurricular research activities), only 66 (44%) students had extracurricular research experience. Participation in extracurricular research was significantly higher among students who read medical journals (OR=2.073, $p=0.029$) and participated in writing research protocol (OR=3.462, $p<0.001$). The most important reason for not publishing the community medicine project was lack of time (42; 33.9% of students who did not publish their project). On the other hand, improving the curriculum vitea was the most important reason for publishing students' research (18; 67.0% of students who published their project). Although 92 (61.3%) students are interested, they reported neither opportunities nor stimulus are available to engage in research activities.

Conclusions:

Regardless of medical students' motivation, extracurricular research activities were deficient among them. Barriers for these activities should be investigated and solved by medical educators in KU in order to enhance biomedical research among their students.

Key Words: Research; Medical students; Publication

Funding Agency: None

Medical Education

Category: Basic Sciences

52

Selection criteria of residents for residency programs in Kuwait

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Introduction:

In Kuwait, 21 residency training programs were offered in the year 2011; however, no data is available regarding the criteria of selecting residents for these programs. This study aims to provide information about the importance of these criteria.

Methods:

A self-administered questionnaire was used to collect data from members (e. g. chairmen, directors, assistants, etc) of residency programs in Kuwait. A total of 108 members were invited to participate. They were asked to rate the importance level (scale from 1 to 5) of criteria that may affect the acceptance of an applicant to their residency programs. Average scores were calculated for each criterion.

Results:

Of the 108 members invited to participate, only 12 (11.1%) declined to do so. Interview performance was ranked as the most important criteria for selecting residents (average score: 4.63/5.00), followed by grade point average (average score: 3.78/5.00) and honors during medical school (average score: 3.67/5.00). On the other hand, receiving disciplinary action during medical school and failure in a required clerkship were considered as the most concerning among other criteria used to reject applicants (average scores: 3.83/5.00 and 3.54/5.00 respectively). Minor differences regarding the importance level of each criterion were noted across different programs.

Conclusions:

This study provided general information about the criteria that are used to accept/reject applicants for residency programs in Kuwait. Future studies should be conducted to investigate each criterion individually, and to assess if these criteria are related to residents' success during their training.

Key Words: Postgraduate training; Admission; Selection

Funding Agency: None

Medicine

Category: Clinical

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Low serum concentrations of Sex Hormone Binding Globulin (SHBG) as a Marker of categories of Glucose Intolerance and undiagnosed Diabetes in First Degree Relatives (FDR) of Type 2 Diabetic (T2DM) patients.

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Introduction:

Raised SHBG levels have been shown to reduce the risk of T2DM but the mechanisms remain unknown. This study explores the associations of SHBG with potential risk factors and categories of glucose intolerance and undiagnosed diabetes in FDR of T2DM patients.

Methods:

Body Mass Index(BMI), waist(WC), Hip circumference and waist:hip ratio (WHR)), fasting lipids, glucose, C-peptide, insulin, adiponectin, SHBG, oestradiol(E2), testosterone(T), Dehydroepiandrosterone sulfate(DHEA-S), and Alanine aminotransferase (ALT) (marker of hepatic steatosis) were measured in 141 FDR. Homeostasis model assessment - insulin resistance(HOMA-IR), beta cell function(%B), insulin sensitivity(%S) and Free androgen index(FAI) were calculated. Categories of glucose intolerance and diagnosis of diabetes were defined based on fasting glucose and/or HbA1c(ADA criteria).

Results:

82 subjects were normoglycemic, 40 had impaired fasting glucose and 19 had undiagnosed diabetes. SHBG showed significant positive correlations with adiponectin ($r=0.35$), %S (0.33) and High-density lipoprotein Cholesterol(HDL-C) ($r = 0.45$) and significant negative correlations with BMI ($r=-0.39$), WC ($r = -0.35$), WHR ($r = -0.62$), T ($r = -0.35$), FAI ($r = -0.72$), DHEAS ($r = -0.26$), C-Peptide ($r = -0.30$), insulin ($r = -0.37$), %B ($r=-0.38$), HOMA-IR (-0.39), ALT ($r=-0.39$), Triglycerides ($r = -0.32$) and HbA1c ($r=-0.22$). After partial correlation analysis, correcting for BMI, only correlations with WHR, FAI, TG and HDL-C remained significant. SHBG decreased stepwise with worsening categories of glucose intolerance in females whereas FAI decreased stepwise with worsening categories in males only. The area under the Receiver Operating Characteristic Curve for detection of diabetes for FAI and SHBG were 0.711 and 0.386 respectively for males and 0.430 and 0.660 respectively for females.

Conclusions:

Associations of SHBG with anthropometric and metabolic variables suggest that lower levels may contribute to the risk of T2DM through obesity dependent mechanisms but low FAI is a better marker of diabetic state in males.

Key Words: Sex Hormone Binding Globulin; Categories of Glucose Intolerance; First Degree Relatives of Type 2 Diabetic patients

Funding Agency: KFAS grant 2004-1302-03

Medicine

Category: Clinical

54

Outcome of critical illness polyneuromyopathy in renal transplant recipients after successful weaning from ventilator for broncho-pneumonia

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Introduction:

Critical illness polyneuromyopathy (CIP/CIM) commonly accompanies patients with multi-organ failure and sepsis. Distal muscle weakness and loss of deep tendon reflexes are usually found with sparing the cranial nerves musculature. Many risk factors have been identified especially hypoxia, hypotension, hyperpyrexia, female gender, severity of illness, duration of organ dysfunction, renal failure and renal replacement therapy, hyperosmolality, parenteral nutrition, low serum albumin, duration of ICU stay, vasopressor /catecholamine support and age. Hyperglycemia also has been identified as an independent preventable risk factor.

Aim of work: we reported the development of such syndrome in 7 out of 22 renal transplant recipients who were weaned successfully from ventilator for bronchopneumonia.

Methods:

Out of 45 renal allo-transplant recipients -who developed persistent bronchopneumonia during the period between August 2009 and Marsh 2010-twenty two of them required mechanical ventilation following diagnostic bronchoscopic aspiration and lavage. After doing the procedure in the ICU, we failed to wean seven patients from mechanical ventilation. Critical illness polyneuromyopathy was suggested as a complication after receiving intensive care for bronchopneumonia and acute graft insufficiency.

Results:

Clinical suspicion and electrophysiologic studies were tools for early diagnosis. Our lines of management were supportive. It consisted of aggressive pulmonary hygiene in addition to prevent ion of secondary complications of immobility such as bed sores, deep venous thrombosis and superimposed compressive neuropathies. As a long term management, rehabilitation program-including active and passive exercises- were started.

Conclusions:

CIP/CIM is a rare complication and this is the first report among renal transplant recipients. Clinical suspicion and electrophysiological studies are the tools for early diagnosis . Proper management including correction of risk factors especially diabetes and long term measures of rehabilitation might be beneficial

Key Words: Transplantation; Polyneuropathy; Outcome

Funding Agency: none

Medicine

Category: Clinical

55

Determinants of Nutritional Abnormalities in Patients with Multiple Sclerosis

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Introduction:

Fatigue and asthenia are often observed in patients with Multiple sclerosis (MS) and it varied with the different neurological deficits. These observations have been ascribed to malnutrition associated with disease course. This study investigated changes in levels of specific nutritional markers in relation to disease activity and progression in MS patients.

Methods:

In this case control study, we recruited 114 MS patients and 102 age and sex matched controls. 64 (GrpA) patients had a mean (\pm SD) disease duration of 7.8 (\pm 5. 7) yrs and 91% were on immune-modulatory therapy; 54 (GrpB) were newly diagnosed and drug naïve. None of the subjects took Vit D or any nutritional supplements; all were interviewed by a questionnaire, clinically evaluated and gave fasting serum samples for assessment of albumin, pre-albumin, urea, Fe, ferritin levels.

Results:

While patients & controls had similar BMI, the former had bigger ($P < 0.05$) waist circumference and lower levels of albumin & calcium (both $p < 0.05$). This difference was more remarkable in the GrpA patients. The patients and controls had similar Fe levels, but the GrpA patients had higher ferritin levels ($p < 0.001$). It was observed that those with a relapsing remitting (RR) MS (86%) had higher albumin and pre-albumin levels (both $p < 0.05$) than those with relapsing progressive (RP) MS (10% cases). These observations did not appear influenced by the Expanded Disability Status Scale (EDSS), that is relatively mild (< 3.0) in 75% of the patients.

Conclusions:

These results suggest that MS patients are sub-clinically malnourished in having reduced serum albumin and pre-albumin levels. They may also have a tendency towards accumulation of tissue iron, as evident from increased ferritin levels. These changes are commoner in the patients with longer disease duration and on disease modifying drugs – whether these changes reflect disease chronicity or are consequent on immune-modulator drug intake remain conjectural.

Key Words:

Funding Agency: Kuwait University, MM 03/09

Medicine

Category: Clinical

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Metabolic bone disease in drug naïve patients with multiple sclerosis

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Introduction:

Mobility disorders associated with Multiple sclerosis(MS) considerably influence morbidity and quality of life in this disabling neurological disease found most commonly in young adults. It is important to be able to rapidly identify the determinants of this complication and institute appropriate remedial measures. This study aimed to evaluate the features of metabolic bone disease in drug-naïve patients presenting with MS.

Methods:

We recruited 2 groups of age, BMI and gender-matched Kuwaiti subjects: (i) Grp A: 114 (50m, 64f) with clinically proven MS, of whom 50 were newly diagnosed and drug naïve; (ii) Grp B :102 healthy controls (HC,42m,60f). All had demographic and anthropometric parameters and clinical details (including comorbidities). In addition, each gave fasting blood and urine samples for assay of bone markers-osteoblastic and osteoclastic by standard ELISA techniques. In addition, we measured other serum indices of calcium metabolism and total 25(OH) vitamin D and tissue inflammation (CRP).

Results:

To avoid confounding due to medications and duration of disease, we compared results only between the HC group (n=102) and the drug-naïve MS sub-group (n=50). The latter had lower serum calcium, albumin, corrected calcium, and vitD (all $p < 0.01$). With respect to the bone markers, the patients' group again had lower levels of the osteoblastic marker-osteocalcin and higher levels of the osteoclastic marker, NTx ($P < 0.01$). Levels of iPTH, CRP, PO4, ALP, BAP, PYD and DPD were similar for both groups.

Conclusions:

Drug naïve patients with MS in comparison to healthy controls, have lower calcium, vitamin D and osteoblastic markers in association with higher levels of bone resorption markers. These features suggest a metabolic bone disease coexisting with MS that demands evaluation in presenting cases, to avoid further diminution in quality of life.

Key Words: Multiple sclerosis; Bone disease; Drug naïve

Funding Agency: MMO3/09

Medicine

Category: Clinical

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Patients factors and disparities in the quality of diabetes care

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Introduction:

Studies have shown that there are disparities in the quality of diabetes care between the practices. This study aims to examine whether there are disparities related to patients' factors.

Methods:

Medical records of 360 diabetic patients were reviewed. Performance measures included the percentages of diabetic patients meeting the recommended targets for HbA1c (<7%), BP (<130/80), LDL-C (<2.6 mmol/l), HDL-C (>1.0 for men and >1.3 mmol/l for women), and triglycerides (<1.7 mmol/l). Patients' factors included age, gender, nationality, type and duration of diabetes, smoking status, and BMI.

Results:

Majority of the patients (70.3%) had type 2 diabetes. Mean age was 45.4 ± 16.9 years. More than half of the patients (53.3%) were female, and the majority (66.9%) were Kuwaiti citizens. The median duration of diabetes was 11 years. More than half (51.4%) of the patients were obese (BMI>30) and 5.8% were current smoker. Only 15.8% and 29.7% of patients met the HbA1c and BP targets respectively; only 65.6%, 39.3% and 50.2% of the patients met the recommendations for triglycerides, HDL-C and LDL-C, respectively. Albuminuria and any retinopathy were present in 26.4% and 28.4% of the patients respectively. Foot ulceration was present only in two patients. Only 10.8% and 11.1% received influenza and pneumococcal vaccinations. In multiple logistic regression, obesity was an independent factor for BP and HDL-C targets, whereas type 2 diabetes was an independent factor for BP, HDL-C, and triglyceride targets. Male gender, age, and duration were the independent factors for diabetic retinopathy, whereas age was the only independent factor for albuminuria. Non-Kuwaiti nationality was the independent factor for LDL target. Glycaemic control and vaccinations were not related to any patient factor.

Conclusions:

Patients factors contribute to the disparities in the quality of diabetes care. Interventions should be tailored according to the needs of the patients.

Key Words: Diabetes; Quality; Factors

Funding Agency: None

Medicine

Category: Clinical

58

**Endoscopic treatment of post laparoscopic sleeve gastrectomy leaks:
An experience from Kuwait**

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Introduction:

Post laparoscopic sleeve gastrectomy leak through staple lines is the most significant cause of procedure-related morbidity and mortality. Endoscopic placement of self-expandable metal stents(SEMS)is a minimally invasive technique emerging as an alternative to surgery in treatment of leaks. Retrieval may be complicated; in such cases, placement of self-expandable plastic stents(SEPS)aids removal. This study highlights our experience in the use of SEMS/SEPS in treatment of gastric leaks post sleeve gastrectomy.

Methods:

The study was conducted in Thunayan Alghanim Gastroenterology center, Kuwait. A retrospective analysis was carried out on 11 patients who underwent SEMS/SEPS placement and removal as a primary treatment of post sleeve gastrectomy leaks. Stenting was done by 1 qualified gastroenterologist.

Results:

Among 11 patients who had successful placement of SEMS, 5 had placement in an infectious environment. One patient had chronic leak at time of placement(>60 days of leak). Interval of SEMS placement after sleeve gastrectomy was rapid(within 1 week)in 4 patients and moderate(1 week to 1 month)in 6 patients. The average duration of SEMS placement per patient is 43. 4 days(range 28-84 days)and SEPS-assisted retrieval 11. 5 days (range 14-35 days). Successful treatment of leak was attained in 9 patients(81.8%), evidenced by normal gastrografen study 1 week post stent removal. One patient sustained a chronic fistula to the pleural cavity and 1 patient had persistent leak through staple lines. Seven patients (77.8%) required SEPS placement to facilitate retrieval. Rapid placement of SEMS resulted in 100% successful leak closure compared to delayed (>1 week) placement which resulted in 71. 4% rate of leak closure

Conclusions:

Use of SEMS is a safe and an effective method in treatment of post sleeve gastrectomy leaks with success rate of 81.8%. SEPS is often required to facilitate SEMS removal. Rapid stent placement is associated with favorable outcomes

Key Words: Leaks; Endoscopic treatment

Funding Agency: None

Medicine

Category: Undergraduate

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Self-perception of visual functioning among diabetic patients in Kuwait

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Introduction:

The prevalence of diabetes in Kuwait is 21.4% with an estimated diabetic retinopathy prevalence of 43.6% in 2010. The aim of this study was to assess the vision functioning quality among diabetic patients.

Methods:

Across sectional study enrolled adult diabetic patients of both genders visiting the primary care diabetes clinics during the data collection period between 12th and 16th February 2012. The participants were randomly selected using a multi-stage sampling frame. The study used a two-parts self-reporting questionnaire. The first included sociodemographic section, history of DM, vision-related history and treatment. The second part included the National Eye Institute visual functioning questionnaire (VFQ-25) which consists of 25 questions and an overall health-rating question. These questions fall into 11 subscales focusing on different aspects of vision like near vision, distance vision, colour vision and vision specific social functioning, role difficulties and dependence. The variables associated with the VFQ-25 scores were identified through multivariate step-wise logistic regression analysis.

Results:

400 participants were included with nearly equal distribution between males and females. Kuwaitis formed 72% of total. The mean VFQ score was 83.4. The logistic analysis showed that secondary education (OR=2.9; 95%CI 1.27-6.81), unemployment (OR= 6.27; 95% CI 2.47-15.89), duration of diabetes of >10 years (OR= 7.22; 95% CI 2.22-23.43), and presence of hypertension (OR= 2.22; 95% CI 1.17-4.21) were independently associated with a less than complete score of 100 points.

Conclusions:

It is important to appreciate that the exact score does not correspond to the actual stages of the disease but to how the patients' daily life gets affected by the changes in vision secondary to their illness. Appreciation of patients' difficulties and needs in chronic conditions like DM is crucial in any formal national screening programs.

Key Words: Diabetes; Retinopathy

Funding Agency: None

Medicine

Category: Undergraduate

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**Do you think a patient will forget about an injection in the eye?
Discrepancies between patients' self-reported ocular history and
recorded data in their charts at the primary care diabetes clinics in
Kuwait.**

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Introduction:

Primary health care service in Kuwait is the “gate keeper” in terms of screening, assessment, and management of many chronic diseases including Diabetes Mellitus and its complications. The aim of this study is to assess any discrepancy between self-reported ocular history related to diabetic retinopathy (DR) and clinical information available in the medical record of diabetic patients.

Methods:

This is a cross-sectional study using a multi-stage sampling frame from 100 clinics in Kuwait. Participants were enrolled by a convenience sample of all adult diabetic patients. The patient's ocular history was collected using self-administered questionnaire and was compared to a doctor's-administered review of DR information available in the electronic medical records. Quantitative analysis of the data was performed using SPSS and presented as simple frequencies.

Results:

A total of 400 participants were enrolled from 22 primary diabetes clinics in three health areas. The chart review alarmingly showed that significant information relevant to DR was missing. The medical charts of the screened patients failed to indicate the date of the last performed DR screening test in 154 cases. Ninety one patients had their last screening test more than 24 months earlier, and a total of 48 patients had no entry in their medical records about a screening fundus exam ever to have been performed although they were seen at the primary diabetes clinics. Out of the 400 participants, 53 patients reported receiving laser therapy, eye surgery, intraocular injection, or combination as treatment for DR. Fourteen participants out of the 53 who reported receiving treatment for DR had an entry of “no DR” as per their medical records review and only 10 patients were reported to have Proliferative DR.

Conclusions:

The DR screening information currently available in the primary health care clinics in Kuwait should be open to discussion as this study raises questions about its reliability and validity

Key Words: Retinopathy; Electronic medical records

Funding Agency: None

Medicine

Category: Clinical

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Long-term follow up of Zero-HLA mismatched renal transplants

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Introduction:

There was an intermediate level of graft survival in haploidentical parent to child or sibling to sibling transplants, in which one but not both of the haplotypes matched. Sooptimal graft outcome, compatibility at all three HLA loci is, therefore, desirable. Objective:analyse the result of zero-mismatched renal transplants done in our center.

Methods:

This study was a retrospective study from 1993 to 2010, 1050 renal transplants were performed in our centre, including 40 (3.8%) involving recipients of kidneys with zero-HLA mismatches. All recipients had negative B and T cell lymphocytotoxicity cross match at the time of transplantation. Their immunosuppression consisted of triple drug therapy with steroids, antiproliferative agent (azathioprine/mycophenolate) and calcineurin inhibitor (cyclosporine/tacrolimus) without any induction

Results:

Mean follow up period was 8. 76 years (range 1.6 to 16.2 yrs) and the mean serum creatinine on last follow-up was 112 umol/L (range 51 to 186 umol/L) Graft survival was, 100% at 1 year, 97.2% at 3 years, 93.9% at 5 years and 84% at 10 years with a patient survival of 100% during the follow up period. Four grafts were lost during the mean follow up period of 8. 7 years, all due to chronic rejection. There were only 2 (5%) episodes of biopsy proven acute rejection which both occurred during the 1st year after transplantation and responded completely to steroid treatment

Conclusions:

The long term outcome of zero-mismatched renal transplantation in our centre shows excellent results. Graft survival was, 100% at 1 year, 97.2% at 3 years, 93.9% at 5 years and 84% at 10 years with a patient survival of 100% during the follow up period. There were only 5% episodes of biopsy proven acute rejection and responded completely to steroid treatment.

Key Words: Mismatch; Renal transplant; Immunosuppression

Funding Agency: None

Medicine

Category: Clinical

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Risk Factors for Steroid-Resistant T-Cell Mediated Acute Cellular Rejection and their Effect on Kidney Graft and Patient Outcome

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Introduction:

Acute rejection in renal transplant is considered a risk factor for short-term and long-term allograft survival. The expected reversal rate for the first acute cellular rejection, by steroid pulse, ranges between 60% and 100%, and lack of improvement within 1 week of treatment is defined as steroid resistant rejection. This work sought to evaluate factors that lead to steroid-resistant acute cellular rejection among patients with first live-donor renal allotransplant and its effect on graft and patient survival.

Methods:

Patients with an improvement in serum creatinine levels were considered controls (group 1; n=100); while the others were considered an early steroid-resistant group (group 2; n=99). Both groups were matched demographically.

Results:

Patients with a target cyclosporine level below accepted therapeutic levels were significantly higher in group 2 ($P = 0.02$). We found no significant differences between the groups regarding post transplant complications ($P > 0.05$). Mean hospital stay was longer in group 2 ($P = 0.021$). Living patients with functioning graft were more prevalent in group 1, while those alive on dialysis were more prevalent in group 2. The groups were comparable regarding long-term patient and graft survival despite significantly lower creatinine values in patients of group 1 at 6 months' follow-up ($P \leq 0.001$).

Conclusions:

Prebiopsy low cyclosporine trough levels and associated chronic changes among patients who were maintained on calcineurin inhibitor-based regimens represented the most-important risk factors for the early steroid-resistant group. Rescue therapies improve short-term graft outcome; however, they did not affect either patient or long-term graft survival after 5 years' follow-up

Key Words: Steroid resistant; Acute rejection; Risk factors

Funding Agency: None

Medicine

Category: Clinical

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Rheumatic complications of Inflammatory Bowel Disease among Arabs: A hospital based study in Kuwait

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Introduction:

Idiopathic inflammatory bowel disease (IBD) is a group of gastrointestinal disorders with Crohn's disease (CD) and ulcerative colitis (UC) as the most prominent phenotypes. Extra intestinal manifestations (EIM) occur frequently in IBD and inflammatory arthropathies are the most common EIM encountered. The published reports in Southwest Asian regions were limited in details relating the types and frequency of arthropathy in IBD patients. The objective of this study is to investigate the rheumatic complications of inflammatory bowel disease (IBD) Arab patients in relation to the clinical manifestations of IBD using Montréal classification system in a hospital-based population in Kuwait.

Methods:

A cohort of 130 consecutive patients with IBD, either Ulcerative Colitis (UC) or Crohn's disease (CD) attending gastroenterology and rheumatology clinics of Kuwait University hospital from January to December 2010 were recruited.

Results:

The mean age of patients was 32.6±12.3 years. 45 (34.6%) IBD patients developed rheumatic manifestations, the difference in proportion was not significant among of UC and of CD patients (18 [40.0%] vs. 27 [31.7%], $P = 0.215$). Peripheral arthritis was seen in 41 (31.5%) of IBD patients. Axial skeletal involvement presenting as a combination of spondyloarthritis with sacroiliitis was seen in 11 (8.5%) out of 130 IBD patients. Isolated sacroiliitis was seen in four (3.1%) of IBD patients. Enthesopathy was seen in seven (5.4%) and dactylitis in two (1.5%) of IBD patients. No statistically significant difference ($P > 0.05$) was detected between the frequency of the rheumatic manifestations and the clinical subtypes of IBD.

Conclusions:

This study delineates the rheumatic complications in relation to clinical manifestations (phenotypes) of IBD using the Montréal classification, in a hospital-based cohort of an Arab population. Our results were comparable to previously published data from other parts of the world.

Key Words: Inflammatory bowel disease; Spondyloarthropathy; Arthritis

Funding Agency: Kuwait University Research Administration (Grant No. MM 01/10)

Medicine

Category: Clinical

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Clinical feature of meningitis, its risk factors, complications and outcome. A hospital based study.

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Introduction:

Meningitis is a common CNS infection associated with significant morbidity & mortality. In this study, we reviewed records of meningitis patients admitted in Mubarak Al Kabir Hospital, during 2010-12. Our objectives were to describe demographic profile, clinical presentation, laboratory features, causative organisms, and outcome.

Methods:

We examined hospital records of 44 suspected meningitis patients for demographic data, presenting symptoms & signs, CSF analysis & microbiology, treatment, hospital course & outcome. Diagnosis of bacterial meningitis was based on clinical presentation, CSF analysis with neutrophilic pleocytosis, decreased sugar, elevated protein & lactate, positive culture, gram stain, latex particle agglutination. Viral meningitis was diagnosed in patients with CSF having lymphocytic pleocytosis, slightly elevated protein, normal sugar & lactate, detection of viral titers & DNA by PCR in CSF. Diagnosis of TB meningitis were based on sub acute course, high CSF protein & lactate, very low sugar, lymphocytic pleocytosis, positive Geil Nelson & PCR for M. tuberculosis.

Results:

Mean age(\pm SD.) of cohort was 31.8 ± 13.8 (1-57yrs). Bacterial, viral, & TB meningitis were seen in 20. 4%, 56.8%, & 13.6% patients, respectively. 3 refused CSF analysis & 1 diagnosed with malaria. Bacterial infection might be responsible for cluster of 24 (54. 5%) admissions in winter. Clinical presentation included fever (90.9%), unconsciousness (79. 5%), vomiting (72. 7%), headache (70. 5%), neckstiffness (61. 4%) & seizures (50%). Organisms were identified in only 6 (Streptococcus pneumonia-3, S. agalactiae-2, meningococcus-1). Bacterial, viral and TB meningitis were managed by empiric antibacterial, symptomatic & anti tubercular drugs respectively. All patients recovered without any neurological deficit.

Conclusions:

Strong clinical suspicion, early empiric antibiotic and dexamethasone therapy against common causative organisms, perhaps, contributed to 100% recovery in our study.

Key Words: Meningitis; Demographic data; CNS infection

Funding Agency: None

Medicine

Category: Clinical

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Environmental risk factors of multiple sclerosis in Kuwait: Evidence of association of Vit D deficiency with multiple sclerosis.

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Introduction:

Immugological, genetical and environmental factors are thought to play an important role in incidence and prognosis of chronic, demyelinating disease Multiple sclerosis (MS). Objective of this study is to identify associations (if any) of MS with different environmental, socio-cultural, and demographic risk factors in Kuwait.

Methods:

In this cross-sectional study, 194 Kuwaiti MS patients who fulfilled McDonald criteria and were followed up in a national MS clinic at Mubarak Al-Kabir Hospital and 146 healthy age and sex matched controls were clinically evaluated, and interviewed through a pre-designed questionnaire. Routine laboratory tests were also carried out according to international protocol.

Results:

The mean age and age at presentation of the MS patients and control were 33.3 years ($\pm 10.3SD$) and 27.4 ($\pm 9.3SD$) respectively, having a male to female ratio of 1:1.55 (76:118). The median duration of the disease was 5 years (range 0-30 years). Smoking [patients (27.3%) vs controls (16.5%), RR=1.7], family history of MS (22.7% vs 3.4%, RR=9.46), and presence of co-morbidities (patient vs control= 44.5% vs 25.6%; RR=0.45) were found to be significant risk factors. Central obesity was more prevalent in patients (waist circumference: patient vs control= 92.7cm ($\pm 15.2SD$) vs 87.9 ($\pm 12.7SD$), $p < 0.01$). Serum urea, albumin and calcium ($p < 0.01$) prealbumin ($p < 0.05$), level was found to be significantly low in patients than in controls. Significantly lower level of total Vit D was also found in drug naïve newly diagnosed patients than in controls ($p < 0.05$). More patients (18.7%) lead unemployed or retired life than controls (2.1%) ($p < 0.01$).

Conclusions:

Young age (< 35 yrs), smoking, family history of MS, co-morbidities, low Vit D level, malnutrition could be the important risk factors among Kuwaiti MS patients. More research is needed to focus on these factors for environmental and socio-cultural values among Kuwaiti population.

Key Words: Multiple sclerosis

Funding Agency: Kuwait University, MM 03/09

Medicine

Category: Clinical

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Hypovitaminosis D in multiple sclerosis: Possible influence of circulating vitamin D binding protein levels.

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Introduction:

Circulating 25(OH)vitaminD(VitD) is bound to serum vitamin D binding protein (DBP). It is presumed that levels of the DBP could significantly influence the measured VitD concentration. Multiple sclerosis(MS) is known to be associated with VitD deficiency, with VitD levels often lower than those seen in a endemic VitD deficient population. Objective: This study aimed to investigate contribution of DBP to hypovitaminosis D observed in MS by assaying levels of VitD & DBP in groups of age, gender & BMI-matched controls & MS patients, those are categorized into GrA=VitD sufficient (>50nM/L) & GrB=VitD insufficient (<50nM/L). The effect of VitD supplementation on DBP levels in MS was also assessed.

Methods:

We recruited(1)Healthy Controls:GrAc,n=23;GrBc,n=28; &(2) MS Patients: GrAp,n= 11; GrBp, n=14. Anthropometry, demographic details & history of comorbidities were assessed in both groups. Serum levels of VitD, DBP, albumin, ferritin & urea were measured by ELISA.

Results:

For the controls, VitD levels in GrAc (median 70nM/L) were about 4times greater than in GrBc (19nM/L); DBP levels however were about 2times greater in GrB than GrA(median 132vs.269), all p<0.001. In patients with MS however, while differences in VitD levels for GrAp vs Bp were similar to those seen in the Controls (61nM vs. 16nM, p<0.001), there were no significant differences in DBP levels between the two groups (188vs191nM/L, p=NS). Additionally, supplementation with Vit D (50,000 u/wk.) did not influence DBP levels in MS in those with & without significantly increased vit D levels after 8 weeks. There were no differences in albumin, ferritin or urea levels between the groups.

Conclusions:

These results suggest that the homeostatic regulation of the relationship between circulating 25(OH) vitamin D level & its binding protein is deranged in individuals with multiple sclerosis. This observation might provide further insight into the pathogenetic links between MS & vitamin D deficiency.

Key Words: Vitamin D; Multiple sclerosis(MS)

Funding Agency: Kuwait University, MM 03/09

Medicine

Category: Clinical

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Kidney Transplantation in the Elderly

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OTC

Introduction:

There is increasing evidence that survival with a kidney transplant exceeds survival on dialysis. Many centres are still reluctant to accept patients >60 or 65 years old, as they are frail, have more comorbid conditions and their overall life expectancy is lower.

Aim of the Study: We retrospectively reviewed the results of renal transplantation in patients over 60 years of age at our Center.

Methods:

This study was a retrospective case control analysis study. The data were analysed at 1 and 3 years, and compared between the patients > 60 years (Gr I) and <60 years old (Gr II). Primary end point were Graft loss &/or patient loss, while secondary end point were cerebro cardiovascular events, malignancies and rejection

Results:

There was no statistically significant difference between the 2 groups in the result of mean serum creatinine after 1 year while mean serum creatinine after 3 years in Gr II was significantly higher than Gr I ($p<0.003$) and prevalence of malignancy was similar in both groups.

There was no statistical difference in the result of rejection occurrence; Chronic graft dysfunction in the control group showed statistically significant increase than the elderly group ($p<0.05$). The cerebrocardiovascular events showed significant increase in the elderly group than control ($p<0.01$). Seven grafts were lost in Gr I (6 due to patient deaths and 1 from trauma) while only 1 was lost in Gr II (due to renal vein thrombosis) ($p<0.01$).

Conclusions:

Old age was associated with lower number of graft losses due to rejection, while they had higher death rate. Recipient age alone cannot be a criterion to exclude patients from transplantation. Patients older than 60 yr of age can be transplanted safely and successfully, especially when they are properly screened for the presence of significant risk factors such as severe cardiovascular disease and diabetes

Key Words: Kidney; Transplant; Elderly

Funding Agency: None

Medicine

Category: Clinical

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Acute antibody-mediated rejection in paediatric renal transplant recipients: single centre experience.

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OTC

Introduction:

Acute antibody-mediated rejections (aAMR) after renal transplantation are defined as rapidly deteriorating graft function, donor-specific antibodies and characteristic histology. Anti-rejection strategies among children with aAMR are lacking.

Aim of the work: To evaluate paediatric renal transplant recipients who experienced at least one episode of antibody mediated rejection and received different modalities of treatment protocols.

Methods:

out of 105 paediatric renal transplants performed in Hamed Al-Essa organ transplant centre, 21(20%) experienced at least one episode of biopsy proven antibody mediated rejection. Most of these episodes occurred within first two years after their first renal transplantation (20 ± 2.6 months). Pre-transplant cross matches were negative. Basic immunosuppression comprised Tacrolimus, MMF and steroids. The diagnosis was made according to Banff classification 2007 and cases were subdivided into 2 groups: aAMR (n=10) and mixed rejection (n=10).

Results:

Mean patients age was 12.5 ± 4.9 and 13.5 ± 2.3 in both groups respectively and both were matched regarding donor source and age, original kidney disease, HLA mismatches, type of immunosuppression, basal graft function and hemogram. The majority of our patients received PE, IVIG and rituximab, however we found that graft outcome was significantly better only in those who received rituximab ($p=0.002$). On the other hand, graft survival was significantly worse in those who received lymphocyte depleting agents ($p=0.036$). Graft function-at last follow up- in both groups were comparable as measured by serum creatinine (132 ± 33 vs. 143 ± 65 , $p=0.88$ respectively). Patients with mixed rejection received significantly more steroid pulses but without significant impact on graft survival. Patient survival was comparable.

Conclusions:

Combined therapy of IVIG, plasmapheresis and rituximab is effective in the treatment of aAMR in pediatric renal transplants.

Key Words: Antibody mediated; Rejection; Pediatric renal

Funding Agency: None

Medicine

Category: Clinical

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HLA-DR mismatched paediatric renal transplantation: patient and graft outcome with different kidney donor sources

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OTC

Introduction:

Renal allograft failure in children has been associated with several factors, including age, race, donor source, cold ischemia time, primary renal disease, HLA antigen mismatch, and transplantation year. Aim of the work: To determine the impact of HLA-DR mismatching on the outcome of pediatric renal transplant patients.

Methods:

In this retrospective analysis, paediatric renal transplants performed in Hamed Al-Essa organ transplant centre of Kuwait (n=104), between 1994 and 2011 were examined for the effect of HLA-DR mismatches on graft and patient survival. DR zero mismatch (group1, n=17); one mismatch (group 2, n=63) and two mismatch (group3, n=34) comprised the three arms of our study. Pre-transplant complement-dependent cytotoxicity and flow cytometry cross matches were negative. Basic immunosuppression comprised Tacrolimus, MMF and steroids.

Results:

The three groups were matched regarding mean recipient age (12.2 ± 5.5 , 13.9 ± 3.8 , 3.7 ± 4.2 years respectively); patient and donor sex; donor age (35 ± 8.2 , 34 ± 7.4 , 30 ± 9.3 years), original kidney disease, type of maintenance immunosuppression, basal graft function, viral profile and pretransplant co-morbidities (diabetes, anemia, hypertension and tuberculosis). Most of patients with two DR mismatch received cadaveric grafts and ATG induction; while patients with grafts from live donors received simulect induction ($p < 0.05$). We found that patient survival at 1, 5, and 10 years was comparable in all groups. Posttransplant complications were comparable in all groups especially infections (bacterial and viral), hypertension, mean rejection episodes and NODAT. Moreover, we found no significant difference in the graft function as represented by serum creatinine at 1, 3, 5, and 10 years of follow up ($p > 0.05$).

Conclusions:

HLA-DR mismatch pediatric renal transplantation-especially with cadaveric donors- is feasible with potent induction and maintenance immunosuppression

Key Words: HLA DR mismatch; Renal transplant; Pediatric

Funding Agency: None

Medicine

Category: Clinical

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Pulmonary hypertension in patients with sickle cell anemia in Kuwait

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Introduction:

Pulmonary hypertension (PHT) is a significant cause of mortality and morbidity in patients with sickle cell anemia (SCA). It is defined as elevated pulmonary artery systolic pressure (PASP) > 30mmHg. This study determines the prevalence of PHT in Kuwaiti adult patients with SCA by echocardiography and 6 minute walk test (6MWT), and correlates PHT with clinical, hematological and biochemical parameters.

Methods:

Stable patients with SCA presenting to hematology at Mubarak hospital were studied. Age and sex matched healthy controls were recruited. Hematological and biochemical assays were performed. 6MWT included distance walked, post walk dyspnea and fatigue levels and oxygen saturation. Transthoracic echocardiography was performed on patients. Peak tricuspid regurgitant jet velocity (TRJV) and PASP were measured. TRJV \geq 2.5m/s was defined as high.

Results:

73 SCA (51 SS, 22 S β) patients and 70 controls were studied. Retic, bilirubin, LDH, WBC and platelets were significantly higher in patients while Hb, haptoglobin, urea, creatinine and cholesterol were significantly lower. Mean HbF level was 15.85%, 18 (25%) patients had HbF > 20%. 57 patients underwent echocardiography. 14 (24.5%) and 15 (26%) patients had mild tricuspid and mitral regurgitation respectively. Mean EF, TRJV and PASP were 63.9%, 1.7m/s and 23.0 mmHg respectively. Only 3 (5.2%) patients had mildly elevated TRJV (2.6-2.97m/s). 8 (14%) patients had high PASP (mean 35.3 \pm 5.1mmHg). All patients with high TRJV had high PASP. Hb, Hct and retics were significantly different between patients with normal and high PASP. Blood pressure, oxygen saturation before and after 6MWT and distance walked were significantly lower in patients compared to controls.

Conclusions:

Our study shows low prevalence of PHT among adult Kuwaiti patients with SCA which may be due to the phenotype of disease. The diagnosis of PHT can be difficult but important. Screening SCA patients with echocardiography is recommended.

Key Words: Sickle cell anemia; Pulmonary hypertension; Echocardiography

Funding Agency: Kuwait University research grant number MG03/08

Medicine

Category: Clinical

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Study of the effect of donor source on graft and patient survival in pediatric renal transplant recipients.

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Introduction:

Evaluation of the impact of kidney donor sources on the outcome of renal transplantation is not adequately studied.

Aim of the study: We aimed to compare the long-term outcome of kidney transplantation from different sources among a pediatric recipient population.

Methods:

This study comprised 105 pediatric recipients who received their kidney grafts between 1994 and 2011 at Hamed Al-Essa Organ transplant center of Kuwait. These patients were further subdivided into three groups according to donor source (37 with LRDs); (31 with LURDs) and (35 with cadaveric donors). All patients' data were assessed with special emphasis on graft and patient survival as well as post-transplant medical complications.

Results:

All groups with mean follow up seven years-were comparable regarding pre-transplant demographic features especially diabetes, anemia, hypertension, tuberculosis, bone disease and viral profile. We found that patient survival at 1, 5, and 10 years was comparable in all groups. In our series, we observed that rejection rate in the 3 groups was comparable ($p>0.05$). However, kidney survival was poor among cadaveric group compared to other groups despite potent induction and maintenance immunosuppression. This could be explained by poor HLA match; high PRA; higher incidence of ATN and NODAT in the same group ($p<0.05$). This was translated as significantly higher mean serum creatinine. The overall incidence of post-transplant complications was comparable among the three groups except significantly higher post-transplant diabetes among LURD group ($p=0.004$).

Conclusions:

Pediatric renal transplants have good long term patient outcome whatever the donor source is; with poorer cadaveric grafts and higher risk of NODAT with unrelated donors.

Key Words: Renal transplant; Outcome; Donor source

Funding Agency: None

Medicine

Category: Clinical

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Detection rate of adenomas on colonoscopy in an Arab population

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Introduction:

Adenoma detection rate (ADR) is an important measure of colonoscopy quality. Guidelines from the US and other Western countries consistently recommend an ADR of >15% in women and >25% in men older than age 50 years. There is no information in the literature about the ADR in the Arab population which has an intermediate incidence of colorectal cancer. The aim of this study was to determine the ADR in an Arab population undergoing colonoscopy for colon cancer screening in Kuwait.

Methods:

The study included 916 consecutive Arab patients presenting for first screening colonoscopy. ADR was calculated as the proportion of patients who had a one or more adenomatous lesions detected on a complete colonoscopy (defined as insertion to the cecum). Advanced adenoma was defined as an adenoma with significant villous features (>25%), size of ≥ 1.0 cm, high-grade dysplasia, or early invasive cancer.

Results:

Of the 916 patients, 776 had a complete colonoscopy (396 (51%) females (mean age 49.8 ± 15.4 years) and 380 (49%) males (mean age 50.3 ± 15.2 years). The total of 419 patients were >50 years old; 215 (51.3%) females and 204 (48.7%) males. The overall ADR for all Arab patients who had a complete colonoscopy was 16.8% for males and 8.6% for females ($p < 0.005$) (Figure 1). However the ADR for patients with age 40-49 years was 19.8% for males and 4.7% for females ($p < 0.05$), and for those with age >50 years it was 20.6% for males and 11.6% for females ($p < 0.05$). Advanced adenoma was found in 24.5% of the patients; 17.2% of the males and 38.2% of the females ($p < 0.05$); and 22.4% had >1 adenoma detected on colonoscopy.

Conclusions:

The ADR in an Arab population aged >50 years in Kuwait is very close to that reported from the Western countries. In addition, the ADR for males between the ages of 40 and 49 years is similar to those who are >50 years of age and advanced adenomas are twice as common in females as males.

Key Words: Colon; Adenoma; Colonoscopy

Funding Agency: None

Medicine

Category: Clinical

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Impact of swine flu(H1N1) infection in renal transplant recipients

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OTC

Introduction:

Swine flu is a highly contagious respiratory disease that affects pigs and can be transmitted to humans causing infections in an epidemic form. This disease is caused by a certain type of influenza viruses known as H1N1. This work aimed to see the effect of this disease in highly vulnerable group as kidney transplant patients who are immunosuppressed and have different co morbidities .

Methods:

A retrospective study was carried out in Organ Transplant Centre in Kuwait over 69 patients who had been infected with swine flu (H1N1). The mean age group of those patients were 38 with a range of (5 -71 year). 19 of them had live related renal transplants (LRRTx), 35 have live unrelated renal transplants and 15 have cadaveric renal transplants. All of them had co-morbid conditions. 18 of them have diabetes mellitus, 61 had hypertension, 13 had ischemic heart disease and 13 have pulmonary disease. All are on regular Immunosuppression and under regular follow up. All patients underwent history taking about symptoms of the disease and its possible complication, physical examination. Laboratory detection of the virus by polymerase chain reaction from the nasopharyngeal and throat swabs and assessment of renal function before, during, and after recovery of infection. All patients received oseltamivir.

Results:

There were no signification changes in renal function before and after getting the infection. There was no mortality over the period of infection and 6 months follow up post recovery. 4 cases were complicated with pneumonia and was treated in the hospital. 43 cases were treated as outpatient and 22 required admission in infectious disease hospital (IDH) for observation and further management.

Conclusions:

The course and prognosis of swine flu is benign in renal transplant patients.

