

**ELEVENTH ANNUAL  
HEALTH SCIENCES CENTRE  
POSTER CONFERENCE  
2006**



## Table of Contents

1. Organizing Committee and Sub-Committees .....	ii
2. Photograph of Organizing Committee .....	iii
3. Preface	
Introductory Remarks, Acting Vice President, HSC .....	v
Address of Vice Dean, Research.....	vi
Organizing Committee Statement .....	vii
Keynote Speaker Biography .....	viii
Keynote Address Abstract.....	ix
4. Best Poster Award Winners 2005.....	x
5. Past Poster Conference Keynote Speakers.....	xii
6. Original Research Abstract List, by Subject Area.....	xv
7. Case Report Abstract List, by Subject Area.....	xliii
8. Abstracts	
<u>Original Research</u>	
Analytical Chemistry .....	1
Anatomy .....	2
Anesthesiology .....	6
Biochemistry .....	11
Community Medicine .....	25
Dentistry .....	38
Genetics and Molecular Biology .....	61
Imaging/Nuclear Medicine and Radiologic al Sciences .....	69
Medical Education .....	84
Medicine .....	85
Microbiology and Immunology .....	124
Neuroscience.....	160
Nutrition .....	162
Obstetrics and Gynecology.....	163
Oncology .....	169
Ophthalmology.....	181
Pathology.....	183
Pediatrics .....	196
Pharmacology and Toxicology .....	206
Pharmacy.....	216
Physical Therapy .....	232
Physiology .....	233
Psychiatry .....	236
Surgery and Transplantation .....	241
Transfusion Medicine .....	269
<u>Case Reports</u> .....	270
9. Author Index.....	317
10. Keyword Index.....	330
11. Acknowledgements .....	340
12. Sponsors .....	342

## Organizing Committee and Sub-Committees

### Organizing Committee

- Dr. Ibrahim F Benter (Chairman)
- Dr. May Al-Maghrebi
- Dr. Joseph Longenecker
- Dr. Ahmed El-Hashim
- Dr. Mariam HM Yousif
- Dr. Elijah Kehinde
- Dr. Issa Lutfi
- Dr. Jon Artun
- Dr. Manal Bouhaimed
- Dr. Noura Al-Sweih
- Dr. Thazhumpal C.Mathew
- Dr. Suhail Ahmed

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- Dr. Thazhumpal C. Mathew

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### Logistics Sub-Committee

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- Mr. Abdel Razik Shaheen (Media In-Charge)

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### Social and public relations

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### Printing Sub-Committee

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- Dr. Joseph Longenecker
- Dr. Thazumpal C.Mathew

### Special Acknowledgements

- Prof. Abdulla Behbehani
- Dr. Eyad Al-Saleh
- Mr. Jasem Al-Khorafi

### Technical Staff

- Mrs. Teena Sadan
- Mrs. Abhaya Krishnan

## **Photograph of Organizing Committee**



### **Front row, from left to right**

Dr. Noura Al-Sweih, Dr. Suhail Ahmed, Dr. May Al-Maghrebi, Dr. Eyad Al-Saleh, Prof. Abdullah Behbehani, Dr. Ibrahim F Benter, Dr. Issa Loutfi, Dr. Manal Bouhaimed, Dr. Ahmed El-Hashim

### **Second row, from left to right**

Dr. Joseph Longenecker, Prof. Jon Artun, Dr. Elijah Kehinde

### **Members not shown in the picture**

Dr. Mariam HM Yousif, Dr. TC Mathew



## INTRODUCTORY REMARKS

It gives me great pleasure to once again write the Introductory Remarks of the Abstract Book for the 11<sup>th</sup> Poster Conference 2006. That this unique annual activity has survived to its 11<sup>th</sup> birthday is yet another testimony to the robust health of the research environment and support in this country. Since its initiation in 1995, the Poster Conference has continued to achieve the goals of fostering high quality research in health priority areas in the State of Kuwait. I am pleased that the numbers of high quality research abstracts accepted for presentation have been increasing yearly – this year the number is 315. Furthermore, the organizers of this conference have maintained the traditional practice of marking the opening ceremony with a state-of-the-art keynote address on an important and contemporary research theme. I cannot think of a topic more appropriate and exciting than the one chosen for this Conference, i.e. stem cell research. The bioethics of stem cell research is still controversial but, hopefully, the issues will soon be resolved with the ultimate objective of advancing biomedical research for the benefit of mankind, especially in tackling currently incurable diseases. To that extent, we feel privileged to have Sir Martin Evans as the Keynote Speaker for the 11<sup>th</sup> Poster Conference. His novel discoveries relating to embryonic stem cells in mice have been seminal, and have expanded our horizon on the potential clinical utility of this new therapeutic modality.

I am grateful to the Vice Dean Research, Dr. Eyad Al-Saleh, for his continuing support for the Poster Conference. I also thank the Chairman of the 11<sup>th</sup> Poster Conference Organizing Committee, Dr. Ibrahim Benter, and the Organizing Committee drawn from his colleagues from the constituent HSC Faculties. They have all worked so hard to ensure the quality we have grown to expect from this important activity.

Prof. Abdulla I. Behbehani  
Dean, Faculty of Medicine  
Acting Vice President, HSC

## **Address of Vice Dean Research, Faculty of Medicine**

The 11<sup>th</sup> Annual Health Sciences Center Poster conference comes this year after a sad event happened in our country, which was the loss of His Highness Sheikh Jaber Al-Ahmad Al-Jaber Al-Sabah. I believe it's worthwhile to mention the achievement and the support of His Highness Sheikh Jaber gave to Education, Health, and Research in our country Kuwait. His vision in this field was phenomenal and had translated into the establishment of a number of leading institutes such as The Kuwait Foundation for the Advancement of Sciences (KFAS), the Faculty of Medicine, and other educational structures. I believe the whole structure of education and health achieved outstanding progress under his leadership. We owe him great respect and appreciation for his contributions and leadership.

The topic of this year's keynote lecture has been chosen to reflect the new scientific developments taking place all over the world in stem cell research. We have invited a leading professor in this field to be our guest speaker. His contributions to this field are phenomenal. Prof. Sir Martin Evans is the Director of the School of Biosciences and Professor of Mammalian Genetics at Cardiff University. He was knighted in December 2003, for his services to medical science.

I have no doubt that this poster conference will be another success added to the achievements of our faculty. This success comes from the hard work of all members of the organizing committee specially Dr. I. Benter Chairman of the 11<sup>th</sup> Poster Conference. I would like to thank all members of the Organizing Committee for their hard work, dedication and commitment to make this event possible. I would also like to thank our keynote speaker Prof. Sir Martin Evans for accepting our invitation. I also thank all supporting organizations of the Private Sector for their sponsorship. I am looking forward to a successful event this year.

Dr. Eyad Al-Saleh  
Vice-Dean for Research

## **Organizing Committee Statement**

Research is essential for excellence in education. This three-day conference includes a keynote presentation, poster sessions and informal scientific discussions and interactions. The purposes of these activities include the stimulation of scientific endeavor and collaboration, the presentation of the medical research effort of the Faculty and the broader community, and the intersection of faculty and student interests. This is an important meeting for the scientific and medical community in Kuwait as it provides a forum for all researchers to present and discuss basic and clinical research conducted in Kuwait.

We are extremely fortunate this year to have one of the pioneers in the field of stem cell research, Professor Sir Martin Evans from Cardiff University, as our keynote speaker who will be providing us with a stimulating and exciting critical appraisal of this topical and controversial technology.

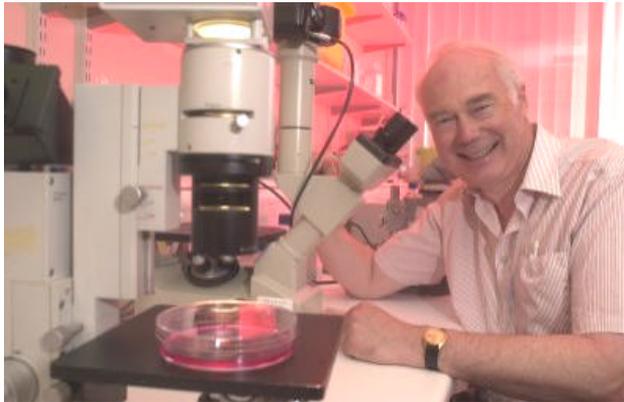
The number of research abstracts accepted this year is 315, which reflects the good progress in research in the health sciences in Kuwait. We are pleased to announce that we have introduced two new awards during this 11<sup>th</sup> Health Sciences Poster Conference. One of these awards is designated for the case reports category and another to be added to the graduate students' category so that participation of PhD and MSc students will be awarded separately.