Key Words: Kidney transplantation; H1N1; Outcome

Funding Agency: None

Medicine

Category: Clinical

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Impact of positive BK virus-kidney donors on renal transplant recipient outcome

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OTC

Introduction:

BK nephropathy is an increasing problem in renal transplant recipients. It has been correlated with newer Immunosuppressive agents and the decline in acute rejection rates. However, the combinations of early detection, prompt diagnosis, and appropriate reduction in maintenance immunosuppressive therapy have been associated with better outcome. Aim of the work: We aimed to evaluate the impact of BK positive kidney donors on the outcome of kidney transplant recipients after mean follow up period of 21 months.

Methods:

Out of 18 kidney donors with positive BK virus in blood and urine-both qualitative and quantitative PCR-, 5 were found fit for donation. Here in we present 5 kidney transplant recipients who received kidney allo-grafts from such donors with mean age of 35 ± 3 years. We assessed the impact of donor BK on patient and graft survival after mean follow up period of 21 months.

Results:

All patients-except one were males with mean age 49.4 ± 4.2 years; mean body weight 68.2 ± 4 kgm and mean follow up duration 21.6 ± 4 months. All patients except one were managed by thymoglobulin induction and steroid, tacrolimus, MMF as maintenance therapy. Ureteric stenting was a routine procedure in each case. HLA-CW7 was detected in 4 out of 5 recipients and in the 5th it was detected in the donor. Three patients were biopsied and two with acute tubular necrosis and one with AAMR which was managed successfully with plasma exchange. Moreover, on last follow up all patients were enjoying functioning grafts without evidence of recurrence of BK infection.

Conclusions:

BK positive persons can be accepted safely for kidney donation especially for recipients with HLA-CW7. Further long term and larger randomized studies are needed to evaluate this preliminary observation.

Key Words: Renal Transplantation; BKV; Nephropathy

Funding Agency: None

Microbiology and Immunology

Category: Clinical

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Bacteriological profile and antimicrobial resistance pattern of infections in the intensive care units of Ibn-sina hospital and Al-Babtain center

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Introduction:

This study was done in Ibn-sina hospital and Al-Babtain center ICU's to analyze the pattern of antimicrobial resistance among bacterial isolates and determine the resistance mechanisms.

Methods:

The study was done in the Ibn-Sina Microbiology laboratory on all clinically significant micro-organisms isolated from blood, urine, respiratory, wound swabs and central line tips and other sterile body fluids from January to December 2011. Isolates were identified by Vitek 2 (biomerieux, France). The antimicrobial sensitivity pattern was performed using Vitek 2 and E-test when required. Further tests to identify the various resistance mechanisms like MRSA, ESBL and MBL was done using Gene Xpert system, CT/CTL and TZ/TZL E-test method and Imipenem with EDTA E-test method (AB biodisk, Solna, Sweden)respectively.

Results:

Out of a total of 811 patients admitted to the ICU over the study period, 1093 significantly positive cultures were evaluated. Infections were mainly due to Gram-negative organisms accounting for 63% of infections while Gram-positive and fungi accounted for 24% and 13% respectively. *Klebsiella pneumoniae* (26%), *Pseudomonas aeruginosa* (22%) and *Acinetobacter baumannii*(11%) were the predominant organisms. Pneumonia together with skin soft tissue infection including burn infection accounted for 37% and 33%, respectively. 17% of Gram-negative isolates were Extended spectrum beta-lactamase producers and 3% were Metallo-beta lactamase producers. 29% and 20% of Gram -negative organisms isolated from ICBU and Pediatric surgery, respectively were resistant to carbapenems. Methicillin-resistant *Staphylococcus aureus* (MRSA) accounting for 49% was the commonest Gram-positive organism isolated mainly from the ICBU.

Conclusions:

Klebsiella pneumonia, *Pseudomonas aeruginosa* and MRSA were the commonest cause of infections in the intensive care units.

Key Words: Antimicrobial; Resistance; ICU

Funding Agency: None

Microbiology and Immunology

Category: Basic Sciences

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Multiplex allele-specific PCR assay rapidly detects cyp51A codon 98 mutations in triazole-resistant environmental and clinical *Aspergillus fumigatus* isolates

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Introduction:

Invasive aspergillosis (IA) caused by *Aspergillus fumigatus* is associated with high mortality rates in immunocompromised patients. New triazoles (itraconazole and voriconazole) are primary therapy of IA due to favorable pharmacokinetic and safety profiles. 14- α -sterol demethylase (cyp51A) codon 98 (cyp51A98) mutations confer resistance to triazoles in *A. fumigatus* isolates. This study evaluated a multiplex allele-specific PCR (MAS-PCR) assay targeting cyp51A98 for rapid detection of triazole resistance in environmental and clinical *A. fumigatus* isolates for proper patient management.

Methods:

Reference *A. fumigatus* strains carrying wild-type and L98H mutation at cyp51A98 were used. The MAS-PCR was performed by using three primers designed to detect the presence of CTC (wild-type) or CAC (mutant) allele at cyp51A98. Amplicons were detected by agarose gel electrophoresis. Environmental (n=131) and clinical (n=44) *A. fumigatus* isolates were used. These included triazole-susceptible (n=125) and -resistant (n=50) strains as determined by Etest. The results of MAS-PCR were confirmed by direct DNA sequencing of cyp51A98 region from selected isolates.

Results:

The MAS-PCR with reference *A. fumigatus* strains yielded expected results. The 125 triazole-susceptible and 46 of 50 triazole-resistant *A. fumigatus* isolates were correctly identified by MAS-PCR. Of the remaining 4 triazole-resistant isolates, two each contained a mutation at cyp51A codons 54 and 220 which are outside the region of analysis by MAS-PCR.

Conclusions:

The MAS-PCR assay successfully detected L98H mutation in cyp51A gene that confers resistance to triazoles in 92% triazole-resistant *A. fumigatus* strains. Our data also showed the presence of cyp51A98 mutations in environmental but not in clinical *A. fumigatus* isolates in Kuwait. The MAS-PCR assay will help in early recognition of triazole-resistant *A. fumigatus* strains for proper management of patients with IA.

Key Words: Aspergillus fumigatus; Triazole resistance; MAS-PCR

Funding Agency: Supported by KU Research Sector grant MI 01/09

Microbiology and Immunology

Category: Basic Sciences

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Investigation of virulence factors in *Campylobacter jejuni* isolated from patients with diarrhoea in Kuwait

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Introduction:

Campylobacter jejuni is a diarrhoeal pathogen. It possesses a number of virulence factors, but how they exactly contribute to diarrhoea is not clear. There are no data on the prevalence of these virulence factors in *C. jejuni* isolated from patients in Kuwait. In this study, we investigated some selected virulence factors. These included tissue culture adherence and invasion, cytolethal distending toxin (CDT) production and its gene (*cdtB*), and genes for invasion-associated marker (*iam*), invasion-associated secreted protein (*ciaB*), and invasion (*cj0486*), and resistance to ciprofloxacin (resistance strains may cause prolonged infection).

Methods:

29 selected diarrhoeal *C. jejuni* from patients at Mubarak Al-Kabir Hospital, Kuwait during 2007-2011 were studied. Adherence and invasion were studied using Int-104 tissue culture cells. The input inoculum for the assays was about $5 \times 10^{6-7}$ cfu/ml of medium with tissue culture cells. Adherence was a 1 hour assay. For invasion, after adhesion, the cells were incubated with gentamicin for 3 hours (to kill extracellular bacteria) after which the tissue culture cells were lysed to enumerate intracellular bacteria. CDT production was assayed in HeLa cells. Specific PCR assays were done to detect the genes, *cdtB*, *iam*, *ciaB* and *cj0486*. Ciprofloxacin susceptibility was studied by E test.

Results:

All 29 strains were both adherent and invasive for Int-104 cells. 27 were positive for *cdtB* gene, but only 13 expressed CDT production. The numbers of isolates positive for *cj0486*, *iam* and *ciaB* genes were 10, 1, 16, respectively with no relationship among them. Fifteen strains were ciprofloxacin resistant and bore no relationship with presence of invasion-associated genes.

Conclusions:

The *C. jejuni* diarrhoeal isolates in Kuwait were positive for a number of virulence factors. However, there was no correlation among the presence of these factors. How they act alone or in concert is not clear.

Key Words: *C. jejuni*; Virulence factors; Diarrhoea

Funding Agency: Kuwait University MI04/10

Microbiology and Immunology

Category: Clinical

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Species spectrum and antifungal susceptibility profile of vaginal isolates of *Candida* spp. in Kuwait

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Introduction:

Candida vulvovaginitis (VVC) is the commonest fungal infection of healthy women. While *Candida albicans* remains the principal cause of VVC, there is a gradual shift towards non-albicans *Candida* spp. The objective of the study was to determine species spectrum and antifungal susceptibility profile of *Candida* spp. isolated from women with complaints of vaginal discharge.

Methods:

A six-month prospective study (November 2010-April 2011) was conducted at Obstetrics and Gynecology Clinic, Farwania Hospital. Cotton-tipped, high vaginal swabs were cultured on Sabouraud dextrose agar supplemented with chloramphenicol. CHROMagar *Candida* medium was used for provisional identification, which was subsequently confirmed by Vitek 2 and/or API 20C AUX methods. Minimum inhibitory concentrations (MICs) against amphotericin B, flucytocine, fluconazole, voriconazole, posaconazole and caspofungin were determined by Etest performed on RPMI 1640–glucose(2%) medium. Revised CLSI breakpoints were used to determine susceptibility profile.

Results:

Of 1752 vaginal swabs cultured, 213 (12.2%) yielded yeast spp. which were identified as *C. albicans* (n = 153), *C. glabrata* (n = 44), *C. tropicalis* (n = 4), *C. parapsilosis* (n = 2), *C. krusei* (n = 2), *C. keyfr* (n = 4), *C. guilliermondii* (n = 2), *C. dubliniensis* (n = 1) and *Saccharomyces cerevisiae* (n = 1). *C. albicans* strains were susceptible to all antifungal agents except one isolate which was resistant to fluconazole (> 256 mg/L). For *C. glabrata*, MIC₉₀ values against fluconazole and posaconazole were 8 mg/L and 6 mg/L, respectively. Five strains of *C. glabrata*, were resistant to posaconazole (MIC 6-32 mg/L). *C. krusei* strains were invariably resistant to fluconazole and flucytocine.

Conclusions:

C. albicans is the major yeast species associated with vaginitis in Kuwait. In spite of frequent use of fluconazole in clinical practice, the resistance is rare.

Key Words: Vulvo-vaginitis; *Candida* spp. ; Antifungal susceptibility

Funding Agency: None

Microbiology and Immunology

Category: Clinical

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Evaluation of Curetis UnyveroTM for rapid detection of bacteria and antibiotic resistance in nosocomial pneumonia

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Introduction:

Nosocomial pneumonia is a severe life-threatening, lower respiratory tract infection which carries high mortality. Our objective was to evaluate the performance of multiplex PCR-based UnyveroTM Pneumonia Application assay for the detection of bacteria and resistance markers in nosocomial pneumonia.

Methods:

Non-repetitive respiratory samples were obtained from 35 severely ill patients with suspected respiratory tract infections and processed with UnyveroTM Pneumonia Application assay according to manufacturer's protocol. Bio-assays were achieved by loading 2ml samples into self-contained Curetis cartridges and then analyzed in the instrument where sample preparation, DNA extraction and purification, amplification and specific detection took place within 4 hours. All samples were cultured in parallel and susceptibility testing performed on relevant bacterial isolates.

Results:

The 35 patients were aged 3-92 years (mean=55.6 year). UnyveroTM detected multiple bacteria in 16 (45. 7%) cases, 4 and 7 of which yielded the same multiple bacteria and single bacteria by culture, respectively. Single isolates were detected in 8 samples and culture yielded the same isolates from 4. Three of 11 negative samples in the assay yielded Mycobacterium tuberculosis by culture. The most common isolates detected were Acinetobacter baumannii (9), Stenotrophomonas spp. (8), Pseudomonas aeruginosa (8), and Streptococcus pneumoniae (7). Detection of resistance genes influenced modification of therapy in 22/24 (91. 7%) positive cases. Four (11. 4%) patients died of underlying co-morbidities.

Conclusions:

Curetis UnyveroTM assay was able to detect etiological agents of severe nosocomial pneumonia and resistance markers in respiratory samples within 4 h compared with c. 72 h by standard culture. Antibiotic resistance with a complex genetic background can be successfully predicted by this assay.

Key Words: Curetis UnyveroTM; Detection bacteria; Nosocomial pneumonia

Funding Agency: None

Microbiology and Immunology

Category: Graduate PhD (Basic Science)

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Improvement of Molecular Characterization of Human Metapneumovirus in Kuwait

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Introduction:

Human metapneumovirus (hMPV) is a newly discovered virus, and has been identified as a common cause of both upper and lower respiratory tract infections (RTIs) in children and adults of all ages. A rapid, sensitive, and high throughput assay is needed for the detection of hMPV in the clinical samples. Therefore, this study was aimed to detect and genotype hMPV using different molecular assays, and to evaluate the sensitivity, specificity, and turnaround time of each test.

Methods:

During December 2010 to February 2011 a total of 200 respiratory samples were collected from 185 hospitalized patients with either upper or lower RTIs. They were tested by the in-house reverse transcription polymerase chain reaction (RT-PCR) assay, the PrimerDesign genesig real-time RT-PCR assay, and the INFINITI Respiratory Viral Panel Plus (RVP-Plus) microarray assay for the hMPV detection, and by the INFINITI RVP-Plus and direct sequencing for hMPV genotyping.

Results:

Out of 185 patients, 10 (5. 4%) were hMPV RNA positive by the in-house RT-PCR (reference assay) and the turnaround time was 5 hours, however, another 24 hours was needed to perform hMPV genotyping by direct sequencing. The genesig real-time RT-PCR assay was used for hMPV detection only, and detected 7 (4%) hMPV RNA (sensitivity 70%), with a total turnaround time of 3 hours. The INFINITI RVP-Plus assay detected 9 (5%) hMPV RNA (sensitivity 90%), with a turnaround time of 24 hours for both hMPV detection and genotyping along with detection of other 23 common respiratory viruses. The specificity of all assays was 100%.

Conclusions:

This study highlights the importance of the molecular characterization of hMPV as a respiratory pathogen using advanced molecular assays, such as the microarray-based assay for its higher sensitivity, rapidity, and throughput compared to other molecular assays.

Key Words: Human metapneumovirus (hMPV); Molecular; Microarray

Funding Agency: College of Graduate Studies and Research Administration, Grant # YM 05/09, Kuwait University

Microbiology and Immunology

Category: Graduate PhD (Basic Science)

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Rapid and accurate identification of *Candida dubliniensis* and *Candida albicans* by real-time PCR and melting curve analysis

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Introduction:

Candida dubliniensis shares many phenotypic features with *Candida albicans* and may be misidentified in clinical mycology laboratories. Molecular methods are preferred over phenotypic tests for unambiguous differentiation of *C. dubliniensis* from *C. albicans*. The aim of this study was to develop a duplex real-time PCR (rt-PCR) that could differentiate these two species via a melting curve analysis.

Methods:

Two species-specific primer pairs targeting rDNA sequences were designed. The LightCycler Fast Start DNA Master SYBR Green I kit and instrument were used for amplification and melting curve analysis as directed by the manufacturer. Amplification products were also analyzed by agarose gel electrophoresis (AGE) to confirm rt-PCR results. The assay was evaluated on 226 clinical isolates including *C. albicans* (n=113), *C. dubliniensis* (n=98) and nine other *Candida* spp. previously identified by Vitek 2 yeast identification system and/or direct DNA sequencing of rDNA.

Results:

The melting point (T_m) for reference *C. albicans* and *C. dubliniensis* strains were 86.55 °C and 82.75°C, respectively. Analysis of rt-PCR products by AGE confirmed amplification of expected DNA fragments for both, *C. albicans* and *C. dubliniensis* and no primer dimer artifacts were visible. When rt-PCR was applied on 226 clinical isolates, the measured T_m values for *C. albicans* (n=113) and *C. dubliniensis* (n=98) were $86.68 \pm 0.529^\circ\text{C}$ and $82.616 \pm 0.535^\circ\text{C}$, respectively while, no amplification was detected from other *Candida* species.

Conclusions:

The rt-PCR assay using SYBR Green dye for melting point analysis is a rapid and reliable test for detection and differentiation of *C. dubliniensis* or *C. albicans* strains. The assay does not require prior identification of clinical isolates as *C. dubliniensis*/*C. albicans* strains by germ tube formation and the whole procedure could be completed within 2 h.

Key Words: *Candida albicans*; *Candida dubliniensis*; Real-time PCR

Funding Agency: Kuwait University Research Administration grant YM 10/11

Microbiology and Immunology

Category: Graduate PhD (Basic Science)

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Distribution of Coagulase and SCCmec types in MRSA isolated from Kuwait hospitals: 1992-2010

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Introduction:

Methicillin-resistant *S. aureus* is endemic in Kuwait hospitals. However, there is no data on the distribution of clonal types. The aim of this study was to investigate MRSA isolated in Kuwait hospitals from 1992 to 2010 for the distribution of coagulase serotypes and Staphylococcal Chromosomal Cassette mec(SCCmec)types.

Methods:

A total of 400 MRSA isolates selected on the basis of PFGE patterns were obtained from patients at 13 different hospitals in Kuwait. They were investigated for coagulase serotypes (coagulase types I to X)and SCCmec types (types I to V) by multiplex PCR.

Results:

All of 15 isolates obtained in 1992 belonged to SCCmec type III. Isolates obtained in 1996 (20 isolates), 1997 (32 isolates) and 1998 (16 isolates) belonged to SCCmec types III and IV with the majority belong to SCCmec type III in 85%, 93.8%, 93.8%, respectively. In 1999 (21 isolates, SCCmec type III (66.6%) was still the most common type, with low prevalence of SCCmec type I (14.3%), II (4. 7%), IV(9. 5%) and V (4. 7%). In 2001 (34 isolates), the prevalence of SCCmec type IV increased to 32.3% while SCCmec type III was detected in 55.9% of the isolates. Isolates obtained in 2005 (52 isolates) consisted of SCCmec types II (1.9%), III (51.9%), IV (36. 5%), V (1.9%) and Non-Typable NT (7. 7%). In 2010 (205 isolates), the isolates consisted of SCCmec types III (31. 7%), IV (25.8%), V (14.6%), I (15.1%) and NT(9.3%). Coagulase type IV was the dominant serotype (56. 5%) in isolates obtained from 1992 to 2010 with a low prevalence of coagulase types I, II, III, V, VI, and VII. Coagulase types VIII, IX and XI were not detected.

Conclusions:

The results showed changes in the distribution of SCCmec types over time with increases in the prevalence of SCCmec types IV and V in 2010 over the preceding years. Coagulase serotype IV was the dominant serotype with serotypes I,II,V,VI and VII isolated sporadically. There was no correlation between coagulase serotypes and SCCmec distribution.

Key Words: MRSA; SCCmec types; Coagulase types

Funding Agency: College of Graduate Studies

Microbiology and Immunology

Category: Basic Sciences

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Identification of hypervariable regions in the 5' untranslated region and the polyprotein gene of coxsackievirus B1 isolated from a child with aseptic meningitis

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Introduction:

Coxsackievirus B1 (CVB1) is a human enterovirus (EV) prevalent in young children with aseptic meningitis. The aim of this study was to investigate the genetic differences between a clinical CVB1 strain, isolated in Kuwait in 2008 from the cerebrospinal fluid of a child with aseptic meningitis, and the prototype CVB1 conn-5 strain, isolated in United States in 1948 from the stool of a child with aseptic meningitis.

Methods:

The sequences of 5'-untranslated region (5'UTR) and capsid genes of clinical and prototype CVB1 were amplified by RT-PCR, and the nucleotide sequences were determined by direct cycle sequencing. Putative RNA secondary structures of the 5'-UTR of clinical and prototype CVB1 were constructed using RNAstructure software.

Results:

The degree of nucleotide variability between the 5'UTRs of clinical CVB1 strain and that of prototype was 15%. Two regions with higher sequence variation were noted in the 5'UTR. The clinical CVB1 strain has 4 extra bases and 2-base deletion in the 5'-UTR. The RNA secondary structures of the 5'UTRs of clinical and prototype CVB1 strains appeared to have quite different configurations. The 5'UTR RNA secondary structure of clinical CVB1 had a thermodynamically more favorable energy level compared with that of prototype. The deduced capsid protein sequence of the clinical CVB1 strain showed a difference of 516 (20%) nucleotides from the prototype strain, resulting in 38 (4%) amino acids differences; 13 in VP2 protein, 12 in VP3 protein, and 13 in VP1 protein, a number of which were found in the loop regions associated with viral antigenicity.

Conclusions:

The polymorphisms detected in the 5'UTR and polyprotein gene may account for the differences in neurovirulence potential observed between different EV strains. The extent to which the neurovirulence phenotype of CVB1 may be influenced by a thermodynamically more stable 5'UTR secondary structure requires further study.

Key Words: Enterovirus; Polymorphism; Secondary structure

Funding Agency: None

Microbiology and Immunology

Category: Clinical

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Infections Caused by *Chryseobacterium* spp. in Pediatric Patients in Kuwait

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Introduction:

Chryseobacterium spp. is a ubiquitous Gram-negative bacillus, which though considered an innocuous environmental contaminant can cause opportunistic infections, especially in newborns and immuno-compromised persons of all age groups. It is known to cause pneumonia, meningitis, endocarditis, bacteremia and meningitis in the susceptible host. Clinical data of 10 patients, and biochemical and genetic characterization of *Chryseobacterium* spp. isolated from clinical samples of these patients at Farwania Hospital (FH) and Maternity Hospital (MH), are presented in this study.

Methods:

From April to November, 2012, 10 strains of *Chryseobacterium* spp. were isolated from clinical samples (8 from endotracheal secretions, ES, and 2 from blood) from as many patients (9 neonates and 1 infant <3 months old) by culturing them on routine media. The isolates were identified by Phoenix or Vitek and confirmed by 16S rRNA sequencing. Antimicrobial susceptibility was performed by E test for confirmation of results obtained by disk diffusion method.

Results:

All strains, which were Gram-negative rods, catalase- and oxidase- positive, non-motile, and susceptible to vancomycin failed to grow on MacConkey agar. All 8 isolates (6 from ES and 2 from blood) at MH were identified as *C. meningosepticum* by Phoenix, whereas the 2 strains isolated from ES at FH were identified as *C. indologenes* by Vitek. Antimicrobial susceptibility test revealed that all *C. meningosepticum* strains were multi-drug resistant with susceptibility to piperacillin/tazobactam (pip/tazo) while *C. indologenes* strains were additionally susceptible to ceftazidime and showed susceptibility to aminoglycosides as well.

Conclusions:

We present evidence for the emergence of a cluster of *Chryseobacterium* associated cases from neonates in Kuwait. These organisms, which can cause high mortality in newborns, may be misidentified by some commercially available kit systems resulting in inappropriate antibiotic use.

Key Words: *Chryseobacterium* spp. ; Infection; Neonate

Funding Agency: None

Microbiology and Immunology

Category: Clinical

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The role of newly discovered viruses in the development of respiratory tract infections in Kuwait.

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Introduction:

More than 80% of the cases of respiratory tract infections are viral in origin. Although mostly causing self-limited upper respiratory tract infections (URTI), they can be associated with serious lower respiratory infections (LRTI) with a high level of morbidity, particularly in children. Little is known about the role of newly discovered viruses in the development of URTI and LRTI in Kuwait and the Gulf region.

Methods:

The aim of this study is to investigate the role of seven newly discovered viruses which include coronaviruses (HCoV)-NL63, OC43, and 229E, human metapneumovirus (hMPV), bocavirus, human polyomaviruses WU (WUV) and KI (KIV) by using sensitive molecular techniques.

Results:

Six hundred thirty four hospitalized patients were screened during three year period, from September, 2010 to December, 2012. Of the 263 patients with viral respiratory infection, WUV was detected in nine patients (3. 4%), KIV in four patients (1. 5%), bocavirus in 12 patients (4.6%), hMPV in eight patients (3. 0%), HCoV-OC43 in 22 patients (8. 4%), HCoV-229E in five patients (1.9%) and HCoV-NL63, was not detected in any of our patients' samples.

Conclusions:

We conclude that newly discovered viruses do play a role in the development of both URTI and serious LRTI in Kuwait. Rapid identification of viral infections can help control nosocomial transmission, reduce overall antibiotic use and improve the treatment and managements of these infections.

Key Words: Respiratory tract infections; Newly discovered viruses; Molecular techniques

Funding Agency: Research administration project grant number MI 03/08

Microbiology and Immunology

Category: Clinical

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Comparative performance of GeneXpert™ and Quick Chek Complete Kit assays for the detection of Clostridium difficile antigen and toxins

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Introduction:

Clostridium difficile is an important cause of healthcare associated diarrhea. Several techniques are available to detect *C. difficile* toxins or genes that encode them in stool samples. The aim of the study was to evaluate the performance of GeneXpert (Cepheid, CA, USA) and Quick Chek Complete (QCC) kit (TECHLAB, VA, USA) for detection of *C. difficile* antigens and toxins directly from fecal specimens, broth culture and colonies.

Methods:

A total of 409 non-repetitive stool samples were collected from adults patients with diarrhea who were attending clinics at Mubarak Hospital from July-December 2012. They were processed at the Anaerobe Reference Laboratory. Stool samples, cooked meat broth (CMB) culture and colonies from cultured plate were tested by GeneXpert and only stools by QCC. The assays were performed according to the manufacturer's instructions.

Results:

Of the 409 samples, 19 (4.4%) were culture-positive and all were positive for glutamate dehydrogenase antigen by the QCC ELISA kit. Of these 19 samples, GeneXpert detected toxins directly from 10 (52.6%) stool specimens, 13 (68.4%) CMB and 13 (68.4%) of isolated colonies. It did not detect toxins in 3 stool samples that yielded toxigenic strains and 6 others positive for non-toxigenic strains. The QCC ELISA assay detected toxins A/B in only 7 (36.8%) of 19 stool samples and was negative, in 6 stool samples positive for toxigenic strains. One stool sample was toxin-positive by QCC ELISA Kit but negative by GeneXpert; but was positive in CMB. The sensitivity and specificity of GeneXpert was 81.25 and 100% in stool samples, 100 and 100% in CMB and direct testing of isolated colonies. For the QCC, they were 68.42 and 100% sensitive and specific, respectively.

Conclusions:

GeneXpert assay is more sensitive than QCC for the detection of *C. difficile* toxin in stool specimens but both tests are highly specific. Testing CMB culture increased the sensitivity and specificity of GeneXpert.

Key Words: Clostridium difficile; GeneXpert; Antigen and toxins detection

Funding Agency: Kuwait University, Research Grant No. MI05/10

Microbiology and Immunology

Category: Clinical

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High prevalence of VIM-4 metallo- β -lactamase encoding gene among carbapenem-resistant Enterobacteriaceae in Kuwait

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Introduction:

Carbapenem-resistance among Enterobacteriaceae are emerging due to acquisition of carbapenem-hydrolyzing β -lactamases. The purpose of this study was to investigate the carbapenem resistance mechanisms among multidrug-resistant (MDR) Enterobacteriaceae isolates from hospitalized patients with nosocomial infections in Mubarak Al Kabeer Hospital, Kuwait.

Methods:

The isolates were identified using VITEK II ID system. Susceptibility testing was performed by E-test. Carbapenemase production was assessed using imipenem-EDTA double disk synergy test and modified Hodge test. PCR and sequencing were used to identify genes encoding ESBL or AmpC of the TEM, SHV, CMY and CTX-M types, and genes encoding carbapenemases of the VIM, NDM, IMP, GIM and KPC types.

Results:

Fifteen carbapenem-resistant Enterobacteriaceae isolates including 9 *Klebsiella pneumoniae*, 3 *Escherichia coli*, 1 *Enterobacter cloacae*, 1 *Morganella morganii* and 1 *K. oxytoca* were recovered during a 22-month period (April 2009 to February 2011). All were resistant to imipenem, meropenem and ertapenem with MIC >32 $\mu\text{g/ml}$. Eleven (73.3%) isolates produced VIM-4 (6 *K. pneumoniae*, 3 *E. coli*, 1 *E. cloacae* and 1 *K. oxytoca*). Three *K. pneumoniae* isolates produced NDM-1. The three NDM-1-positive *K. pneumoniae* isolates co-produced the CMY-4 cephalosporinase. Additional β -lactamases were detected among these MDR Enterobacteriaceae, including the ESBLs CTX-M-15 (7 isolates), SHV-12 (1), and SHV-26 (1), and the narrow-spectrum TEM-1 (7), SHV-31 (1) and SHV-11 (6).

Conclusions:

This is the first report on the emergence of highly carbapenem-resistant Enterobacteriaceae producing VIM-4 and NDM-1 metallo- β -lactamases. Some of these isolates co-expressed ESBLs, leading to panresistance to β -lactams. This study further highlights that countries from the Arabian peninsula are currently facing an emergence of carbapenemase-producing Enterobacteriaceae, leading to very difficult-to-treat infections.

Key Words: Carbapenem resistance; VIM-4; Enterobacteriaceae

Funding Agency: Kuwait University, Research administration, Grant No MI06/10

Microbiology and Immunology

Category: Clinical

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Primary Cervical Screening with HPV-DNA

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Introduction:

Infection with oncogenic HPV was detected in 99.8% of cervical cancer tissue. The number of women infected with HPV and the distribution of HPV genotype vary across population and with age. Tests for oncogenic HPV-DNA have been proposed as adjuncts or replacement to pap-cytology. Primary screening using HPV testing could play a role in primary health-care settings.

Methods:

The study population was comprised of women aged >20 years consulting in primary care gynecology clinics. The Hybrid Capture 2 test was used to test for HPV-DNA. The assays were performed using a pool of HPV RNA probes against types 16,18,31,33,35,39,45,51,52,56 and 68

Results:

Between January, 1st 2009 and July 31st, 2012, 4,572 women were enrolled in the study. Oncogenic HPV was detected in 8.2%, the prevalence of HPV was 6%, 8% and 9% for years 2009, 2010 and 2011& 2012 respectively. In this study >90% of women were negative for HPV

Conclusions:

In Kuwait we lack a formal organized screening program as well as cytology laboratories in a community setting. Therefore; this study makes the test available to women attending opportunistic screening at primary care setting. HPV testing has a negative predictive value close to 100%; therefore women with a negative HPV test had an extremely low risk of cervical cancer. While for women who were HPV- positive (8.2%), the performance of the HPV test could be improved with pap-smear, since HPV testing is significantly more sensitive than pap-smear but less specific.

Key Words: Human papillomavirus; Prevalence; Cervical cancer screening

Funding Agency: None

Microbiology and Immunology

Category: Basic Sciences

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Lecythophora polymorpha, a new species from endotracheal aspirate of a preterm neonate

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Introduction:

Lecythophora species are rare human pathogens. There are only two known species, *L. hoffmannii* and *L. mutabilis* which are incriminated as etiologic agents of keratitis, abscesses, peritonitis, endocarditis and septic shock. Lecythophora species are anamorphs of Coniochaeta, an ascomycetous genus belonging to the family Coniochaetaceae. The species are widely distributed in nature and primarily occur in wood and water. Here, we describe a new species of Lecythophora from a clinical source identified on the basis of unique phenotypic and genotypic differences.

Methods:

The isolate (Kw448/12) was recovered on Sabouraud dextrose agar from the endotracheal secretion of a preterm male neonate. The isolate was initially identified as a yeast species, but species-specific identification was difficult due to atypical morphological characteristics. To achieve a definite identification, a combined phenotypic and molecular approach was pursued. A variety of mycological media were used to induce discriminatory morphological characteristics. Additionally, amplification and sequencing of rDNA and fragments of the actin and beta-tubulin genes were undertaken.

Results:

The distinctive phenotypic characteristics which separated it from other known species included development of dark brown colonies after one week of incubation on culture medium, formation of abundant yeast-like cells and sclerotium-like structures associated with discrete, brown, nearly globose phialidic conidiogenous cells and absence of chlamydospores. Sequence analyses of internal transcribed spacer (ITS) region and the D1/D2 domains of the nuclear DNA and the actin and tubulin genes showed relationship of the case isolate with *Lecythophora decumbens*, but with less than 95% combined sequence identity, thus establishing its unique phylogenetic status.

Conclusions:

On the basis of unique phenotypic and molecular characteristics, a new species, *Lecythophora polymorpha* has been described.

Key Words: New species; Kuwait

Funding Agency: None

Microbiology and Immunology

Category: Basic Sciences

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Aspergillus and other molds in the outdoor air of Kuwait

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Introduction:

In recent years, Kuwait has undertaken a massive plantation drive which has resulted in the continuous increase in the vegetable mass of the soil. Presently, there are few data on prevalence of pathogenic and/or allergenic fungi that grow on decaying vegetable matter. The purpose of this study was to determine the occurrence and distribution of *Aspergillus* and other molds prevalent in the air of Kuwait.

Methods:

A one-year study (October, 2011-September, 2012) on the prevalence of airborne fungi using a six-stage Anderson air sampler was carried out at fortnightly intervals at two pre-determined sites: an open area at the ground level and the terrace (~50 ft above ground level) of the Faculty of Medicine. The plates containing malt extract agar were exposed for 30 minutes. The exposed plates were incubated at 30°C up to 5 days and colony forming units (CFU) were counted. The molds were identified by morphologic characteristics and/or by DNA sequencing of ITS region of rDNA.

Results:

During the study period, a total of 4406 CFUs were obtained. *Aspergillus* spp. formed 21. 0% of the fungal aerospora recorded. The prevalence of the three clinically important *Aspergillus* was as follows: *Aspergillus* section *Fumigati* (3. 0%), section *Flavi* (2.8%) and section *Terrei* (0.8%), respectively. Among non-*Aspergillus* molds, *Cladosporium* was the most predominant (42.1%), followed by *Penicillium* (19.1%), *Paecilomyces* (6.1%), *Alternaria* (4.3%), *Bipolaris* (2.8%) and others (6. 0%). The prevalence of *Cladosporium*, *Alternaria* and *Bipolaris* was higher at the ground level, whereas *Penicillium* and *Paecilomyces* were isolated more frequently from air samples obtained from the terrace.

Conclusions:

During the study, 19 different genera of fungi were recorded. *Aspergillus* spp. accounted for 21. 0% of the total fungal aerospora. The study provided information about the prevalence and distribution of pathogenic and/or allergenic fungi prevalent in the air of Kuwait.

Key Words: Molds; Airborne

Funding Agency: Supported by KURS grant MI01/09

Microbiology and Immunology

Category: Basic Sciences

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***Nigella sativa* (Blackseed) Possesses Potent Immunosuppressive and Anti-Tumor Activities**

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Introduction:

The search for natural immunosuppressive drugs holds a great hope for discovering effective remedies for preventing and treating a wide range of medical conditions. In this study, the potential immunomodulatory effects of *Nigella sativa* are investigated in light of splenocyte proliferation, macrophage function, and NK anti-tumor activity using BLAB/c and C57/BL6 primary cells.

Methods:

Splenocyte proliferation was assessed by [3H]-thymidine incorporation. ELISA was performed to assess cytokine secretion by splenocytes and macrophages, and Griess assay was performed to evaluate NO production by macrophages. Using YAC-1 lymphoma cells, the potential of *Nigella sativa* extract to promote the cytotoxic activity of NK cells was also examined by JAM assay.

Results:

Our findings reveal that the aqueous extract of *Nigella sativa* significantly enhances splenocyte proliferation in a dose-responsive manner. In addition, the aqueous extract of *Nigella sativa* favors the secretion of Th2, versus Th1, cytokines by splenocytes. The secretion of IL-6, TNF α , and NO; key pro-inflammatory mediators, by primary macrophages is significantly suppressed by the aqueous extract of *Nigella sativa*, indicating that *Nigella sativa* exerts anti-inflammatory effects in vitro. Finally, experimental evidence indicates that the aqueous extract of *Nigella sativa* significantly enhances NK cytotoxic activity against YAC-1 tumor cells, suggesting that the documented anti-tumor effects of *Nigella sativa* may be, at least in part, attributed to its ability to serve as a stimulant of NK anti-tumor activity.

Conclusions:

Our data present *Nigella sativa* as a traditionally used herb with potent immunomodulatory, anti-inflammatory, and anti-tumor properties. We anticipate that *Nigella sativa* ingredients may be employed as effective therapeutic agents in the regulation of diverse immune reactions implicated in various conditions and diseases such as cancer.

Key Words: Immunosuppression; Anti-Tumor

Funding Agency: NA

Microbiology and Immunology

Category: Clinical

92

Evaluation of the Comparative Performance of Verigene Gram-Positive Blood Culture Nucleic Acid System to Conventional and Other Nucleic Acid Techniques in a Tertiary-Care Hospital in Kuwait

Mokaddas EM, Behbehani A, Abdulla A, Shatti S

Ahmed Behbehani

Introduction:

To evaluate the performance of Verigene Gram-Positive Blood Culture(BC-GP) nucleic acid test in comparison to conventional culture and the Cepheid GeneXpert blood culture in the identification of Gram-positive bacteria and their resistance markers (mecA, vanA, vanB) directly from positive culture bottles.

Methods:

A total of 40 positive blood culture bottles showing Gram-positive bacteria were tested with BC-GP and plated on blood agar both aerobically and anaerobically. Blood culture bottles showing Gram-positive cocci in clusters were tested with the Cepheid GeneXpert cartridge. Identification and antimicrobial susceptibility testing of bacteria were done using Vitek II (Biomérieux, France).

Results:

The Verigene BC-GP system correctly identified all methicillin-sensitive *S. aureus* (MSSA)(8), *S. epidermidis* (12), *Enterococcus faecalis* (4), *Enterococcus faecium* (2), *S. pyogenes* (3), *S. agalactiae* (4) and *S. pneumoniae* (3) with a sensitivity and specificity of 100%. MecA was absent in all the 8 MSSA's, and present in all the 12 *S. epidermidis* which showed resistance to cloxacillin. VanA was detected only in the *E. faecium* that was resistant to vancomycin. The sensitivity and specificity of resistance marker for the above bacteria were 100%. Two *S. haemolyticus* and one *S. hominis* were identified by the VerigeneBC-GP test as *Staphylococcus* spp. GeneXpert correctly identified all MSSA's and coagulase-negative staphylococci. The average turnaround time for Verigene was 1 hr and 50 min compared to 1hr and 30 min for Cepheid GeneXpert and 48-72 hr for the conventional culture.

Conclusions:

Verigene is a rapid and accurate system for the identification of Gram-positive bacteria directly from a positive blood culture.

Key Words: Verigene; Gram positive; Blood culture

Funding Agency: None

Microbiology and Immunology

Category: Clinical

93

Evaluation of Unyvero, Curetis in the rapid diagnosis of pneumonia in a tertiary hospital in Kuwait.

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Introduction:

Lung infection is a grave problem in acutely –ill patients. Unyvero (UV), developed by Curetis AG, Germany, is a multiplexed assay targeting both typical and atypical pathogens in less than 4 hours. The objective of the study was to evaluate the role of UV in the rapid diagnosis of pneumonia and the detection of resistance markers.

Methods:

Patients suspected to have hospital and community-acquired pneumonia were included in the study. Patients on mechanical ventilation were also included. Sputum or endotracheal secretions ETT were inoculated into UV Cartridge according to the manufacturer's instruction as well as processed by the conventional culture

Results:

Out of 11 patients, four were diagnosed as community-acquired pneumonia (CAP), 3 as ventilator-associated pneumonia (VAP) and 4 were on ventilators without chest infections as surveillance cases. All CAP cases were started empirically on piperacillin/tazobactam and ofloxacin as per the protocol of the department. UV could detect *Streptococcus pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and Enterobacteriaceae 48-72 hours earlier than culture. Resistance markers such as *tem*, *shv*, *ctx-M*, *dha* for Enterobacteriaceae, *oxa51* for *Acinetobacter baumannii*, and *int1* and *sul1* for *Pseudomonas aeruginosa* were detected in 4 hours. However, it failed to detect *Enterococcus faecalis* and *Candida albicans* as they are not in the panel. As per VAP and surveillance cases, UV could detect *Stenotrophomonas maltophilia*, *S. pneumoniae*, *Haemophilus influenzae*, *Staphylococcus aureus* and Enterobacteriaceae 48 hours earlier than culture together with their

Conclusions:

Unyvero molecular diagnostic system can play an important role in the rapid and accurate identification of pathogens associated with bacterial pneumonia and for the detection of resistance markers.

Key Words: Unyvero; Diagnosis; Pneumonia

Funding Agency: None

Microbiology and Immunology

Category: Basic Sciences

94

Ovarian hormones rescue neurogenesis by dampening brain inflammation

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Introduction:

Brain inflammation occurs in several brain-associated illnesses including neurodegenerative diseases, stroke and infection. Uncontrolled inflammation exacerbates brain damage and induces a loss of brain functions. It has been shown that estradiol promotes LPS-activated microglia, the immune competent cells of the brain, and facilitates expression of pro-inflammatory genes within the brain while combined estradiol and progesterone treatment dampens the inflammatory response. Because brain inflammation hampers neurogenesis, we explored how hormonal replacement therapies affect brain inflammation and its consequent effect on neurogenesis.

Methods:

Female rats were ovariectomized and subjected to LPS injection into their striatum, a well established model of brain inflammation. Subsequently, they were given physiological doses of either estradiol alone (E) or a combination of E and progesterone (E + Pr) for three days.

Results:

E + Pr treatment dampened microglial activation while E treatment was with no significant impact. The reduced microglial activation in E + Pr group was associated with reduced levels of the pro-inflammatory cytokine TNF α and decreased activity of the NF κ B signaling pathway. Brain inflammation dampened neurogenesis as assessed by detection of newly born neuron (doublecortin containing cells). Interestingly, administration of E + Pr, but not that of E, partially rescued newly born neurons especially in the rostral migratory stream.

Conclusions:

These data suggest that the neuroprotective effect of ovarian hormones is mostly apparent when the hormonal replacement therapy consists of the combined E and Pr therapy.

Key Words: Microglia; Hormonal replacement therapy; Doublecortin

Funding Agency: RS Grant# MY01/10 and Grant # GM01/05 (for RCF)

Microbiology and Immunology

Category: Graduate PhD (Basic Science)

95

**Association between Human Leukocyte antigens(HLA-A,B,and DR)
and end-stage renal disease in Kuwaiti patients awaiting
transplantation**

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Introduction:

The number of patients with end stage renal disease (ESRD) is increasing considerably worldwide. Human Leukocyte antigens (HLA) are relevant for the expression of many immunological diseases and contribute to the development of different nephropathies. Therefore, we aimed from the present work investigate the possible association between the frequency of HLA-A, -B, and -DR and ESRD in Kuwaiti patients awaiting renal transplant.

Methods:

HLA-A, -B, and -DR typing was performed by complement-dependent cytotoxicity (CDC) method for 334 patients with ESRD awaiting renal transplantation and 191 healthy controls.