Ultimately, however, the success of the conference will be judged by how well the delegates have participated, learnt, interacted and established contacts with other researchers in different fields. We, as a committee, hope that we have been able to put together the ingredients for a successful conference.

We would like to thank all colleagues and supporters who have worked hard and diligently to make this conference successful.

The 11<sup>th</sup> Health Sciences Center Poster Conference Organizing Committee

## **Keynote Speaker – Prof. Martin Evans FRS, DSc**



Professor Evans is at the forefront of research into stem cell therapies, which could hold the answer to many of the most devastating diseases and genetic conditions. Twenty years ago he discovered embryonic stem cells, which have the ability to change into any other type of cell the body requires.

This discovery enabled Sir Martin to correct the faulty gene that causes cystic fibrosis, showing for the first time that gene therapy could be used successfully. His research now has a major impact in combating human conditions in fields as diverse as cancer, immunology, neurobiology, human genetic disorders and endocrinology.

In 2001 Sir Martin was awarded the prestigious Lasker Award, a prize known as the American 'Nobel', for his work which was said to have 'revolutionized the study of human health and disease.' Sir Martin is a member of the management executive team of the Wales Gene Park - which brings together genetics, life sciences and clinical expertise from across Wales to create a new centre for research of national and international importance that will offer state-of-the-art facilities for research, education and commercial exploitation.

## **Abstract of the Keynote Address**

### **Stem Cell Research**

Embryonic stem (ES) cells are proliferating tissue-culture cells which are embryonic in origin and retain the full lineage and differentiative capacity of the early mammalian embryo. Only mouse ES cells have been fully characterized but similar cultures have been isolated from numbers of other mammalian embryos including, notably, human. ES cells can differentiate either *in vivo* in the context of an embryo or equivalently *in vitro*. Their ability to undergo genetic alteration and selection *in vitro* followed by embryonic development *in vivo* has led to their extensive use as a vector for mammalian genetic engineering. This is not an application for human ES cells but their ability to differentiate *in vitro* into a plethora of specific tissue precursors has led to scenarios for their use in cellular and tissue engineering therapies. Ethical and practical problems for the provision of *ad hominem* human ES cells remain. Knowledge from the mouse system may aid our understanding of the relationship between ES cells and embryos.

## **Best Poster Award Winners -2005**

### **Dr. Nael A. Al Naqeeb Award for the Best Undergraduate Research**

- El-Hammasi KS, Abbas JM, Al-Hussainan KY, Abullah A, Mojiminiyi OA: Comparison of method for the assessment of urine concentration in patients with microalbuminuria-Is urine creatinine our best choice? Department of Biochemistry laboratories, Faculty of Medicine, Mubarak Al-Kabeer Hospital, Kuwait.

### **Graduate Basic Science**

- El-Shazly S, Ahmad S, Mustafa AS, Al-Attiyah R, Krajci D: Mammalian cell entry proteins encoded by the mce3 operon are expressed during in vitro growth of Mycobacterium tuberculosis and internalized by HeLa cells. Department of Microbiology, Department of Anatomy and EM Unit, Faculty of Medicine, Kuwait University.

### **Resident Doctor's Research**

- Zaki MY, Mojiminiyi OA, Abdella NA, George S, Pinto C, Mathew R: Plasma concentrations of C-reactive protein and total homocysteine in relation to the severity and risk factors for cerebrovascular disease. Department of Pathology and Medicine, Faculty of Medicine, Ministry of Health, Kuwait University.

### **Basic Sciences**

- Al-Maghrebi M, Kehinde EO, Anim JT, Kapila K, Abraham V, Varadharaj: Non-invasive detection of surviving, a sensitive novel marker in bladder cancer diagnosis. Department of Biochemistry, Department of Surgery, Department of Pathology, Faculty of Medicine, Kuwait University.
- Canatan H, Benter IF, Yousif MHM, Akhtar S: Microarray-based gene expression profiling in diabetes: role of receptor tyrosine kinases in vascular dysfunction. Department of Pharmacology and Toxicology, Kuwait University, Faculty of Medicine, Kuwait, Centre for Genome-based Therapeutics, The Welsh School of Pharmacy, Cardiff University, UK.

## **Best Poster Award Winners -2005, Continued**

### **Clinical Sciences**

- Lutfy S, Khalik D, Al-Nakib W: Establishment of a multiplex PCR assay for the detection of respiratory viruses in clinical specimens. Department of Microbiology, Faculty of Medicine, Kuwait University.
- Sher A, Iqbal J, Hira PR, Hameed GhHM, Mandakar Y, Al-Mufto S, SI-Owaish RA: Enzyme-based parasite lactate dehydrogenase (pLDH) test for the rapid diagnosis of Plasmodium vivax. Department of Malaria Laboratory, Department of Microbiology, Faculty of Medicine, Ports and Borders Health Division, Virology Laboratory, Department of Public Health, Ministry of Health, Kuwait.

## Past Poster Day Keynote Speakers and Lectures

### 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

### 2004

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

Prof. Ferid Murad, Nobel Laureate, 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, Cont.**

## **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 Abstract List,  
By Subject Area**



## **Analytical Chemistry**

**1**

Denola, N, Quiming,N, \*Catabay, A, Saito,Y, and Jinno,K: Optimization of capillary electrophoretic (CE) enantioseparation for basic drugs with native beta-cyclodextrin as a chiral selector (Basic Sciences)

## **Anatomy**

**2**

\*Singh RKA, Jagia M, Samir S, Naik AK, Guermanov A, Ammar MH: Infraclavicular para coracoid approach of bracheal plexus block. (Clinical)

**3**

\*Krajci D, Mares V, and Lisa V: Giant astrocytes in C6 glial cells culture surviving Cisplatin treatment. (Basic Sciences)

**4**

\*Schütz P, Klepajcek I, Hamed HH: Coronal incision in cranio-maxillo-facial trauma (Clinical)

**5**

Singh RKA, Naik AK,Guermanov A, Assefa B, Khashty MJ, Mallick PN: Percutwist: percutaneous dilative tracheostomy. (Clinical)

## **Anesthesiology**

**6**

\*Jagia M, Guermanov A, Naik AK: Effect of thiopentone and propofol on Bispectral index (Clinical)

**7**

Bahzad M, Alisher AI, Hatem M, Blanka G, Hanouf AR, Susan M: Clinical Trial of Prolonged Infusions of Rocuronium Bromide in Critically Ill Patients: Effects of Multiple Organ Failure. (Clinical)

**8**

Aftab Ahmed, M Saeed Khan, Raimundo Pinto, Yousuf Abdul A Issa, M. Samir A Najam: Circumcision in Infants /Neonates With Ring Block (Local Anesthesia) (Clinical)

**9**

El-Zeini MNT; Al-Refaai AA. and Vedi H: Phenylephrine Added to Prophylactic Ephedrine during Spinal Anesthesia for Elective Cesarean Section. (Clinical)

**10**

\*Sherif S, Mallick PN, Hanafy M, Singh RKA: Comparative study between Esmolol,Diltiazem,and labetalol in the management of stress response to laryngoscopy and endotracheal intubation. (Clinical)

## **Biochemistry**

**11**

\*Ghader I, Cheng B, Sequeira F: Can the rat adrenal serve as a model for study of retinoid-X-receptor? (Graduate MSc: Basic Science)

**12**

M.R. Dayer: New inhibitors for Phosphoenopyruvate carboxy kinase (Clinical)

**13**

Bourfesen AMA, Anim JT, Khan I: Ultra-structural changes in experimental colitis: Role of Na-H exchanger-6 isoform (Graduate MSc: Basic Science)

**14**

\*Al-Mutairi DA, Craik JD, Benov L: Induction of oxidative stress by a Zn(II) N-alkylpyridyl-porphyrin photosensitizer (Graduate MSc: Basic Science)

**15**

\*Al-Mutairi DA, Craik JD, and Benov L: Novel high-efficiency photosensitizing agents: isomeric Zn(II) N-alkylpyridyl-porphyrins as photosensitizers (Basic Sciences)

**16**

\*Benov L and Sequeira F: Evaluation of a tetrazolium dye for in vivo detection of superoxide (Basic Sciences)

**17**

\*Sadeq AM, Craik JD: Erythrocyte plasma membrane microdomains: selective distribution of nutrient transporter polypeptides. (Graduate MSc: Basic Science)

**18**

Khader A, Siddique I, Hasan F, Khan I: Induction and characterization of polyclonal antibodies against the human Na-H exchanger-3 (Basic Sciences)

**19**

Alansari S, Sanders S: Cardiac markers, new definition and reality (Clinical)