Results:

The frequency of HLA-B8 antigen was significantly higher in ESRD patients (OR=2.62, P=0.001, Pc=0.038), and the frequency of HLA-A28, HLA-DR11 antigens was significantly higher in healthy controls (OR 0.42, p=0.0001; pc=0.0021, and OR=0.44, P=0.0007, Pc=0.01 respectively). Although, a statistical significance difference was found between patients and controls for the frequency of HLA-A26 (OR=2.02, P=0.008), HLA-A68 (OR=2.11, P=0.004), HLA-A1 (OR=0.62, P=0.026) and HLA-24 (OR=0.54, P=0.007), however, the significance was lost after correction for multiple comparisons (Pc>0.05). HLA-DR12, -16, and -18 showed a trend for association with ESRD in Kuwaiti patients (OR=2.92, 2.13, and 2.34 respectively), but without statistical significance (P>0.05).

Conclusions:

While the HLA-B8 antigen may be a susceptibility risk factor for development of ESRD, the HLA-A28, and HLA-DR11 antigens may be protective against development of ESRD in Kuwaiti population.

Key Words: Human Leukocyte antigens(HLA); Renal Transplantation; HLA-B8 antigen

Funding Agency: None

Microbiology and Immunology

Category: Basic Sciences

96

Identification of delayed type hypersensitivity-inducing antigens encoded by *Mycobacterium tuberculosis*-specific genomic regions of differences

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Introduction:

Tuberculosis (TB) is an infectious disease problem of world-wide distribution and the effective control of TB requires the identification of antigens of *M. tuberculosis*, which could be useful in the diagnosis of active/latent TB and differentiate between vaccination with BCG and exposure to non-tuberculous mycobacteria. The aim of this work was to identify *M. tuberculosis*-specific proteins useful for diagnostic applications in vivo.

Methods:

Groups of guinea pigs (4 animals in each group) were immunized with *M. tuberculosis* or BCG and tested for delayed type hypersensitivity (DTH) responses to eight purified recombinant proteins encoded by genes in *M. tuberculosis*-specific region of difference (RD)1 (CFP10, ESAT-6 and PE35), RD7 (Rv2346 and Rv2347) and RD9 (Rv3619 and Rv3620). *M. tuberculosis* and BCG sonicates were used as positive controls. The proteins were tested singly or as mixtures representing each RD and the DTH responses were measured after 24 hrs.

Results:

DTH responses induced by single proteins were significantly weaker than the sonicates of *M. tuberculosis* and BCG. However, when pools of RD1, RD7 and RD9 proteins were tested, the best responses were observed with RD7, followed by RD9 and RD1 protein pools in *M. tuberculosis*-immunized guinea pigs. Moreover, in BCG-immunized guinea pigs, protein pools of RD7 and RD9 also induced positive responses. The bioinformatics analyses showed that three additional homologs of RD7 (Rv2346 and 2347) and RD9 (Rv3619 and Rv3620) proteins are present in other *M. tuberculosis* genomic regions, which are also present in BCG, but not in non-tuberculous mycobacteria.

Conclusions:

Conclusion: The use of protein mixtures containing RD1 or RD7+RD9 proteins may be useful in identifying individuals infected with *M. tuberculosis* or vaccinated with BCG, which is not possible by using currently used antigenic mixture PPD, because it has antigens that cross-react with non-tuberculous mycobacteria.

Key Words: Tuberculosis; Diagnosis; DTH

Funding Agency: Kuwait University Research Sector grants MI01/10 and GM01/01

Microbiology and Immunology

Category: Clinical

97

Performance of ProbeTec ET for direct detection of Mycobacterium tuberculosis in pulmonary and extra-pulmonary specimens in comparison to automated BACTEC MGIT 960 culture system

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Introduction:

Rapid molecular diagnosis of tuberculosis (TB) directly in clinical specimens is useful in low TB burden countries for proper patient management. Culture confirmed diagnosis is highly desirable, however, automated liquid culture systems require ~10 days for detectable growth and identification of Mycobacterium tuberculosis (MTB) further delays specific treatment. This study evaluated the performance of ProbeTec ET (PTec ET) for direct detection of MTB in both, pulmonary and extra-pulmonary specimens against MGIT 960 system.

Methods:

Clinical specimens (n=2486) originating from pulmonary (PTB, n=1661) and extra-pulmonary (E-PTB, n=825) sites from suspected patients during Jan. 2010 to Oct. 2012 were processed for acid-fast smear (AFS) microscopy by Ziehl-Neelsen stain, liquid culture in MGIT 960 system tubes (Becton Dickinson, BD) and detection of MTB nucleic acid by PTec ET (BD). All procedures were performed according to manufacturer's instructions and sensitivity of PTec ET was calculated in comparison with culture.

Results:

Of 1661 PTB specimens, 250 were culture positive while 1411 were negative for culture, AFS and PTec ET. Of 250 culture-positive samples, 123 were AFS-positive and 111 of 123 were PTec ET-positive (sensitivity = 97% as 9 of 12 PTec ET-negative specimens yielded non-tuberculous mycobacteria, NTM). Of 127 AFS-negative PTB specimens, 62 were PTec ET-positive (sensitivity = 59% as 21 of remaining 65 cultures were NTM). Overall sensitivity for PTB specimens was 79%. Of 825 E-PTB specimens, only 113 yielded culture. Of 113 culture-positive samples, 35 were AFS-positive and 32 of 35 were PTec ET-positive (sensitivity = 97% as 2 of 3 PTec ET-negative specimens yielded NTM). Of 78 AFS-negative E-PTB specimens, 51 were PTec ET-positive (sensitivity = 66% as 1 of remaining 27 cultures was an NTM). Of 712 culture-negative specimens, 705 were AFS-negative and PTec ET-negative. Four (2 AFS-positive and 2 AFS-negative) of 7 samples were from TB patients on therapy and were PTec ET-positive while 3 AFS-positive (1 identified as *M. leprae*) samples were PTec ET-negative. Overall sensitivity for E-PTB specimens was 75%.

Conclusions:

Our data show that ProbeTec ET is useful for rapid and specific diagnosis of TB in AFS-positive PTB and E-PTB specimens. The sensitivity of ProbeTec ET was ~2.5 times greater than AFS for E-PTB specimens, providing valuable information for the diagnosis of TB in samples often accepted on clinical indications only.

Key Words: Probtect; TB; Diagnosis

Funding Agency: None

Microbiology and Immunology

Category: Basic Sciences

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Detection and Characterization of Ampicillin- and Vancomycin - Resistant *Enterococcus faecium* belonging to Clonal complex-17 in a Kuwait hospital.

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Introduction:

Vancomycin-resistant *Enterococcus faecium* (VREF) is rare in Kuwait. However, between 1 and 30 March 2010, 10 VREF were isolated from patients in a Kuwait tertiary hospital. This study investigated the genetic relatedness, mechanism of vancomycin resistance and carriage of virulence genes in these isolates.

Methods:

Ten VREF isolates were obtained from nine patients in four wards and tested for susceptibility to antibiotics by disk diffusion and minimum inhibitory concentration (MIC) using Etest strips. Beta-lactamase production was detected with nitrocefin. Molecular typing was by pulsed-field gel electrophoresis (PFGE) and multi locus sequence typing (MLST). Genes for vancomycin (*vanA*, *vanB*), high level gentamicin (*aac(6'')*)-*aph(2'')* resistance and virulence determinants [*gelE*], aggregation substance (*aggA*), hemolysin activation factor (*cylA*), enhanced expression of pheromone (*eep*) and enterococcal surface protein (*esp*)] were detected by PCR.

Results:

All isolates were resistant to vancomycin (MIC >256 mg/L), teicoplanin (MIC:> 64 mg/L), penicillin (MIC: >32 mg/L), ampicillin (MIC: > 256 mg/L), tetracycline, ciprofloxacin and rifampicin but were susceptible to linezolid and none produced beta-lactamase. Three isolates expressed high-level gentamicin resistance (MIC >1024 mg/L). All isolates were positive for *vanA* and *esp*. Three isolates were positive for *aac(6'')*-*aph(2'')*. Molecular typing yielded two PFGE and MLST types. Seven isolates had identical PFGE pattern and belonged to ST412. Three isolates had the same PFGE pattern belonged to ST80. ST412 and ST80 are members of the pandemic clonal complex-17. The ST80 isolates came from patients in one ward, whereas the ST412 isolates were from patients in three different wards.

Conclusions:

The results highlights the emergence and transmission of ampicillin – and vancomycin –resistant *E. faecium* belonging to the pandemic clonal complex-17 in a Kuwait hospital.

Key Words: Enterococcus faecium; MLST; Antibiotic resistance

Funding Agency: Kuwait University Research Sector MI 01/05

Neurology

Category: Clinical

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Early versus late surgical treatment for neurogenic thoracic outlet syndrome

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Introduction:

Thoracic outlet syndrome symptoms related to compression of the neurovascular bundle at the upper thoracic aperture. We compared the outcome of early surgical intervention in recently diagnosed cases of neurogenic thoracic outlet syndrome (NTOS) with late surgical treatment after trial of conservative management.

Methods:

Thirty five patients of NTOS (25 women and 10 men, aged 20–52 years, were evaluated clinically, neurophysiologically and answered the Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire preoperatively and 6 months postoperative. Patients were classified into 2 groups. First group (15 patients) was operated on 6 months after physiotherapy and the second group was operated within 3 months of the onset. All patients were operated via supraclavicular surgical approach.

Results:

Paraesthesia and pain were significantly improved in group 2. Muscle weakness were less frequent in group 2 compared to group one. Group two showed significant improvement of Sensory Nerve Action Potential (SNAP) of ulnar nerve and less denervation in (Electromyography EMG). The postoperative DASH score improved in both groups but it was less significant in group 1 compared to group 2 ($p < 0.05$ in group 1 and $p < 0.001$ in group 2).

Conclusions:

Surgical treatment of NTOS improves functional disability and stop degeneration of the nerves. We suggest that early surgical treatment of NTOS, prevent irreversible wasting and denervation of nerves.

Key Words: Neurogenic Thoracic outlet syndrome; Surgical outcome; Functional disability

Funding Agency: None

Neurology

Category: Clinical

100

Migraine misdiagnosis as a sinusitis, a delay that can last for many years.

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Introduction:

Background: Sinusitis is the most frequent misdiagnosis given to patients with migraine.

Objectives: To estimate the frequency of misdiagnosis of sinusitis among migraine patients who fulfilled the diagnostic criteria according to the revised 2004. International Headache Society (IHS) classification system, [The International Classification of Headache Disorders, 2nd edition (ICHD-II)] criteria.

Methods:

The study included migraine patients with a past history of sinusitis of both sexes and over 12 years of age. All included cases fulfilled the revised 2004 IHS criteria (ICHD-II). We excluded patients with evidence of sinusitis within the past 6 months of evaluation. A detailed demographic data, headache history, medical consultation, and medication intake for headache and effectiveness of therapy before and after diagnosis were collected. All the patients were seen by one headache specialist in two neurological institutes over three years.

Results:

A total of 130 migraine patients were recruited. 106 (81. 5%) patients of them were misdiagnosed as sinusitis till they were assessed by the headache specialist. The time between the first episode and the diagnosis of migraine ranged from 1 to 38 years (mean duration 7. 74+ 6.30 years). Chronic migraine was significantly higher ($p < .0001$) in misdiagnosed patients than in patients with proper diagnosis. Medication overuse headache (MOH) was reported only in patients misdiagnosed as sinusitis. 59 of misdiagnosed patients (55. 7%) had consulted a primary care physician, and 47 patients (44.3%) were seen by otorhinolaryngology specialist before the diagnosis of migraine. The misdiagnosed patients were treated either medically (87. 7%), or surgically (12.3%) without relieve of their symptoms.

Conclusions:

Many migraine patients were misdiagnosed as sinusitis. More attention should be focus to educate primary care physicians to recognize migraine patients. Strict adherence to the diagnostic criteria will prevent the delay in migraine diagnosis and help to prevent chronification of the headache and possible (MOH).

Key Words: Migraine; Sinusitis; ICHD-II

Funding Agency: None

Neurology

Category: Clinical

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Predictors of conversion to multiple sclerosis in patients with clinical isolated syndrome using the 2,010 revised McDonald criteria

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Introduction:

Clinically isolated syndrome (CIS) is the first neurologic episode of multiple sclerosis (MS). Magnetic resonance imaging (MRI) and clinical features are used to predict risk of conversion to MS. Objectives. The aim of this prospective study is to evaluate predictors of conversion of CIS to McDonald MS.

Methods:

97 patients with CIS have been followed for 2 years. Age of onset, gender, initial clinical presentation, and MRI brain and spine were assessed. The 2010 revised McDonald criteria were applied.

Results:

Fifty-nine patients (60.8%) with CIS converted to McDonald MS after 10.1 + 4.2 months. Thirty-seven (38.1%) of the converters satisfied the diagnostic criteria based on the radiological parameters, while 21. 7% sustained their second clinical events. A multivariate regression analysis revealed that high number of lesions in MRI ($P < 0.001$) and earlier age of onset ($P < 0.043$) predicted the conversion of CIS to McDonald MS. Gender ($P < 0.5$) and initial clinical presentation (optic pathway ($P < 0.4$), supratentorial ($P < 0.91$), brain stem/ cerebellum ($P < 0.97$), and spinal ($P < 0.76$)) were not statistically significant.

Conclusions:

Age of onset and MRI parameters can be used as predictors of CIS conversion to McDonald MS. Application of the 2010 revised McDonald criteria allows an earlier MS diagnosis.

Key Words: Neurogenic Thoracic outlet syndrome; Surgical outcome; Functional disability

Funding Agency: None

Neurology

Category: Clinical

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Natalizumab is effective in patients with active relapsing remitting multiple sclerosis: First middle east experience

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Introduction:

Natalizumab has been established to be an effective disease modifying therapy (DMT) for Multiple Sclerosis (MS) especially in patients with highly active disease. Data reporting both efficacy and safety outcomes in MS patients using Natalizumab is scarce in the Middle East. We aimed to evaluate the outcomes of MS patients who have been treated with Natalizumab in Kuwait.

Methods:

A retrospective study included 44 patients who have been indicated for Natalizumab. Patients' demographics, clinical characteristics and treatment parameters were collected. Brain MRI scans were performed every 6 months. The primary end point was the proportion of relapse-free patients and secondary end points were the change in the mean annualized relapse rates (ARR), EDSS and the proportion of patients with MRI activity at the last follow-up visit.

Results:

The proportion of relapse-free patients has significantly increased ($P < 0.0001$) while ARR was significantly reduced ($P < 0.0001$) and EDSS improved ($P < 0.0001$). Also the proportion of patients with MRI activity was significantly reduced ($P < 0.0001$) at their last visit. There was no significant difference between patients with EDSS < 3 compared to those with EDSS > 3 ($P < 0.67$) in terms of efficacy. Six patients discontinued the drug.

Conclusions:

Natalizumab induced a significant suppression of disease activity and improvement in disability status MS patients. It was safe and effective during observational period.

Key Words: Multiple Sclerosis; Natalizumab; Prognosis

Funding Agency: None

Nuclear Medicine and Radiology

Category: Graduate (Resident)

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Evaluation of lymphatic drainage in the diabetic foot using Tc-99m nanocolloid lymphoscintigraphy

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Introduction:

Diabetic foot is a common complication of diabetes mellitus (DM) which is itself very widespread in Kuwait, the Arabian Gulf region and the world. The aim of the study is to evaluate lymph drainage abnormalities, manifested occasionally as edema in the diabetic foot, using Tc-99m nanocolloid lymphoscintigraphy (LS).

Methods:

24 consenting patients (14 (58%) with DM) were referred from the Foot Clinic for lymphoscintigraphy which involved intradermal injection of 0.5 mCi Tc-99m nanocolloid in the webspace of each foot and imaging using a scintillation camera. The imaging protocol included dynamic imaging of the lower pelvis for 30 min after injection and 3 whole body scans at 30, 60 and 120 min. The images were scored for the time delay of inguinal lymph node uptake, visualization of discrete lymph trunks, presence of dispersion and dermal backflow, collateral circulation and uptake in the popliteal lymph nodes. Statistical analysis was by descriptive statistics and the Chi square test.

Results:

There were 16 (67%) males and 8 females (33%). The average age was 56 yr and the age range was 27-74 yr. Of 48 limbs studied, 27 (56%) had normal lymphatic drainage. There were 7 (15%) limbs with features of lymphedema, in 2 (4%) limbs there was limited dispersion of the radiotracer. In the remainder of the studied limbs (12, 25%) there were isolated findings including delayed drainage and presence of collaterals. There were more abnormal findings in the diabetic patients but no significant statistical association was found.

Conclusions:

The evaluation of lymph drainage using LS reveals abnormalities that tend to be overlooked in diabetic patients. A comprehensive lymph drainage score based on multiple parameters recorded during LS is being tested to optimize its diagnostic performance for impairment of lymph drainage in those patients.

Key Words: Diabetes Mellitus; Lymphoscintigraphy; Lymphedema

Funding Agency: College of Graduate Studies, Kuwait University

Nuclear Medicine and Radiology

Category: Graduate (Resident)

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The effect of systemic hypertension on myocardial perfusion and cardiac diastolic and systolic function by Tc-99m lipophilic chelate gated SPECT

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Introduction:

Systemic hypertension (HTN) is associated with cardiac complications including ischemia and heart failure. Abnormalities of perfusion and function (systolic & diastolic) are amenable to study using Tc-99m lipophilic chelate gated-SPECT myocardial perfusion imaging (G-SPECT MPI). The objective of this study is to use G-SPECT MPI for the study of abnormalities of cardiac perfusion and function in patients with hypertension. In particular, assessment of diastolic function is done to check its value for diagnosis of early ventricular dysfunction.

Methods:

G-SPECT MPI studies for 54 hypertensive patients were retrieved and reconstructed using the QGS software. Findings related to perfusion (defects) and function (systolic and diastolic) were recorded and compared. The statistical analysis was by descriptive statistics and chi square test.

Results:

There were 26 (48%) males and 28 (52%) females. The average age was 54 yr (range 18-84). G-SPECT MPI showed 39 (72%) patients with abnormal diastolic function (Peak Filling Rate PFR and Time to Peak Filling Rate TPFR). Of these patients, 22 (56%) had abnormal perfusion, 5 (13%) had abnormal ejection fraction of the left ventricle (LVEF) and 15 (38%) had abnormal wall motion. The abnormalities of diastolic function did not correlate statistically with the abnormalities of perfusion or systolic function (LVEF or wall motion).

Conclusions:

Using G-SPECT MPI in patients with hypertension, abnormalities of cardiac diastolic function are identified without concomitant abnormalities of myocardial perfusion or systolic function. This could represent an early indication of cardiac dysfunction in those patients.

SPECT: Single Photon Emission Computed Tomography

Key Words: Hypertension; Gated SPECT; Diastolic function

Funding Agency: College of Graduate Studies-Kuwait University

Nuclear Medicine and Radiology

Category: Clinical

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Red cell mass value in polycythaemia vera in the JAK2 V617F era

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Kuwait

Introduction:

In Polycythaemia Vera (PV), the RBC lineage is involved with increased haemoglobin, RBC count and haematocrit. WHO diagnostic criteria for PV are JAK2 V617F mutation and elevated red cell mass (RCM) > 25% of mean normal value. In addition, tests of marrow hypercellularity, blood erythropoietin and colony formation, are minor criteria. However, the diagnostic role of RCM test is still controversial and requires clarification. In this work, PV patients who had both an RCM study and JAK2 V617F mutation test, and routine laboratory tests, are evaluated to check if RCM was essential in the diagnostic work up for PV.

Methods:

Over 2 years, 75 patients with abnormal haematocrit (men ≥ 0.50 , women ≥ 0.45) had RCM and JAK2 V617F mutation tests (except JAK2 exon 12 mutation). All subjects consented to the study approved by the ethics committee. RCM was done by Cr-51 RBC radiolabeling method (no prior venesection at least 1 month). Statistical analysis involved descriptive statistics and chi-square test.

Results:

There were 71 males and 4 females, mean age 46 y (range 17-75 y). Increased RCM was found in 41/75 (55%). Positive JAK2 V617F was found in 13/75 patients (17%), who also had RCM above the mean normal predicted value, however, when the WHO RCM criteria were applied, only 7/13 (54%) could be considered as having "truly" increased RCM. In the patient group with negative JAK2 V617F test, 12/28 (43%) had RCM results as per WHO criteria. There was no statistical association between presence of JAK2 V617F and the RCM values.

Conclusions:

In patients with negative JAK2 V617F but with high clinical suspicion for PV and all other causes of secondary and idiopathic erythrocytosis excluded, an increase in RCM would support the diagnosis of PV (about 10 % PV cases). In patients with JAK2 positive mutation and high haematocrit but RCM below the WHO cut-off level, an increased RCM would still count to confirm the diagnosis as the current standard level seems too stringent.

Key Words: Polycythaemia Vera; Red cell mass; JAK2 V617F

Funding Agency: None

Nuclear Medicine and Radiology

Category: Clinical

106

F18-FDG PET/CT in assessing myocardial viability first Kuwait experience

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Introduction:

Myocardial viability studies are a major contributor to help identify patients who are likely to benefit from coronary revascularization. The aim of this article is to summarize the first experience in Kuwait in assessing myocardial viability, using F18-FDG PET/CT, with two different approaches in patient's preparation.

Methods:

A comparison between two different protocols of preparing patients pre injection of F18-FDG has been made. The first protocol consists of asking patients to take, a non standardized meal, with low carbohydrate content, followed by his usual treatment of oral hypoglycemic medication or insulin. In the second approach patients are fasting for at least 8 hours and an oral glucose load and insulin boluses were administered using a standard protocol. One hour post F18-FDG injection images were acquired. Delayed two hour images were acquired for patients with poor or average quality early images. Two nuclear medicine physicians analyzed the cases commenting on the quality of the image using a 4 point scoring system as (1) excellent, (2) good, (3) average and (4) poor.

Results:

Out of the two groups, non diabetic patients and patients using insulin were reported to have similar quality of image. Three of the four patients on oral hypoglycemic of group A were not reported due to poor image quality and delayed imaging did not improve the image quality. All four studies were termed poor quality. In group B patients, four patients on oral hypoglycemic were termed average quality on early imaging, and good quality on delayed.

Conclusions:

To summarize, this is the first study of myocardial study using F18-FDG to evaluate myocardial viability in Kuwait. In our experience, the glucose loading with insulin sliding scale is more promising in preparing patients for myocardial viability study. This is most evident in patients on oral hypoglycemic drugs.

Key Words: Myocardial viability; F18-FDG; PET/CT

Funding Agency: None

Nuclear Medicine and Radiology

Category: Graduate PhD (Basic Science)

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Comparison of Gated SPECT and Dobutamine ECHO Cardiography for evaluating myocardial viability In Ischemic Patients

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Introduction:

201-Tl myocardial single-photon emission computed tomography (SPECT) is recognized to be an excellent tool for identifying viability after myocardial infarction, but expense and a longer imaging time are among its main limitations. This study was designed to evaluate the relative effectiveness of low-dose dobutamine echocardiography (DE) and Tc-99m myoview gated SPECT for the assessment of myocardial viability versus compared with the standard 201-Tl myocardial SPECT viability evaluation.

Methods:

35 patients (34 male, 1 female) were included in this study. Myocardial viability was evaluated through regional wall-motion analysis (e. g. akinesia, hypokinesia or dyskinesia) assessed by DE and compared with the Tl-201 myocardial viability assessment. The myoview GSPECT evaluation of wall-motion and perfusion both were taken together as an index of viability and also compared with regional viability evaluation by 201-Tl scan.

Results:

We compared the segments in patients; we had 560 segments in the myoview, 201-Tl SPECT and echocardiography. Low dose dobutamine echocardiography identified 325/560 segments (58%) as viable myocardium compared to 525/560 (83.3%) by Tc-99m Myoview gated SPECT while 201-Tl identified 536/560 (85%) viable segments. Sensitivity, specificity PPV and NPV for low dose dobutamine echocardiography and Tc-99m Myoview gated SPECT were [60.6 %, 100%, 100%, 30.8%] and [98%, 100%, 100% and 93. 5%] respectively. The concordance rate between the latter studies was 96.2 % and 86.2 % based on the visual and wall motion analysis respectively ($p=0.00$), while it was 64.8% ($p=0.00$) between Thallium and Dobutamine echo.

Conclusions:

Tc-99m gated SPECT scan is better than the low-dose Dobutamine echocardiography for the assessment of myocardial viability.

Key Words: Myocardial viability; Tc--99m gated SPECT; Echocardiography

Funding Agency: None

Nuclear Medicine and Radiology

Category: Clinical

108

Silent Brain Infarcts in Children with Sickle Cell disease

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Introduction:

Overt stroke and silent brain infarcts are the most devastating complications of sickle cell disease (SCD). The former is rare among Kuwaiti patients and previous study using T1 and T2-weighted brain magnetic resonance imaging (MRI) study also reported the rarity of silent brain infarcts in the children. However, newer MRI techniques are better in identifying these infarcts. Aim of the study was to determine the prevalence of silent infarcts in a Kuwaiti SCD patients using MRI and magnetic resonance angiography (MRA) techniques.

Methods:

45 steady-state patients aged 5-18 years, were studied. T1-, T2- and diffusion-weighted images (DWI), and T2 -Fluid attenuated inversion recovery (FLAIR) of the brain and MRA of the vessels of the Circle of Willis (COW) were carried out on 1.5 T MRI. The presence, number and size of the infarcts, as well as stenosis of COW vessels were evaluated.

Results:

6 (13.3%) children showed silent infarcts, of whom 5(83%) had infarcts in the middle cerebral artery (MCA) territory. Two of the latter also showed additional infarcts in bilateral posterior cerebral artery (PCA) and bilateral anterior cerebral artery (ACA) territories. The remaining 1 patient showed infarcts in the left PCA territories. The number of infarcts was in the range of 1-3 and were <1 cm in diameter in 3 (50%), 1-3cm in 1(16.7%) and >3cm in 2 (33%) patient. MRA showed stenosis in the proximal portions of both ACA in one patient and in the distal MCA in a second patient. T2- FLAIR sequences were most helpful in detecting the infarcts and DWI was in excluding acute infarcts in all cases.

Conclusions:

The prevalence of silent infarcts is 13.3%, much higher than the previously reported prevalence of 3.3% in a similar group of SCD patients. The MCA territory was the commonest location of these infarcts. T2- FLAIR sequences were most helpful to depict the lesions and DWI in excluding acute infarcts needing urgent intervention and treatment.

Key Words: Sickle cell disease; Silent Brain infarcts

Funding Agency: Kuwait University

Research Grant NO. MK01/08

Nuclear Medicine and Radiology

Category: Clinical

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Are there Independent Associations between Bone mineral density and anthropometric indices of obesity in the Kuwaiti population?

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Introduction:

Obesity and osteoporosis have several genetic and environmental factors in common. The relationship between obesity and bone mineral density (BMD), the important predictor for osteoporosis, however, is not clear. Some studies show a negative relationship while others show a positive relationship and yet a few studies show no relationship at all. The ethnic differences in BMD are also a significant factor. The aim of our study was to investigate the relationship between BMD and obesity in adult males, pre- and post-menopausal females in Kuwaiti population.

Methods:

Hip and spine BMD data of 3203 patients were analyzed in relation to their obesity status. Multivariate linear regression models examined independent effects of obesity on BMD while adjusting for relevant covariates (gender, age, height and, in females for menopausal status).

Results:

This study included 249 (7.8%) males, 2954 (92.2%) females. Of these 780 (26. 4%) were pre-menopausal and 2174 (73.6%) were post-menopausal. Age ranged from 46 to 91 years with a mean of 54.78 ± 8.10 yr. Hip and spine BMD correlated positively with height, weight and BMI, and negatively with age. The increasing pattern of BMD with obesity persisted after controlling for the confounding effect of gender, age, height and, in females, for menopausal status.

Conclusions:

Obesity showed a positive relationship with BMD in Kuwaiti population. Such a relationship should be studied in individual populations and the findings may not be transferrable across different populations

Key Words: Absorptiometry; Obesity; Photon

Funding Agency: NA

Nuclear Medicine and Radiology

Category: Graduate MSc (Basic Science)

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Clinical audit of dual-phase SPECT-CT parathyroid scintigraphy at Farwania Hospital Kuwait

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Introduction:

Scintigraphic techniques are used for localizing hyperfunctioning parathyroid gland (parathyroid adenoma, hyperplasia and carcinoma). Dual-phase MIBI scan complimented by SPECT acquisition is the current technique of choice. SPECT tomography has now been replaced by the dual-modality SPECT-CT imaging following the introduction of hybrid imaging into clinical practice. We present a retrospective clinical audit of Parathyroid SPECT-CT performed to evaluate the utility of hybrid imaging for localization of hyperactive parathyroid glands, in the Farwania Hospital, Kuwait.

Methods:

Fifty-six consecutive patients (41 female, 15 male) with a clinical diagnosis of hyperparathyroidism (40 primary, 16 secondary) were included in the study. The average age was 49.5 years (range 16y-97y). A thyroid scan was performed 20 minutes after an intravenous injection of Tc-99m pertechnetate. This was followed by planar Tc-99m sestamibi scan at 10 & 180 minutes postinjection with a SPECT-CT performed at 90 minutes. Static planar images of the neck and chest were additionally acquired. Two experienced readers independently evaluated the images.

Results:

Out of 56 patients referred, 38 (67.8%) patients had parathyroid pathology. Out of these 38 cases, 31 (81.5%) were diagnosed with adenoma (14 right, 13 left, 1 bilateral and 3 ectopic) and 7 (18.5%) with hyperplasia. The planar images detected the site of pathology in 33/38 (86.9%) cases while SPECT alone & combined SPECT-CT were useful in 3/38 (7.8%) and 2/38 (5.3%) cases respectively.

Conclusions:

Eighty-seven percent of the cases are diagnosed correctly by planar early and delayed images while the SPECT-CT adds 13% in the final outcome of the patients. The main advantage of CT component is its ability to localize the exact site of the pathology which helps the surgeons to perform key-hole surgery as well as reducing the time in the theater.

Key Words: Parathyroid adenoma; SPECT-CT; Tc-99m sestamibi

Funding Agency: None

Nuclear Medicine and Radiology

Category: Basic Sciences

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Effect of the NSAID diclofenac on 99mTc-MAG3 and 99mTc-DTPA renography: A comparison study

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Introduction:

Renal function are commonly evaluated by technetium-99m mercaptoacetyltriglycine (99mTc-MAG3) or technetium-99m diethylenetriamine pentaacetic acid (99mTc-DTPA). The choice of radiopharmaceutical agent is crucial for proper interpretation. The present study compared the effect of the NSAID diclofenac, which is the most commonly used to relieve kidney pain, on the kinetic of 99mTc-MAG3 and 99mTc-DTPA.

Methods:

24 New Zealand White rabbits divided into two groups. A baseline study was done by injecting 48MBq 99mTc-MAG3. Two days later a single i. v. dose of diclofenac (2mg/kg) was given and 99mTc-MAG3 renography was performed. Above procedure was repeated following administration of 96 MB 99mTc-DTPA. Dynamic images were acquired using a gamma camera equipped with a low energy high resolution collimator interfaced with a computer. Radioactivity-time curves were generated for control and treated rabbits.

Results:

Administration of diclofenac shifted the experimental renogram curves to the right compared to the control curves indicating that there was a delayed renal uptake of the two tracers and clearance of the radioactivity. The calculated average values of time to peak activity (T_{max}) for control and treated rabbits using 99mTc-MAG3 were 1.8±0.5 and 6.35±0.4 min, while those of 99mTc-DTPA were 3.4±0.4 and 18.2±2 min. The time from peak to 50% activity (T_{1/2}) for control and treated rabbits for 99mTc-MAG3 were 3.2±0.07 and 6.6±0.07 min while those of 99mTc-DTPA were 10.1±1 and 35±4 min, respectively, The differences were significant: p<0.05.

Conclusions:

This study showed that diclofenac delayed both the T_{max} and T_{1/2}. The NSAID-induced kinetic changes were considerably greater for 99mTc-DTPA than 99mTc-MAG3 Therefore it is suggested to use 99mTc-MAG3 for performing renography for studies involving the use of NSAIDs administration to decrease any change may occur due to the type of the tracer and not due to the kidney condition.

Key Words: Renal scintigraphy; Radionuclide

Funding Agency: None

Nuclear Medicine and Radiology

Category: Graduate (Resident)

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The role of sentinel lymph node biopsy in high risk ductal carcinoma in situ of breast

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Introduction:

The role Sentinel Lymph Node (SLN) biopsy in DCIS is still controversial. Although inherently a non-invasive disease, occult invasive disease could be found at definitive histology. The aim of the present study is to evaluate the clinical usefulness of sentinel lymph node biopsy in a selected high-risk ductal carcinoma in situ who are at highest risk for being upstaged to invasive carcinoma.

Methods:

Thirty three high risk patients with DCIS proven on core biopsy (mean age, 50. 4±11 yrs, age range, 37-78 yrs) were prospectively included in the study. High-risk DCIS patients are defined as who had one or more of the following: a palpable or mammographic mass, suspicion of microinvasion, high-grade histology, extensive or multicentric disease requiring mastectomy. SLN scintigraphy was performed 2-4 hour before surgery by injecting Tc-99m labeled nanocolloid intra-dermally in the periareolar region. LN was explored in the axilla using a gamma probe.

Results:

The SLN was identified in all patients (100% success rate). One out of 33 cases, SLN was positive for metastasis. Ten patients (30%) were came out to be ductal carcinoma on final histological specimen despite of DCIS on core biopsy. Among these ten patient, four has only minimal invasive carcinoma (<1cm).

Conclusions:

Our study suggests that high risk DCIS patients and have an increased risk of invasive disease and approximately one-third of patients with DCIS population has invasive disease at the time of definitive operative procedure. SLNB is a reliable and minimally invasive procedure providing axillary information and avoiding a second operation in this particular group of patients

Key Words: Ductal carcinoma in situ; Breast cancer

Funding Agency: None

Obstetrics and Gynecology

Category: Clinical

113

Association of Gestational Diabetes Mellitus and Oxidative Stress, proinflammatory Cytokines and Butyrylcholinesterase: Cause or Effect?

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Introduction:

Gestational Diabetes Mellitus (GDM) is caused by insulin resistance which has multifactoral aetiology in pregnancy.

Objective of Study: To evaluate the relationship between GDM, Oxidative Stress and T helper .

Methods:

Between October 1 and March 31 2011, the relationship between GDM and oxidative stress, BuChE and Cytokines was evaluated in 35 consecutive patients with GDM and normal controls. The oxidant and antioxidant status were determined by colorimetric methods and T helper cytokines and Butyrylcholinesterase by ELISA technique.

Results:

Tumor necrosis factor (TNF- α), 38.2 vs 26. 0 pg/ml, $P < 0.02$ and interleukin-(IL)-6, 28.8 vs 18.2, $P < 0.05$ and MDA, 2.2 vs 1.2, $P < 0.01$ are more significantly expressed in the gestational diabetes mellitus (GDM) patients than controls. Conversely, total anti-oxidant activity 1. 4 vs 2. 4, superoxide dismutase, 0.8 vs 1.6, $P < 0.02$ and α -tocopherol 1. 0 vs 2. 5 and interleukin- (IL)-10, 8.8 vs 20.1 pg/ml are more significantly expressed in the control group than the GDM. Similarly, BuChE activity is significantly reduced in the GDM (1. 0 vs 1.8, $P < 0.05$). Correlation analysis revealed an inverse correlation between MDA and BuChE. ($\rho = -0.644$, $P < 0.01$) but positive correlation with total antioxidant activity ($\rho = 0.562$, $P < 0.05$).

Conclusions:

GDM is associated with oxidative stress and reduced antioxidant status, increased proinflammatory cytokine expression and reduced BuChE activity.

Key Words: Gestational Diabetes Mellitus; Insulin Resistance; Pro-inflammatory cytokines

Funding Agency: None

Obstetrics and Gynecology

Category: Clinical

114

Effect of Medical disorders and social habits on Sperm Parameters

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Introduction:

There are suggestions from reports in the medical literature of sperm parameters as biomarkers of male health and lifespan.

Objective of Study: To evaluate the effect of medical disorders and social habits on sperm quality and whether the latter can be an index of male health

Methods:

During a 16 year period, January 1, 1995 and December 31, 2011, 2,251 men presented with inability to achieve conception for more than twelve months. All the men had clinical evaluation. Semen analysis was according to WHO guidelines. Hormone profile included FSH, LH, prolactin and testosterone.

Results:

The mean age was 34 ± 8 (22 to 78 years) and 7.0 percent of the men were above fifty years. Primary infertility was more common than secondary infertility, 67.8 versus 32.2 percent, $P < 0.05$. Obesity was present in 39.5 % of the men. Azoospermia occurred in 8.2 percent. Compared to normozoospermia; azoospermia, oligozoospermia, asthenozoospermia, teratozoospermia and leukocytospermia were more common with diabetes mellitus, obesity and metabolic syndrome, previous genital operations and smoking by 1-5 to 3.5 folds ($p < 0.01$). FSH levels were inversely related to testicular volume ($r = -.634$, $p < 0.01$) and testosterone levels ($P < 0.01$).

Conclusions:

Chronic disorders like diabetes mellitus and hypertension, previous genital operations, obesity and smoking adversely affect sperm quality. This is important in the evaluation and counseling of couples with infertility.

Key Words: Medical Disorders; Obesity and Smoking; Clinical implications

Funding Agency: None

Obstetrics and Gynecology

Category: Clinical

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Triplet versus quadruplet and quintuplet gestations maternal and neonatal outcome over 9 years: A concern?

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Introduction:

To undertake a retrospective study in which the natural history of triplet versus quadruplet and quintuplet pregnancies were managed at our institution over a 9 year period. The maternal and neonatal outcomes were compared.

Methods:

A retrospective cohort study, at a single institution, on 300 triplets, 108 quadruplets and 30 quintuplets born from 2001 to 2010. Quintuplets and Quadruplets were compared with triplet pregnancies according to gestational age, pregnancy complications, birth weight and perinatal outcome. Prophylactic interventions like Cervical cerclage, routine hospital admissions were avoided.

Results:

(1) Cervical cerclage was increased among the Quadruplets and Quintuplets ($P=0.04$); Gestational diabetes was increased among triplets ($P=0.039$). (2) Intra uterine growth retardation was equally distributed between groups. Apgar scores at 1 and 5 minutes was significantly higher among the triplets ($P=0.002$; $P=0.01$). Early neonatal and perinatal mortality was significantly higher in quadruplets and quintuplets than in triplets ($P=0.03$). Survival of growth retarded fetus was better than survival of their eutrophic counterparts. Preterm labour was the commonest complication among this cohort (84% vs 97% ; $P=0.07$). (3) Although mean gestational age at delivery between triplets and higher order gestation was not significantly different ($P=0.30$), birth weight of Quadru - quintuplet was significantly lower ($P=0.001$).

Conclusions:

Conservative management of multi fetal pregnancies, especially triplets in specialized tertiary centre seems to be a prudent solution, to optimize materno-fetal outcome in this high risk group without using prophylactic interventions.

Key Words: Triplets; Quadru quintuplet; materno-fetal outcome

Funding Agency: None

Obstetrics and Gynecology

Category: Clinical

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Cutoff age for adverse pregnancy outcome among teenagers: A myth or a reality?

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Introduction:

This study aims at (1) Whether teenage was associated with increased adverse maternal and neonatal outcomes (2) To ascertain this cutoff point in regards to age

Methods:

Retrospective analysis of pregnancy and delivery in primiparous teenagers. Medical files, from Jan 2002 – Dec 2010, of 3863 teenagers (Study group) and 4416 primiparous patients (Control group) aged between 20 – 25 years, were analyzed

Results:

Total of 32,700 deliveries were conducted. Nullipara represented 42.2% (13,799); of which 3863 (28%) were aged ≤ 19 . 4416 nullipara (32%) used for the Control group were aged between 20 and 25 yrs. Mean gestational age in the Study group was 38.2 ± 2.1 weeks, and 39.1 ± 1.5 weeks in the Control ($P < 0.001$). 12% (460) of teenagers delivered by caesarean section ($P < 0.001$), and this was significantly higher amongst those aged ≤ 15 years ($P < 0.001$). There was a significantly lower mean birth weight ($P < 0.001$) if the adolescent was aged ≤ 15 years. There were 2 maternal deaths in the adolescent group, both in teens in below 15 years. The mean apgar score was 8.2 ± 1.2 for teenagers and 9.6 ± 0.4 for the control group ($P < 0.0001$), however a low 5 minute apgar was more among those aged ≤ 15 years ($P = 0.02$). There were a total of 155 (2%) neonatal deaths; of which 49 (18.1%) were among those aged ≤ 15 years ($P < 0.001$)

Conclusions:

Pregnancies and deliveries among teenagers, especially those aged ≤ 15 years, which is the cut off age, is associated with adverse out comes and should be meticulously monitored.

Key Words: Teenage; Adverse pregnancy out come, ≤ 15 years; Cut off age point

Funding Agency: None

Obstetrics and Gynecology

Category: Clinical

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The impact of the mode of delivery in severe pre-eclampsia

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Introduction:

Pre-eclampsia remains a leading cause of maternal and perinatal morbidity and mortality worldwide with an incidence of 2-8%. The mode of delivery is still controversial. The objective of our study was to establish the mode of delivery in severe pre-eclampsia and document the maternal and perinatal outcome.

Methods:

A retrospective study of all cases of severe pre-eclampsia admitted in labour to Maternity Hospital, Kuwait, from 1st January, 2010 to November 30th, 2012, was undertaken; the patients were subdivided into 3 parity subgroups for comparative study. The social biodata, the past obstetric/medical/surgical history details were extracted and the antenatal, intrapartum and postpartum management for the index pregnancy and the maternal/perinatal outcome were established.

Results:

There were 30,663 deliveries in the study period with 330 cases of severe pre-eclampsia, an incidence of 1.08%. Kuwaiti and non-Kuwaiti Arabs constituted 55.3% of the study population. The parity subgroups were group A, para 0, 180 cases (54.5%), group B, para 1-4, 134 (40.5%) and group C, para > 5, 17 (5.2%). The primigravida was the most significant parity, $p < 0.001$. There was no significant difference in the gestational age at delivery. Caesarean section, the most frequent mode of delivery, was recorded in 60% of all the patients; no significant difference in the caesarean section rates in the 3 subgroups. Vaginal delivery was more associated with perinatal deaths. The 60% caesarean section reported was significantly higher than the 29.7% for the department in the study period, $p < 0.0001$. Maternal complications included eclampsia, 6 cases (1.8%), abruptio placenta, 4 (1.2%) and HELLP syndrome and no maternal deaths recorded. There were 12 perinatal deaths in Groups A and B, PNM of 3.6%.

Conclusions:

Caesarean section, the most selected route of delivery, was associated with low perinatal mortality and morbidity. The maternal morbidity was satisfactory.