**20**

Dhaunsi GS, Yousif MH, Alsaeid M, Benter IF: Diabetes-induced activation of peroxisomal functions in kidneys of spontaneously hypertensive rats is Ras-GTPase-mediated (Basic Sciences)

**21**

Sebastian S, Alansari S: Retrospective analysis of TSH and fT4 results (Clinical)

**22**

\*Al-Masaeid AL, Das KC, Al-Wazzan HJ, Al-Humood S, Craik JD: Membrane properties of erythrocytes from Kuwaiti patients with beta-thalassemia major. (Graduate MSc: Basic Science)

**23**

Srikumar TS: Biochemistry Practical Teaching in Kuwait University Medical College – Improvements in Student Performances. (Basic Sciences)

**24**

\*Kettaneh S, Cheng B, Al-Bader M, Thakar J, Mohan S: Is the adrenal steroidogenic cholesterol ester-reserve formed before birth? (Undergraduate)

## **Community Medicine**

**25**

Alaa B. Abbas\*, Mohamed M. Al-Desoky, Wafaa Y Al-Johar, Seham A. Al-Mufty: Screening of Tetracycline Residues in Kuwaiti Marketed domestic animals tissues by Charm II method (Basic Sciences)

**26**

Al-Ansari HKh, Al-Asfoor MM, Al-Kandari SA, Al-Othman MB, Moussa MAA: Prevalence and associated factors of Irritable Bowel Syndrome among Kuwaiti school teachers in the Capital governorate (Undergraduate)

**27**

Al-Arouj HA, Al-Adwani BM, Al-Obeid FA, Bu-Nashi F, Longenecker JC, Bouhaimed MM: Prevalence of hypertension and overweight and their associated factors among male high school students in Kuwait (Undergraduate)

**28**

\*Al-Mazeedi H, Al-Saleh H, Al-Ajmi M, Al-Rashed A, Moussa M: Anxiety and depression among medical doctors in Kuwait: prevalence and associated factors (Undergraduate)

**29**

Sharma PN, Bang RL, Al-Fadhli AN, Sharma P, Bang S, Ghoneim IE: Incidence, causes and mortality due to burns in Kuwait (Basic Sciences)

**30**

\*Ahmad K, Ahmad E, Al-Felakawi M, Al-Ali A, Longenecker JC: Patient satisfaction and perception of quality of care among surgery outpatients at Kuwait's general hospitals (Undergraduate)

**31**

\*Al Tarrah MY, Al Hadhoud SA, Al Rabeiah HS, Ja'afar NM, Longenecker JC: The acceptability of SMS text and Email messages in the clinical management of diabetic patients in Kuwait. (Undergraduate)

**32**

\*Al-Refaie N, Al-Fadhli B, Al-Anbuee E, Al-Harbi A, Radovanovic I: Driving Behavior of Kuwait University Student in Relationship to Socio-Demographic Variables and Personality (Undergraduate)

**33**

Anwar MA, \*Abdulrahman MI: Nutrition Information Seeking Behavior of Obese Kuwaiti Women (Graduate: Resident)

**34**

Al-Ramthan A, Al-Hashim N, Hussain E, Al-Otaibi H, Radovanovic I: Smoking among doctors and their attitude toward patients' smoking (Undergraduate)

**35**

\*Alhadlaq AA, Buhamrah AK, Alomar O, Alkhalidi SH, Radovanovic I: Football injuries among recreational football players in Kuwait (Undergraduate)

**36**

Al-Arabi D, Al-Doukhi F, Al-Hashemi A, Al-Amiri N, Shukur M, Bouhaimed MM: Knowledge, Perception and Practice of Cosmetic Procedures among University Students in Kuwait (Undergraduate)

**37**

Al-Dashti M, Al-Shatti M, Al-Kandari H, Hajia M, Akhtar S: Water consumption and self-reported health problems among Kuwait's young population (Undergraduate)

## **Dentistry**

**38**

\*Al-Shammari KF, Al-Ansari JM, Ben-Nakhi A, Al-Arouj M, Moussa NM: Prevalence and severity of periodontal diseases in Kuwaiti patients with diabetes (Clinical)

**39**

\*Al-Mutawa SA, Shyama M, Al-Duwairi Y, Soparkar P: Age specific dental caries experience of Kuwaiti schoolchildren in different governorates (Clinical)

**40**

Al-Jasser A, Al-Mutairi W, Behbehani E: Patient's Opinion To Reveal Health History Information (Undergraduate)