Key Words: Delivery; Pre-eclampsia

Funding Agency: None

Obstetrics and Gynecology

Category: Basic Sciences

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Maternal-Fetal Transport Kinetics of Vanadium in Perfused Human Placental Lobule in Vitro

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Introduction:

This study was undertaken to explore for the first time, maternal-fetal transport kinetics of an essential trace element, vanadium in human placenta in vitro

Methods:

Human placentae from normal uncomplicated pregnancies were collected post-partum. Vanadium piccolinate (Sigma Chem Co,USA) at two times the physiological concentration, along with antipyrine (Sigma Chem Co, USA) as internal reference marker were then injected as a single bolus (100ul) into the maternal arterial circulation of perfused placental lobules and perfusate samples collected from maternal and fetal circulations over a period of 5 minutes. National Culture and Tissue Collection medium, diluted with Earle's buffered salt solution was used as the perfusate. Concentration of vanadium in perfusate samples was assessed by atomic absorption spectrophotometry while that of antipyrine was assessed by spectrophotometry. Transport kinetics of substances studied were computed using established permeation parameters.

Results:

Differential transport rates of vanadium and antipyrine in 8 perfusions differed significantly (Student's t-test ; $p < 0.05$) for all efflux fractions investigated. Transport Fraction of vanadium averaged 47% of bolus dose in 8 perfusions, representing 72.30% of reference marker TF. The difference observed in TF values of vanadium and antipyrine was statistically significant (Student's t-test, $p < 0.05$) Pharmacokinetic parameters such as area under the curve, absorption rate, elimination rate of deoxy glucose compared to reference marker were significantly different ($p < 0.05$) between the two groups. Absorption rate: elimination rate index of vanadium differed significantly compared to antipyrine index as well (Student's t-test ; $p < 0.05$).

Conclusions:

Our studies show for the first time maternal-fetal transport kinetics of vanadium in human placentae in vitro and the possibility of active transport of vanadium in humans cannot be excluded

Key Words: Maternal-Fetal Exchange; Placental Perfusion

Funding Agency: This Research Work was supported by KFAS Research

Obstetrics and Gynecology

Category: Clinical

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Genital Operations and Male Infertility: Is Inguinal hernia a component of Testicular?

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Introduction:

Testicular Dysgenesis Syndrome encompasses a constellation of conditions like, Cryptorchidism, Hypospadias and Testicular Cancer and associated with poor sperm quality. Objective of the study is to evaluate the association between the genital disorders cryptorchidism, hypospadias and hernia, and male fertility discuss the anatomical simulators.

Methods:

Men referred with male infertility and found on clinical evaluation to have had history of inguinal hernia, cryptorchidism and hypospadias and had corrective surgery from the subjects of the study. The study period was 16 years from January, 1995 to December 31, 2010. All patients had investigative semen analysis according to WHO guidelines .

Results:

During the study period, there were 2251 patients seen at the infertility clinic. Out of these 103 (4.6%), 87 had prior history of inguinal hernia, 21 had cryptorchidism and 5 had hypospadias. All the 6 men (28.6%) who had orchidopexy before five years of age, had normal sperm parameters and normal testosterone of above 10 nmol/L, but nine (42.9%) who had orchidopexy after five years of age had moderate to severe oligozoospermia. The remaining 6 (28.6%) had testicular atrophy, non-obstructive azoospermia and low testosterone levels. Similarly, 26 (29.9%) of the patients with herniorrhaphy, had azoospermia, testicular atrophy and low serum testosterone.

Conclusions:

Genital disorders and corrective operation are associated with poor sperm parameters. Hernia may be part of the Testicular Dysgenesis Syndrome.

Key Words: Male infertility; Genital operations; Cryptorchidism

Funding Agency: None

Oncology

Category: Clinical

120

One institute retrospective Chart Review of Pegylated Interferon α -2a in Polycythaemia Vera and Essential Thrombocythemia treatment

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Introduction:

Pegylated Interferon α -2a (PEG-IFN- α -2a) is an approved anti hepatitis C agent. It is in use in medical trails as a non leukogenic treatment of Myeloproliverative Neoplasm (MPN) especially polycythemia vera (PV) and essential thrombocythemia (ET). Several studies reported a remarkable hematological rate of molecular JAK2 V617F mutation response, with an acceptable toxicity in patients with ET and PV. The myelosuppressive side effect of PEG-IFN- α -2a can be an advantage in treating MPN patients. JAK2 is a cytoplasmatic tyrosine kinase, it plays a major role in myeloid development and growth. In this study, we aimed to investigate the hematological and the molecular response for 5 patients with PV and ET treated with PEG-IFN- α -2a.

Methods:

All patients were positive for JAK2V617F mutation (4 ET and one PV) and were selected because of their low tolerance to the conventional medication. Mean age was 51.8 years. The study was approved by the ethics committee. The patients consented to receive gradual increasing doses of PEG-IFN- α -2a from 45 to 90 Mcg weekly. The patient's clinical and CBC assessment was performed on weekly bases. Median follow up period was 24 months (17 - 31 months).

Results:

The medical records and results of all 5 patients showed a remarkable and rapid hematological response. The overall hematological response was defined as 50% reduction in platelet count in ET and attainment of normal hematocrit in PV after treating with PEG-IFN- α -2a. The toxicities of PEG-IFN- α -2a were less pronounced and the patient compliance was enhanced due to treatment convenience and better tolerance of side effects.

Conclusions:

Despite the limited number of subjects and the short follow up period, our results are unlike findings reported by other studies. We found that PEG-IFN- α -2a yields only hematological response in patients with PV and ET, but no molecular response whereas JAK2V617F remained positive in all cases.

Key Words: Polycythaemia Vera; Essential Thrombocythaemia; Peginterferone

Funding Agency: None

Oncology

Category: Undergraduate

121

The Combined Anticancer Effect of Ascorbic Acid and Docetaxel

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Introduction:

Docetaxel is widely used for cancer chemotherapy; however it has problems such as drug resistance and adverse effects. Ascorbic acid is an important antioxidant, which is required for tissue repair and protection. In many studies, ascorbic acid has shown potent anticancer activity against various cell types at high concentration. So ascorbic acid can provide a way to reduce the dose of docetaxel and target the cancer cells by different mechanisms thus, less side effects and better effect against resistant cells.

Methods:

The anticancer effect for ascorbic acid was studied at 0.2mM, 1mM, 2mM, and 4mM on MCF7 cells with and without 2.5ng/ml docetaxel. The cell viability was measured using MTT assay. MCF7 were seeded in flasks with no treatment, 2mM ascorbic acid, 2.5ng/ml docetaxel, or a combination of the two for flow cytometry.

Results:

The MTT assay showed that the cell viability decreased to 71.5% with 0.2mM and 27.9% with 4mM ascorbic acid. When docetaxel was combined with ascorbic acid, the cell viability was 45.1% at 0.2mM and 18.4% at 4mM. Flow cytometry data showed that ascorbic acid at 2mM and docetaxel at 2.5ng/ml caused 17.6% and 45.6% respectively of the cells to undergo apoptosis and 67.6% when combined.

Conclusions:

Our results show that both agents when combined give an anticancer action greater than either one alone and this is thought increased apoptosis. However, 2mM ascorbic acid induced less apoptosis than the reduction in cell viability observed in the MTT assay, suggesting that ascorbic acid slows cancer cell proliferation.

Key Words: Ascorbic acid; Docetaxel

Funding Agency: None

Oncology

Category: Clinical

122

Long-term follow-up of early stage node negative breast cancer from Kuwait

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Introduction:

Stage and axillary node involvement have been established as two of the most important clinical and pathological prognostic factors in the management of breast cancer. The objective of our study was to examine the survival data of early stage node negative breast cancer patients treated in Kuwait.

Methods:

All breast cancer patients who had undergone surgery at Kuwait Cancer Control Centre from January 1998 to December 2002 and pathologically staged as early breast cancer (T1/T2, N0, M0) were analysed for Disease Free Survival (DFS) and Overall Survival (OS). The clinical and pathological parameters were collected from their medical records. Statistical analysis for survival was performed using the Kaplan Meier analysis and p value was analysed by log-rank and Breslow methods.

Results:

120 patients were followed up for 15 y for survival analysis. Median duration of follow up was 126 months. The median age of our population was 48 y, with 10.8% of patients below 35 y. Majority of the patients were Arabs (87.5%), 85.8% were infiltrating ductal carcinoma. 67% were positive for ER and 66% for PR. Her2 positivity was seen in 16.7%. 55.8% received adjuvant chemotherapy and 60.8% received adjuvant radiotherapy. Adjuvant hormonal therapy was given to 58.3%. 5 and 10 y DFS in our population was 89.4% and 82.9%, and OS was 86.6% and 78.1%. The survival rates with respect to hormones status for 5 and 10 y DFS were 95.4% and 89% respectively in hormone positive as against 81.2% and 74.7% for hormone negative patients.

Conclusions:

The overall survival in our population was similar to data from Western countries, The better survival of hormone positive as against hormones negative patients is also consistent with established data.

Key Words: Breast cancer; Early stage breast cancer; Hormone positive breast cancer

Funding Agency: None

Pathology

Category: Graduate PhD (Basic Science)

123

Virtual Autopsy, a new horizon in Forensic Examination to detect various causes of Un-Natural Deaths; Forensic study

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Introduction:

Forensic science is growing rapidly in the world today. Medico-legal investigations have been highly expanded to include all areas of forensic science. A Virtual Autopsy is a new and non-intrusive form of autopsy. This utilizes postmortem multilice computed tomography (MSCT) and magnetic resonance imaging (MRI) in order to obtain a detailed view of a body.

Objective: Aim of the project was to determine the effectiveness of using virtopsy which represent a great challenge in forensic pathology as an alternative for traditional autopsy.

Methods:

A total of thirty (30) male forensic cadavers with mean age of 42.3 years were employed in this project. The cases were RTA 11/30 (36.6%), firearm injuries 10/30 (33.3%), drowning 4/30 (13.3%), head injuries 3/30 (10%) and lastly strangulation 2/30 (6.6%). The identity and circumstances of all the cases were kept confidential for the purpose of the study. The main tools employed for the virtopsy project were CT scanning and MRI. All these cases were first checked by CT scan and MRI then the results were compared to the findings of traditional autopsy in the Morgue.

Results:

The study has proven that findings detected from both radiological imagining (MRI and CT scanning) were similar to traditional autopsy technique concerning the detection of deaths due to trauma and it was highly beneficial to locate precise areas of injuries (eg soft tissues, blood vessels, bones, etc) especially in firearm injuries, head injuries and RTA deaths in all injuries of the 30 cases.

Conclusions:

It can be concluded that virtopsy could be an effective tool in certain autopsy being noninvasive and rapid. The radiological imaging implemented in virtopsy were superior to the traditional autopsy technique concerning the detection of deaths due to trauma. Further prospective studies utilizing application of virtopsy are needed for actual evaluation of efficiency or drawbacks.

Key Words: Virtopsy; MRI; CT Scanning

Funding Agency: None

Pathology

Category: Graduate PhD (Basic Science)

124

Trends of un-natural deaths in Kuwait during the year 2003-2011.

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Introduction:

Un-natural deaths happen almost everywhere in the world and Forensic Pathologists have to deal with a wide spectrum of such fatalities. In Kuwait, medico-legal cases are transferred to the (FMD) to investigate the cause of death, which can be established via a variety of investigations. However, with each case, vital statistics are amassed by the FMD, including the identity of the dead person, the manner of death, the ethnicity, the socio-economic status, nationality and other demographic data.

Objective:

This study was aimed to investigate the trends of various categories of un-natural deaths including, trends of homicide, suicide and accidental deaths in Kuwait from the period of 2003 to 2011.

Methods:

A total number of 7,907 cases were diagnosed as un-natural deaths by the Forensic Department, Kuwait, during the years 2003-2011. The data analysis was based on scene examination, complete autopsy performance, serological and toxicological screening and they were categorized as homicide, suicide and accidental deaths.

Results:

The results show that accidental, homicidal and suicidal deaths accounted for 86%, 8% and 6%, respectively. Un-natural fatalities among expatriates exceeded the Kuwaiti indigenous population (64% vs 36%), with males outnumbered females (82% vs 18%). Most people who died of unnatural deaths were more predominant in the age groups 20-29 years (third decade). Road Traffic Accidents (RTA) accounted for 65%, and 4% out of them were related to alcohol consumption. Highest rate of homicide in Kuwait was due to stab wound injuries 38% compared to the lower rate of homicidal pattern for infanticides 3%. Whereas, the study showed that the most common method of suicide in Kuwait was death by hanging and this accounted for 60%.

Conclusions:

In conclusion, the present project has shown that accidental deaths are the major cause for un-natural deaths in Kuwait.

Key Words: Homicide; Suicide; Accidents

Funding Agency: None

Pathology

Category: Clinical

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Spider-like Intracytoplasmic Inclusions in Non-Hodgkin Lymphoma and Its Possible Significance

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Introduction:

In non-Hodgkin lymphoma (NHL), a variety of intracytoplasmic inclusions have been reported in the neoplastic cells; these inclusions had the appearance of eosinophilic round bodies, crystalline structures and those closely resembling Auer rods. In the present study, we report the presence of spider-like intracytoplasmic inclusions in the fine-needle aspiration (FNA) smears of 11 non-Hodgkin lymphoma cases and discuss their possible significance.

Methods:

Following detection of an unusual intracytoplasmic structure resembling a spider in Giemsa-stained smears of occasional lymphoma cases, FNA smears of all the lymphoma cases diagnosed during 1998-2002 were reviewed; these included 79 NHL, 38 Hodgkin's lymphoma (HL) and 8 NHL/HL. In addition, smears of 40 cases of reactive hyperplasia (RH) of the lymph node were examined.

Results:

The cytoplasmic spider-inclusions were observed in lymphoma cells of 11 (13.9%) cases of NHL (all B-cell), and in reactive lymphoid cells of 15 (37.5%) RH cases, but none of the HL and NHL/HL cases had these inclusions the neoplastic cells. In respect of frequency of spider-like inclusion, statistical significance was observed between NHL and HL ($p = 0.01550$), NHL and RH ($p = 0.004810$), and HL and RH ($p = 0.00001$). When NHL cases with and without spider inclusion were compared, there was significant difference in respect of age of occurrence ≥ 60 years (54.5% vs. 19.1%, $p = 0.01942$) and frequency of follicular center cell lymphoma (81.8% vs. 39.7%, $p = 0.01896$) among them.

Conclusions:

NHL with spider-like inclusion appears to be B-cell neoplasms and most of them are of follicular center cell origin but the nature of spider inclusion is yet to be elucidated.

Key Words: Non-Hodgkin's lymphoma; Spider-like inclusion; Reactive hyperplasia

Funding Agency: None

Pathology

Category: Clinical

126

Prevalence and Correlation of Human Papilloma Virus (HPV) and its Subtypes with Prognostic Markers in Patients with Invasive Ductal Carcinoma of the Breast in Kuwait

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Introduction:

This work aims to document the association of Human Papilloma Virus (HPV) and its subtypes in breast carcinoma tissues in Kuwait and correlate them with known prognostic markers.

Methods:

Archived tissue from 144 cases of invasive ductal breast carcinoma with available clinicopathological data - age, histological grade, size of tumor, lymph node metastases, estrogen and progesterone receptor status and Her-2/neu status were studied. HPV frequency was documented using immunohistochemistry (IHC) and chromogenic in-situ hybridization (CISH). The HPV subtypes were documented by CISH using HPV probes (6,11); (16,18) and (31,33). CISH and IHC techniques were compared and HPV correlated with prognostic parameters.

Results:

The HPV prevalence by CISH was 51 (35. 4%) and by IHC was 24 (16. 7%). Sensitivity of HPV by CISH was 79.2% and specificity was 73.3%. HPV (CISH) was statistically significant ($P<0.001$) by Fischer's Exact Test. HPV types (CISH) were as follows in 51 samples - HPV 6, 11: 23 (45.1%); HPV 16, 18 : 6 (11.8%) and HPV 31, 33 : 11 (21.6%). In 2 (3.9%) cases a combination of HPV 6, 11 and 16, 18 was detected. In 7 (13. 7%) cases a combination of HPV 6, 11 and 31, 33 was seen. All the three HPV probes for 6, 11; 16, 18 and 31, 33 were present in 2 (3.9%) cases. The prevalence of HPV(CISH) in the Kuwaiti and Non- Kuwaiti population was 27(52.9%) and 19 (37.2%), respectively. No correlation was observed between HPV status and types (CISH) with prognostic parameters.

Conclusions:

The frequency of HPV in breast carcinoma cases in Kuwait was 35. 4% (CISH) and 52.9% were Kuwaitis in whom both low and high risk HPV types were detected.

Key Words: Breast carcinoma; CISH

Funding Agency: Kuwait University grant MG01/10

Pathology

Category: Clinical

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Fine needle aspiration cytology of thyroid follicular lesions of undetermined significance, suspicious for follicular neoplasm and suspicious for malignancy -Kuwait experience

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Introduction:

Objective: To report our experience regarding incidence and outcome of thyroid aspirates diagnosed as Follicular Lesions of Undetermined Significance (FLUS), Suspicious for Follicular Neoplasm (SFN) and Suspicious for Malignancy (SM).

Methods:

Of 6864 thyroid aspirates performed at Mubarak Al Kabeer Hospital from 2004 – 2011 a follow up (lobectomy/thyroidectomy) was available in 118 cases which were categorized as FLUS (29 cases), SFN(16 cases) and SM (73 cases) on cytology.

Results:

In 29 (20.1%) aspirates diagnosed as FLUS, 5 (17%) were reported malignant on histological examination (3 papillary carcinoma, one follicular carcinoma and one as a tumor with uncertain malignant potential), 12- follicular adenoma (FA), 10 – multinodular goiter (MNG) and 2 hyperplastic nodule in MNG. In 16 (13.6 %) aspirates diagnosed as SFN, 6 were considered as SFN-hurthle cell type. Of the 6 SFN - hurthle cell type, 2 each were diagnosed as hurthle cell neoplasm and Hashimoto's thyroiditis while one each was reported as papillary carcinoma and multinodular goiter. Of the 10 SFN, 5 were reported as follicular adenoma, 2 each as follicular carcinoma and follicular variant of papillary carcinoma and one as a hurthle cell adenoma. In 41 of 66 (62.1%) aspirates suspicious for papillary carcinoma the histological diagnosis was a papillary carcinoma while 21 (31.8%) were reported as multinodular goiter and 4 (6.1%) as follicular adenoma. Five of the six cases suspicious of a lymphoreticular malignancy were confirmed and one was categorized as a hyperplastic nodule. One case suspicious for a medullary carcinoma was reported as C cell hyperplasia in a nodular goiter.

Conclusions:

Follicular lesions continue to be challenging and 83% of our aspirates reported as FLUS were benign. Distinguishing follicular adenoma from carcinoma is not possible on aspirates. A papillary carcinoma was detected in 62% of suspicious aspirates Our findings are in consonance with that reported in the literature.

Key Words: Thyroid fine needle aspirates; Follicular lesions of undetermined significance; Suspicious for malignancy

Funding Agency: None

Pathology

Category: Clinical

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Subtyping of non-small cell lung carcinoma in fine needle aspirates using minimal immunohistochemistry based diagnostic approach – Kuwait experience.

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Introduction:

Newer treatment modalities require subtyping of non-small cell lung carcinomas (NSCLC) as adenocarcinomas need to be distinguished from squamous cell carcinoma. Morphological differentiation is often difficult and various immunohistochemical (IHC) panels have been used to maximize proportion of accurately subtyped NSCLC. Having limited resources, we used a minimal antibody panel approach for subtyping NSCLC - not otherwise specified (NOS) on fine needle aspirates (FNA).

Methods:

Cell blocks from 23 FNA samples with a morphological diagnosis of NSCLC -NOS were taken from Mubarak Al-Kabeer and Kuwait Cancer Control Centre Hospitals in Kuwait. The history of a primary or a secondary tumor was unfolded after the IHC results were analysed. IHC was evaluated (blinded to the clinical data) for thyroid transcription factor (TTF-1), cytokeratin (CK)-7, CK-20 and p63.

Results:

TTF-1 was positive in 14 and negative in 9 cases. P63 was positive in two cases each of TTF-1 positive and negative tumors. CK-7 was positive in 11 of the 14 TTF-1 positive tumors and 5 of the TTF-1 negative tumors. CK-20 was negative in both the TTF-1 positive and negative tumors. All the 14 TTF-1 positive tumors were primary lung tumors. Five of the 9 TTF-1 negative tumors were metastatic tumors from endometrium, kidney, head and neck region (two) and in one the primary site was unknown. Four of the 9 TTF-1 negative tumors were clinically considered to be primary lung tumors and three of these were positive for CK-7 but negative for CK-20 and p63.

Conclusions:

Use of limited IHC panel appears to help categorise primary vs secondary tumors to the lung. P63 when positive is a useful marker for detecting squamous cell carcinoma in morphologic NSCLC-NOS of the lung. In countries where antibodies are not readily available using a limited IHC panel of TTF-1, p63 and CK-7 can help in further typing of lung tumors.

Key Words: Fine needle aspirates; Non-small cell lung carcinoma; Immunohistochemistry

Funding Agency: None

Pathology

Category: Clinical

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Contrasting associations of the ACE Gene Insertion/Deletion polymorphism with Cardiometabolic risk factors in Type 2 Diabetic subjects and their First Degree Relatives.

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Introduction:

As several studies have shown associations between the DD genotype of Angiotensin Converting Enzyme (ACE) insertion/deletion (I/D) polymorphism with metabolic perturbations and complications of diabetes, the aim of this study was to investigate whether the associations of ACE gene I/D polymorphism with cardiometabolic risk factors is reflected in first degree relatives (FDR) of subjects with Type 2 diabetes (T2DM).

Methods:

Fasting glucose, lipids, insulin, adiponectin; HbA1c and plasma ACE were determined in 123 T2DM subjects and 219 non diabetic FDR-190 offspring (son/daughter) and 29 siblings. Homeostasis Model Assessment of Insulin Resistance (HOMA-IR) and insulin sensitivity (%S) were calculated.

Results:

In each group, plasma ACE was highest in DD and lowest in II genotype. Age, Body Mass Index (BMI) and waist circumference did not differ by genotype. In T2DM, the ACE DD genotype compared to the II genotype was associated with CHD (regression odds ratio = 5.2), higher HbA1c (105 vs 88 mmol/mol), higher insulin (18.9 vs 13.5 uU/ml), lower %S (64% vs 81%) higher HOMA-IR (8.9 vs 6.3), higher triglycerides (2.0 Vs 1.5 mmol/L), lower HDL-cholesterol (1.1 vs 1.28 mmol/L) and lower levels of the protective adipokine, adiponectin (6.1 vs 7.9 ug/ml). In contrast, II genotype compared to DD genotype in FDR was associated with higher HbA1c (45 vs 40 mmol/L), higher insulin (9.5 vs 7.9 uU/ml), lower %S (87 vs 112), higher HOMA-IR (2.4 vs 1.7), higher triglycerides (1.5 vs 1.2 mmol/L), lower HDL-cholesterol (1.01 vs 1.20 mmol/L) and lower adiponectin (8.3 vs 9.5 ug/ml). <

Conclusions:

In T2DM, II genotype is protective in sharp contrast to FDR, where the DD genotype appears to be protective. As genetic predisposition to T2DM and complications is influenced by other factors, we postulate that these contrasting associations of ACE I/D genotypes may be due to effects of other genetic, environmental or metabolic factors that predispose the DD genotype to development of complications in the diabetic state.

Key Words: ACE Gene Polymorphism; Cardiometabolic Risk Factors; Type 2 Diabetes

Funding Agency: KFAS grant 2004-1302-03

Pathology

Category: Graduate (Resident)

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Associations of Insulin-Like Growth Factor-1 (IGF-1) and Bioavailable IGF with Insulin Resistance in Patients with Polycystic Ovaries Syndrome (PCOS)

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Introduction:

Insulin like growth factor-1 (IGF-1) and insulin share common structural homology and function. As insulin resistance (IR) plays a pivotal role in the pathogenesis of PCOS, the aim of this study was to evaluate the associations between IGF-1 level, bioavailable IGF with insulin resistance in patients with PCOS.

Methods:

Anthropometric, biochemical and hormonal parameters were measured in 92 women with PCOS and 44 apparently healthy control subjects. Bioavailable IGF was calculated as IGF-1/IGFBP3. Homeostasis model assessment of insulin resistance (HOMA-IR) was used to assess IR. Univariate and logistic regression analyses were used to find the associations between IGF-1, bioavailable IGF with different variables and IR in PCOS.

Results:

IGF-1 and bioavailable IGF showed significant ($p<0.05$) positive correlations with HDL-C ($r=0.18$ vs 0.28), DHEA-S ($r=0.27$ vs 0.30) and adiponectin ($r=0.32$ vs 0.35) and negative correlations with age ($r=-0.36$ vs -0.36), waist circumference ($r=-0.40$ vs -0.39), BMI ($r=-0.38$ vs -0.35), fasting glucose ($r=-0.28$ vs -0.31) and TG ($r=-0.30$ vs -0.43) respectively. Bioavailable IGF showed significant negative correlation with HOMA-IR ($r=-0.3$, $p<0.0001$) comparable to the correlation ($r=-0.17$, $p=0.05$) for IGF-1. In contrast to IGF-1, bioavailable IGF level significantly differ between IR PCOS versus non IR PCOS ($p=0.02$) and it is also significantly associated with IR in PCOS (OR = 0.954, CI 0.916-0.993, $p=0.022$). However, this association was lost when WC was added as a confounding factor.

Conclusions:

Bioavailable IGF is significantly associated with metabolic parameters as well as IR. In PCOS, bioavailable IGF rather than IGF-1 is the significant determinant of IR.

Key Words: Insulin resistance; Polycystic Ovaries Syndrome

Funding Agency: Kuwait University Research Sector grant MG01/05

Pediatrics

Category: Clinical

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Celiac Disease in Children: is it a Problem in Kuwait?

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Introduction:

Celiac disease (CD) is a permanent inflammatory disease of the small intestine triggered by ingestion of gluten. The objective of this study is to describe our experience with CD children in Kuwait.

Methods:

All CD children referred to the Pediatric Gastroenterology Unit between February 1998 and December 2010 were retrospectively reviewed. Patients were referred either because of CD symptoms (symptomatic) or positive CD antibody screening of a high risk group (screened). CD was diagnosed based on the criteria of the North American Society of Pediatric Gastroenterology, Hepatology and Nutrition.

Results:

Forty seven patients were diagnosed, 53% were symptomatic and 47% were screened. The estimated prevalence was 1: 1200 live births (0.08%). The mean age at diagnosis was 6 ± 4.15 years (range: 0. 7-15.9 years). 66% of the patients were females and 77% were Kuwaitis. 9% had a positive family history of CD. The mean duration of symptoms before diagnosis was 15.7 ± 15.60 months. Weight loss was the most common presenting complaint (72%) followed by diarrhea (64%) then abdominal distension (56%). Atypical features occurred in 32% of symptomatic cases. Underweight and short stature was confirmed in 19% and 17% of patients respectively. The most prevalent abnormal lab feature was anemia. CD serology was based on a combination of anti-endomysial antibodies (positive in 85% of patients), Immunoglobulin A antigliadin antibodies (positive in 79%) and immunoglobulin G antigliadin antibodies (positive in 77%). The median follow up was 2 ± 2.66 years (range: 1-12 years). All patients were commenced on gluten free diet (GFD) but a good compliance was achieved in 66% of patients only.

Conclusions:

In Kuwait, CD may present with typical features or identified through a screening program, however, its frequency is low. This could probably be attributed to an underestimation of the atypical presentations. Also, adherence to GFD is a major problem in our population.

Key Words: Celiac disease; Children; Kuwait

Funding Agency: None

Pediatrics

Category: Clinical

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Vitamin D Supplementation for Infants in Kuwait: Physicians Perspectives

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Introduction:

This work was designed to highlight vitamin D supplementation knowledge and practices of physicians caring for infants born in Kuwait. A secondary objective was to compare this knowledge in pediatricians working in Ministry of Health (MOH) hospitals and physicians working in Primary Health Care (PHC) facilities.

Methods:

The current study was conducted on 73 physicians who work in MOH in Kuwait. They were 33 assistant registrars and registrars recruited from the Pediatric Department at Al-Adan Hospital, Al-Ahmadi District, in comparison to 40 family physicians working in the PHC facilities from the same district. The enrolled physicians were requested to fill a questionnaire about their knowledge and attitude towards the vitamin D supplementation practice.

Results:

Out of the studied pediatricians only 46.85% reported giving vitamin D supplementation to the infants in their practice. Only 43.84% knew the proper age for starting vitamin D for breast fed infants and 28.77% knew the amount of formula enough to supply vitamin D daily requirements. The proper dose of vitamin D needed was known by 90.41% but only 46.85% knew the proper form to prescribe. Al-Ahmadi hospital pediatricians showed better practice and had significantly better knowledge of vitamin D supplementation compared to the PHC family physicians.

Conclusions:

The practice of giving vitamin D supplementation to newborns and the vitamin D knowledge are less than satisfactory among physicians caring for infants in Kuwait and this issue is significant among PHC family physicians compared to hospital physicians. We thus recommend implementing the vitamin D supplementation as a part of the child health policy in Kuwait with awareness programs for practicing physicians especially those working in PHC facilities

Key Words: Knowledge; Pediatricians; Vitamin D

Funding Agency: None

Pediatrics

Category: Clinical

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Pediatric Hemophilia and Von Willebrand Disease in Kuwait

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Introduction:

Hemophilia (A, B) and von Willebrand disease (VWD) are uncommon inherited disorders worldwide. This study is a review of all the pediatric hemophilia and VWD patients in 3 government hospitals in Kuwait.

Methods:

This was a cross-sectional study involving all the hemophilia (A, B) and VWD patients currently being followed in the pediatric hematology clinics in Mubarak, Amiri and Addan hospitals in Kuwait. Informed consent was obtained as appropriate. Patients' presentation, clinical findings, family history, laboratory data, management and complications were documented.

Results:

There were 31 patients: 23 hemophilia (A, B) and 8 VWD patients. Ten (32%) presented before 6 months of age, 12 (39%) presented between 6 months to 2 years; only 1 presented after 6 years. Nine (39%) of the hemophilia patients presented with prolonged bleeding post circumcision or after an open wound, 6 (26%) presented with mucous membrane bleeding while 2 had spontaneous CNS bleeding. Mucous membrane bleeding was the presentation in 5 (62.5%) VWD patients; 2 (25%) presented with hemarthrosis and one had prolonged bleeding from an open wound. There was a positive family history in 21 (67.7%) patients. The factor level deficiency was severe (<1%) in 15 (48.3%) patients, moderate (1-5%) in 10 (32%) patients and 6 were mild (>5%). Most of the severe patients are on prophylactic treatment with no more evidence of target joints or severe bleeding. Only one patient developed inhibitors and is currently on Immune Tolerance Induction. None of our patients had viral infections.

Conclusions:

Pediatric hemophilia and VWD patients could be serious bleeders. Prompt intervention usually has a good outcome and starting prophylaxis at an early age is associated with less morbidity and mortality.

Key Words: Pediatrics; Vonwillebrand Disease

Funding Agency: None

Pediatrics

Category: Clinical

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Is Rarity of Stroke in Arab Sickle Cell Disease Patients a Reflection of Normal Transcranial Doppler Ultrasonography?

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Introduction:

Time-averaged mean of the maximum velocity (TAMMX), derived from transcranial Doppler (TCD) ultrasonography is the method of choice for identifying sickle cell disease (SCD) patients at risk for ischemic stroke, which is the most devastating complication of SCD. While stroke is uncommon among Kuwaiti SCD patients, there have been no previous TCD studies in this population. The main objective of this study is to determine TCD velocities in a group of Kuwaiti children with SCD.

Methods:

Forty-three pediatric SCD patients aged 10.1 ± 3.9 (21 SS, 19 Sβ0Thal, and 3 SD) were studied. Twenty six age-matched, normal siblings of the patients served as controls. TCD was performed using a General Electric, Vivid 3 equipment with 1-3MHz phased array transducer. Complete blood count and Hb quantitation using cation-exchange high performance liquid chromatography (HPLC). Serum lactate dehydrogenase was measured using standard technique. The SS patients were screened for α-thal trait using a PCR technique.

Results:

Although the mean TAMMX was significantly higher in the SCD group than the controls, it was normal (<170 cm/s) in all. It showed significant correlation with age and LDH in both groups. There was also significant correlation with Hb among the controls. TAMMX did not correlate with Hb F among the patients. The mean values were comparable among SS and Sβ0thal patients and co-existent α-thal trait had no influence on the readings in the former.

Conclusions:

The mild phenotype among Kuwaiti SCD patients is reflected in normal TCD velocities. However, there is a need for more extensive studies to firmly establish the “normal” range. Those with values >98th percentile may be the group that requires more focused neuroimaging and neurocognitive studies.

Key Words: Sickle cell disease; Transcranial Doppler ultrasonography; Stroke

Funding Agency: Kuwait University Research Administration grant MK01/08

Pediatrics

Category: Clinical

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Long term Outcome after Haploidentical Hematopoietic Stem Cell Transplant (HSCT) in Pediatric Patients with Thalassemia Major

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Introduction:

Haploidentical HSCT (haplo-HSCT) from family members is an alternative option for Beta-Thalassemia major pediatric patients. Its feasibility and effectiveness have already been reported but safety is not fully known. Disease free survival of large cohort was reported after transplant. Late effects of HSCT can cause substantial morbidity. Our goal is to provide an overview of the late outcomes noted in such patient.

Methods:

This is a retrospective study from October 2005 and April 2010. Seven patients with beta-thalassemia major (Pesaro class 2 risk stratification), at median age of 5.5 years (2.8-8.4 years), received 7 transplants from HLA mismatched parent's marrow (mother) (n=4) or sibling marrows (n=3). Non-T-cell depleted haplo-HSCT has been performed in the Mediterranean Institute of Hematology in Roma, Italy. Follow-up of survivors has been done in the SCT Unit of NBK Children's hospital in Kuwait.

Results:

All patients are alive at a median follow up of 1782 days after transplantation. Of the 7 patients, 4 (57%) had sustained 100% of donor cells engraftment, 2 are stabilized with mixed engraftment, 1 has no evidence of engraftment (full autologous reconstitution). The main complication noted was iron overload (all patients). Vitamin D deficiency and hypothyroidism (4 patients), Obesity, hypercholesterolemia and hypertriglyceridemia (2 patients), mild osteoporosis (2 patients) were also noted. 2 patients developed moderate to severe immunodeficiency. 2 patients developed limited skin chronic GVHD. All complications were managed with specific treatment. No severe pulmonary or cardiac complications noted.

Conclusions:

Haploidentical HSCT provides safe and effective disease free survival and limited long term complications for children with beta-Thalassemia major with no matched related donor.

Key Words: Thalassemia; Stem Cell; Long Term

Funding Agency: None

Pediatrics

Category: Clinical

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Very long chain fatty acids impair Insulin-like Growth Factor-1 function in human skin fibroblasts: Implications for X-linked Adrenoleukodystrophy

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Introduction:

X-linked Adrenoleukodystrophy (X-ALD), a common peroxisomal disorder is characterized by elevated very long chain fatty acids (VLCFA) levels in tissues and body fluids of patients. X-ALD patients present with adrenal insufficiency, demyelination and progressive mental retardation and IGF-1 has been reported to alleviate demyelination and neurodegeneration in an animal model of X-ALD. We examined the effect of VLCFA on IGF-1 function in human skin fibroblasts.

Methods:

Human skin fibroblasts grown from skin explants were cultured in growth medium. Cell cultures were treated with varying concentrations of IGF-1 and/or VLCFA (Lignoceric acid ;C24:0, hexadecanoic acid; C26:0) for 24-72 hrs. DNA synthesis into cultured fibroblasts was measured and total RNA was extracted for RT-PCR analysis of IGF-1 receptor and GAPDH. Cell homogenates were prepared for western blotting and protein measurements. Levels of IGF-1 and VLCFA were measured in blood samples of 10 patients with confirmed diagnosis of X-ALD.

Results:

Both VLCFAs used in this study significantly ($p < 0.01$) reduced the IGF-1 –induced DNA synthesis in cultured skin fibroblasts. Lignoceric acid as well as hexadecanoic acid markedly reduced the gene expression of IGF-1 receptor. IGF-1 receptor protein was also significantly reduced following 48 hrs of treatment with VLCFAs. X-ALD patients were observed to have significantly lower levels of plasma IGF-1 as compared to healthy controls.

Conclusions:

This study suggests that abnormally elevated VLCFA in X-ALD patients impair IGF-1 function through downregulation of IGF-1 receptor and provide a new insight into molecular mechanisms of pathogenesis.

Key Words: IGF-1; X-ALD; Peroxisome

Funding Agency: None

Pediatrics

Category: Clinical

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Epidemiology of *Neisseria meningitidis meningitis* in Kuwait: 1987-2012

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Introduction:

After the introduction of *Haemophilus influenza* (b) conjugate vaccine in 1996 and conjugate pneumococcal vaccine in 2006, *Neisseria meningitidis* has become the leading organism causing meningitis in children Kuwait. Currently, a quadrivalent meningococcal vaccine (A, C, Y, W135) is administered as part of the routine childhood vaccination in Kuwait at the age of 2 years. Lately, a conjugate meningococcal vaccines have shown to be more effective in preventing meningococcal infection. The objective of this study is to describe the epidemiology of *Neisseria meningitidis meningitis* in Kuwait to evaluate the need of a conjugate meningococcal vaccine as part of the routine childhood vaccination.

Methods:

Retrospective review of meningococcal meningitis data from the communicable disease unit, Ministry of health during the period of 1987-2012. The analysis included only microbiologically confirmed cases of *Neisseria meningitidis* in the cerebrospinal fluid (CSF).

Results:

There were 226 cases of meningococcal meningitis during the study period. The highest annual incidence rate was 1.4/100,000 population in 1987 and the lowest was 0.1/100,000 in 2010. One hundred forty six cases (65%) occurred between January and April. Forty five (20%) of the cases were in children <1 year and 104 cases (46%) in children ≤ 4 years. The dominant serogroups were: serogroup B accounting for 72 cases (32%) followed by serogroup A & W135 each accounting for 70 cases (31%). The case fatality ranges between 11.1% -33.3%.

Conclusions:

Routine meningococcal vaccination has reduced the incidence of meningococcal meningitis in Kuwaiti population. However, infants and young children remain the dominant affected age group. This result calls for introduction of introducing more potent conjugate meningococcal vaccine to the routine childhood vaccination.

Key Words: Neisseria meningitidis; Meningococcal conjugate vaccine; Kuwait

Funding Agency: None

Pharmacology and Toxicology

Category: Basic Sciences

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Activation of erbB2 and downstream signaling via Rho kinase mediates diabetes-induced vascular dysfunction

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Introduction:

The mechanisms leading to diabetes-induced vascular dysfunction are not well understood. Here, we investigated the role of the epidermal growth factor receptor 2 (EGFR2; erbB2) signaling via the potential downstream effector molecule, rho kinase (ROCK) in mediating vascular dysfunction in the mesenteric bed of diabetic rats.

Methods:

Diabetes was induced by intraperitoneal (i. p) injection of 55 mg/kg of streptozotocin. AG825 (1mg/kg alt diem), an inhibitor of erbB2 phosphorylation, was administered chronically from onset of diabetes to 4 weeks of diabetes. Vascular reactivity of the perfused normal and diabetic mesenteric bed to norepinephrine was determined. Western blotting was utilized to identify the levels of total and phosphorylated erbB2 and ROCK in the mesenteric bed.

Results:

Diabetes led to elevated levels of erbB2 phosphorylation and an enhanced vascular response to NE at several doses in the mesenteric bed. AG825 significantly attenuated the enhanced responsiveness to NE of the diabetic mesenteric bed. AG825 also attenuated the diabetes-induced elevation in erbB2 phosphorylation and ROCK.

Conclusions:

These findings suggest that activation of erbB2 and downstream signaling via Rho kinase mediates diabetes-induced vascular dysfunction. Therapeutic strategies aimed at targeting erbB2 signaling may represent novel approaches for the treatment of diabetes-induced vascular complications.

Key Words: Diabetes; ROCK

Funding Agency: Kuwait University MR05/09

Pharmacology and Toxicology

Category: Basic Sciences

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Incretin response to a meal in a rat model of sleeve gastrectomy with diet-induced obesity.

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Introduction:

Sleeve gastrectomy (SG) is an effective treatment for obesity and related comorbidities especially type 2 diabetes mellitus (T2DM). The aim of this study was to investigate the incretin hormone; glucagon-like peptide-1 (GLP-1) and glucose-dependent insulintropic peptide (GIP), response to a standard test meal in a rat model of SG with diet-induced obesity (DIO).

Methods:

Male Sprague Dawley rats were divided into four groups lean control (Lean), DIO, DIO animals that had undergone SG and DIO animals that had been sham-operated (Sham). Blood sampling was performed in free moving rats at various time points through chronic vascular access of the jugular vein following a standard test meal (5 ml chocolate milk). Plasma GLP-1 and GIP were measured by ELISA. Student's t-test was used to test for significance.

Results:

There was significant ($P < 0.001$) increase in bodyweight in animals fed a high-fat and sugar diet, accompanied by a reduction in oral glucose tolerance. Body weight and oral glucose tolerance returned to that of lean control animals following SG but not sham surgery. Whereas there was no change to the GIP response to a standard test meal in any of the animals tested the GLP-1 response was significantly ($P < 0.001$) attenuated in DIO animals and increased following both SG and sham-surgery. However, the GLP-1 response following SG was significantly ($P < 0.05$) greater than in the Lean group whereas this was not the case in the Sham group. There was a sharp rise in blood glucose concentration 15 minutes following a standard test meal in the SG group followed by reactive hypoglycemia that was not seen in the other groups.

Conclusions:

In DIO rats there is an impairment in GLP-1 secretion following a standard test meal as well as a reduction in glucose tolerance. SG produces a dramatic increase in GLP-1, but not GIP, response to a standard test meal as well as reactive hypoglycemia. This may be indicative of dumping syndrome.

Key Words: GLP-1; GIP; Sleeve Gastrectomy

Funding Agency: MR01/10 GM01/01

Pharmacology and Toxicology

Category: Basic Sciences

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Novel anti-inflammatory effects for Angiotensin-(1-7) in the asthma phenotype, via the MAS1 receptor, through suppression of ERK1/2- and NF- κ B-dependent pathways

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Introduction:

Angiotensin-(1-7) [Ang-(1-7)] has anti-inflammatory effects in models of cardiovascular disease and arthritis, but its effects in asthma are unknown. We investigated whether Ang-(1-7) has anti-inflammatory actions in a murine model of asthma.

Methods:

The effects of Ang-(1-7) alone or in combination with the MAS1 receptor antagonist, A779, were evaluated over a 4 day period in an ovalbumin-challenged mouse model of allergic asthma. On day 5, bronchoalveolar lavage was performed, and lungs were sectioned and assessed histologically for quantification of goblet cells, perivascular and peribronchial inflammation and fibrosis. Biochemical analysis of the pro-inflammatory ERK1/2 and I κ B- α was assessed. In addition, the effect of Ang-(1-7) on proliferation of human peripheral blood mononuclear cells (HPBMC) was investigated.

Results:

Ang-(1-7) attenuated ovalbumin-induced increases in total cell counts, eosinophils, lymphocytes and neutrophils. Ang-(1-7) also decreased the ovalbumin-induced perivascular and peribronchial inflammation, fibrosis and goblet cell hyper/metaplasia. Additionally, Ang-(1-7) reduced the ovalbumin-induced increase in the phosphorylation of ERK1/2 and I κ B- α . These effects of Ang-(1-7) were reversed by the MAS1 receptor antagonist A779. Furthermore, Ang-(1-7) inhibited phytohaemagglutinin (PHA)-induced HPBMC proliferation.

Conclusions:

Ang-(1-7), via its MAS1 receptor, acts as an anti-inflammatory pathway in allergic asthma, implying that activation of the MAS1 receptor may represent a novel approach to asthma therapy.

Key Words: Asthma; Anti-inflammatory

Funding Agency: None

Pharmacology and Toxicology

Category: Basic Sciences

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Structure-activity relationship studies of novel enaminones in the rat hippocampus in vitro.

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Introduction:

Some enaminones are reported to have anticonvulsant activity. We screened structural analogs of enaminones on neuronal excitation to identify structures for further testing as anticonvulsants.

Methods:

We studied the effects of halogen substituents on the phenylamino moiety and substituents on the cyclohexenone ring that forms the backbone of enaminones on evoked population spikes (PS) in rat hippocampal slices. We studied the following compounds: AK1; AK6; AK7; AK11; AK12; E249, FA1B; and FA5. Statistical significant was at $p < 0.05$.

Results:

The effects of these compounds included suppression, no effect and enhancement in PS. The dichloro (AK1) and dibromo (AK6 and E249), derivatives with substituents on the cyclohexenone ring suppressed PS amplitude in a concentration-dependent manner. AK6 (6-phenyl, 1-CO₂Me) and E249 (6-methyl, 1-CO₂Et) had similar potencies, with EC₅₀ of 2.1 and 1.9 μ M, respectively while AK1 (6-methyl, 1-CO₂Et) was less potent with EC₅₀ of 10 μ M. AK6 with a phenyl substituent on the cyclohexenone ring was more efficacious with depression of 72% at 10 μ M compared to 35% for E249 with methyl substituent. The rank order of efficacy (at 10 μ M) for halogen substituents on the phenylamino group was dibromo (AK6: -72%) > dichloro (AK1: -25%) > diiodo (AK11: - < -5% -inactive). Removal of the phenyl or methyl substituent at position 6 of the cyclohexenone ring (FA2: +35%) or replacement of the cyclohexenone ring with cyclopentenone (FA5: +56%) produced proconvulsants.

Conclusions:

Our data show that not all enaminones are anticonvulsant at similar concentrations and that the cyclohexenone ring is necessary for anticonvulsant activity, with the dibromo substituents being the most potent and efficacious derivatives for anticonvulsant activity. Further testing in in vitro and in vivo models should be performed on compounds with substituents at positions 5 and 6 on the cyclohexenone ring and dibromo on the phenylamino group.

Key Words: SARs; Drug design and synthesis; Anticonvulsant

Funding Agency: Kuwait University Research Sector Grant # PR01/08

Pharmacology and Toxicology

Category: Basic Sciences

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Anticonvulsant actions of potent enaminones on in vitro and in vivo seizure models.

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Introduction:

Some enaminones are reported have anticonvulsant activity. We tested if AK6 and E249, two active and potent enaminones had effects on in vitro and in vivo seizure models.

Methods:

In vitro seizures were induced in the hippocampus chemically (zero Mg²⁺ buffer and picrotoxin-100 uM) and electrically using patterned high frequency stimulation of afferents:-stimulus train-induced bursts (STIBs). In vivo seizures were induced in rats using the 6 Hz and the maximal electroshock (MES)models. $p < 0.05$ was significant.

Results:

In zero Mg²⁺ model, AK6 (10 uM) suppressed multiple spiking (MS) by $59.3 \pm 6.9\%$ ($n=5$) and spontaneous bursts (SBs) by $65.9 \pm 7.2\%$ ($n=4$) while in the picrotoxin-model, it depressed MS by $43.3 \pm 7.2\%$ ($n=5$) and SBs by $50.0 \pm 8.3\%$ ($n=5$). Similarly, E249 (10 uM) depressed the zero-Mg²⁺-induced MS by $48.8 \pm 9.5\%$ ($n=7$) and SBs by $55.8 \pm 15.5\%$ ($n=7$) and suppressed the picrotoxin-induced MS by $37.1 \pm 5.5\%$ ($n=7$), SBs by $56.5 \pm 11.4\%$ ($n=7$) and STIBs by $50.0 \pm 11.8\%$ ($n=3$). In both in vivo models, stage 4 seizures could be induced in all control (saline injected) rats while stage 5 seizures were observed in 4/5 rats (80%). In the 6Hz model, 40 mg/kg of phenytoin protected all rats ($n=5$) against stage 4 and 5 seizures. 30 min pretreatment $n=5$) with 20 mg/kg AK6 protected all (100%) of the rats from stage 4 and 5 seizures. In the MES model, phenytoin protected all rats (5/5, 100%) from stage 4 but only 4/5 (80%) from stage 5. AK6 protected 4/5 rats (80%) from stages (4/5)seizures while E249 (20 mg/kg) protected all rats (5/5, 100%) from stages 4/5.

Conclusions:

Our data show that AK6 and E249, both active/potent enaminones can suppress in vitro and in vivo seizures to a similar extent. Furthermore AK6 and E249 have in vivo activities that are comparable to phenytoin, a clinically used anticonvulsant drug. Thus, AK6 and E249 are excellent candidates for further studies for the treatment of epilepsy syndromes.

Key Words: Epilepsy; Drug discovery; Seizure models

Funding Agency: Kuwait University Research Sector Grant # PR01/08

Pharmacy

Category: Clinical

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Availability of antidotes in hospitals in Kuwait

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Introduction:

Stock levels and access to antidotes can impact the quality of care. International guidelines recommend a list of antidotes to be available in emergency care facilities. There is no publication on antidote stocking in Kuwait. The purpose of this study was to determine the availability of antidotes in hospitals and to compare it with the United Kingdom (UK) list; to identify the presence of guidelines for antidote use; to identify any sharing agreements between hospitals and the employment of pharmacists for the use and distribution of antidotes.

Methods:

On November 2012, the chief pharmacists of the six general hospitals in Kuwait were given a questionnaire, followed by a reminder. For the survey, 29 categorised antidotes were derived from a UK study. Category A, B and C had 12 antidotes for immediate availability, 13 within 1 hour and 4 for supra-regional stocking, respectively. Descriptive statistics was used.

Results:

All hospitals responded to the survey. The most commonly available antidotes were N-acetylcysteine, activated charcoal, digoxin-specific antibody fragments, flumazenil and glucagon. Category wise, there was no uniform availability of antidotes. Seven of the antidotes were not available in the hospitals. Three hospitals had guidelines related to use of antidotes. Three hospitals had agreements to share antidotes. Four hospitals had pharmacists employed specifically for the use and distribution of antidotes.

Conclusions:

There is substantial variation in the availability of antidotes. National guidelines for the appropriate stocking and sharing of antidotes is urgently required. The role of pharmacists in this area needs further research.

Key Words: Antidotes; Pharmacist; Kuwait

Funding Agency: None

Pharmacy

Category: Basic Sciences

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The role of pharmacists in self-medication among medical undergraduate students in Kuwait

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Introduction:

Self-medication is the use of non-prescription medicines by individuals to treat self-recognised illnesses or symptoms on their own initiative. Pharmacists have a key role to play in providing them with assistance, advice and information about medicines available for self-medication. The practice of self-medication is growing worldwide. It's association with problems that may lead to potentially life-threatening complications represent a priority to be investigated.

The aim of this study was to evaluate the prevalence of self-medication and the role of pharmacist in self-medication among healthy undergraduate medical students in Kuwait.

Methods:

A descriptive cross-sectional study was performed, using a pretested questionnaire on a sample of 819 students randomly selected from three health faculties in Kuwait. Self-medication practice was studied for twelve health medical conditions.

Results:

The overall prevalence of self-medication practice was 97.8%. The age was significantly inversely proportional to self-medication. In addition, there was a significant difference between male and female students, ($P < 0.05$). Headache was the highest health condition that most frequently triggered self-medication with 90.1% prevalence. While, dermatologic conditions with 13.9% was the least. Contribution of the pharmacist as a part of self-medication care was low, highest was 40.1% for cough conditions. However, the role of the pharmacist as a drug consultant was more noticeable after obtaining the drug and not before. Around 80.1% of the students would request information from pharmacist about recommended doses, duration of treatments, and side effects.

Conclusions:

The practice of self-medication is alarming. Improved awareness about the role of pharmacist as a drug consultant and part of the health care system is strongly recommended for careful and cautious use of medicines available for self-medication.

Key Words: Self-medication

Funding Agency: none

Pharmacy

Category: Basic Sciences

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In Vitro and In Vivo Evaluation of Capsules Containing Coated Isoniazid-Rifampicin Combination

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Introduction:

This study was conducted to evaluate if enteric coating of isoniazid can prevent its interaction with rifampicin in anti-tuberculosis FDC containing both drugs.

Methods:

Investigations with different polymers at different ratios showed that isoniazid coated with Eudragit L100 (1:2) has the lowest dissolution rate in acidic medium and the highest dissolution rate in alkaline medium. Capsules filled with rifampicin alone, rifampicin-isoniazid physical mixture and rifampicin-coated isoniazid were used for stability testing, and for determination of rifampicin dissolution rate and percentage dissolved at pH 1, 3, and 7. 4, and rifampicin relative bioavailability after single administration in 12 healthy human volunteers.

Results:

Accelerated stability study at 40±2°C/75% RH±5% RH for 3 months and long-term stability for 12 months showed less than 3% degradation indicating minimal interaction between rifampicin and isoniazid in the dosage form. Rifampicin percent dissolved in 120 minute from capsules containing rifampicin alone, rifampicin-isoniazid physical mixture, and rifampicin-coated isoniazid were 98.01±1.77, 64.20±7.34, and 95.69±9.31 at pH 1, 25.09±4.68, 15.06±5.85, and 39.71±1.78 at pH 3.0, and 26.47±0.65, 27.74±1.41, and 30.53±9.02 at pH 7.4. These suggest that isoniazid coating may prevent isoniazid-rifampicin interaction in the acidic medium of the stomach. Rifampicin bioavailability determined for rifampicin-isoniazid physical mixture and rifampicin-coated isoniazid mixture relative to rifampicin alone were 65.3%±6.56 and 97.3%±4.92, respectively as determined from rifampicin AUC calculated after single oral dose. This indicates that coating of isoniazid prevented its interaction with rifampicin in vivo.

Conclusions:

Isoniazid coating before mixing can be a useful strategy for preparing fixed-dose combinations containing rifampicin and isoniazid.

Key Words: Rifampicin; Isoniazid; Interaction

Funding Agency: None

Pharmacy

Category: Basic Sciences

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Implementation and Evaluation of a Workshop on Patient Counseling about Antidiabetic Medications for Final-Year Pharmacy Students

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Introduction:

The rapidly rising prevalence of diabetes mellitus in Kuwait necessitates active collaboration of all healthcare professionals to provide optimal patient care. Pharmacist can contribute to patient care by optimizing drug therapy and counseling patients about their medications. The workshop was conducted to enable future pharmacists to provide effective patient counseling about antidiabetic medications. The objective was to implement various teaching activities and to assess their impact on students' acquisition of the knowledge and skills needed for counseling.

Methods:

The workshop was organized for all final year pharmacy students (27 students) during the academic year 2011-2012. It included interactive lectures, group work and role-playing. Pre-/post-workshop questionnaires were used to assess the impact of the workshop on students' knowledge about medications and attitudes to patient counseling respectively. The workshop and the teaching activities were evaluated using an evaluation sheet. Data was analyzed using SPSS version 17. Paired Student's t test was used to compare the results of pre-/post-intervention instruments.

Results:

The workshop significantly improved students' knowledge about antidiabetic medications. It also had significant effects on students' self-reported confidence in communicating effectively with patients and ability to provide counseling on antidiabetic medications. All participants (100%) strongly agreed that the workshop was very useful. The case discussion in small groups was ranked as the most preferred learning method by the students.

Conclusions:

The workshop was successful in improving pharmacy students' knowledge and skills needed for patient counseling on antidiabetic medications. Adapting the use of engaging teaching methods in pharmacy education allows students to become active, independent and self-directed learners and thus, prepares them to provide effective pharmaceutical care to patient

Key Words: Counseling; Antidiabetic medications

Funding Agency: None

Pharmacy

Category: Basic Sciences

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In vitro Monoamine Oxidases (MAO-A and -B) Inhibitory Activities of New Oxazolidinones

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Introduction:

Oxazolidinones are potent antibacterial agents plagued with unwanted side effects. Among them is monoamine oxidases (MAO) inhibition, due to their structural similarity to the MAO inhibitor, toloxatone. The aim of this study was to determine the 50% inhibitory concentration (IC₅₀) of selected oxazolidinones against pure commercial MAO-A and -B activities.

Methods:

The inhibitory activity (IC₅₀, microM) of newly synthesized oxazolidinones was tested using pure commercial MAO-A and MAO-B preparations. Enzyme activity was determined by a continuous peroxidase-linked spectrophotometric assay, and measurements were taken at 498 nm for 15mins. Tyramine was used as a mixed substrate for MAO-A and MAO-B. The tested compounds, as well as controls were pre-incubated at 37°C with the enzymes for 5 minutes.

Results:

The 5-triazolyl oxazolidinone PH-27 significantly inhibited both MAO-A and MAO-B, with IC₅₀ of 27. 7 and 15 microM, respectively. Linezolid (5-acetamido), PH28 (5-imidazolyl) and PH85 [5-(5-methyltriazolyl)] strongly inhibited MAO-B with IC₅₀ of 1.2, 38. 4 and 43. 5 microM, all of which are much higher than that of the irreversible MAO-B inhibitor pargyline (IC₅₀ = 0. 49 microM). The morpholino derivatives exhibited relatively weaker MAO-A inhibition with IC₅₀ of 960 microM (linezolid), 162. 5 microM (PH28) and 269.3 microM (PH85), compared to the selective MAO-A inhibitor chlorgyline (IC₅₀ of 3.9 microM). The dichloroacetylpiperazino derivative (PH119) selectively inhibited MAO-A with IC₅₀ of 139.25 microM, without MAO-B inhibition even at 200 microM.

Conclusions:

MAO-A and -B inhibitory activity of oxazolidinones is determined by the substituents around the oxazolidinone pharmacophore.

Key Words: Monoamine oxidases; Oxazolidinones

Funding Agency: Supported by RA, Kuwait University; Grants PC01/05

Pharmacy

Category: Basic Sciences

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A Bioactive Guaianolide from *Centaurea aegyptiaca*

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Introduction:

In a previous work, *Centaurea aegyptiaca* ethanol extract showed potential cytotoxic activity against liver and larynx carcinoma cell lines. The aim of this study is to continue the isolation of the compound(s) that may be responsible for the potent biological activity of *Centaurea aegyptiaca*.

Methods:

The shade-dried aerial parts of *Centaurea aegyptiaca* were coarsely powdered and extracted with ethanol (96%). The ethanol extract was subjected to chromatographic separation on a flash silica gel column gradually eluted with an increasing strength of acetone in toluene. After successive purification, one compound was isolated and analyzed using different spectroscopic methods. Moreover, the cytotoxic activity of this compound was evaluated against liver and larynx carcinoma cell lines according to Skehan et al. , 1990 method. IC₅₀ (micromolar) of the compound was determined using doxorubicin as a positive control.

Results:

A guaianolide sesquiterpene lactone, 8 α -hydroxy-11 α ,13-dihydrozaluzanin C was isolated and characterized from *Centaurea aegyptiaca* ethanol extract. It exhibited a cytotoxic activity against liver carcinoma cell line with IC₅₀ value of 147. 73 micromolar. However, the most potent cytotoxic activity was against larynx carcinoma cell line with IC₅₀ value of 25. 57 micromolar.

Conclusions:

Chemical investigation of *Centaurea aegyptiaca* ethanol extract led to the isolation and identification of a guaianolide sesquiterpene lactone, 8 α -hydroxy-11 α ,13-dihydrozaluzanin C. Moreover, this compound may be responsible for the potential cytotoxic activity of *Centaurea aegyptiaca* ethanol extract against liver and larynx carcinoma cell lines. Acknowledgement: Spectral analyses were done at Kuwait University, Faculty of Science, Science Analytical Facilities, (SAF) supported by Grant number GS01/03.

Key Words: *Centaurea aegyptiaca*; Cytotoxicity; Sesquiterpene Lactone

Funding Agency: SAF, GS01/03

Pharmacy

Category: Basic Sciences

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Effect of droplet size and turbidity on stability and human bioavailability of ibuprofen self-emulsified systems

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Introduction:

To study the effect of droplet size and turbidity on stability and bioavailability of optimized self-emulsified systems of ibuprofen.

Methods:

Ibuprofen formulations were optimized to get the lowest turbidity (F1) and the smallest droplet size (F2) applying Face Centered Experimental Design. F1 and F2 consisted of 50mg ibuprofen each and 90 and 9.98 parts of soybean oil, 8 and 72 parts of Cremophore EL and 11.06 and 18 parts of Capmul MCM-C8, respectively. The stability study was conducted at 4°C, room temperature and 37 °C for eight months. The stored formulations were examined visually and assessed for dispersability in water, particle size, turbidity and drug release at 0, 1, 2, 4, 6 and 8 months. Bioavailability was assessed after a single oral dose of HPMC capsules containing F1, F2 and the reference (50mg ibuprofen in soybean oil), with 7-days washout period using six human volunteers. Blood samples of 5ml were collected immediately before dosing and after 0.25, 0.5, 0.75, 1, 1.5, 2, 4, 6, 8, and 10 hr of dose administration. Separated plasma samples were measured by HPLC.

Results:

F1 and F2 were physically stable without sedimentation, separation or color change. The changes in particle size, turbidity and dissolution rate at 4°C were smaller compared to those stored at room temperature or 37°C. The pharmacokinetic parameters obtained were: The C_{max} was 0.707, 0.936 and 0.468 µg/ml, the T_{max} was 1, 1 and 1.5 hr, the AUC_{0-∞} was 3.78, 3.96 and 1.99 mg. hr/ml for F1, F2 and reference, respectively. The relative bioavailability of the test formulations against the reference were 190.25 and 199.11% for F1 and F2 respectively.

Conclusions:

The optimized ibuprofen formulations stored at 4°C were more stable compared to those at room temperature or 37°C regarding the turbidity, particle size and in-vitro drug release. The test formulations showed higher rate and extent of drug absorption and bioavailability compared to the oily drug solution.

Key Words: Ibuprofen; Self-emulsified System; Stability and Bioavailability

Funding Agency: None

Physiology

Category: Graduate MSc (Basic Science)

150

Angiotensin (1-7) protects the heart against ischemia reperfusion injury by a pathway involving nitric oxide.

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Introduction:

Angiotensin-(1-7) (ANG-(1-7)) was proven to protect the heart against hypertension, however, its role in heart protection by postconditioning is not yet known. In this study we investigated the role of ANG-(1-7) in the protection of the heart against I/R, its role in pacing postconditioning (PPC) protection and involvement of nitric oxide (NO) in this protection.

Methods:

Regional ischemia in isolated rat hearts (n=6) using modified Langendorff system was used for this study. The PPC protocol was 3 cycles of 30 seconds left ventricle (LV) pacing alternated with 30 seconds right atrium (RA) pacing. Improvement was assessed by the recovery of the LV hemodynamics which were computed by a data acquisition program. For the role of ANG-(1-7), ANG-(1-7) or its antagonist were added at the beginning of reperfusion alone or in combination with PPC. To study the involvement of NO in PPC and ANG-(1-7) protection, L-name the antagonist of NO was added at the beginning of reperfusion in the presence of ANG-(1-7) or PPC. All hearts were subjected to 30 min ischemia produced by ligation of left anterior descending (LAD) coronary artery. All hearts were allowed 30 min of reperfusion. Control hearts were subjected to ischemia with no further treatment.

Results:

Ischemia and reperfusion resulted in a poor recovery of LV hemodynamics, LV end-diastolic pressure (LVEDP), left ventricular developed pressure (Pmax), coronary flow (CF) and coronary vascular resistance (CVR). ANG-(1-7) similar to PPC significantly ($P<0.04$) improved Pmax, LVEDP, CF and CVR when it was used alone or in combination with PPC compared to respective controls. This protection was completely blocked by the treatment of the heart with ANG-(1-7) antagonist. The protection afforded by both PPC and ANG-(1-7) was completely blocked by L-name.

Conclusions:

Similar to PPC, ANG-(1-7) protected the heart against ischemia reperfusion injury. This protection is through a pathway involving nitric oxide.

Key Words: Local ischemia; Pacing postconditioning; Angiotensin-(1-7)

Funding Agency: Research administration YM/09

Physiology

Category: Graduate MSc (Basic Science)

151

Fluoxetine reversed cell hypermobility and increased interleukin-2 levels in dexamethasone challenged astrocytes

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Introduction:

The “plasticity hypothesis” proposes that major depression is associated with cellular modifications in neurons and glia cells and distortion of growth factors regulations. Depression in humans can be triggered by elevated levels of cortisol and its analogues.

Methods:

Primary rat astrocyte were cultures were treated with dexamethasone (DEXM), a cortisol-analogue, and the antidepressant fluoxetine (FLUO) in order to investigate their molecular effects on glial cells. Morphological parameters including the number of cells per surface unit, cluster formation and cell mobility were analyzed for a period of 48 hours using “time lapse” microscopy.

Results:

Our results showed that the application of DEXM increased cell mobility significantly compared to the controls. Cellular interleukin-2 (IL-2) content was increased while glia-derived-growth-factor (GDNF) cellular content was diminished by DEXM. Parallel administration of FLUO and DEXM reversed IL-2 elevation and reduced cellular mobility but had no effect on the low levels of GDNF content. Cell number was reduced by both dexamethasone and fluoxetine.

Conclusions:

These results suggest that morphology and growth factors in astrocytes are affected by depression-triggering drug (DEXM) and by treatment with antidepressant (FLOU) as well and that FLUO could reverse some changes induced by DEXM.

Key Words: Antidepressant; Astrocytes; Growth factors

Funding Agency: College of Graduate Studies, Research Administration YM07/11

Physiology

Category: Basic Sciences

152

Effect of the delay in employment on selected physiological and body composition status of newly graduated firefighter candidates

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Introduction:

Continuous physical activity, exercise and training maintains fitness levels, however, abrupt break of the program can considerably reduce and damage fitness levels. The longer the time gap between detraining and training, the more challenging it would be to regain the fitness back. Purpose: the aim of this study was to assess the degrading level of fitness in recently graduated firefighters adapting a sedentary lifestyle post years of intense training through their academic programs before enrolling them into a refreshment three month training program.

Methods:

49 male recently graduated firefighters were assessed age = 23.61 (\pm 1.78). Maximum oxygen consumption (VO_{2max}), grip strength, flexibility, push-ups, sit-ups, anaerobic power, and body composition were measured.

Results:

Weight 87.39 (\pm 18.01) kg, height 1.75 (\pm 0.07) m, BMI 28.39 (\pm 5.64), VO_{2max} 34.48 (\pm 5.76) ml/kg/min, resting heart rate 90.95 (\pm 13.95), maximum heart rate 182.87 (\pm 11.59), flexibility 17.40 (\pm 7.56) cm, push-ups 25.96 (\pm 15.33), sit-ups 26.85 (\pm 9.86), grip strength 92.12 (\pm 20.25) N, Percent Fat 25.91 (\pm 10.33), and fat free mass 63.47 (\pm 9.11) kg.

Conclusions:

The recently graduated firefighters fitness results were poor except for their anaerobic power. This is the result of waiting for employment for approximately 20 months. Their body composition results showed that they were overweight. It is concluded that for appointing such physically demanding profession, it is important that they should be employed immediately after graduation.

Key Words: Oxygen uptake; Body composition

Funding Agency: None

Physiology

Category: Basic Sciences

153

Gender differences and long- and short-term estrogen treatments: A union in origin and discrepancy in protection

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Introduction:

Postconditioning was proven to be protective to the heart. The aim of this study was to determine the elements involved in pacing postconditioning (PPC) and the effects of short- and long-term treatments with estrogen (E2) on its outcome.

Methods:

Perfused rat hearts (Langendorff) (n=6) were used for this study. Controls were subjected to 30 minutes unprotected ischemia. PPC protocol was 3 cycles of 30 seconds left ventricle (LV) pacing alternated with right atrium (RA) pacing. Male or females hearts were treated with E2 for 15 minutes at the beginning of reperfusion with or without PPC. Hearts from ovariectomized rats substituted with E2 or placebo, were subjected to PPC. Hemodynamics were computed by a data acquisition program. Infarct size was determined by triphenyltetrazolium chloride (TTC) staining. Expression brain natriuretic peptide (BNP) and tumor necrosis factor alpha (TNF- α) were determined by RT-PCR and ELISA.

Results:

Unprotected ischemia resulted in poor recovery of left ventricular hemodynamics. PPC significantly ($P<0.04$) decreased the infarct size and improved hemodynamics in the male and female hearts compared with respective controls. Short-term E2 treatment did not block the protection afforded by PPC, however, 6 weeks of E2 substitution completely abrogated PPC protection. Significant ($P<0.003$) decrease in infarct size and improvement in hemodynamics were seen in 6 weeks placebo treated hearts compared with E2 treated hearts and controls. PPC increased BNP expression significantly ($P<0.03$) in the cardiomyocytes homogenate compared to ischemia. TNF- α was significantly ($P<0.03$) increased by ischemia and decreased ($P<0.04$) by PPC in both cardiomyocytes homogenate and coronary effluent.

Conclusions:

Short-term E2 treatment did not block the PPC protection however, long-term E2 treatment completely abrogated PPC protection. PPC recruited BNP and down regulated TNF- α in its protection to the heart.

Key Words: Postconditioning; Estrogen; Ischemia/Reperfusion

Funding Agency: Kuwait University, Grant #MY 03/10 and #GM 01/01

Physiology

Category: Graduate PhD (Basic Science)

154

Chronic ouabain administration does not elevate blood pressure but activates vasodilatory mechanisms

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Introduction:

Ouabain has been implicated in the pathogenesis of essential hypertension. However, the hypertensive effect of long-term administration of ouabain is inconsistent. This study was designed to solve this controversy and to give insights into ouabain-induced alterations that could either promote or prevent hypertension.

Methods:

Male Wistar rats were subcutaneously infused with ouabain (63 and 324 $\mu\text{g/kg/day}$) for 6 to 11 weeks. Blood pressure and heart rate were assessed using radiotelemetry. Measures of cardiovascular variability and baroreflex sensitivity were derived to estimate the activity of the autonomic nervous system. Real-time PCR and immunoassays were used to screen for ouabain-induced changes.

Results:

Despite elevated ouabain plasma levels, arterial blood pressure was not increased during ouabain administration. Low frequency power of systolic pressure variability, urinary excretion of catecholamines, cardiovascular responses to restraint stress and high salt diet as well as the responsiveness to α -1 adrenergic stimulation were all not elevated by ouabain administration suggesting that activity of the sympathetic nervous system was not increased. However, surrogate indices of cardiac vagal nerve activity derived from ECG and heart rate variability were elevated during ouabain treatment. Remodeling in resistance arteries that could support hypertension development was not evident, i. e. ouabain did not increase the gene expression of Na/Ca-exchanger and α_2 isoform of Na/K-ATPase. Instead, plasma levels of vasodilatory calcitonin gene related peptide (CGRP) significantly rose from 55 ± 10 pg/ml to 89 ± 20 pg/ml in ouabain treated rats.

Conclusions:

Chronic administration of ouabain did not increase arterial blood pressure in rats. This could be due to unchanged sympathetic drive, augmented cardiac vagal activity, absence of remodeling in resistance arteries and elevated plasma levels of CGRP.

Key Words: Hypertension; CGRP

Funding Agency: Kuwait University graduate student research grant

Physiology

Category: Graduate MSc (Basic Science)

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The role of the novel calcium acidic stores and cyclooxygenase-2 postconditioning protection of the heart

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Introduction:

The intermittent dyssynchrony (pacing postconditioning (PPC)) was proven to be protective against ischemia reperfusion (I/R) injury. The aim of this study was to determine the role of calcium released from acidic stores and cyclooxygenase-2 (COX-2) in the protection of the heart against I/R injury and their influence on the outcome of PPC.

Methods:

Isolated rat hearts (n=6) perfused with a modified Langendorff were used for this study. The hearts were perfused immediately retrogradely with freshly prepared Krebs-Hensleit solution (mM: NaCl 117.86, KCl 5.59, CaCl₂·H₂O 2.4, NaHCO₃ 20, KH₂PO₄ 1.19, MgCl₂·6H₂O 1.2, Glucose 12.11) osmolality: 300mOsm. Post-ischemic function recovery was assessed by evaluation of the left ventricle (LV) hemodynamics which were computed by a data acquisition program. Controls were subjected to 30 minutes unprotected ischemia with no further treatment. PPC protocol was 3 cycles of 30 seconds LV pacing alternated with 30 seconds right atrium (RA) pacing. For the study of calcium effects, nicotinic acid adenine dinucleotide phosphate (NAADP) or its antagonist (Ned-19) were used alone or in combination with PPC. The role of COX-2 was investigated using COX-2 agonist (iloprost) or antagonist (celecoxib) alone or in combination with PPC. Ischemia was produced by ligation of the left anterior descending coronary artery. All hearts were allowed 30 min reperfusion.

Results:

Treatment with NAADP alone or in combination with PPC significantly ($P<0.03$) improved LV end-diastolic pressure (LVEDP), left ventricular developed pressure (Pmax), coronary flow (CF) and coronary vascular resistance (CVR) which were deteriorated by I/R compared to control. This improvement was completely abrogated by Ned-19. COX-2 alone or in combination with PPC significantly ($P<0.03$) protected the heart against ischemia reperfusion injury. The LV hemodynamics, Pmax, LVEDP, CF and CVR were significantly ($P<0.03$) improved compared to control. This improvement was completely blocked by COX-2 antagonist.

Conclusions:

COX-2 and calcium release from acidic stores are essential for the postconditioning protection of the heart against ischemia reperfusion injury.

Key Words: Postconditioning; Calcium acidic stores; COX-2

Funding Agency: Project No: YM 08/11, Kuwait University, College of postgraduate, Research administration

Psychiatry

Category: Basic Sciences

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Measurement Invariance of Working Memory Measures across Two Arab Cultures

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Introduction:

In this study, we examine the measurement invariance of a battery of working memory tests across two Arabic-speaking countries. The Authors conducted multiple-group analyses to test for measurement invariance (configurable, metric, scalar and strict) across two cultural groups (Kuwaitis - Egyptians).

Methods:

Participants:

In total, 384 children from the Al-Jahra Governorate, the State of Kuwait and the Gharbia Governorate in Egypt participated in this study. The Kuwaiti participants consisted of 192 primary school children (96 males and 96 females; mean age = 9.98; SD \pm 1.03). The Egyptian participants consisted of 192 primary school children (96 males and 96 females; mean age = 9.97; SD \pm 1.17).

Measures:

Six working memory tasks were used as measures of verbal and visuospatial working memory. The six working memory tasks were administered to 1200 children (600 Egyptian and 600 Kuwaitis) aged seven to eight years. A good convergent validity with concurrent working memory tasks was found. The correlation coefficients as indicators for convergent validity ranged from .76-.87 and good reliability have been identified based on Cronbach's α . And ranged from .81 to .90 and test re-test coefficients ranged from .78 to .89.

Results:

A multi-group confirmatory factor analysis was conducted using Amos software. The results showed that, the model fitted the data very well in each sample, where all of the χ^2 values were not significant and the indices values were at the cut-off criterion for model fit for both groups ($\chi^2 = 8.26$, $P > .05$, CFI = .999, SRMR = .019, RMSEA = .013, 90CI = .0, .123 for Kuwaitis; $\chi^2 = 15.64$, $P > .05$, CFI = .984, SRMR = .029, RMSEA = .061, 90CI = .006, .078 for Egyptians).

Conclusions:

Working memory was conceptualized by Arabian children (Kuwaitis and Egyptians) similarly to their British peers, as revealed by the findings suggested by Alloway, et al. (2006).

Key Words: Working Memory; Measurement Invariance; Two Arab Cultures

Funding Agency: Kuwait University Research Administration through research grant # (OP02/07).

Psychiatry

Category: Basic Sciences

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Working Memory Performance in Psychiatric Patients: a Comparative Study

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Introduction:

Working memory can be understood as a system of maintenance and temporary storage of information required to perform complex cognitive tasks involving reading, comprehension and reasoning. Psychiatric patients are known to show major impairment in this area. This research explored the working memory WM performance in two Kuwaiti psychiatric patients' groups (schizophrenics & substance users).

Methods:

The participants were 26 schizophrenics Psychiatric inpatients and 26 substance users from Kuwait psychological medicine hospital. The schizophrenics are based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria. The substance users sample was restricted to either users of cocaine, amphetamine, sedatives, tranquilizers, or opioids or other substances (i. e. alcohol, cannabis and other drugs). The participants' mean age is 34.90 ± 6.98 years with no significant age differences between the two groups ($t=1.81$, $p>.05$). The Automated Working Memory Assessment (AWMA) comprising six tasks, measuring both verbal and visuo-spatial WM, was administered to the participants. Independent Sample t test was used to examine group differences in WM performance.

Results:

The mean score for verbal WM schizophrenics and substance users groups (12.50 ± 3.90) and (15.73 ± 2.96) respectively. It was significantly lower in Schizophrenics ($t=3.36$, $p<.001$). Also, the mean score for visuo-spatial WM schizophrenics and substance users groups (10.84 ± 4.78) and (14.76 ± 3.56) respectively. It was significantly lower in Schizophrenics ($t=3.35$, $p<.001$).

Conclusions:

The results of the present study strengthen the evidence for an impairment of the component of both verbal and visuo-spatial working memory in patients with schizophrenia. This study confirmed the earlier findings on the impaired working memory of schizophrenic patients. Our findings are limited by the relative small sample size. Thus, our results should be confirmed in larger samples.

Key Words: Working memory; Schizophrenics; Substance users

Funding Agency: None

Psychiatry

Category: Undergraduate

158

Prevalence of Anxiety and Depression among Outpatients with Diabetes in Kuwait

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Introduction:

Diabetes mellitus is a common condition. Studies found that anxiety and depression may cause functional impairment, and poor glycemic control in people with diabetes. Thus, people with diabetes are almost twice as likely to suffer from anxiety and depression. Depressed and anxious people are less likely to comply with self-care recommendations, dietary regimen, prescribed medications and are less physically active.

Objectives: Assess the prevalence of anxiety and depression among patients with diabetes, the association between anxiety, depression and sociodemographic factors, and the association between anxiety, depression and diabetes complications.

Methods:

Cross-sectional study in diabetes outpatients in four public hospitals and a diabetes center in Kuwait using self-administered questionnaires. To assess the diabetes complications, and, anxiety and depression, the Diabetes and Complication Index and the Hospital Anxiety and Depression Scale were used respectively. The Statistical Package for Social Science was used for data entry and analysis. Logistic regression was performed to assess associations between anxiety, depression and other factors.

Results:

47.3% had anxiety and 43.8% had depression. Both anxiety and depression were significantly associated with gender, marital status, total family income, and complications. There was a significant association between anxiety, age and smoking, and between depression and educational level. After adjusting for confounders, anxiety was significantly associated with female gender (aOR= 1.9), age, total family income, smoking, coronary artery disease (CAD), peripheral vascular disease (PVD) and foot problems, while depression was associated with female gender (aOR= 2.3), CAD, PVD and foot problems (aOR= 2.9).

Conclusions:

A significant number of study participants had anxiety and/or depression. Complications, including CAD, PVD and foot problems, were significantly associated with anxiety and depression.

Key Words: Depression; Anxiety

Funding Agency: None

Psychiatry

Category: Basic Sciences

159

Evaluating the reliability, validity of the Arabic version of the Summary of Diabetes Self-Care Activities (SDSCA) in a Kuwaiti Type-2 Diabetes.

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Introduction:

The SDSCA assesses levels of self-care and not adherence or compliance to a prescribed regimen because of the difficulties associated with identifying for a given patient, a specific unchanging standard against which behaviour should be compared. It is now widely used in clinical trials, and for routine clinical monitoring. This study aims at examining psychometric properties of SDSCA in Arabic language for type-2 diabetes patients in Kuwait.

Methods:

Data was collected from (222) Kuwaitis, including (106) males and (116) females of whom were identified as having type 2 diabetes in Mubarak Al-Kabeer hospital. The mean age of the sample was 47 years. The SDSCA has been administered in paper and-pencil form that consists of 12 items (8-point likert scale):1-5 General Diet, items 6-8 for Exercise, items 9-10 for Blood-Glucose Testing, items 11-12 for Medications.

Results:

The factor analysis for the SDSCA showed the 4 subtest items to load together >0.67 . Reliability was confirmed (alpha coefficients: 0.73), and (test-retest correlation coefficient = 0.78). The SDSCA showed satisfactory scores that were negatively correlated with the Diabetes Quality of Life measure DQOL ($r=-0.31$), Beck Depression Inventory-II BDI-II ($r=-0.34$) and the Diabetes Symptom Checklist DSC-R ($r=-0.32$). Moreover, the SDSCA was positively correlated with the Diabetes treatment satisfaction test ($r=0.45$). The SDSCA score ranging from 13 to 50 had a mean 27.15 ± 7.46 . Furthermore, no significant gender difference in the SDSCA was found ($f=1.39$, $p>.05$).

Conclusions:

This study provides evidence for the reliability and validity of the in SDSCA Arabic language for type-2 diabetes in Kuwait. The strengths of the 12 core items of the SDSCA include their brevity and ease of scoring, which make them practical to use both clinically and in research.

Key Words: SDSCA; Type 2 diabetes; Kuwait

Funding Agency: None

Psychiatry

Category: Clinical

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Relationship of family caregiver burden with quality of care and psychopathology in a sample of Arab subjects with schizophrenia

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Introduction:

Although the burden experienced by families of people with schizophrenia is one of the most important consequences of the disorder, no reports have addressed this important issue in the Arab world. The aim of this study is to explore the relationship of family caregiver psychic distress with the caregiver's/patient's socio-demographics, clinical features and the indices of quality of care.

Methods:

Consecutive family caregivers of outpatients with schizophrenia were interviewed with the Involvement Evaluation Questionnaire (IEQ-EU). Patients were interviewed with measures of needs for care, service satisfaction, quality of life and psychopathology.

Results:

There were 121 caregivers (66.1% men, aged 39.8). The IEQ domain scores (total: 46.9; tension: 13. 4; supervision: 7.9; worrying: 12.9; and urging: 16. 4) were in the middle of the range for the EU data. In regression analyses, higher burden subscale scores were variously associated with caregiver lower level of education, patient's female gender and younger age, as well as patient's lower subjective QOL and needs for hospital care, and not involving the patient in outdoor activities. Disruptive behavior was the greatest determinant of global ratings of burden.

Conclusions:

Differences with the international data reflect peculiarities of culture and type of service. Despite generous national social welfare provisions, experience of burden was the norm and was significantly associated with patient's disruptive behavior. The results underscore gaps in the delivery of mental health services and highlight the need for the community-based programs and continued intervention with the families in order to improve the quality of care.

Key Words: Schizophrenia; Caregiver burden; Psychopathology

Funding Agency: KU, MQ 01/05

Surgery

Category: Graduate (Resident)

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Efficacy of Laparoscopic Sleeve Gastrectomy in Adolescents

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Introduction:

From the many types of bariatric surgeries, sleeve gastrectomy (LSG) is becoming more popular and more preferred as a primary bariatric intervention, especially among adolescents. It is now used as a single procedure operation after being a two way procedure followed by a gastric bypass or duodenal switch. Obese people who fail the conservative measures prefer LSG because it can achieve fast promising results and improve patient comorbidities with less complications and side effects.

Our aim in this study is to measure the rate of weight loss in adolescents during certain intervals following Sleeve gastrectomy, and to assess its efficacy and outcome.

Methods:

A retrospective review of a prospective maintained data was revised from patients with ages between 14 and 21 who underwent laparoscopic sleeve gastrectomy from 2008 to November 2012. The data included patient's: age, gender, BMI, Date of operation, length of stay, and weight loss after 2 weeks, 3 months, 6 months, 1 year, 1 and a half year and the current weight. Data analysis are done with SPSS program

Results:

The total number of patients who underwent LSG from 2008-2012 was 146, 105 are female and 41 were males. The mean age was 18.9 ± 2.17 years. The mean preoperative weight was 130.6 kg with a BMI of 48.6 kg/m^2 . Patients were followed up from the day of surgery until the end of November/2012 and the mean follow up period was 20 ± 11.39 months. There was no intra operative complications reported and from 146 patients only 1 patient (0.7%) had post-operative complication. The mean excess weight loss after two weeks, three months, six months, one year, and one year and a half was 17%, 40%, 56%, 85%, 72% respectively.

Conclusions:

These data showed that LSG is effective and safe bariatric surgery in adolescents where it can significantly decrease excess body weight in a short period of time. Larger study with longer follow up is required to validate the results.

Key Words: Adolescents; Weight loss

Funding Agency: None

Surgery

Category: Undergraduate

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The Prevalence, Severity and Knowledge About Treatment of Lower Urinary Tract Symptoms in Kuwaiti Men Older Than 40 Years of Age.

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Introduction:

The prevalence of lower urinary tract symptoms (LUTS) is increasing in men in most communities. This is due largely to better health care and an ageing male population. Many elderly men are unaware that there is effective treatment for LUTS, regarding such symptoms as part of the ageing process. The aim of this study was to determine the prevalence and severity of LUTS among Kuwaiti men older than 40 years and their awareness of available treatment.

Methods:

This was a cross sectional study of community dwelling healthy Kuwaiti men older than 40 years with no previous history of a urological disease or consultation. Using a questionnaire, volunteers were asked to rate the following 7 LUTS: incomplete bladder emptying, frequency of micturition, intermittency, urgency, weak urinary stream, straining to void and nocturia on the following scale; 0= not at all, 1= less than 1time in 5, 2= less than half the time, 3= about half the time, 4= more than half the time and 5 = almost always. Based on the AUA guidelines, the total symptoms score were categorised into mild (0-7), moderate (8-18) and severe (>18). Symptom scores in relation to age were analysed using regression models. Severity of the symptoms were associated with the age groups using Chi-square for trend.

Results:

270 men with mean age \pm Standard Deviation of 46.9 ± 6.3 years were recruited. 65.6%, 31.9% and 2. 5% had mild, moderate and severe symptoms, respectively. The mean age of men with mild, moderate and severe symptoms was 46, 49 and 53 years respectively ($p < 0.04$). For men with age ranges 40-49, 50-59 and 60-69 years the mean symptom scores were 4.9, 7 and 13, respectively ($p = 0.06$).

Conclusions:

These data indicate that more than one third of healthy Kuwaiti men older than 40 years have moderate to severe LUTS and require treatment.

Key Words: Lower urinary tract symptoms; Prevalence; Kuwaiti men

Funding Agency: None

Surgery

Category: Clinical

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**Laparoscopic Sleeve Gastrectomy in Patients Aged 55 and Above:
Experience from Kuwait.**

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Introduction:

The World Health Organization, in 2009, stated 74.2 % of the Kuwaiti population was overweight or obese. This led to an increase in bariatric surgery in different age groups, including the elderly population, since 2008 with various outcomes. The objective of this study is to determine the outcomes of Laparoscopic Sleeve Gastrectomy (LSG) in patients aged 55 and above.

Methods:

This was a retrospective analysis of 1200 patients underwent LSG, of which 44 patients were aged 55 and above from February 2009 to October 2012 in Al Amiri Hospital, Kuwait. Data included length of stay, percentage of excessive weight loss (EWL%), Body Mass Index (BMI), and post-operative complications. Paired t test was utilized to compare quantitative data.

Results:

Mean age was 58 years, 70. 5% were females. Mean pre-operative weight of 122 kg and BMI of 47 was noted. Median length of stay recorded was 3 days. Patients were followed up from 2 weeks to 2 years (median 3 months). Mean EWL% of 56% and 58% at 1 year and 18 months was achieved, respectively. Mean BMI reduced significantly over different time periods. Postoperative complications involved leak (n=1, 2.3%), biliary colic (n=2, 4. 5%), renal embolism (n=1, 2.3%). No mortality occurred. A significant difference with regards to successful LSG in patients above 55 years old and those below 55 years was noted.

Conclusions:

LSG has proven to be effective and safe in patients age 55 and above. A significant EWL% was achieved. Larger and longer follow-up studies are required for verification of these results.

Key Words: Sleeve; Kuwait

Funding Agency: None

Surgery

Category: Clinical

164

Revisional Surgery: Adjustable Gastric Band to Sleeve Gastrectomy - Al Amiri Experience.

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Introduction:

Although some patients attain good outcomes after adjustable gastric band (LAGB), a certain quantity have experienced complications and insufficient weight loss. The Objective of this study is to assess the practicality and outcome of laparoscopic sleeve gastrectomy (LSG) as a revision surgery after a failed LAGB.

Methods:

A retrospective analysis of 80 patients underwent LAGB, of which 40 patients received LSG as revision surgery from 2009 to 2012 in Al Amiri Hospital, Kuwait. Data analyzed included percentage of excessive weight loss (EWL%), Body Mass Index (BMI), and post-operative complications after each procedure (LAGB and LSG). Paired t test was utilized to evaluate total weight loss after either procedure.

Results:

Among the 40 patients that underwent revision surgery, the mean age was 36 years old, 34 (85%) of which were females. Follow up for LAGB was 1 year to 11 years (median 4. 5 years) and 6 months to 3 years (median 1 year) for LSG. Mean BMI before LAGB was 44 kg/m² (SD = 7.2) and mean weight was 117.2 kg (SD = 25.1). After the LAGB the patients achieved a mean BMI of 42.1 kg/m² (SD = 6.6) and after LSG mean BMI was 31. 5 kg/m² (SD = 5. 5). Median EWL% achieved with LAGB was 16. 5% and with LSG a median EWL% of 56.9% was recorded. Complications recorded included 1 patient that developed pleural effusion, 4 complained of insufficient weight loss, 2 had persistent vomiting, 2 developed biliary colic, 1 developed anemia and 1 developed scar hypertrophy. After conversion to LSG a significant drop in BMI was noted with a p-value<0.002.

Conclusions:

Laparoscopic conversion from LAGB to LSG may be considered an alternative for patients with a failed LAGB procedure. However, a longer and bigger follow up study is required to validate the results.

Key Words: Banding; Sleeve; Revisional

Funding Agency: None

Surgery

Category: Clinical

165

Does Daflon® (Micronized Purified Flavonoid Fraction) Have an Effect on the Amount of Drained Fluid After Abdominoplasty?

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Introduction:

Seroma formation is an annoying complication for both surgeons and patients following abdominoplasty.

Hypothesis tested: Pathophysiology of seroma is still unclear. There are several postulates in the literature discussing the etiology of seroma. Lymphatic, venous causes and inflammatory etiology have all been described. Daflon® acts on veins, lymphatics and microcirculation increasing the venous tone, improving lymphatic drainage and decreasing capillary permeability. The effect of Daflon® on the amount of fluid drained after abdominoplasty is the aim of this study.

Methods:

A prospective review was conducted on 27 patients who underwent abdominoplasty with or without liposuction from April 2012 to November 2012. Patients were stratified into 3 groups. Group A and B started Daflon® on the 1st and 3rd postoperative days respectively and continued until 2 weeks after drain removal. The 3rd group (C) was the control group who did not receive Daflon®. Data regarding patient's age, body mass index, and the amount of fluid drained was collected and analyzed.

Results:

Utilizing the IBM SPSS® program v17, the data collected from 27 patients was analyzed. In Group A (n=9) the mean of total fluid collected was 415cc, while it was 688cc in the control Group (n=8), a 39% decrease in drained fluid was documented when using Daflon®. The average number of drain days was 24% less in Group A than the control Group. All Groups were almost symmetrically distributed regarding age, sex and BMI.

Conclusions:

Daflon® has shown a favorable effect on decreasing the amount of fluid drained and consequently seroma formation post abdominoplasty surgery. Data collected, number of patients and available literature is still scarce and more data is needed to confirm the effect of Daflon® on seroma formation.

Key Words: Daflon; Abdominoplasty; Seroma

Funding Agency: None

Surgery

Category: Clinical

166

Impact of post-renal transplant leucopenia on graft and patient outcome

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Introduction:

Post-renal transplant(PRT)leucopenia is a common clinical challenge which is multifactorial.

Aim: To study incidence of PRT leucopenia, clinical management and its impact on graft and patient outcome over one year.

Methods:

We studied PRT patients operated during 2010 in our center who received immunosuppression and chemoprophylaxis according to our protocol. Significant leucopenia was managed by reduction of valgancyclovir (VGC)then mycophenolate (MMF) and giving granulocyte colony-stimulating factor (G-CSF). All patients were screened for CMV infection by CMV-PCR.

Results:

Over one year, 79 patients were transplanted and divided into leucopenia-group1 and non-leucopenia-group2. In group1, 34.1% had at least one attack of significant leucopenia, $p<0.02$. Mean total leucocytic count over one year was significantly lower in group 1, $p<0.0001$. VGC and septrin were stopped completely in 76.9% while MMF was reduced to $\geq 50\%$ in 85. 7% in group1, $p<0.0001$. G-CSF was given to all patients in group1 with a mean dose of 1466ugm/patient without significant side. There were no significant differences in demographic data between the groups. Four cases of CMV infection were detected in group1, $p<0.01$. There was higher number of new onset diabetes after transplant (NODAT) in group1 most likely due to higher maintenance doses of steroids and tacrolimus to compensate for the MMF dose reduction, $p<0.03$. Mean rejection episode/patient was significantly higher in group1 (0.62 ± 0.85 versus 0.28 ± 0.49), $p<0.03$. All patients were alive at 12months. Graft failure was 3. 7% in group1 versus 7. 7% in group2 without significant difference, $p<0.44$.

Conclusions:

Significant reduction of MMF and VGC due to leucopenia resulted in higher rate of rejection episodes, CMV infection and NODAT. High doses of G-CSF were used safely to treat neutropenia.

Key Words: Renal transplant; Leucopenia; Graft outcome

Funding Agency: None

Surgery

Category: Clinical

167

The Diagnostic Value of Serum Survivin Concentrations in Patients With Prostate Cancer

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Introduction:

Survivin is an inhibitor of apoptosis and its mRNA and protein levels are considered potential molecular markers for the detection of prostate cancer (PCa). The aim of the present study was to determine the use of serum survivin concentrations in diagnosis of PCa and determination of its grade and stage.

Methods:

Serum concentrations of prostate specific antigen (PSA) and survivin were determined in normal healthy men (controls) aged 20 to 70 years old as well as in men undergoing transrectal ultrasound (TRUS) guided prostate biopsies for suspected PCa. Multivariate analysis was used to compare serum concentrations of PSA and survivin between controls and patients with BPH and those with PCa. In patients with PCa, the ability of serum survivin concentrations to predict tumour stage and grade was evaluated.

Results:

The mean age of control, patients with BPH and PCa were 39, 64 and 68 years respectively. There were 68 controls, 60 with BPH and 68 with PCa. PCa patients had significantly higher serum survivin levels than BPH patients (0.25 ± 0.02 ng/ml vs. 0.16 ± 0.02 ng/ml; $P=0.005$). Serum survivin and PSA correlated positively with PCa diagnosis ($p=0.0036$ and 0.001 respectively). Multivariate analysis showed that serum survivin was an independent predictor of PCa (odds ratio=25.7, 95% CI: 2.55-260, $p=0.0026$) but not a good predictor for tumor grade and stage. The diagnostic value of serum survivin was estimated with receiver operating characteristic analysis yielded a 98.5% sensitivity and 100% specificity (AUC = 0.99; 95% CI = 0.96-0.99; $p=0.0001$).

Conclusions:

Serum concentrations of survivin are significantly higher in men with PCa compared with those with BPH or healthy controls. However, serum survivin concentration was not a good predictor of tumour grade and stage.

Key Words: Prostate cancer; Survivin; Prostate specific antigen

Funding Agency: Kuwait University Research Grant MS 01/05

Surgery

Category: Clinical

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Sleeve or bypass as revisional bariatric procedure: retrospective evaluation of outcomes

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Introduction:

Revisional bariatric surgery has been found to be effective and safe. A considerable number of patients after laparoscopic adjustable gastric banding (LAGB) require revisional surgery. Studies that compared the outcomes of revisional Sleeve gastrectomy (r-SG) and revisional Roux-en-Y gastric bypass (r-RYGB) after failed LAGB are scarce in the literature. Our objective was to determine whether significant differences exist in outcomes between r-SG and r-RNYG after failed LAGB.

Methods:

From 2005 to 2012 all patients who underwent laparoscopic r-SG and r-RYGB after failed LAGB were retrospectively compared and analyzed. Data included demographics, indication for revision, operative time, hospital stay, conversion rate, percentage excess weight loss (%EWL), morbidity and mortality.

Results:

Out of 693 bariatric procedures, 42 r-SG and 53 r-RYGB were performed. The mean preoperative weight (108.1, 119.7 kg, $p=0.02$) and BMI (40.1, 44.4, $p=0.01$) in r-SG was statistically lower than r-RYGB respectively. The mean operative time was significantly shorter after r-SG (108.4 versus 161.2 minutes, $p=0.00$) as well as the hospital stay (2.43 versus 3.7 days, $p=0.02$). One patient was converted to open surgery after r-RYGB ($p=0.5$). Re-operation rate was higher (3.8%) among r-RYGB patients ($p=0.3$). There was 1 postoperative leak in the r-RYGB and the overall complication rate was significantly higher among the r-RYGB patients ($P=0.05$). The mean follow up was significantly shorter in the r-SG (9.8 versus 29.3 months, $P=0.00$). However, the mean postoperative BMI was not different at 1 year (32.3 versus 34.7, $p=0.29$) as well as mean %EWL was (47.4% versus 45.6%, $p=0.77$).

Conclusions:

Both r-SG and r-RYGB are safe procedures with similar outcomes in terms of %EWL. Due to the complexity of r-RYGB and long term potential nutritional complication, r-SG may be a better option in this group of patients.

Key Words: Roux-en-Y Gastric bypass; Revisional Surgery

Funding Agency: Ministry of Health

Surgery

Category: Clinical

169

Demographic pattern and clinical features of patients with carpal tunnel syndrome presenting to orthopaedic outpatient clinics in a military hospital in Kuwait

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Introduction:

Carpal tunnel syndrome (CTS) is the most common entrapment neuropathy. Authors aimed to provide data about the demographic pattern and clinical features of this syndrome among patients in Kuwait, and compare it to data from other countries.

Methods:

A retrospective files review of 175 patients diagnosed with CTS in Jaber Al-Ahmad Armed Forces hospital in Kuwait between January 2006 and December 2010 was done. The diagnosis was based on history, physical examination and nerve conduction studies. Results were presented using frequencies and percentages.

Results:

Out of the 175 cases, 132 (75. 4%) were females, with a male to female ratio of 1:3.1. The mean age was 43.68 years (range 25-70), peaking between 46 to 50 years (40; 22.9%). All patients complained of nocturnal symptoms, while 173 (98.3%) had daytime symptoms. Physical examination revealed abnormal sensation, positive Phalen's test, positive Tinel sign, thenar muscle wasting and decrease thenar muscle power in 150 (85. 7%), 161 (92. 0%), 129 (73. 7%), 17 (9. 7%) and 91 (52. 0%) patients respectively. Involvement was bilateral in 141 (80.6%) patients. The most common cause/risk factor of CTS in this sample was obesity (66; 37. 7%).

Conclusions:

The demographic pattern and clinical features of CTS patients in Kuwait are similar to what was found elsewhere.

Key Words: Carpal tunnel syndrome; Demographic pattern; Clinical features

Funding Agency: None

Surgery

Category: Clinical

170

Impact of Systemic Lupus Erythematosus on the Outcome of Renal Transplant Recipients in Kuwait

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Introduction:

Long term outcome of renal transplantation among systemic lupus erythematosus (SLE) patients remains a debated topic. The aim of our study was to compare the long-term outcome of kidney transplantation in ESRD patients secondary to lupus nephritis with that in an age, sex, and donor matched control group of recipients.

Methods:

This study comprised 192 kidney transplant recipients who received their grafts between 1994 and 2011 at Hamed Al Essa Organ Transplant Center of Kuwait. These patients were further subdivided into two groups according to original kidney disease (36 secondary to SLE) and (156 secondary to non-SLE causes). All patients' data were assessed with special emphasis on graft and patient survival as well as post transplant medical complications.

Results:

The two groups were comparable regarding pre transplant patient demographic features (age and sex of donors and recipients), moreover pre-transplant diabetes, anemia, hypertension, tuberculosis, bone disease, type of dialysis, type of immunosuppression and viral profile were also matched. The overall incidence of post transplant complications was comparable among the two groups especially NODAT, BK nephropathy and coronary heart disease ($p > 0.05$). Lupus patients needed significantly more anti-hypertensives ($p = 0.003$), and had higher prevalence of CMV ($p = 0.001$). On the other hand, we observed higher prevalence of hyperlipidemia in the control group ($p = 0.015$). We observed that the mean number of rejection episodes were significantly higher among lupus patients compared to the control group (0.94 ± 1.1 vs. 0.42 ± 0.66 ; $p = 0.011$). Kidney graft survival was worse among the lupus group compared to the control group.

Conclusions:

SLE as a cause of ESRD in renal transplant recipients is associated with worse allograft survival possibly due to higher prevalence of CMV, hypertension and acute rejection episodes.

Key Words: ESRD; Renal Transplant

Funding Agency: None

Surgery

Category: Clinical

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The Versatility of the De-epithelialized Cross Finger Flap in Coverage of Dorsal Finger Defects

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Introduction:

Dorsal soft tissue defects in the hand are a challenging problem that are encountered by the hand surgeon. The choice for coverage depends on many parameters. Exposure of the extensor tendons, bone or joint requires flap coverage to achieve stable wound closure, minimize morbidity and to facilitate future definitive reconstruction and rehabilitation. Local flaps from the adjacent normal digits are commonly and successfully used for coverage of volar defects. Atasoy in 1982, described the de-epithelialized cross-finger flap and it was popularized ever since for coverage of dorsal soft tissue defects of the fingers.

Limitations and drawbacks of this flap include; prolonged immobility of the finger joints and resulting stiffness or diminished range of movement, failure of flap take especially in children due to inadequate immobilization and inclusion cysts due to inadequate de-epithelialization, as well as the complications associated with the skin graft.

Methods:

We performed this versatile flap in 9 patients, with average age 24 years, with multiple causes of trauma. The mean follow up period was 6 months.

Results:

We had no major complications reported apart from 2 cases of partial flap dehiscence that healed by secondary intention with minimal morbidity.

Conclusions:

The reversed (de-epithelialized) cross-finger flap is a good option for covering dorsal finger defects, easy to perform, poses minimal morbidity for the patient and can be performed easily under local anesthesia in selected patients. The reversed cross finger flap has low complication rates with optimal surgical technique.

Key Words: Cross finger flap; Local flaps in hand; Dorsal finger defects

Funding Agency: None



Original Research Case Report By Subject Area

Allied Health

Category: Clinical

172

Reconstruction of saddle nose deformity in Wegener's granulomatosis

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CASE REPORT

Background:

Wegener's granulomatosis is an autoimmune disease in which abnormal type of circulating antibodies (ANCA) attack the small and medium sized blood vessels which when affects the septal cartilage of the nose, causes saddle nose deformity.

Case summary:

We report a case of surgical correction of a saddle nose deformity causing severe respiratory restriction and social embarrassment in a 34 years old gentleman diagnosed with Wegener's granulomatosis. This patient was receiving immunosuppressive drugs and was in a state of remission of the disease and because of this saddle nose deformity and its devastating psychological effect, the patient was always covering his nasal deformity with a piece of plaster. To improve the aesthetics of the nose ,the patient underwent a surgery to reconstruct the nasal vault and tip. We used costochondral cartilage graft in the reconstruction. At a follow up 1 year postoperatively, no signs of resorption of the cartilage graft were observed .

Conclusion:

We conclude that external nasal reconstruction in saddle nose deformity due to Wegener's granulomatosis seems to be promising as long as the disease is in a state of remission ,despite the immunosuppressive drugs that could affect the healing capacity .

Key Words:

Category: Clinical

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A case of postpartum hemorrhage and DIC that required 561 units of blood products to be corrected

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CASE REPORT

Background:

Postpartum hemorrhage is one of the major causes of maternal mortality worldwide and is the most common reason for blood transfusions after delivery.

Case summary:

We present a 42 year old Filipino patient, ASA1, P2+1+1+2 who was admitted to the our hospital in labour and agreed for VBAC. With placental separation the patient went into intractable vaginal bleeding, shock and cardiac arrest. Resuscitation was started, blood and blood component transfusion continued, and in the OT the placenta was manually removed. Uterine atony caused continuous bleeding. DIC started to show. Uterine massage together with Uterotonic drugs were used but were not effective. Bakri balloon was inserted then laparotomy and internal iliac artery ligation were done in a trial to control bleeding but these also failed. Finally obstetric hysterectomy was done. On admission to the ICU the patient was mechanically ventilated. Nor-adrenaline high dose infusion, fluids, blood and blood components were continued. The patient continued to bleed intermittently from all the puncture sites; arterial line and CVP. She also developed hematuria, hematemesis, hemothorax, epistaxis, intra-abdominal bleeding, sub-conjunctival hemorrhage, purpura fulminans, and cerebral hemorrhage (mild). The patient developed renal failure, liver failure, and respiratory failure. Ventilation, antibiotics, renal dialysis, TPN, supportive care and physiotherapy were continued. Liver failure subsided and coagulation was corrected. The platelet count started to increase. Ultimately patient responds to treatment and was weaned from artificial ventilation after about one month. The total amount of blood and blood products given to the patient during her stay in the ICU and OT from delivery to response were as follows: PRBCs: 60U, FFP: 117 U, Cryoprecipitate 235 U, PLATELETS 149 U and FVIIa 14. 4 mg.

Conclusion:

DIC with multiple organ failure is a common cause of death after postpartum hemorrhage. Aggressive management of DIC by blood and blood component therapy and treatment directed to the triggering cause with a multidisciplinary system team work can change the outcome of postpartum hemorrhage and DIC.

Key Words: Post-Partum Hemorrhage; DIC; Massive Transfusion

Anaesthesiology

Category: Clinical

174

Phaeochromocytoma and pregnancy

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CASE REPORT

Background:

Phaeochromocytoma with pregnancy is an extremely rare condition. Less than 250 cases have been reported worldwide. If untreated, it is life threatening with maternal and fetal mortality of nearly 50%. But proper management can reduce the mortality to less than 5% for mother and 15% for fetus.

Case summary:

A 36 years old pregnant lady (24 weeks Pregnant) who is a known case of phaeochromocytoma presented to our Emergency Department with rapidly fluctuating Blood pressure ranging from 210/130 to 80/40. She had stopped all her medications. She was immediately transferred to the ICU and a Multidisciplinary team consisting of Anesthesiologist, Obstetrician, Endocrinologist, and a Laparoscopic Endocrine Surgeon were formed. She was started on alpha blocker phenoxybenzamine, alpha and beta blocker Labetalol and methyldopa. Her intravascular volume was expanded with fluids. When she reached 28 weeks, decision was taken for removal of tumor by laparoscopy and then to continue her pregnancy. But she developed premature rupture of membranes the night before laparoscopy and she was taken up for cesarean section followed with resection of tumor with laparotomy. Phaeochromocytoma with pregnancy is an anesthetic challenge with problems of a pregnant patient as well as the adrenergic and hypotensive crises seen intraoperatively which were successfully managed. She was given epidural analgesia for postoperative pain relief and general anesthesia for laparotomy. She was kept in ICU for 2 more weeks till she stabilized.

Conclusion:

This patient was successfully managed with intensive ICU monitoring, Intravenous antihypertensives initially followed by preparation of the patient for surgery by oral alpha blockers, intravascular volume expansion and a careful anesthetic plan. Both the patient and her fetus survived and were discharged home.

Key Words: Pheochromocytoma; Pregnancy; Phenoxybenzamine

Category: Clinical

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Intra-arterial Milrinone in a Rebleed aSAH patient with Refractory Cerebral Vasospasm: A Case Report

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Background:

Major cause of morbidity and mortality in patients with aneurysmal subarachnoid hemorrhage (aSAH) includes the initial hemorrhage, rebleeding, and delayed cerebral ischemia (DCI) secondary to vasospasm. Rebleeding alone carries a reported mortality of 80%.

Case summary:

We present a case of a 41-year-old male patient, admitted to our intensive care unit with a ruptured anterior communicating artery (ACOM) aneurysm complicated by rebleeding post catheter angiography. The aneurysm thereafter was uneventfully surgically obliterated. On day 4 post ictus, the patient developed symptomatic cerebral vasospasm and was treated according to our institutional protocol which includes high doses intravenous milrinone. Despite initial neurological improvement with this intensive medical management, worsening neurological status with cerebral ischemia became evident on day 9 post ictus. It was decided to proceed with angiography and intra-arterial injection of milrinone into the affected vessel. Although no immediate angiographic response was seen, clinical improvement was evident within the first day. Furthermore, despite a complex and complicated neurocritical care course, good functional outcome was evident in his 6th month assessment.

Conclusion:

We report the effective use of intra-arterial Milrinone therapy in reversing refractory symptomatic cerebral vasospasm in a patient with aneurysmal subarachnoid bleed complicated with rebleeding leading to good functional outcome.

Key Words: Intra-arterial Milrinone; Refractory cerebral vasospasm; a SAB

Dentistry

Category: Clinical

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Cemento-osseous Dysplasia: Atypical Case Report.

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CASE REPORT

Background:

Cemento-osseous dysplasia (COD) is a bone lesion of unknown pathogenesis that is confined to the jaw bone. COD is more prevalent in middle-aged African women. It is asymptomatic condition that is detected on routine radiographic examination. Here, we report a case of unique COD that is associated with cystic degeneration.

Case summary:

A sixty-year-old African male presented to Amiri Dental Clinic complained of intermittent burning sensation of right tongue and mandible for one year. His symptoms interfere with eating and talking. He is diabetic (type 2) but controlled with Gliclazide (160 mg) and Metformin (1000mg). Oral examination only disclosed geographic tongue with fissured dorsum. Panoramic image showed bilateral mixed radiolucent-radiopaque lesions located at apices of mandibular molar teeth. Interestingly, there is a 3cm large cystic degeneration on right mandible that spans the body and ramus area. There was negative aspirate on fine needle aspiration. Biochemical and serology tests were unremarkable. CT-scan of lesion shows well delineated cystic degeneration without buccolingual expansion. In addition, there is a similar cystic changes evolving on the left mandible. The final diagnosis is florid cemento-osseous dysplasia with right simple bony cyst. Patient referred to oral surgery department for management of the cyst. About his burning tongue sensation, multivitamin supplements did improve symptoms.

Conclusion:

COD is asymptomatic bone condition. Risk of osteomyelitis is unavoidable secondary to dental disease. Hence, follow up is mandatory. Cystic degeneration of COD is rare, surgical curettage is commonly effective therapy.

Key Words: Cemento-Osseous Dysplasia; Simple bone cyst; Treatment

Category: Clinical

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Traumatic Ulcerative Granuloma with Stromal Eosinophilia: Case Report.

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CASE REPORT

Background:

Traumatic ulcerative granuloma with stromal eosinophilia (TUGSE) is a benign lesion of oral mucosa of an unclear pathogenesis. A solitary ulcer affecting dorsal and lateral tongue is the typical clinical presentation of TUGSE, which is often misdiagnosed as a malignant lesion on clinical and histological examination.

Case summary:

A 40-year-old Kuwaiti woman presented with a rapidly-growing and painful ulcer on right side of the tongue of 10 days duration in the absence of any systemic symptoms. She denied any preceding events such as trauma or febrile illness. Several investigations were carried out including incision biopsy, serology, and microbiological tests. While the latter two investigations were unremarkable, incisional biopsy of the lesion revealed an ulcerated mucosal lesion with a dense inflammatory cell infiltrate deeply invading the underlying muscular fibers. The infiltrate composed of cohesive aggregates of lymphocytes and few scattered atypical cells in association with abundant eosinophils. Immuno-histochemical stain of CD 30 was not taken up by the atypical cells. The clinical and histological findings were consistent with TUGSE. Her oral lesion healed completely after two months without any specific therapy.

Conclusion:

TUGSE is a rare chronic, self-limiting, ulcer that can be easily confused with oral malignancy clinically as well as histologically. Data pool of some case reports raises the possibility that some subset of TUGSE may represent the oral counterpart of primary cutaneous CD30+ T-cell lymphoproliferative disorders, which was not found to be the case in our patient.

Key Words: Ulcer; Lymphoproliferative disorder; Treatment

Dentistry

Category: Clinical

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Cemento- Osseous Dysplasia: Case Report.

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CASE REPORT

Background:

Cemento-osseous dysplasia (COD) is a pathologic entity resulting from a bone and cementum reactive process affects the periapical region of the jawbone specifically mandible. COD is more prevalent among African women in third and fourth decades. Its etiology is not fully understood, but it could be related to an unusual bone and cementum response to some local factor. Our case exhibits a bulky growth on the lingual aspect of the right mandible. Jaw expansion is extremely rare clinical presentation of COD.

Case summary:

39-year-old Kuwaiti female complained of a lump in right jaw with intermittent dull pain more than one year ago. Clinical examination revealed bony growth arising from lingual plate of right mandibular area. It measures 2. 7 x 1. 0 cm and is covered by normal-looking mucosa. Biochemical markers of bone were unremarkable. CT-scan revealed predominantly a varying degree of radiopaque materials over the apices of premolars and molars surrounded by radiolucent border with intact lingual plate displacement. Cemento-osseous dysplasia is a plausible diagnosis based on clinical-radiological correlation. Biopsy would have been considered in the presence of signs suspicious of osteomyelitis, which was not the case at this condition. Her right jaw pain was related to myofascial pain and for this reason she was referred to physical therapy.

Conclusion:

Our case is unique as the lesion presents as a tumor. Such clinical presentation is rare leading to diagnostic challenge. Our plan is to maintain good oral health so to reduce any risk of osteomyelitis. Hence, monitoring of the lesion is mandatory.

Key Words: Jaw expansion; Radiological feature

Dentistry

Category: Clinical

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Generalised advanced periodontitis in a patient with CANDLE syndrome

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CASE REPORT

Background:

Chronic atypical neutrophilic dermatosis with lipodystrophy and elevated temperature (CANDLE syndrome) is an autoinflammatory syndrome caused by an autosomal recessive gene mutation in PSMB8. CANDLE syndrome was first reported in the scientific literature in 2010. 14 cases have been reported worldwide, presenting in seven males and seven females. Most of these patients developed symptoms of the syndrome before the age of 6 months. The majority of identified cases presented with associated disorders including “JMP” syndrome (joint contractures, muscle atrophy, microcytic anaemia, and panniculitis-induced childhood lipodystrophy). There is a display of a characteristic neutrophilic dermatosis with a mononuclear interstitial infiltrate including “immature” neutrophils in the dermis that has been described as pathognomonic for CANDLE syndrome.

Case summary:

An 11 year old patient was referred to Cork University Dental Hospital for a periodontal consultation. Several teeth were periodontally compromised, and radiographic examination revealed generalised advanced bone loss. Teeth that are of poor prognosis were extracted and replaced with temporary immediate removable partial dentures. An on-going treatment plan was established, which includes non-surgical periodontal therapy with the adjunct use of antimicrobials. In the long term, the potential use of dental implants will be considered in consultation with the patient’s medical team. Sibling evaluation revealed that the patient also had an older brother who had been diagnosed with CANDLE syndrome. However, his periodontal condition was generally stable with little evidence of active or progressive disease.

Conclusion:

This is the first report of periodontal manifestations of CANDLE syndrome. Further evaluation should assess if the characteristic immature neutrophil infiltrate (dermatosis) is replicated within the gingival and periodontal tissues, thus causing advanced periodontal disease

Key Words: Case report; Candle; Periodontics

Dentistry

Category: Clinical

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Traumatic foreign bodies in maxillofacial area case series

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CASE REPORT

Background:

Foreign bodies in maxillofacial area are sometimes overlooked during primary treatment of causative injury. They pose a diagnostic challenge due to various factors such as size and material of the object, difficult access, and close anatomic relation to different vital structures. The presence of undiagnosed foreign bodies can complicate the healing process and result in late complications. The correct approach to the treatment of these injuries involves careful history and adequate imaging procedures, as well as choice of surgical techniques that offer a satisfactory result while minimizing detrimental side effects.

Case summary:

In Oral&Maxillofacial Surgery Unit, Al-Adan Hospital, we treated 21 patients who suffered injuries leading to retention of foreign bodies in maxillofacial area. All patients were males aged between 2 and 52 years. Air weapons were responsible for 6 cases, industrial accidents for 5 cases, assaults with improvised weapons for 5 cases, road traffic accidents for 3 cases and 2 cases were freak accidents. In 19 cases foreign bodies were successfully recovered, in 2 instances patients did not accept suggested procedures.

Conclusion:

Careful evaluation of traumatic mechanism based on history and witnesses accounts should raise suspicion of foreign body presence. CT examination is preferred method of diagnostic imaging not only reliably identifying foreign object, but establishing relation to important anatomical structures. During surgical procedure fluoroscopy plays important role in location of foreign bodies embedded deep in soft tissues.

Key Words: Maxillofacial trauma; Foreign body; Airgun

Hematology

Category: Clinical

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Duodenal perforation in a child treated with Deferasirox: Case Report

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CASE REPORT

Background:

Iron overload is an expected complication of chronic blood transfusion in beta Thalassemia major patient. Management of transfusional iron overload consists of chelation therapy with intravenous deferoxamine. Recently the oral iron chelator deferasirox became available. Studies have confirmed the efficacy and safety of deferasirox. In children and adolescents, Gastro-intestinal complaints (mainly nausea, vomiting and diarrhea) and moderate skin rash were the main adverse events. We report a case of severe duodenal perforation in a child treated with deferasirox for iron overload.

Case summary:

A 7-year old male patient with beta-Thalassemia major was treated with deferasirox for 4 years (500 mg daily) and monthly packed red cells transfusions. Previously he received haplo-identical bone marrow transplantation with poor engraftment and autologous reconstitution. He never had gastro-intestinal problems. He presented to hospital emergency with acute abdominal symptoms including sudden severe abdominal pain and distension. Plain abdominal radiography showed the presence of free air under the diaphragm suggestive of visceral perforation. Exploratory laparotomy revealed peritonitis and duodenal perforation that was sealed surgically. Subsequently oral deferasirox was stopped with rapid improvement in clinical signs. Patient was not on any other medication. Two months later, iron chelation was restarted using deferoxamine.

Conclusion:

Severe gastro-intestinal adverse events to Deferasirox have been described in two patients in the literature (gastric ulcer and esophagitis). We report rare, yet not reported case of duodenal perforation related to the use of deferasirox. In addition, no reported cases of visceral ulcers related to beta Thalassemia. To our knowledge, this is the first case report of such complication. Physician treating patient with deferasirox should be aware of such complication.

Key Words: Thalassemia; Deferasirox; Iron Overload

Medicine

Category: Clinical

182

ANCA positive vasculitis is a fatal disease if not properly treated

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CASE REPORT

Background:

ANCA positive vasculitis is a rare form of systemic vasculitis where the kidney might be involved. Proper treatment can save patients ' life

Case summary:

Miss A is a 20 years lady diagnosed as having crescentic necrotizing glomerulonephritis secondary to Wegener's granulomatosis in 2005 for which she was treated with steroids and plasma exchange with excellent response. She was lost to follow up for 5 years untill she presented with 3 weeks history of fever, ear discharge, heamaturia. She was pale, febrile, no epistaxis and she denied history of hemoptysis. She had no rash and no palpable lymph nodes. She was started on antibiotics and antifungal treatment without improvement. Culture from the right ear discharge showed 3 types of organisms including Candida. CT of the chest and nasal sinuses showed evidence of mastoiditis. CRP was 20.8, immunology was negative except for high PR3 ANCA >100. Renal functions continued to deteriorate and her urine proteins was 4.8gm/d. The family refused to do renal biopsy or to start active therapy. A week later, she had hypotension, tachycardia, anemia (Hb 3.2gm/l) and evidence of intraabdominal hemorrhage. Urgent U/S showed left perinephric hematoma which was confirmed by CT angiography with no active bleeding with the presence of multiple small aneurysms in kidneys, spleen and the liver . She was shifted to ICU where she was started on CVVHD for 12 hrs with transfusion of PRBCs. She was started on Methyl-prednisolone 500 mg/day for 5 doses under cover of antibiotics. A week later, she had the same presentation, CT abdomen showed active bleeding from the left kidney and spleen . The surgeon recommended exploration but the family was reluctant, with further drop of hemoglobin and development of hemorrhagic shock, they finally gave consent for surgery. She had left nephrectomy + splenectomy. Currently she is alive but dialysis dependent

Conclusion:

Untreated ANCA vasculitis can expose the patients to life threatening complications

Key Words: ANCA vasculitis; Acute renal failure; Crescentic glomerulonephritis

Medicine

Category: Clinical

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Necrotizing crescentic glomerulonephritis: uncommon presentation of Henocho Schonlein Purpura (HSP) in adults

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CASE REPORT

Background:

HSP with acute kidney injury is common in children. It presents with hematuria, proteinuria, and acute renal insufficiency. Necrotizing glomerulonephritis is not usually seen in renal biopsy.

Case summary:

A 38 years lady with insignificant medical history presented with frank hematuria, left wrist monoarthritis, purple non itchy, non fading rash on both legs(fig1). She is non smoker non alcohol consumer. No history of fever, respiratory or gastrointestinal symptoms. Examination showed blood pressure of 160/90, diffuse left wrist swelling with erythematous overlying skin and vasculitic rash on both legs as well as the lower back. She had normal renal functions two weeks prior to presentation with serum creatinine 70 $\mu\text{mol/l}$ and serum albumin of 38 gm/l investigations showed: CBC, ESR, CRP were normal. BUN 8.6 mmol/l , serum creatinine 165 $\mu\text{mol/l}$, S. albumin 21 gm/l and, normal serum electrolytes Urine: RBcs $>250/\text{mm}^3$. Protein of 8.9 $\text{gm}/24$ hrs Immunology screening (C3, C4, ANA, ANCA, and Anti GBM), Cryoglobulin assay as well as virology screening were negative. The patient was started on daily 1 gm of IV methylprednisolone for three successive days with marvelous improvement of her monoarthritis and rash. She continued on oral steroid in a dose of 60 mg/day . S. Creatinine dropped down to 90 $\mu\text{mol/l}$ within 4 days after starting treatment. Renal biopsy was attempted and showed necrotizing crescentic glomerulonephritis with strong positive mesangial and peripheral capillary loops IgA deposits. In View of the biopsy findings IV cyclophosphamide was started as 700 mg monthly doses for three successive months after which her proteinuria decreased to 1.2 $\text{gms}/24$ hrs. She was then started on azathioprin 100 mg daily together with tapering dose steroids.

Conclusion:

Crescentic necrotizing glomerulonephritis is an uncommon presentation of HSP that showed an excellent response to steroid and cyclophosphamide treatment

Key Words: Glomerulonephritis; Renal biopsy; Acute renal insufficiency

Medicine

Category: Graduate (Resident)

184

PTH in the repair of the bone mass density

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CASE REPORT

Background:

Many studies showed that there is a higher incidence of osteoporosis in patients who have received corticosteroids. Teriparatide is a recombinant form of endogenous parathyroid hormone with a sequence which is equivalent to the N-terminal portion of the human hormone. Although chronically elevated parathyroid hormone depletes bone stores, intermittent exposure to lower doses of it will activate osteoblasts more than osteoclasts and result in increased bone density mass. Generalized bone remodeling is stimulated, but there is a net favoring of new bone formation.

Case summary:

A female patient presented at the age of 23, as a child she had extensive eczema that was treated with steroids for many years. At the age of 15 years, she developed fractures in both feet with no history of trauma, also other asymptomatic fractures in the ribs. Examination was unremarkable. All blood investigations were within normal. After 12 months of introduction of teriparatide, the results were visible. The patient's bone density mass increased, with substantial improvements in general condition. Bone mass density measurements of the lumbar spine show visible improvement of T score from -3.8 to -1.4 and Z score -2.7 to -1.2.

Conclusion:

This case presents a patient with secondary osteoporosis who had been treated with multiple medications, including bisphosphonates, calcitriol and calcium, but with unsatisfactory results, low quality of life and a high risk of further fractures. However, after a treatment with teriparatide, a recombinant form of endogenous parathyroid hormone, the patient's bone mineral density increased in a successful way, with an improvement in the general condition. Teriparatide appears to be superior to antiresorptive therapy in improving bone mass density.

Key Words: Teriparatide; Secondary osteoporosis; Corticosteroids

Medicine

Category: Clinical

185

Thyroid Abscess due to Squamous Cell Carcinoma of the Thyroid: A Case Report

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CASE REPORT

Background:

Squamous cell carcinoma (SCC) is an uncommon malignancy of the thyroid gland which can be primary or a secondary. Secondary squamous cell carcinoma of the thyroid gland is usually due to either extension of SCC from adjacent structures or from distant metastasis whereas Primary is an extremely rare neoplasm, representing less than 1% of all primary thyroid malignancies.

Case summary:

A 33 year old female domestic helper presented with painful thyroid swelling of several months duration which was associated with fever and recent dysphagia of about one week duration. A thyroid abscess was diagnosed by ultrasound that was subsequently drained with full coverage by appropriate antibiotics. During her laboratory work up, an elevated corrected calcium level was detected that required to be lowered transiently by a bisphosphonate (pamidronate) infusion. Fine Needle Aspiration Cytology (FNAC) of the thyroid gland and cervical lymph nodes revealed the presence of squamous cell carcinoma in the thyroid with involvement of the cervical lymph nodes. A soft and friable laryngeal growth was noted by an upper gastrointestinal endoscopy performed for assessment of her anemia. The patient condition deteriorated progressively and she died prior to completion of the full work up. The retrospective analysis of her radiological investigations wasn't confirmatory for the presence of a primary lesion in the larynx.

Conclusion:

Abscess in the thyroid due to primary squamous cell carcinoma is a rare and aggressive entity with poor prognosis. FNAC is effective confirmatory tool, but efforts should be made to rule out metastasis from other sites.

Key Words: Thyroid; Squamous; Carcinoma

Medicine

Category: Clinical

186

An uncommon cause of muscle pain in diabetes

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CASE REPORT

Background:

Diabetic muscle infarction (DMI) is a frequently overlooked complication of diabetes. It is typically described in the advanced stage of the disease with long-standing complicated type 2 diabetes with diffuse microvascular complications. We report uncommon case of acute DMI during a severe hypoglycemic episode in an 18-year old type1 diabetic patient.

Case summary:

A 18-year old diabetic patient on multiple daily insulin analogues injection was admitted to hospital with severe hypoglycemic coma (blood glucose 1.8 mmol/L). One day after admission patient had severe pain localized on the anterior aspect of right thigh, aggravating with movements. Physical examination revealed local swelling, warmth and tenderness. Simultaneously he developed ipsilateral foot drop with lost ankle reflex. Dorsalis pedis pulse was palpable bilaterally. His vital signs were normal, and had no evidence of nephropathy, retinopathy or neuropathy. WBC count- 6.6×10^9 cells/L, repeated blood glucose values: 1.8, 3.3 and 4.1 mmol/L, ESR 42 mm/hour, CRP 2.4 mg/dl (normal 0-0.8 mg/ dl), repeated CK values were: 11.23, 7346, 4290 IU/L (normal 22-269 IU/L). MRI imaging revealed characteristic features of muscle infarction. Post-contrast series showed non homogenous enhancement with multiple small patchy non enhancing areas of necrosis. Patient responded with complete resolution of symptoms after 2 weeks of conservative treatment with analgesics, complete bed rest during first few days, followed by early ambulation avoiding vigorous exercises.

Conclusion:

DMI during an acute severe hypoglycemic episode is an under estimated deleterious effect of hypoglycemia on skeletal muscle and possibly all other microvascular organs in diabetic patients. Clinicians should include the possibility of DMI among other differential diagnosis of muscle pain in diabetics.

Key Words: Diabetic muscle infarction; Type I Diabetes mellitus; Hypoglycemia

Medicine

Category: Clinical

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Nonsecretory Myeloma: A rare, variant form of Multiple Myeloma

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CASE REPORT

Background:

Nonsecretory myeloma is a variant form of multiple myeloma characterized by the absence of M paraprotein in both the serum and urine. It occurs in approximately 2% of all patients of myeloma. Renal impairment is less common in nonsecretory myeloma as compared to other forms of multiple myeloma. Treatment is similar to other forms of multiple myeloma with similar response rates. Serum-free-light chain (SFLC) ratio is a sensitive marker for follow up.

Case summary:

A 49-year old male patient was admitted with lower back pain, weakness and fatigue of one month duration. On investigation, his skeletal survey showed multiple osteolytic lesions in the pelvic and long bones. Laboratory results showed anemia with Hb of 80 g/L, hypercalcemia with corrected calcium of 3.0 mmol/L and hypogammaglobulemia. His serum and urine immunoelectrophoresis showed no paraprotein band. His bone marrow trephine biopsy showed significant infiltration with abnormal plasma cells which were positive for CD138 and LCA on immunocytochemistry. Patient's B2 microglobulin was very high with levels of 9.94 mg/L. On the basis of the clinical, radiological and bone marrow findings a diagnosis of nonsecretory myeloma was made. Hypercalcemia was treated urgently and was followed up with proper multiple myeloma protocol.

Conclusion:

Absence of paraproteins in both serum and urine should not distract from the diagnosis of this rare form of multiple myeloma.

Key Words: Paraproteins; Non secretory myeloma; Immunoelectrophoresis.

Medicine

Category: Graduate (Resident)

188

Bee venom therapy (BVT) induced immune thrombocytopenia (ITP)

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CASE REPORT

Background:

Immune thrombocytopenia (ITP) is a hematological disorder characterized by an isolated decrease in number of circulating platelets. In either primary (idiopathic) or secondary ITP, it is thought to be an immune mediated process. The disease may manifest from simple bruising to overt bleeding. Bee venom therapy (BVT) is a well-known form of alternative medicine. BVT is where acupuncture points are used to inject diluted bee venom into the body. It is believed that bee venom has a number of pharmacological actions including analgesic, anti-inflammatory, and anti-cancer actions through multiple mechanisms. There is no significant evidence supporting the effectiveness of BVT, but several trials have been and are currently conducted to support the use of BVT.

Case summary:

A 61 year old lady presented to the ER in Mubarak hospital with bleeding from her gums. She noticed a well demarcated rash, bluish in color on her right forearm and abdomen. Previously, she was diagnosed with lumbar disc prolapse. She has started BVT sessions a month ago once weekly. Upon arrival to hospital, she was oriented and hemodynamically stable. Systemic examination was unremarkable except for the skin examination which revealed 2 ecchymotic rashes on her right forearm and para-umbilical region, 2 and 5 cm in diameter respectively. Lab investigations were normal except for a platelet count of $9 \times 10^9/L$. Her peripheral blood smear showed few giant platelets. She was diagnosed to have ITP, and received immune globulin and prednisolone. She was discharged 3 days later with a platelet count of $42 \times 10^9/L$.

Conclusion:

With the present knowledge of bee venom components and toxicity it is reasonable to associate thrombocytopenia as a complication of BVT. Further research is needed to postulate guidelines and protocols for BVT. In the meantime, monitoring of the practice of BVT should be made, with an emphasis on patient education regarding the associated risks compared to the gained benefits.

Key Words: Bee venom therapy (BVT); Adult

Medicine

Category: Clinical

189

Constipation and proximal myopathy

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CASE REPORT

Background:

Myopathies are diseases of skeletal muscle that are not caused by nerve disorders. These diseases cause the skeletal or voluntary muscles to become weak or atrophied. The main causes of myopathies are genetic, inflammatory, hormonal and metabolic. Common causes of proximal myopathy are polymyalgia rheumatica, Cushing's syndrome, thyrotoxicosis, hyperparathyroidism and drugs as statin, steroids, chloroquine and amiodarone. Hyperparathyroid myopathy occurs when the parathyroid gland produces too much of the parathyroid hormone, leading to muscle weakness, some muscle wasting in hips and shoulders.

Case summary:

62-year old male, known to have diabetes mellitus, old stroke with left hemiparesis that recovered, atrial fibrillation, dilated cardiomyopathy, permanent pacemaker, presented with abdominal pain and sometimes loin pain, constipation, inability to stand from sitting position of several weeks. Abdominal ultrasound showed bilateral small renal stones, normal liver and spleen. Laboratory investigations showed hypercalcemia 3.69 mmol/l (normal range 2.2 – 2.6) for which he received intravenous fluids and pamidronate 30 mg. His serum calcium dropped to 2.49 mmol/l. 24-hour urine for calcium was elevated 16.24 mmol/24 hours (normal range 2.5 – 7.5). His liver and renal functions were normal. ECG showed left bundle branch block pattern. Parathyroid scan showed right parathyroid adenoma in the lower aspect of the right lobe of the thyroid gland. Serum parathyroid hormone was elevated 19.9 pmol/l (normal range 1.6 - 9.3 pmol/l) and thyroid function was normal. Parathyroidectomy done and the patient showed dramatic recovery and both the weakness and the constipation disappeared.

Conclusion:

The presence of abdominal pain, constipation, bilateral renal stones and the proximal muscle weakness are complications of hypercalcaemia secondary to hyperparathyroidism which should be detected early as it is easily curable before the development of more complications.

Key Words: Hyperparathyroidism; Constipation

Medicine

Category: Clinical

190

Metastatic adenocarcinoma

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CASE REPORT

Background:

Adenocarcinoma is a cancer of an epithelium that originates in glandular tissue. Epithelial tissue includes, but is not limited to, the surface layer of skin, glands and a variety of other tissue that lines the cavities and organs of the body.

Case summary:

40-year old lady, with past history of hysterectomy in 2011, presented with abdominal pain and swelling associated with vomiting of 5 days duration. On examination she was pale, no lymphadenopathy, ascites and decreased air entry on the chest. Laboratory investigations showed Hb = 87 g/l hypochromic microcytic anaemia. Chest X ray showed bilateral pleural effusion. Ascitic fluid was tapped and was chylous, thick. No AFB seen, no growth in the culture, neutrophils 19% and the lymphocytes 81%, cytology examination showed atypical cells. Doppler ultrasound of the left lower limb showed extensive deep venous thrombosis. CT pulmonary angiography showed multiple subpleural nodules and right basal rounded pneumonia, mild bilateral pleural effusion. Abdominal ultrasound showed large amount of intraperitoneal collection. Normal liver, kidneys and spleen. CT abdomen revealed multiple focal lesions in the right lobe of the liver, large para-aortic and aorto-caval cystic nodes extending from the renal veins distal the bifurcation entrapping the common iliac arteries and completely occluding the veins. Peritoneal biopsy done and revealed histomorphologic features suggestive of metastatic adenocarcinoma. Based on the immunohistochemical findings the possible primary tumor in the female genital tract: ovary or cervix is considered. The patient returned back to her native country.

Conclusion:

Patient with history of hysterectomy should have a regular follow up for the early detection of metastasis hoping in the future to get rid of any complications.

Key Words: Ascites; Effusion

Medicine

Category: Clinical

191

Pulmonary embolism presenting with syncope in patient with vitamin B12 deficiency induced hyperhomocysteinemia. A case report .

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CASE REPORT

Background:

Regardless of the high incidence of pulmonary embolism, its diagnosis continues to be difficult because of the diversity of symptoms and signs in its presentation. Syncope accompanied by involuntary movements is not uncommon and creates a differential diagnostic problem against seizure disorders. Untreated B12 deficiency increases the patient's risk .

Case summary:

55-years male, was previously completely healthy, admitted with history of recurrent attacks of transient loss of consciousness and falling with spontaneous complete recovery. There was no identifiable triggering factor. CT brain showed periventricular white matter hypodense areas, small artery disease. The patient was evaluated by neurologist and was diagnosed as having epilepsy and started on antiepileptic drugs . Two days later and during the daily checkup, the patient had attack of abnormal movement involving the upper extremities and was witnessed and described by the staff as tonic-clonic activities from which he was spontaneously recovered and regained consciousness ,30 minutes later and while he was reevaluated ,he collapsed ,became desaturated with raised JVP. ECG showed nonspecific ST -T segment changes, urgent Echo heart showed PAP = 100 mm Hg ,CT pulmonary angio showed massive saddle shaped PE . The patient was immediately thrombolysed followed by anticoagulation. Laboratory evaluation revealed a mild anaemia with significant macrocytosis. Serum vitamin B12 blood level was low with elevated homocysteine level. EEG was done and was normal. After three weeks of treatment with vitamin B12, its level normalized.

Conclusion:

Recurrent convulsive syncope may be difficult to discriminate from seizures resulting from epilepsy. Awareness of cardiovascular possibilities would prevent life threatening conditions such as pulmonary embolism. Recognition of correctable risk factors such as Vitamin B12 deficiency causing hyperhomocysteinemia is essential for effective prevention.

Key Words: Pulmonary embolism; Vitamin B 12 deficiency; Syncope and seizures

Medicine

Category: Clinical

192

Erythema-nodosum: different causes among renal transplant recipients.

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CASE REPORT

Background:

Erythema nodosum is a cutaneous inflammatory reaction located on the anterior aspects of the lower extremities. A review of the literature reveals a long list of etiologic factors like infections, sarcoidosis, rheumatologic diseases, inflammatory bowel diseases, medications, autoimmune disorders, pregnancy, and malignancies. Histopathologically, it shows as septal panniculitis with no vasculitis and the inflammatory infiltrate in the septa varies with age of the lesion. In early lesions edema, hemorrhage, and neutrophils are responsible for the septal thickening, whereas fibrosis, peri-septal granulation tissue, lymphocytes, and multinucleated giant cells are the main findings in late stage.

Case summary:

We here in report four renal transplant recipients who presented with classical erythema nodosum with different etiologies. In all cases, primary immunosuppression was tailored without induction and maintained by cyclosporine and MMF without steroids. Also, all cases were subjected to the following investigations to rule out autoimmune disorders: anti-ds-DNA, rheumatoid factor, antistreptolysin O (ASO), (c&p) ANCA, ANA, C3 and C4, anti-cardiolipin, and B-glycoprotein. Also, we investigated for infections especially HBV, HCV, CMV, HIV, EBV and antibodies against legionella, mycoplasma and brucella. Also, T-spot test, blood and urine cultures were performed for bacteria and fungi. Usually, erythema nodosum regresses spontaneously within a few weeks and bed rest is often sufficient treatment. Management of erythema nodosum should be directed to the underlying associated condition, if identified. So, etiological management by anti-TB therapy in 2 cases; and salazopyrin was started for a 3rd case diagnosed as ulcerative colitis ; and by discontinuation of the offending agent (ciprofloxacin) in the 4th case was associated with regression of both the original diseases and erythema nodosum within a few days.

Conclusion:

Erythema nodosum can develop in renal transplant patients who did not receive induction therapy, non-rejecters and those with steroid free protocols. Management of erythema nodosum should be directed to the underlying associated condition which could be TB, IBD or drug induced.

Key Words: Erythema nodosum; Renal Transplant; Immunosuppression

Medicine

Category: Clinical

193

Guillain-Barre syndrome following traumatic bone injuries - Report of two cases.

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CASE REPORT

Background:

Guillain-Barre syndrome is one of the important causes of acute neuromuscular paralysis. It includes a spectrum of immune mediated neuropathies often triggered by a preceding infection or vaccination. It has also been reported following surgery, head trauma, fractures or other stressful events. Guillaine-Barre syndrome occurring in such situation has to be differentiated from the critical illness poly-neuropathy or myopathy.

Case summary:

We report two cases of Guillaine-Barre Syndrome following traumatic bone injuries. The first patient was a 47 year old female who was admitted with fracture of both tibial bones sustained during a road traffic accident. One week after surgical fixation of the fracture, she developed Guillaine-Barre Syndrome which was diagnosed based on clinical features and electrophysiological criteria. She was administered intravenous immunoglobulins. She recovered gradually. The second patient was a 31 year old male who was admitted with a 4 day history of severe back pain which occurred when he lifted a heavy weight. X-ray and magnetic resonance imaging of lumbosacral spine revealed fracture of L1 and L2 vertebra. Then he developed ascending areflexic weakness of all four limbs and bifacial weakness. Nerve conduction studies confirmed the diagnosis of Guillaine-Barre Syndrome. He was given mechanical ventilatory support and was treated with intravenous immunoglobulins and later plasmapheresis. However his condition gradually deteriorated as he developed aspiration pneumonia and sepsis with multiorgan failure and finally expired.

Conclusion:

Guillaine-Barre Syndrome may occur rarely following trauma, fracture of bone or surgery. Careful neurological assessment and electrophysiological studies help the diagnosis and to differentiate it from critical illness neuropathy. Awareness of the treating physicians about this will help early diagnosis and management.

Key Words: Guillain- Barre Syndrome; Intravenous immunoglobulin; Critical illness poly-neuropathy

Medicine

Category: Clinical

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Dural sinus thrombosis and generalized seizure

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CASE REPORT

Background:

A risk factor can now be identified in many patients with venous thromboembolism; they are divided into two groups: hereditary and acquired. There is often more than one factor at play in a given patient, which may include both hereditary and acquired factors. The most frequent hereditary causes of venous thromboembolism are the factor V Leiden and prothrombin gene mutations, which account for 50 to 60 percent of cases. The major acquired risk factors for venous thromboembolism include recent major surgery, trauma, immobilization, lupus anticoagulant and elevated levels of antiphospholipid antibodies, malignancy, pregnancy, oral contraceptives, and myeloproliferative disorders.

Case summary:

A 57-year old male, obese, with past history of diabetes, was admitted with new onset generalized Seizure. It was not associated with tongue bite or urinary incontinence and was followed by post-ictal state. There was headache, global in nature, not throbbing, not associated with photophobia or vomiting. No history of head trauma and no family history of epilepsy. Examination showed normal chest and heart examination. Neurological examination was intact. Fundus examination showed no papilloedema. Laboratory investigations showed impaired renal function but normal electrolytes. Protein C and S, anti-thrombin III and Factor V Leiden were normal. CT brain done and was reported as normal. Cerebral angiography showed poor opacification of dural venous sinuses suggestive of dural sinus thrombosis. There is no evidence of intracranial aneurysm or dural arterio-venous fistula. Magnetic resonance imaging and venography done for the brain and showed extensive dural sinus thrombosis with multiple haemorrhagic infarcts.

Conclusion:

Generalized seizure that occurs for the first time should be considered serious looking for an underlying cause even if the first CT brain came normal.

Key Words: Thrombosis; Venography

Medicine

Category: Clinical

195

Unusual presentation of generalized seizure

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CASE REPORT

Background:

Neurocysticercosis can be acquired via fecal-oral contact with carriers of the adult tapeworm *Taenia solium*. This usually indicates the presence of a tapeworm carrier in the immediate environment or by accidental ingestion of contaminated food. Cases of auto-ingestion, in which persons with taeniasis may ingest the eggs of *T. solium* into their intestine, have been reported. Neurocysticercosis is the most common parasitic disease of the nervous system and is the main cause of acquired epilepsy in developing countries.

Case summary:

45-year old male admitted for the first time with generalized tonic clonic convulsion during sleep, associated with frothy mouth, tongue bite with upward deviation of both eyes, but no urinary incontinence. This was followed by post-ictal state. No history of head trauma or sleep deprivation and no family history of epilepsy. On examination he was conscious, oriented. Chest, heart and abdominal examination were unremarkable. No neurological deficit, neck was lax, no papilloedema. Both pupils were equal, reactive to light. Vital signs were normal. Blood glucose was 5.1 mmol/l. Laboratory investigations showed normal electrolytes, renal and liver functions. Negative tuberculin test. Lumbar puncture done and showed clear CSF, white blood cell count less than 5, CSF culture was negative, no eosinophil could be seen in the sample. CSF glucose and protein were normal. CT brain showed picture suggestive of neurocysticercosis. Two cystic hypodense small lesions one on the right parietal lobe and the other on the left parietal lobe measuring 8 by 6 by 5 mm each with central hyperdense dot, no enhancement and no surrounding oedema and no mid line shift. The patient was treated with albendazol 400 mg BD for 3 weeks + epanutin caps 100 mg TDS + Folic acid tab 5 mg OD.

Conclusion:

Neurocysticercosis is the most common parasitic disease of the nervous system and is the main cause of acquired epilepsy in developing countries.

Key Words: Neurocysticercosis; Albendazole

Microbiology and Immunology

Category: Clinical

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**An unusual case of sepsis with multiple splenic abscesses caused by
Enterococcus hirae**

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CASE REPORT

Background:

Enterococci are increasingly resistant to antimicrobial agents. Twelve species pathogenic for humans have been described, including the most common human isolates, *Enterococcus faecalis* and *E. faecium*. *Enterococcus hirae* is found in the intestinal flora of several domestic animal species, but rarely encountered in humans. To date, nine human infections due to *E. hirae* have been reported. We report the isolation of *Enterococcus hirae* in a patient with multiple splenic abscesses.

Case summary:

A 48-years-old Indian woman presented with a 1-month history of abdominal pain, productive cough and fever but no hemoptysis, hematemesis, vomiting, abnormal bowel habit or dysuria. She was a known case of insulin-dependent diabetes mellitus. On examination, the patient looked ill with oral temperature was 40°C, heart rate of 113/ min. and blood pressure of 110/70 mm Hg. Abdominal examination revealed tenderness in the left upper quadrant with no rigidity or organomegaly. Results of Laboratory investigations were: white blood cells, 20 x 10⁹/L with 83% neutrophils; hemoglobin, 6.6 g/L; platelets, 481 x 10⁹/L; C- reactive protein, 212 mg/L, and mild elevation in liver enzymes. Cystic lesions, suggestive of abscesses were seen in the spleen on ultrasound of abdomen, which was confirmed by CT scan. Empirical therapy with piperacillin/tazobactam (TZ), vancomycin (VA) and flagyl (FG) was initiated. Splenectomy was performed. Blood and pus from the abscesses were sent for culture. VA was discontinued due to allergic reactions. Blood and pus cultures both grew *Enterococcus hirae*, which was sensitive to ampicillin, teicoplanin, VA, linezolid, tetracycline and resistant to gentamicin. Since patient failed to show improvement, linezolid was added to the treatment regimen resulting in defervescence.

Conclusion:

To the best of our knowledge, this is the first reported case of multiple splenic abscesses and septicemia caused by *E. hirae*.

Key Words: Enterococcus species; Splenic abscesses; E. hirae

Microbiology and Immunology

Category: Clinical

197

Bacteremia Caused by *Rhizobium radiobacter* in a Preterm Neonate

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CASE REPORT

Background:

Among various species grouped under the genus *Rhizobium*, *R. radiobacter* is the only organism considered as human pathogen albeit of low virulence. Although *R. radiobacter* rarely causes infections in humans, the most common manifestation remains bacteremia, often associated with an intravascular device, both in immunocompetent and immunocompromised individuals. We report a case of hospital-acquired bacteremia due to *R. radiobacter* in a preterm neonate.

Case summary:

The male baby weighing 810 g was one of the twins born at 25 weeks of gestation to a 31-year-old primigravida. Because of low birth weight and Apgar score he was admitted to NICU, where several medical problems (pneumothorax, intraventricular haemorrhage, pulmonary hypertension etc.) were discovered. He developed sepsis due to *Klebsiella pneumoniae* twice and was successfully treated each time with meropenem. On day 115 baby developed signs and symptoms of sepsis yet again and the blood culture grew a Gram-negative rod, which was motile, glucose-nonfermenter, oxidase- and urease- positive, hydrolyzed esculine and was identified as *R. radiobacter* by Vitek 2 (bioMérieux) and confirmed by Vitek MS. The antimicrobial susceptibility profile showed the isolate to be susceptible to carbapenems, aminoglycosides, fluoroquinolones and resistant to ceftazidime and cephalothin. Repeat blood cultures continued to grow the same organism despite patient being treated with appropriate antibiotics. Since the central line (femoral) could not be changed because of the poor condition of the baby, therapy with multiple antibiotics with higher doses was tried. Although the baby recovered (blood cultures were sterile) from the septic episode following this management, he succumbed to complications, mainly associated with prematurity on day 143 in the NICU.

Conclusion:

This report describes a case of *R. radiobacter* blood stream infection in a neonate in whom the source of the organism remained undiscovered.

Key Words: *Bacteremia; Rhizobium radiobacter; Neonate*

Microbiology and Immunology

Category: Clinical

198

A case of Scrub Typhus presenting as meningoencephalitis

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CASE REPORT

Background:

Scrub typhus, an infection caused by *Orientia tsutsugamushi*, is prevalent in the tropical areas like South-East and far east Asia. Many residents in Kuwait belong to countries in this area, so infections prevalent here are likely to be imported into Kuwait.

Case summary:

The presented case is of a seven year old Indian boy who presented with fever, headache, vomiting and generalised tonic-clonic convulsions refractory to anticonvulsants. Patient continued to have fever, convulsions and leukocytosis despite empirical therapy with antimeningitic doses of cefotaxime, meropenem, aciclovir and liposomal amphotericin B. On day 15 the serum was tested for Weil-Felix reaction using OX 19, OX 2 and OX K heterophile antigens. It was reactive with OX K up to 1/80 dilution, while others were non reactive in all dilutions. On repetition a week later, the titre was the same. Intravenous chloramphenicol was started. He became afebrile after two days, leukocyte count came down within normal limits and convulsions stopped altogether. Chloramphenicol was continued for a total of 10 days. Patient was stable, although had developed rigidity due to hypoxic insult to brain caused by the delay in the diagnosis and start of the specific treatment. Weil-Felix test became negative after two weeks of starting chloramphenicol.

Conclusion:

This case was diagnosed on the basis of serological test (Weil-Felix Reaction), and by exclusion of other rickettsial species using PCR. In Kuwait, facilities for confirmation of scrub typhus infection are warranted, as a vast population comes here from the endemic areas. In cases like ours, with central nervous system involvement, chloramphenicol should be the drug of first choice as it penetrates blood brain barrier very well, which is not achievable by tetracyclines and macrolides.

Key Words: Scrub typhus; Orientia tsutsugamushi; Meningoencephalitis

Microbiology and Immunology

Category: Clinical

199

Subdural Empyema due to Salmonella Typhimurium in a health child

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CASE REPORT

Background:

Focal intracranial infections with Salmonella are rare manifestations of salmonellosis. Subdural empyema is a collection of pus between the dura and arachnoid meninges. The most frequently isolated non-typhoidal salmonella species are *S. enteritidis* and *S. typhimurium*.

Case summary:

A previously healthy, 16 month old male baby was admitted to the neurosurgery ward of Ibn Sina hospital with a three week history of fever, and recent history of difficulty to stand. The child had an episode of gastroenteritis two months back. He was treated with antipyretics and intravenous antibiotic, piperacillin/tazobactam 900mg tds for 10 days. Stool culture was not done. Vomiting and diarrhea subsided, but the child continued to be febrile. Following failure of antibiotic therapy to control his fever, a whole body CT scan was done which revealed large subdural fluid collection involving the left cerebral hemisphere with evidence of mass effect. Blood, Urine and stool cultures were sterile. Widal test was negative. Computed Tomography [CT] of the brain showed large [3.2 × 10. 4 × 11.3 cm] multiloculated subdural cystic lesion with wall enhancement seen in the left fronto- parieto-temporal area, causing severe midline shift suggestive of subdural empyema. The patient underwent emergency left mini craniotomy with evacuation of subdural empyema. Pus from the subdural space yielded a pure growth of gram- negative bacilli, identified as *S. typhimurium*. The patient was started on Cefotaxime 600mg IV sixth hourly for four weeks. Fever subsided within two days following the surgery . After 4 weeks the child was put on oral Amoxycillin 330mg 8th hrly for two weeks. The child improved gradually with no neurological complications and a follow up MRI was advised after one month.

Conclusion:

Salmonella subdural collection should be highly suspected post gastroenteritis, in patients with central nervous system manifestations.

Key Words: Empyema; Subdural; S. typhimurium

Nuclear Medicine and Radiology

Category: Clinical

200

**Unilateral decreased gallium uptake in the lower extremity in
poliomyelitis**

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CASE REPORT

Background:

Gallium scan is a non-specific imaging study that is used in inflammatory and oncology cases. Increased gallium uptake in lower extremity is usually seen in bone and joint infection, bone and soft tissue tumor. Occasionally decreased gallium uptake in lower extremity can be seen in cases of amputation, arterial insufficiency or occlusion, disuse and following radiation therapy. Pattern of gallium uptake in cases with poliomyelitis is not reported in the literature. Here we present such a case of unilateral decreased gallium uptake in the lower extremity in patient with poliomyelitis.

Case summary:

A 33-year-old female, with history of poliomyelitis at age of 5 years that affected the right extremity, was presented with gradually increasing right knee pain. A 3-phase bone scan with SPECT/CT along with gallium scan was performed. The bone scan was unremarkable. The gallium scan showed generalized reduced activity in the right lower limb and relatively increased activity seen in the left lower limb. Increased activity was also seen in the right knee joint matching the distribution and the intensity of the uptake pattern seen on the bone scan, which was attributed to active arthritis confirmed on the CT scan. The unilateral reduced gallium activity in the limb was attributed to disuse atrophy of the right lower extremity, which was evidenced by less muscle mass on the right side on CT scan.

Conclusion:

This case illustrates the pattern of unilateral decreased gallium uptake in lower extremity in poliomyelitis. Although the appearance that we documented can be easily explained by the well-known pathophysiology of the disease, however unilateral decreased uptake of gallium in lower extremity in patient with poliomyelitis had not been previously reported. This case adds poliomyelitis as a cause of decreased gallium limb uptake to the list differential diagnoses.

Key Words: Poliomyelitis; Gallium-67 scan; Limb activity

Nuclear Medicine and Radiology

Category: Graduate MSc (Basic Science)

201

Scintigraphic Detection of Inguinal Hernia in Patients on Continuous Ambulatory Peritoneal Dialysis

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CASE REPORT

Background:

There are multiple causes of scrotal swelling both systemic and local; however in patients on CAPD, additional factors (such as dialysate leakage and volume retention) may contribute to the scrotal swelling. It is therefore essential to determine the exact cause for scrotal swelling in patients undergoing CAPD in order to institute the appropriate treatment. Dialysate leakage requires surgical repair; however, increasing ultrafiltration will most probably resolve the scrotal edema in the absence of leakage. We present a report of two patients on CAPD with scrotal swelling investigated with peritoneal scintigraphy both planar and SPECT-CT.

Case summary:

Case 1 A 52-year-old man with endstage renal disease presented a week after starting CAPD with 1 day history of scrotal swelling. Peritoneal scintigraphy was performed after intraperitoneal instillation of Tc-99m Nanocolloid via the indwelling Tenckhoff catheter. Static 5-min images of the abdomen and pelvis were obtained in the supine posture immediately after tracer instillation and in the erect posture after ambulation. The images reveal early visualization of a focus of activity in the proximal left inguinal canal which was seen to persist unchanged on the subsequent images. Case 2 A 55-year-old man on CAPD due to endstage renal disease presented in our department with persistent bilateral scrotal swelling post CAPD. The patient had similar presentation which resolved spontaneously after previous sessions of CAPD. Peritoneal scintigraphy was performed as above. Planar sequential images of the pelvis scrotal region obtained with and without flood phantom, pre and post ambulation. SPECT-CT was additionally performed. The images show appearance of the activity in the left inguinal region which appear to be in the left inguinal canal on CT component.

Conclusion:

This combination functional and structural imaging technique has the advantage of accurately localizing the exact site and extent of leakage.

Key Words: Peritoneal dialysis; Scrotal swelling; Peritoneal scintigraphy

Nuclear Medicine and Radiology

Category: Clinical

202

Incidental Visualization of Renal Infarct on Bone Scintigraphy for a Patient with Sickle Cell Disease

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CASE REPORT

Background:

Bone Scintigraphy plays an important role in the management of sickle cell disease. It is usually done for patients presenting with painful bony crises to differentiate new bony infarcts from osteomyelitis, which are not uncommon complications in this patient population. Sickle cell disease can also result in less common complications like liver, spleen and kidney infarcts.

Case summary:

A 24 year old female known to have sickle cell disease presented with back and knee pain. Three phase bone Scintigraphy was performed and showed the typical features of bone marrow expansion including diffuse calvarial uptake, tie sternum, and peri-articular uptake around the knees, shoulders and elbows. As well, there were multiple cold defects at the ribs representing new bony infarcts. Incidental finding was made of a wedge-shaped area of increased uptake at the upper pole of the left kidney. Renal cortical study was performed with Tc-99m DMSA which showed wedge shaped cold defect corresponding to the one on the bone Scintigraphy in keeping with a renal infarct.

Conclusion:

In addition to its important role in evaluating bony structures, bone scintigraphy can also demonstrate extra-osseous manifestations of sickle cell disease in patients presenting with painful crises.

Key Words: Bone scintigraphy; Sickle cell disease; Renal infarct

Nuclear Medicine and Radiology

Category: Graduate (Resident)

203

SPECT-CT of an unsuspected ischial tuberosity avulsion fracture

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CASE REPORT

Background:

Ischial tuberosity avulsion fracture usually occurs between puberty and late adolescence where the ischial tuberosity apophysis remains open and non-ossified. Avulsion commonly occurs in young athletes resulting from sudden forcible contraction of the hamstrings during sudden forceful physical activity or chronic repetitive traction. Misdiagnosing ischial tuberosity avulsion is not uncommon since the clinical presentation closely mimics that of a hamstring injury. Early recognition of the fracture is important as this will enable proper management and prevent the development of chronic pain. However, occasionally, the diagnosis is missed on plain radiographs since the radiographic features may be absent, subtle or non-specific. We present such a case of an unsuspected ischial tuberosity avulsion fracture diagnosed on SPECT-CT.

Case summary:

A 15-year-old boy presenting with a history of sports injury (twisted his ankle whilst playing football) one year ago, with subsequent pain in the posterior aspect of the right upper thigh and buttock. X-ray taken following the injury was negative. A 3-phase bone scan with SPECT-CT of the pelvis was performed. Blood pool images showed mild hyperemia in the ischial region on the right in the posterior projection. The planar images showed two foci of increased tracer uptake in the right ischium on a background of mild increased uptake in the bone. The SPECT-CT however showed a complete fracture of the ischial tuberosity with increased uptake in the region of fracture with features suggestive of exostosis.

Conclusion:

This case illustrates the value of SPECT-CT in establishing the diagnosis of ischial apophyseal avulsion fractures. The case also illustrates the importance of an awareness of the radiographic and scintigraphic features of this pathology and its associated complications such as exostosis formation and nonunion, which are crucial for correct management.

Key Words: Ischial tuberosity avulsion fracture; Bone scan; SPECT-CT

Nuclear Medicine and Radiology

Category: Graduate (Resident)

204

Cutaneous flow pattern of primary lymphoedema

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CASE REPORT

Background:

Qualitative lymphoscintigraphic image evaluation and interpretation yields specific image patterns associated with primary lymphoedema (aplasia or hypoplasia) or secondary lymphoedema (post-surgical or post traumatic). An awareness of these patterns is crucial to making correct scan interpretation and accurate diagnosis. We present a case of a patient with primary lymphoedema where the scan pattern could have easily been confused with that of secondary lymphoedema.

Case summary:

A 26-year-old female with left lower limb oedema of 16-month duration was for lymphoscintigraphy to determine the underlying cause of the lower limb swelling. Dynamic lymphoscintigraphy was performed for 45 min following injection of Tc-99m Nanocolloid into the first interdigital web spaces of both feet. Next, pre and post exercise static lower half-body scans were acquired. The early flow images did not show inguinal lymph nodes on either side, nor any activity in the lymphatic channels. The delayed post-exercise images showed appearances suggestive of dermal backflow in the left mid-thigh. On the right, there was no activity seen above the mid-calf level with apparent patchy dermal back flow only to this level. On careful review of the images, the pattern of the pooling of activity in the skin was seen to be significantly different than the classic dermal backflow pattern and the appearances were in keeping with cutaneous lymphatic microcirculatory flow through the lymphatic capillaries as compared to flow through dilated dermal lymphatic channels in secondary lymphatic obstruction. A diagnosis of bilateral congenital lymphoedema secondary to lymphatic aplasia/hypoplasia was established.

Conclusion:

Dermal backflow is a feature of secondary lymphoedema and is absent in primary lymphoedema. This new image pattern of “cutaneous flow” on delayed imaging in primary lymphoedema that mimics the “dermal backflow” pattern in secondary lymphoedema has to date not been reported.

Key Words: Lymphoscintigraphy; Primary lymphoedema; Dermal backflow

Nuclear Medicine and Radiology

Category: Graduate MSc (Basic Science)

205

**Umbilical metastatic deposit from intra-abdominal malignancy:
[sup]18FDG-PET/CT findings.**

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CASE REPORT

Background:

Sister Marry Joseph's nodule (SMJN) was first described by Sir Hamilton Bailey in 1949. It is a clinical sign used to describe either benign or malignant umbilical lesion. A malignant umbilical mass can represent a primary or metastatic lesion but usually referred to as metastasis of visceral malignancy to the umbilicus. Most common sites of origin are in the gastrointestinal or genital tracts. The mechanism of umbilical seeding from primary tumors is not clearly understood. We present a case of SMJN metastasis from ovarian carcinoma to highlight the significance of an early diagnosis of this rare sign of a malignant tumor.

Case summary:

A 74 -year old woman presented with a history of growing pelvic mass and abdominal pain of 9 months duration. She was intravenously injected with 7 mCi of ¹⁸F-fluorodeoxyglucose (¹⁸FDG). A positron emitting tomographic/computed tomographic (PET/CT) and a PET/CT scan was done an hour later. The scan showed ¹⁸FDG avid soft tissue nodule at the umbilicus along with bulky uterus and ovaries bilaterally which was highly suspicious of gynecological malignancy. Also, there was evidence of multiple ¹⁸FDG avid soft tissue masses at the peritoneal cavity near the liver and subcentemetric ¹⁸FDG avid lymph nodes. Marked abdominal ascites was noted as well. Later, the patient underwent surgery for tumor resection and intra-operative biopsy proved a metastatic lesion from ovarian carcinoma. Accordingly, she was scheduled for chemotherapy.

Conclusion:

The ¹⁸FDG-PET/CT scanning enabled an early detection of SMJN (an umbilical metastatic nodule) from ovarian cancer that led to early treatment.

Key Words: Sister Marry Joseph's nodule; Visceral malignancy; PET/CT

Nuclear Medicine and Radiology

Category: Graduate (Resident)

206

Paget Disease in a Kuwaiti patient

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CASE REPORT

Background:

Paget's disease or Osteodystrophia Deformans is a multifocal chronic skeletal disease characterized by disordered and exaggerated bone remodeling. Male :Female = 2:1. The prevalence is about 3% of individuals >40 years; 10% of persons >80 years. The prevalence of Paget disease varies greatly in different areas of the world. The highest prevalence is in Europe. The United States, Australia and New Zealand have high prevalence because of significant population with northern European ancestry. The disease is rare in Asian countries, Middle East and Africa. The disease has 3 stages: the active phase or osteolytic phase, the mixed or middle phase, and the inactive or sclerotic phase. The disease mainly affect the axial skeleton (mostly the spine, skull, pelvis and proximal femur). The most common complication are fractures, osteoarthritis, heart failure and malignant transformation.

Case summary:

A 68 years old Kuwaiti male patient was complaining of lower back pain. Seen by the orthopedic surgeon and he ordered an MRI of the lumbosacral spine. The MRI revealed a hyper-intense signal in L3 vertebra. The differential diagnosis was chronic infection, hematological malignancy, or secondary metastasis. The patient then did a PET/CT to rule out any other lesions. The patient went for a biopsy of L3 vertebra for confirmation. Result: The PET/CT revealed multiple areas of increase uptake. The CT part showed expansion of the right clavicle head with mixed sclerotic and lytic areas classical of Paget disease. The biopsy of L3 confirmed Paget disease.

Conclusion:

Although rare in the Middle East, Paget disease of bone must be included in the differential diagnosis of any lytic or sclerotic lesions, especially in elderly patients.

Key Words: Paget; Bone; Radiology

Nuclear Medicine and Radiology

Category: Clinical

207

Subcutaneous hydatid cyst

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CASE REPORT

Background:

23 year old female patient presented with swelling in the left lower back. FNA cytology revealed hydatid cyst. Based on CT scan diagnosis of solitary subcutaneous hydatid cyst was made and the cyst was successfully removed after four weeks Albendazole administration. The liver and lungs are frequently involved account for 75% and 15% respectively. We describe patient who had as isolated hydatid cyst in the subcutaneous fat.

Case summary:

23 year old female presented with painless slow growing swelling in the left lower back. Examination shows a well-defined, soft, mobile lesion measures about (7cm). Patient referred to the cytology lab where smear sample revealed parasite cyst. Further CT scan imaging done to evaluate the lesion site, multiplicity, and visceral organ involvement.

Discussion:

Hydatid disease is a unique parasitic disease that is endemic in many parts of the world. There are two types of Echinococcus infection. E granulosus is the more common type, whereas E multilocularis is less common but more invasive, mimicking malignancy. Dogs are definite hosts, whereas the sheep are intermediate hosts. Humans are secondarily infected by ingestion food or water that has been contaminated by dog feces containing the eggs of the parasite. Larvae travel with the blood stream where it reach the liver and lungs forming cyst, however, the mechanism of further spread elsewhere is not well understood. Possibly the lymphatics are responsible for systemic dissemination of the larvae and formation of cysts in an uncommon sites. Soft tissue hydatid cyst occurs in (2.3%) of the cases reported from the endemic areas, they are usually associated with involvement of other organs. In medical literatures there are few articles about isolated subcutaneous hydatid cyst.

Conclusion:

Isolated subcutaneous hydatid cyst is rare, therefore, should be kept in the differential diagnosis of cystic lesions especially in the endemic areas. Total surgical excision with complete removal of the capsule is essential to prevent recurrent.

Key Words: Soft tissue; Subcutaneous cyst

Nuclear Medicine and Radiology

Category: Clinical

208

**Gardner syndrome with extra and intra-abdominal desmoids tumors
and adrenal involvement: PET/CT findings**

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CASE REPORT

Background:

Gardner syndrome is a part of the spectrum of familial adenomatous polyposis. It is characterized by the presence of multiple polyps in the colon together with extracolonic neoplasms like osteomas of the skull, epidermoid cysts, fibromas, and sebaceous cysts. Rarely, Gardner syndrome is associated with desmoid tumors and adrenal masses.

Case summary:

We report the case of a 42 year old admitted with abdominal pain, and bleeding per rectum. CT abdomen showed a huge intra-abdominal desmoids tumor. Colonoscopy revealed hundreds of sessile and pedunculated polyps. Tissue biopsy showed multiple tubular adenomas with low grade dysplasia. The patient was finally diagnosed as Gardner syndrome. A whole body PET/CT scan was acquired to investigate for other lesions.

Conclusion:

It demonstrated the rare coexistence of the intestinal polyps, extra and intra-abdominal desmoids and adrenal adenoma. In addition the characteristic cutaneous lesions and osteomas of the skull were noted.

Key Words: Gardner syndrome; Desmoid tumors; PET/CT

Nuclear Medicine and Radiology

Category: Clinical

209

Lymph node and skin involvement detected with PET/CT mimicking lymphoma in a patient with Kikuchi disease

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CASE REPORT

Background:

Kikuchi-Fujimoto disease also known as Kikuchi disease or histiocytic necrotizing lymphadenitis is a rare benign and self-limiting disorder that typically affects the cervical lymph nodes. Generalized lymphadenopathy, involvement of mediastinal, peritoneal, and retroperitoneal lymph nodes, extranodal sites or skin is uncommon. Age of presentation is typically 20–30 years and it may mimic in presentation tuberculosis, lymphoma, or even adenocarcinoma. Most cases have been reported from East Asia. An immune response of T cells and histiocytes to Infectious agents (microbial/viral) has been hypothesized as the cause. Systemic lupus erythematosus, antiphospholipid syndrome, polymyositis, systemic juvenile idiopathic arthritis, bilateral uveitis, arthritis and cutaneous necrotizing vasculitis have been linked to Kikuchi disease. Treatment is largely supportive (e. g. NSAID) and differentiating it from other more serious conditions is important.

Case summary:

We report a rare case of 19 year old referred to the nuclear medicine department as a case of fever of unknown origin to investigate for the cause. PET/CT revealed multiple hypermetabolic generalized lymph nodes in the cervical, mediastinum, axillary, abdomen and pelvic lymph nodes with diffuse thyroid and parotid focal involvement bilaterally. Histopathology results showed that the patient had Kikuchi syndrome.

Conclusion:

The glucose diffuse pattern of uptake with thyroid and parotid and skin involvement raised the suspicion to autoimmune etiology and lymphoproliferative disease and helped guide biopsy.

Key Words: Kikuchi-Fujimoto disease; Histiocytic necrotizing lymphadenitis; PET/CT

Nuclear Medicine and Radiology

Category: Clinical

210

Liver laceration in blunt abdominal injury associated with hepatic parenchymal and subcapsular gas.

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CASE REPORT

Background:

Gas in the hepatobiliary system may be intraparenchymal, subcapsular, in the portal venous system or in the biliary ducts and very rarely these may be the results of blunt abdominal trauma. The most common cause of intraparenchymal hepatic gas is abscess or infection by gas forming organisms. Intraparenchymal gas has been emphasized as the most helpful finding in detecting infection and distinguishing it from the results of trauma. Other authors have also emphasized that extravascular gas within the liver on CT is specific for abscess and that this distinguishes infection from trauma. Reports of intrahepatic parenchyma and subcapsular gas following blunt abdominal trauma are few. We review the common causes of intrahepatic gas in the literature.

Case summary:

We report the unusual occurrence of hepatic parenchymal and subcapsular gas demonstrated by CT in a 20-year old male following blunt abdominal injury. In our patient, hepatic parenchymal and subcapsular gas identified on CT two hours after the injury, had totally resolved in ten days. There was no evidence of hepatic or intra-abdominal infection at surgery and during the post-operative period. The cause of parenchymal and subcapsular gas after hepatic laceration caused by blunt abdominal trauma is speculative.

Conclusion:

The early appearance of intrahepatic and subcapsular gas in our case, is thought to be due to gas tracking up the portal venous system from the lacerated ileum and sigmoid colon.

Key Words: Liver; Bowel; Abdominal trauma

Nuclear Medicine and Radiology

Category: Clinical

211

Calcifying liver hematoma, ductus venosus and portal vein calcification and ascites complicating umbilical vein catheterisation

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CASE REPORT

Background:

umbilical vein catheterization (UVC) was first described by Diamond in 1947. Although it represents a relatively easy access of parenteral administration in a neonate and has advantages of rapid placement and being a relatively large vessel, it is known to carry specific risk and complications.

Case summary:

UVC is frequently employed in the critically ill neonate for the purpose of administration of fluid and electrolytes, nutrition and drugs and as a route of obtaining blood sample to monitor blood chemistry. Unfortunately, several complications of UVC have been reported. We here report a neonate in whom UVC was complicated by a calcifying liver hematoma, calcification of the ductus venosus and portal vein and ascites.

Conclusion:

calcifying hepatic hematoma, calcification of the ductus venosus and portal vein, ascites and sepsis, although previously reported in various combinations as complication of UVC, have not been seen in the same neonate. This is an unusual and hitherto unreported occurrence. Finally, the umbilical vein as an intravascular access, was been used judiciously and requires constant observation to avoid complications.

Key Words: UVC; Neonate; Calcification

Nuclear Medicine and Radiology

Category: Clinical

212

Scintigraphic pattern of oncogenic hypophosphataemic osteomalacia mimicking bone metastases

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CASE REPORT

Background:

Oncogenic hypophosphataemic osteomalacia is a rarely reported clinical condition which may mimic metastatic disease. It is a paraneoplastic syndrome characterized by that the involved neoplasm is often of a limited clinical significance apart from its impact on the musculoskeletal system. Tumors responsible for oncogenic osteomalacia are usually benign rather than invasive, whereas the main clinical complains for the patient is debilitating osteomalacia. In some rare case however, this condition have been reported in association with carcinomas. The pathogenesis behind this condition is the excessive renal loss of phosphate. Parathyroid hormone and serum calcium level are usually normal, however, mild hypocalcemia has been described in some case. Elevations of serum alkaline phosphatase activity are typical. Low or normal circulating levels of 1, 25-dihydroxyvitamin D are observed, despite the stimulation of hypophosphataemia.

Case summary:

We report a rare case of oncogenic hypophosphataemic osteomalacia appearance on bone scan mimicking bone metastasis in a 74 year old lady who was admitted to the hospital following sever progressive generalized debilitating musculoskeletal pain.

Conclusion:

In this condition, tumors are often remaining unidentified for years following the diagnosis of hypophosphataemic osteomalacia and the management in such cases is phosphate and calcitriol and long-term surveillance.

Key Words: Oncogenic hypophosphataemic osteomalacia; Bone scan; Bone metastasis

Nuclear Medicine and Radiology

Category: Clinical

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Indium-111-octreotide/somatostatin-receptor-positive fluorine-18-deoxyglucose-PET-negative pancreatic neuroendocrine tumor.

Implications for diagnosis and therapy. A case report

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CASE REPORT

Background:

Characterization of a pancreatic mass using anatomic and functional imaging is important for accurate diagnosis and appropriate management. More recently, the availability of molecular imaging using various markers for cell surface receptors and metabolic pathways has added scope for targeted therapies and monitoring response to treatment. In-111 octreotide scan is used for imaging neuroendocrine (NE) tumors that commonly express the somatostatin receptors such as gastrinomas, insulinomas and glucagonomas. F-18 fluoro deoxyglucose (FDG) is a marker of glucose utilization and reflects the metabolic activity of a tumor.

Case summary:

ZSA is a 62 year old lady who was referred for an F-18 FDG PET/CT scan to evaluate a mass in the uncinate process of the pancreas on a recent abdominal CT. The PET/CT scan was negative for FDG uptake in the mass, indicating its relative low metabolism. A CT guided needle biopsy revealed a tumor of NE type with MIB-1 staining of <1% (low ki-67 protein staining due to limited cell proliferation) which is in line with the low metabolic activity by FDG PET. An In-111 Octreotide scan using SPECT/CT showed intense uptake in the mass denoting expression of the somatostatin receptors, which confirms its NE nature. Based on the above findings, the patient was put on medical somatostatin analog therapy.

Conclusion:

Nuclear medicine plays an important role in the characterization and management planning, in addition to providing tools for assessment of response to treatment, for NE tumors using, among others, In-111 octreotide and FDG PET. FDG avidity for these tumors can be variable, depending on the underlying tumor biology and degree of differentiation. PET: Positron Emission Tomography, SPECT: Single Photon Emission Computed Tomography

Key Words: FDG PET/CT; Indium 111 octreotide; Neuroendocrine tumor

Nuclear Medicine and Radiology

Category: Clinical

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A case of coexisting osteoid osteoma and non-ossifying fibroma: the added value of SPECT-CT diagnosis

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CASE REPORT

Background:

Radionuclide bone scintigraphy is a sensitive functional imaging modality for the diagnosis of bone tumours. However, the specificity of planar bone scintigraphy is relatively poor. Both the sensitivity and the specificity are improved by the addition of Single Photon Emission Computed Tomography (SPECT), which also allows better localization of small bone pathology. In the current era of hybrid functional-structural imaging with the advent of the SPECT-CT, there has been a tremendous improvement in the diagnosis of bone pathologies with the advantage of functional and anatomical characterization of bony lesions. We report a case of a patient with a suspected osteoid osteoma where the hybrid imaging accurately diagnosed and characterized the lesion and also outlined another discrete pathology in the same bone which could otherwise have been misdiagnosed as another osteoid osteoma lesion.

Case summary:

A 15-year-old young man with 2-year history of pain in the left femur with x-ray showing appearance suggestive of an osteoid osteoma in the left femoral shaft was referred to the nuclear medicine department for confirmation of the diagnosis. A 2-phase planar bone scan and a SPECT-CT study was performed. The SPECT-CT findings were consistent with an osteoid osteoma in the left femur. The planar and the SPECT images showed an additional incidental focus of activity in the metaphysis of the distal femur which appeared cystic on the CT component.

Conclusion:

The presence of both an osteoid osteoma and a nonossifying fibroma in a single bone is rare and not previously reported. The two pathologies could easily have been misdiagnosed if reported on either modality alone; however, hybrid functional and structural imaging provided specific information confirming the diagnosis of the osteoid osteoma as well as a coexisting non-ossifying fibroma.

Key Words: Non-ossifying fibroma; Osteoid osteoma; SPECT-CT

Nuclear Medicine and Radiology

Category: Clinical

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I-131 pinhole versus SPECT/CT imaging post thyroidectomy for cancer. A report of 2 cases

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CASE REPORT

Background:

Since well-differentiated thyroid cancer can retain the ability to concentrate iodine, although to a lesser extent than normal thyroid tissue, radioactive iodine (I-131) scanning has been used to identify thyroid remnant after surgery, local recurrence or distant spread of tumor. We present 2 cases of papillary thyroid cancer post near total thyroidectomy that showed focal uptake of I-131 in the neck. The findings using the currently available techniques of pinhole and SPECT/CT imaging were compared to define the optimal protocol for imaging in these patients.

Case summary:

Case 1 is a 41 yr old female who had near total thyroidectomy for papillary thyroid cancer (pT2, Nx, Mx) 6 weeks prior to I-131 scan. Case 2 is a 25 yr old female who had near total thyroidectomy for microadenocarcinoma 2 months prior to I-131 scan. Both patients had high TSH more than 100, and low free T4. The study involved a whole body scan as well as neck imaging using pinhole and SPECT/CT 24 hr after oral administration of approx. . 3 mCi I-131. In the first case, the pinhole images showed 3 distinct foci of uptake in the neck while only one focus was seen on SPECT/CT. The pinhole images showed 2 foci versus 1 focus seen on the SPECT/CT in the second case. The SPECT/CT, however, provided anatomical localization of the site of the uptake. The patients were referred for I-131 ablation of the remnant thyroid tissue and subsequent follow up.

Conclusion:

I-131 pinhole imaging of the neck provides high resolution for identification of small individual foci of remnant thyroid tissue while SPECT/CT shows their anatomical location more accurately. Both imaging modalities would be complementary for optimal imaging in these cases.

Key Words: Thyroid cancer; Pinhole imaging; SPECT/CT

Obstetrics and Gynecology

Category: Graduate (Resident)

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Abdominal pregnancy: Case report

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CASE REPORT

Background:

Abdominal pregnancy is a form of ectopic pregnancy in which the pregnancy is implanted within the peritoneal cavity outside the Fallopian tube or ovary and is not located on the broad ligament. While rare, abdominal pregnancies have a higher mortality than other ectopic pregnancies in general, delivery of a viable fetus have been reported in some cases.

Case summary:

In our case, it was a 37 year old Filipino lady G3 P2+0 admitted as a case of illegal pregnancy of around 9/52 with per vaginal bleeding as her last men's trail period was unknown. Her past obstetric history is unremarkable as she had two previous full term vaginal delivery with no obstetric complications. Her initial exam was only remarkable for tachycardia of 120 beats/min. She was later admitted to ward and an ultrasound scan was requested. Her ultrasound scan clearly revealed presence of extra-uterine pregnancy corresponding to 17/52 gestation and at that time patient had started to become tachycardic, hypotensive and ultimately underwent a laparotomy where a viable extra-uterine pregnancy of 17/52 was found in the peritoneal cavity. placenta had multiple attachment point in the peritoneum, colon along in part the fallopian tube.

Conclusion:

Ultimately, this case is not only rare but emphasizes the importance of proper patient evaluation, starting with proper history taking and good physical exam. Ultrasound also plays a significant role in the diagnosis of abdominal pregnancy. Timely intervention in such cases could be complicated by severe intraperitoneal bleeding with resultant development of shock and death.

Key Words: Abdominal pregnancy; Ectopic pregnancy; Pregnancy of unknown location

Obstetrics and Gynecology

Category: Graduate (Resident)

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Placenta prevai with unexpected blood group

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Maternity Hospital

CASE REPORT

Background:

Hh is a rare blood group also called Bombay Blood group. This blood phenotype was first discovered in Bombay, now known as Mumbai, in India, by Dr. Y. M. Bhende in 1952. Given that this condition is very rare, any person with this blood group who needs an urgent blood transfusion will probably be unable to get it, as no blood bank would have any in stock. In anticipation of the need for blood transfusion the patient's blood may be banked for future use, but this option is of course not available in cases of accidental injury because there is an emergency.

Case summary:

A 39 year old Indian lady P0+1+1+0 married for 11 years was referred to Maternity Hospital at 29/52 with gestational diabetes management. She was discovered to have high blood pressure in the clinic of 150/100 and albuminuria +. The patient had no history of blood transfusion nor prior knowledge of her blood group type. She had developed antepartum hemorrhage and a repeat ultrasound confirmed placenta previa covering cervical internal os. Blood group screening revealed Bombay blood group. Ultimately, after evaluation by a multidisciplinary team, of obstetricians, haematologist, anaesthetist and neonatologist, the patient underwent a lower Caesarian section to deliver a male with birth weight 986 grams and A/S 2/1 and 7/5 with endotracheal tube. Postpartum, patient stayed in the ICU for a few days and was later transferred to the ward. She was finally discharged home with follow up to the hematology clinic and obstetric clinic. She eventually picked up a healthy baby from neonatology department few weeks postpartum.

Conclusion:

This patient had multiple challenging issues including a rare blood group, severe placenta previa and pre-eclampsia. The vital role of a multi-disciplinary team was crucial in the management of this patient.

Key Words: Bombay blood group; Hh blood group; Placenta previa

Obstetrics and Gynecology

Category: Clinical

218

XX Male: Presenting as male infertility

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CASE REPORT

Background:

A 47 year old clerk, presented at the infertility clinic with primary infertility of 15 years. He got married at 32 years but got divorced a year ago. Developmental milestones were normal, including normal puberty and by 12 years he was having night and morning emissions and normal coitus with the wife. Examination revealed a healthy looking male with moustache, sideburns and male voice. He was 1.70 meters tall and weighed 74 kg. Blood Pressure was 125/70 mmHg. System examination revealed no abnormality. The external genitalia revealed a normal circumcised penis > 6.0 cm long. Although both testes were normally low in the scrotum, they were small in size but firm in consistency (5 out of 10), no varicocele but normal prostate, confirmed by ultrasonography. Investigations included hormone profile: FSH 28.2 IU/L (1.6-11), LH 12 (1.7-8.6), Testosterone 15.6 nmol/L (5.0-35). They were all essentially normal as in a normal XY male, except FSH that was high.

The Karyotype revealed XX SRY DSD. Testicular biopsy showed a hyalinised seminiferous tubules, with thick basement membrane with Sertoli cell only. The interstitium showed increased number of Leydig cells.

Conclusion:

This is an extremely rare condition with normal testosterone level and male physical profile. The mechanism was most likely through complete SRY Translocation.

Key Words: XX Male; SRY Translocation; Sertoli Cell only

Obstetrics and Gynecology
Category: Graduate (Resident)

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Antenatal Bartter Syndrome type 2, presenting as transient pseudohypoaldosteronism: Case series in a family

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CASE REPORT

Background:

Inherited renal tubular disorders are associated with hypokalemic alkalosis (Bartter-syndromes). They can be subdivided into three clinical phenotypes: (i) the classic variant (ii) the Gitelman variant and (iii) the antenatal hypercalciuric variant (also termed hyperprostaglandin E syndrome). The Antenatal type presents with severe hyponatremia and moderate hypokalemic, metabolic alkalosis, hyper-prostaglandinuria and failure to thrive.

Case summary:

We now describe three kindred of the same family with mutation in the gene encoding the inwardly-rectifying potassium channel (ROMK) but presenting with hyperkalemia along with metabolic acidosis, leading to a misdiagnosis of transient pseudohypoaldosteronism.

Conclusion:

Mutations in the Na-K-2Cl cotransporter (NKCC2) have been identified in the antenatal hypercalciuric variant. Findings of transient hyperkalemia are most likely due to defects affecting the cortical collecting duct.

Key Words: Bartter Syndrome; Transient pseudohypoaldosteronism; ROMK

Obstetrics and Gynecology

Category: Clinical

220

Bilateral tubal ectopic pregnancy (case report)

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CASE REPORT

Background:

Incidence of ectopic pregnancy ranges from 4. 5 to 16.8 for 1000 pregnancies. The frequency of bilateral tubal ectopic pregnancy is extremely rare. It is reported from 1:125 to 1:1580 of all ectopic pregnancies and usually follows ovulation stimulation. Co-incident pregnancy in each tube may be due to superfetation or superfecundation. Fertilization of a second ovum after the onset of pregnancy, resulting in the simultaneous development of two fetuses of different degrees of maturity within the uterus OR the result of fertilization of ova during different menstrual cycles, yielding fetuses of different ages is known as superfetation. Superfecundation implies the fertilization of two or more ova by sperm from separate acts of sexual intercourse in the same menstrual cycle, which can lead to twins.

Case summary:

A 26 years old Egyptian lady with primary infertility for 2. 5 years. She was given clomiphene for anovulation. She missed her period for \pm 6 weeks, and was admitted on August 11 2011 complaining of vaginal bleeding & abdominal pain. Serial β HCG result was: 2616, 3526 and 3049 mIU/ ml on day 7, 9 and 11 of August, respectively. Vaginal ultrasound showed left tubal ring (1.8 x 1.6 cm) & thick endometrium (11mm). There was a moderate amount of free fluid in the Pouch of Douglas . she was diagnosed as disturbed right tubal ectopic pregnancy. Diagnostic laparoscopy revealed a right ampullary tubal pregnancy along with bleeding from the right fimbria and hemoperitonium. Linear salpingotomy was done. Exploration of the left tube shows intact isthmic tubal pregnancy (1x1cm). Left linear salpingotomy was also done. The tissues were sent in two separate jars for histopathology, which showed bilateral tubal ectopic pregnancy with positive immature and ghost chorionic villi in both specimen.

Conclusion:

(1) Early diagnosis of bilateral ectopic pregnancy can save both or at least one fallopian tube
(2) Before starting surgical management either by laparoscopy or laparotomy, both tubes and ovaries must be examined to exclude bilateral ectopic pregnancy (3) In patients who have undergone assisted reproductive techniques (ART) and are symptomatic, a high level of suspicion should be present and ultrasonic screening to exclude bilateral ectopic pregnancy is strongly recommended.

Key Words: Bilateral tubal ectopic pregnancy; Superfetation; Superfecundation

Obstetrics and Gynecology

Category: Graduate (Resident)

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Vernix Caseosa Peritonitis after vaginal delivery- A case report

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Background:

Vernix caseosa peritonitis (VCP) is a very unusual complication caused by inflammatory response to amniotic fluid spilled into the maternal peritoneal cavity. Only 23 cases of this entity have been reported and all occurred after caesarean section.

Case summary:

This is the first case of VCP reported following vaginal delivery. Mrs A, 28 years old, P2+0+0+2, with one previous caesarean section, was admitted at 41 weeks gestation in active labour. Antenatal care in current pregnancy was uneventful. Labour progressed rapidly to the second stage and because of repeated fetal decelerations, vacuum extraction was performed to deliver a healthy male baby, 4.410 Kg, Apgar scores 7, 8. She developed fever, acute abdominal pain and distension about 3 hours after delivery. Physical examination revealed temperature of 37.9°C, pulse was 118/minute, blood pressure 105/70 mmHg and the abdomen was slightly distended abdomen with generalized, diffuse tenderness; pelvic examination was negative. A diagnosis of acute abdomen was made. Hb was 12.9 gm/dl and WBC 10.6 with polymorphonuclear leucocytosis and ultrasound demonstrated some free fluid in the pelvis and abdomen. Laparotomy was performed soon afterwards and it revealed neither uterine scar rupture nor other surgical emergencies, but 500 ml of turbid fluid and some cheesy material on the serosal surface of all viscera; tissue biopsy was obtained from the cheesy material and adjacent glands. She had a course of antibiotics; her post-operative period was uneventful and her recovery complete. Histology of the peritoneal fluid and tissue biopsy resulted in a diagnosis of vernix caseosa peritonitis.

Conclusion:

Clinical diagnosis of peritonitis due to vernix caseosa should be considered in patients presenting postpartum with an acute abdomen. Characteristic intra operative findings and the involvement of a pathologist can promote a more conservative approach and prevent unnecessary invasive procedures.

Key Words: Caseosa; Peritonitis

Pathology

Category: Clinical

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Contralateral metastasis of parotid gland in advanced breast cancer A case report.

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CASE REPORT

Background:

Metastatic tumors to the parotid gland are extremely rare. Only a few cases of breast carcinoma with metastasis to the parotid gland have been reported. This case documents the rarity of the disease.

Case summary:

A 43 year old Egyptian woman presented in January 2012 with a swelling of 3x1.6cm in the left parotid of two weeks duration. She was diagnosed to have right breast carcinoma cT3N2M1 with lung and bone metastasis. Core biopsy done in January 2010 revealed an infiltrating mammary carcinoma positive for ER, PR and Her 2 neu. She was treated with Taxol and Herceptin. In July 2010 modified right radical mastectomy and axillary clearance was done. Histopathology revealed a high grade ductal carcinoma (T2N2M1) with involvement of 4/12 lymph nodes. She completed her adjuvant radiotherapy. Follow up assessment three months later by CT/PET scan demonstrated newly detected wide spread metastatic disease with multiple hepatic and bone metastasis. Chemotherapy was continued. In March 2011 she developed a mass in the left breast. Core biopsy confirmed an infiltrating mammary carcinoma. She underwent 7 cycles of chemotherapy and oophorectomy as ablation. Fine needle aspiration cytology (FNAC) of the left parotid swelling in January 2012 revealed a high grade carcinoma possibly metastatic. A left parotidectomy was performed in May 2012 which confirmed metastatic carcinoma of breast origin. The tumor was negative for ER and PR but positive for Her 2 neu. The patient later developed bilateral pleural effusion and expired in August 2012.

Conclusion:

When a high grade carcinoma is detected in the parotid in a patient with a known carcinoma the dilemma lies in distinguishing a primary from a metastatic tumor. Although breast carcinoma metastasis to the parotid is rare, it should be included in the differentials for any patient with a known history of breast carcinoma.

Key Words: Breast carcinoma; Metastasis;; Parotid FNAC

Pathology

Category: Clinical

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Rare Association of Papillary Carcinoma of Thyroid with Non Hodgkin Lymphoma. A case Report.

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CASE REPORT

Background:

Papillary thyroid carcinoma (PC) is the common type of thyroid carcinoma in Kuwait. Simultaneous occurrence of PC with Non-Hodgkins lymphoma (NHL)–B cell of follicular centre origin in the thyroid is very rare.

Case summary

A 64-year-old man presented with a neck swelling of four months duration in January 2009. A fine needle aspiration cytology (FNAC) from both lobes of the thyroid was reported as suggestive of lymphocytic thyroiditis (LT), however, the possibility of a Non-Hodgkins lymphoma could not be ruled out. A core needle biopsy of thyroid (February, 2009) was reported as Non-Hodgkin B cell lymphoma consistent with follicular origin (positive for CD 20, bc12, bc16, CD10, Ki67index 15%) with an associated papillary thyroid carcinoma showing intense staining for CK19. He was lost to follow up and returned in March 2010 with complaints of rapid increase in the neck swelling. A left cervical mass (9. 5x5cm) was detected. Ultrasound revealed a hypodense area in the right lobe of thyroid with bilateral cervical lymph node enlargements. FNAC of the thyroid and cervical lymph nodes was reported as a papillary carcinoma and non-Hodgkins lymphoma respectively. He again disappeared and returned in April 2012 when he was given 6 cycles of RCHOP chemotherapy till August 2012. A total thyroidectomy was performed. A histological diagnosis of papillary carcinoma, follicular variant (PT3NxMx) was rendered. The persistent left cervical lymphnode was aspirated in November 2012 and reported as a Non-Hodgkins lymphoma.

Conclusion:

Non-Hodgkin lymphoma involving the thyroid can be primary or secondary to local extension from adjacent neck nodes. Its preoperative diagnosis is difficult on FNAC due to its resemblance to LT. PC and MALT lymphomas have been associated with LT, however their occurrence in combination is very rare. Critical evaluation of the lymphocyte rich infiltrate of LT associated with PC is important in order to identify NHL.

Key Words: Thyroid papillary carcinoma; Non-Hodgkins Lymphoma; FNAC

Pediatrics

Category: Clinical

224

Kawasaki disease in a two months Kuwaiti girl: A case report and literature review.

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CASE REPORT

Background:

Kawasaki disease (KD) is one of the most common vasculitides of childhood. It is considered the leading cause of acquired heart disease in children. The peak age of occurrence is 6 to 24 months. There are only a few reports of KD in infants younger than 6 months. Infants had a higher incidence of atypical KD and of coronary artery aneurysm. This case report from Kuwait will reinforce considering atypical KD in infants with persistent fever and negative cultures. Early diagnosis allows early treatment with intravenous immune globulin (IVIG) and so decreases the incidence of cardiac aneurysm.

Case summary:

A 2 month old female infant, presented with fever and poor feeding. She was admitted and treated as urinary tract infection as her urine routine revealed pyuria. The baby continued to have persistent fever and hypoactivity. Later, she developed non purulent conjunctivitis, skin mottling, oedema of the face / lower limb and was treated as a case of septic shock. Septic work up, metabolic, and immunologic screen were negative. KD was suspected when the baby developed polymorphic erythematous rash and noticed to have peeling of skin at perianal area and periangular area of the fingers of the hand and feet. IVIG was given in dose of 2 gm/kg/day in single dose and aspirin 100mg/kg/day in four divided doses. The girl showed marked clinical improvement. The fever subsided dramatically and the level acute phase reactant markedly decreased but the platelets count increased to 1600000/mm³. Echo cardiography showed mild dilatation of mid right coronary artery. Aspirin was continued in a dose of 5mg/kg/d.

Conclusion:

A high index of suspicion of KD must be maintained in young infants with prolonged unexplained fever. Accepted criteria should be less restrictive to allow early diagnosis of atypical KD in infants less than 6 months of age. Timely appropriate treatment with IVIG is essential to avoid severe coronary sequelae.

Key Words: Atypical Kawasaki disease (KD); Coronary artery aneurysm in infant; Intravenous immune globulin

Pediatrics

Category: Clinical

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Papular-purpuric "gloves and socks" syndrome associated with B19V infection in a 10-year-old Kuwaiti child: A case report and literature review.

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CASE REPORT

Background:

Papular-purpuric "gloves and socks" syndrome (PPGSS) is a rare distinctive, self-limited acute dermatosis characterized by a papular-purpuric edematous rash in a distinct "gloves and socks" distribution often accompanied by oral lesions and fever. It is mainly caused by parvovirus B19 (B19V). It occurs mainly in young adults; it has also been reported in children. We are reporting a ten year old Kuwaiti girl who presented with fever and rashes proved to be caused by PVB19. We also reviewed the literature for PPGSS in children. This will highlight the clinical manifestation and the natural history of this syndrome in children empowering paediatrician to diagnose it and avoid unnecessary investigations and treatment which creates further parental anxiety.

Case summary:

A healthy 10yr old Kuwaiti girl presented with fever, headache, and abdominal pain of three days duration. She had itchy erythematous fine maculopapular rash over hands & feet. Her throat was congested with exanthema over the hard palate. She developed erythema and edema above the upper lip & chin. She was sick, lethargic and had petechia on lower limb. Systemic antibiotic was started to cover possibility of meningococemia. She developed bilateral nonpurulent conjunctival congestion, increasing edema of the face, hand and foot. She was fully investigated and possibility of bacterial infection, collagen disease was excluded. Virology screen was positive for Parvo B19 IgM & IgG. She was discharged in a good condition.

Conclusion:

Papular purpuric gloves & socks syndrome is a self-limited dermatosis that in recent years is found to be increasingly prevalent in children worldwide. It should be considered in the differential diagnosis of petechial or purpuric eruption of unclear etiology in children. The distinctive clinical characteristics of PPGSS in children should be recognized by all pediatricians in order to avoid unnecessary investigations.

Key Words: Papular purpuric gloves & socks syndrome; Parvo virus Parvo B19; Dermatositis

Pediatrics

Category: Clinical

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Hyperekplexia: A case report from Kuwait.

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CASE REPORT

Background:

Hyperekplexia is a rare paroxysmal disorder characterized by an exaggerated persistent startle reflexes and hypertonia in response to sudden unexpected auditory, somatosensory and visual stimuli. We are reporting a Kuwaiti male who presented with recurrent fits treated with phenobarbital but continued to have attacks in form of hyperekplexia that responded to clonazepam. Highlighting the clinical manifestation of this relatively benign form of convulsions with a favourable developmental outcome may alert paediatrician to establish the diagnosis of hyperekplexia avoiding unjustified extensive investigations or unnecessary treatment, suspecting a progressive neurologic disorder.

Case summary:

A Kuwaiti baby boy was admitted to hospital at age of three days with seizure like episodes. He is a product of full term caesarean delivery, birth weight of 4 kg with no birth asphyxia. The patient was treated with oral Phenobarbital and discharged home within seven days although seizures were not well controlled. At age of three months, the baby was seen in outpatient clinic, parents reported frequent episodes of abnormal movement in spite of medication. The episodes were mainly observed with sudden loud sound and could be elicited with tapping on nose. On examination the baby was alert, active, and developmentally normal. He had normal tone and deep tendon reflexes. Brain CT scan and electroencephalogram, formerly performed, were normal. The patient was diagnosed as having hyperekplexia and started on clonazepam which immediately improved these movements. By the day of writing this report the patient is eighteen month old walking and talking and the parents are satisfied with learned manoeuvre that stops the attack.

Conclusion:

Some seizures are not epilepsy. Early diagnosis and treatment of hyperekplexia can prevent much of the morbidity and mortality, and is also important because affected families can be referred for genetic counseling.

Key Words: Hyperekplexia; Paroxysmal disorder; Convulsions

Pediatrics

Category: Clinical

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Juvenile Polyposis in Children with Glanzmann Thrombasthenia

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CASE REPORT

Background:

Glanzmann Thrombasthenia, a rare autosomal disease affecting the platelets. The authors describe two children known to have Glanzmann Thrombasthenia and presenting with rectal bleeding due to rectal polyps. To our knowledge these are the youngest patients reported to have multiple Juvenile polyposis together with Glanzmann Thrombasthenia.

Case summary:

Two children presented to our department with rectal bleeding, together with background history with Glanzmann Thrombasthenia. The first case is a five year old boy who presented with severe persistent rectal bleeding and anemia together with a family history of Glanzmann Thrombasthenia. Investigation revealed multiple polyps in the Colon. The second case is a four year old autistic boy known to have Glanzmann Thrombasthenia and presented with recurrent severe rectal bleeding. Both children required polypectomy procedures, together with intensive medical supportive management after the procedures.

Conclusion:

Bleeding episodes in children with Glanzmann Thrombasthenia can be quite a challenge. In this report we are describing the youngest patients reported to present multiple Juvenile polyposis together with Glanzmann Thrombasthenia, and this may suggest an association between polyposis and Glanzmann Thrombasthenia.

Key Words: Polyposis; Platelets dysfunction

Pediatrics

Category: Clinical

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Post-streptococcal cutaneous vasculitis: A case report of an unusual presentation of a common infection.

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CASE REPORT

Background:

Group A beta-hemolytic streptococci (GAS) is a gram-positive cocci that is responsible for numerous infections and postinfectious syndromes. The commonly described post streptococcal syndromes include acute rheumatic fever, post streptococcal glomerulonephritis, and post streptococcal arthritis. Recently, more syndromes related to GAS is being described including post streptococcal cutaneous vasculitis. The case reported is of an eight year old Kuwaiti girl presented with migratory polyarthritis and serological evidence of a recent streptococcal infection, consistent with the diagnosis of acute rheumatic fever, who in addition showed manifestations of cutaneous vasculitis.

Case summary:

An eight year old Kuwaiti girl admitted with migratory polyarthritis of two days duration. This was preceded with history of fever, tooth abscess, and sore throat for one week. On examination, she had swelling, redness, warmth and tenderness of the right ankle, and the dorsum of the left hand. ECG was normal. Blood investigations revealed elevated CRP (112 → 240), ESR (87), ASOT (2590 → 2860), sterile pyuria. She was diagnosed to have acute rheumatic fever and managed with intravenous clavalanated amoxicillin and oral naproxen. Continued to have fever, three days later she developed painful bluish discoloration of the tips of the fingers with periungual peeling of the skin. She also had bilateral upper eyelid edema. She responded to intravenous immunoglobulin.

Conclusion:

This case demonstrates that acute streptococcal infection may present with a wide clinical spectrum even in the presence of Jones criteria suggesting the diagnosis of acute rheumatic fever. We suggest that it's time to put a new classification for post-streptococcal syndromes in order to outline the correct approach and treatment for each syndrome according to the severity of the disease.

Key Words: Group A beta-hemolytic streptococci (GAS); Post streptococcal syndromes; Childhood vasculitis

Pediatrics

Category: Clinical

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Treating Tyrosinemia Type 1: Experience from Kuwait

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CASE REPORT

Background:

Hereditary tyrosinemia type1 (HT1) is an autosomal recessive disorder caused by deficiency of fumarylacetoacetase. Patients present with liver dysfunction and renal tubular dysfunction associated with rickets. It is a potentially lethal disease if not diagnosed and treated properly. Early diagnosis and prompt treatment is essential for an improved prognosis. Combined treatment with nitisinone (NBTC) and a low-tyrosine diet has resulted in a greater than 90% survival rate.

The medical records of children diagnosed to have (HT1), admitted to Adan Hospital between 1994 and 2011 were reviewed.

Case summary:

This report is describing the presentation, management and follow-ups of 6 Kuwaiti patients having HT1. The index case was the product of consanguineous marriage male presented at five months of age with hepatic failure and rickets, died at age of 7 months. Based on this family history all following siblings were screened for (HT1). Three children (two males and one female) out of four were affected. The second index case (the father of whom was the youngest brother of the first index case) was a female died at age of 6 months with hepatic failure. Her sister was diagnosed on birth based on family history. Once diagnosis was confirmed, all patients were started on tyrosine free diet and NTBC 1 mg/kg/day twice daily. They were monitored regularly. Patients, apart from being slow learner, are leading almost normal life, 2 males aged 15 and 9 and 2 females aged 13 and 8. Although they have poor dietary control, their tyrosine level ranged between 800- 1000. None of the patients had any complication of the disease or the drug.

Conclusion:

Medical advances improved diagnostic methods and treatment of patients with HTI. Surveillance and screening of HTI is recommended in a country with high consanguineous marriage rate as Kuwait.

Key Words: Hereditary tyrosinemia type1 (HT1); Nitisinone (NBTC); Screening of HTI

Pediatrics

Category: Clinical

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Acute hemorrhagic edema of infancy: A case report from Kuwait

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CASE REPORT

Background:

Acute hemorrhagic edema of infancy (AHEI) is a rare benign acute cutaneous vasculitis that is characterized by the triad of fever; edema; and rosette-, annular-, or targetoid-shaped purpura primarily over the face, ears, and extremities in a nontoxic infant. It occurs in children between 4 and 24 months of age. The skin lesions are dramatic both in appearance and rapidity of onset; however, it is self-limiting. More than 100 cases of AHEI have been published in medical literature worldwide. We are reporting a 6 month old Kuwaiti boy diagnosed with AHEI in order to familiarize pediatrician with the distinct clinical features of this rare benign disease allowing the diagnosis and appropriate prognosis to be promptly made in children.

Case summary:

A six month old previously healthy Kuwaiti boy presented with acute onset of fever, edema, and skin rash. He had history of cough and low grade fever for around one week before presentation. On examination child was well and active, a febrile with normal vital signs and systemic examination. There were erythematous, pleomorphic, palpable, purpuric skin lesions over the face especially over cheeks, perioral area, ear lobules, genitals and plantar aspect of toes and less intensively over abdomen varying in size from 0.5 to 4 cm in diameter. Oral mucosa and tongue were also involved. There was edema of upper and lower limbs. Laboratory findings including coagulation profile were normal. Stool occult blood was positive. He improved on symptomatic supportive treatment.

Conclusion:

AHEI, initially considered a variant of HSP, is now considered a separate disease entity that is being increasingly reported worldwide. The recognition of AHEI allows making the diagnosis and so predicting the benign prognosis of this self-limiting disorder.

Key Words: Acute hemorrhagic edema of infancy (AHEI); Leukocytoclastic vasculitis; Henoch-Schönlein purpura

Pediatrics

Category: Clinical

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DOOR syndrome- a case report.

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CASE REPORT

Background:

DOOR syndrome (deafness, onychodystrophy, osteodystrophy and mental retardation) is a very rare genetic disorder with unknown etiology. Less than 35 cases has been reported in the literature.

Case summary:

We are reporting the first case of DOOR syndrome from Kuwait with typical features along with epilepsy, congenital cardiac defect and rib defects. Kuwaiti girl, to consanguineous parents, presented with right focal seizures. She needed multiple anticonvulsants for control of the seizures. She was noted to have microcephaly; and dysmorphic features in form of coarse facies - broad nasal bridge, long philtrum, open mouth with thin upper lip, low set large ears. The nails were absent on fingers and toes. Both fingers and toes seemed to be slender and long, with short fifth fingers. Thumbs and the big toes are digitalized. Skeletal survey revealed absent distal phalanges on the 5th fingers and dysplastic terminal phalanges of other fingers. Terminal phalanges of 5th toes were absent and were dysplastic in other toes. Only 10 ribs were found on the left side when 11 ribs were found on the right side. Echocardiogram revealed small muscular VSD. BERA (auditory brain stem evoked response) revealed bilateral sensory neural hearing deficit. CBC showed persistent thrombocytosis with microcytic anemia, which had required packed RBC transfusion couple of times. Detailed neurometabolic work up was undertaken - showed no abnormality. Karyotyping showed 46 XX. CT and MRI head showed no abnormality. The child has global developmental delay and had recurrent hospitalizations with status epilepticus (focal with secondary generalisation). EEG showed sharp waves in the centro temporal region. Currently seizures are partially controlled on sodium valproate, topiramate and clobazam.

Conclusion:

A multidisciplinary team approach is needed for management of these cases. We hope advances genetics will reveal the underlying aetiology in future.

Key Words: DOOR syndrome; Onychodystrophy; Osteodystrophy

Physiology

Category: Clinical

232

Effect of a supervised exercise program on a 76 year old patient with multi-complicated disease conditions

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CASE REPORT

Background:

A supervised exercise rehabilitation program (SERP) may be a valuable approach to improve quality of life in older patients. A 76-year-old retired male was confined to a wheelchair, constantly required help in movement, used a hearing aid, and had diabetes, high blood pressure, high cholesterol, ulcer and muscle joint pain. He had been treated for non- Hodgkin lymphoma a year prior to his commencement in our SERP. At entry he was on at least six prescribed medications, physically inactive, overweight, and had not been involved in any exercise or physical activity program.

Case summary:

Initial physical, medical and fitness assessment prior to enrollment in the SERP, the patient was assisted by two people to get up and to sit on the wheelchair and to sit on the bicycle. His daughter assisted him in changing his clothes. The patient's weight = 61.4 kg, BMI = 24.1, fat percent = 25.6, fat free mass = 45.7 kg, VO_{2max} (rest = 9.56, peak = 11.93 (ml/min/kg)), heart rate (rest = 89, peak = 132), blood pressure (rest = 140/70, peak = 190/80), total grip strength = 38 kg, flexibility = -4cm, and waist-hip ratio = 0.96. After three months of SERP, the patient was able to walk, change his clothes and get on the bicycle on his own. His six months post testing results were weight = 67 kg, BMI = 25, fat percent = 23.1, fat free mass = 51.5 kg, VO_{2max} (rest = 4.69, peak = 16.72 (ml/min/kg)), heart rate (rest = 74, peak = 150), blood pressure (rest = 180/70, peak = 210/90), total grip strength = 49 kg, flexibility = 20 cm, waist-hip ratio = 0.96. The patient was able to go back to his work independently and regain his mobility back.

Conclusion:

Despite all his medications the patient had been confined with the wheelchair with very limited locomotion. Exercise was an effective tool to free him from the wheelchair and enable him to walk independently. He returned to his office as a fully productive individual.

Key Words: Quality of living; Body composition.

Surgery

Category: Graduate (Resident)

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Case of recurrent breast abscesses by uncommon pathogens

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CASE REPORT

Background:

Breast abscesses are common surgical conditions caused mainly by Staph aureus, it is less likely to see patients diagnosed with *Proteus mirabilis* or *Citrobacter koseri*.

Case summary:

Ms. A. S. M. is 21 yr. old single obese Kuwaiti lady, case of with hypothyroid and controlled epilepsy on treatment. Had multiple breast abscesses caused by rare pathogens.

1st admission was on July. 2012, she presented with left breast abscess, incision and drainage (I & D) done under GA. Pus culture (C/S) showed *Proteus mirabilis* treated with Augmenten 1 gm. BD for 1 week and wound care management.

2nd admission was in Oct. 2012 for right breast abscess, treated with I & D, pus C/S showed *Citrobacter koseri*.

3rd admission was in Nov. 2012 for right breast abscess, treated with I & D, pus C/S showed *Citrobacter koseri*.

Both times managed with Tygacil IV for 1 week. Patient has regular follow up in surgical clinic with no new issues.

Conclusion:

Breast abscesses require treatment with appropriate antibiotic therapy and drainage, further attention should be paid to different bacterial isolates in similar cases.

Key Words: Breast abscess; Proteus mirabilis; Citrobacter koseri

Surgery

Category: Clinical

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Primary Melanoma of the Submandibular Salivary Gland

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CASE REPORT

Background:

Melanoma is common skin cancer in western countries and rare in the Middle East. In addition, melanoma can arise in different organs and can cause diagnostic dilemma. Herein, we are reporting a primary melanoma arising in submandibular salivary gland.

Case summary:

A 31-year-old male presented with slow growing submandibular swelling for 1 month duration. The ultrasound showed heterogeneous, vascular mass measuring 1.6 cm in maximum diameter within the left submandibular gland. FNAC was performed and diagnosed as pleomorphic adenoma. The patient underwent surgical excision. The gross examination showed soft, tan tumor within the gland. Microscopic examination revealed monomorphic spindle cell tumor arranged in fascicles. The tumor cells were infiltrating in between the normal ductules. Occasional large cells are seen. Immunohistochemical stains demonstrate positive expression of HMB-45, S100 and negative for p63, CK, CD10, CD34, D2-40 and SMA.

Conclusion:

Melanoma is very rare primary tumor in salivary gland and pathologist and surgeons should be aware of it.

Key Words: Melanoma; Submandibular gland; Tumors

Surgery

Category: Clinical

235

Fatal Complication after Gluteal Augmentation: A Case Report

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CASE REPORT

Background:

A 27 year old previously healthy female was admitted to our Center with history of multiple sessions of AqualiftTM injection to augment her gluteal area. A total of 1200 cc were injected in 4 sessions three years ago. This was followed by re-augmentation using autologous fat few months ago, which was complicated by repeated abscesses in the gluteal and right trochanteric areas that was drained in private.

Local examination revealed 4 incisions in the right buttock, with intervening cellulitic skin and pus. Proper I&D under GA was done on same day. Post-operative US showed evacuation of all of the pockets, IV antibiotics were started according to C&S, and she was dressed with VAC. The patient was hospitalized for 10 days and was discharged after complete resolution of infection. Four weeks later she was admitted to our center suffering of septic shock complicated by acute renal failure.

Case summary:

Ultrasonography to the right buttock revealed minimal collection. We started her on IV antibiotics. I&D was performed evacuating only minimal amount of discharge and no new pockets were found. Post-operatively, the patient deteriorated and she was put on ventilator and circulatory support. Despite our efforts she developed Multi-Organ Dysfunction Syndrome the following morning. Ultrasound done on the opposite side revealed multiple intra-muscular fluid collection in the left gluteal region. I&D was performed in the Left buttock evacuating 100 cc of gelatinous material with no pus. Two hours later she developed DIC and she passed away.

Conclusion:

Injectable fillers, especially permanent, being a foreign body carries a high risk of complications. Serious systemic infection, although rare, should be informed to the patient prior to the injection. Early signs of infection or inflammation should be taken seriously. We believe that hospitalization, empirical antibiotics, and early adequate drainage are a cornerstone in prevention of more serious outcome.

Key Words: Filler; Gluteal Augmentation; Complications

Surgery

Category: Clinical

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Nerve Sheath Myxoma in a 4 month old: A case report.

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Cancer Control Center

CASE REPORT

Background:

A 4-month old girl presented to our clinic with a lemon size swelling in the right hand of 1 month duration, slowly growing, with no history of trauma reported by parents.

Case summary:

On examination, the infant had a 3 X 3 centimeter well circumscribed, non-tender subcutaneous swelling in the right thenar eminence. The swelling was soft, smoothly lobulated, non-pulsating and partially attached to the overlying skin but was not attached to the underlying structures. There was no affection of hand or thumb movement. Duplex Ultrasound showed a subcutaneous circumscribed lesion with lobulated margins and heterogeneously hyperechoic echotexture overlying the Adductor Pollicis Brevis (APB) muscle. The color Doppler showed increased marginal blood flow with evidence of low-flow internal vascularity suggestive of vascular anomaly. Multi-planar MRI showed a well-defined soft tissue mass in the thenar eminence of the right hand deeply bounded by the APB muscle, displaying homogenous isointense signal to the muscle on T1 weighted images with bright signal in T1 short tau inversion recovery (STIR) images with signal void vessels inside the lesion suggestive of vascular anomaly. Clinically, in contrast to radiological suggestions, it was clearly a tumor of non-vascular origin. Total Excision under tourniquet and Loupe magnification was carried out, with direct visualization and preservation of the recurrent motor branch of the median nerve. Histopathology revealed lobules containing myxoid matrix separated by collagenous septa and surrounded by a thick collagenous capsule-like fibrous band. The myxoid nodules contain stellate cells, strongly positive for S100 protein as well as CD34 positive fibroblasts. The histological and immunohistochemical features were consistent with Nerve Sheath Myxoma. Follow up of the patient 3 months postoperatively was uneventful, showing full range of movement of the thumb and no evidence recurrence so far.

Conclusion:

Although, Nerve sheath myxoma and Neurothekeoma are rare benign neoplasms of the peripheral nervous system, they should be considered for the differential diagnosis for localized asymptomatic soft tissue hand swellings in the pediatric group (i. e. schwannomas, neurofibromas, hemangiomas). Standard imaging techniques are not helpful in diagnosis of such a lesion. Complete excision remains the main stay of treatment so far with relatively low rate of recurrence. Histoimmunocytochemistry is the only accurate diagnostic tool up to date.

Key Words: Nerve Sheath Myxoma; Neurothekeoma; Pediatric hand swellings

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