**41**

Al-Omar DH, Joseph B, Behbehani E, Scheutz F: Yeasts in the Oral Cavities of Kuwaiti Infants (Undergraduate)

**42**

\*Al-Omari QD, Omar R, Al-Omari WM: Factors associated with postoperative sensitivity of amalgam restorations (Clinical)

**43**

\*Kullman L, Joseph B: Reliability of a quality index in panoramic radiographs (Basic Sciences)

**44**

\*Muller HP, Barrieshi-Nusair KM, KoNonen E: Variance components of periodontal parameters in a steady-state plaque environment (Clinical)

**45**

\*Muller HP, Stadermann S: Multivariate multilevel models for repeated measures in the study of smoking effects on the association between plaque and gingival bleeding (Clinical)

**46**

\*Årtun J, Van 't Hullenaar R, Dopppe D, Kuijpers-Jagtman AM: Early identification of orthodontic patients at risk of severe apical root resorption (Clinical)

**47**

Behbehani E, Andersson L, Muller HP, Al-Haddad A: A Strain and Compression Study Of Dental Anesthesia Needles (Clinical)

**48**

Safer AM, Behbehani EMH, Al-Haddad A, Rafique M: Variation in Consistency of Dental Needles in Kuwait (Clinical)

**49**

\*Shyama M, Al-Mutawa SA, Al-Duwairi Y, Soparkar P. Risk factors for dental caries prevalence in Kuwaiti schoolchildren (Clinical)

**50**

AL-Aradi F, Boodai D Reliability of Gingival Bleeding on Probing and Periodontal Probing Depth in Patients with Plaque Induced Gingivitis (Graduate: Resident)

**51**

Zubaid D, Behbehani E Medical Histories of Patients Admitted to Kuwait University Dental Clinic (Graduate: Resident)

**52**

Akeel R, \*Omar R: Relationship between clinicians' educational background and their stated choices regarding retreatment of inadequate fixed prosthodontic restorations. (Clinical)

**53**

Al-Sharhan FA, Abdullah MA, Behbehani E Dentists' Competence Regarding Dental Managment of Diabetic Patients (Undergraduate)

**54**

Alotaibi1 S, Alsaleh M, Behbehani E Cross Sectional Survey of Consent in Oral Surgery (Undergraduate)

**55**

\*Al-Hajji BY, Omar R: Facial Symmetry: Attractive or Not? (Graduate: Resident)

**56**

\*Hammadi HA, Ahmad S, Qudeimat MA: Knowledge and attitudes of dentists in recognizing and reporting child abuse in Kuwait (Undergraduate)

**57**

Alhussaini F, Behbehani E, Alqattan S: Medico-Legal Aspect of Dental Malpractice in Kuwait 2004 (Graduate: Resident)

**58**

\*Hasan AA, Moussa NM, Al-Sane M, Al-Shammari KF: Appropriateness of antibiotic prescription for pediatric dental emergencies in Kuwait (Clinical)

**59**

\*Barrieshi-Nusair KM, Al-Omari QD, Said KN: Dental health attitudes and behavior among dental students in Jordan (Clinical)

**60**

\*Al-Asfour A, Andersson L: Effect of information given to school teachers on knowledge level of tooth avulsion and first aid. (Clinical)

## **Genetics and Molecular Biology**

**61**

\*Al-Timimy BM, AlFadhli SM, Khalid Al-Saeid Haider MZ, Al-Awadi A, Al-Herz A: Evidence of association of Endothelial Nitric Oxide Synthase locus with Systemic Lupus Erythmatosis (Graduate MSc: Basic Science)

**62**

\*Al-Azmi AA, Luqmani YA, MM El-Zawahri, Abraham G, Ford CHJ, Al Bader M: Estrogen receptor gene silencing in breast cancer cells using siRNA (Graduate MSc: Basic Science)

**63**

\*Rachid O, Ali AY, Jaffal S, Alkhalaf M: Gene expression profiling induced by Resveratrol, a natural cancer chemopreventive agent, in MDA-MB-231 human breast cancer cells (Graduate MSc: Basic Science)

**64**

\*AlFadhli SM, Al-Timimy BM, Yassin A: Molecular and Clinical study of von Hippel-Lindau disease in Kuwait (Basic Sciences)

**65**

\*Al-Maghrebi M, Anim JT, Adesina AO: Up-regulation of Eukaryotic Elongation Factor-1 Subunits in Breast Carcinoma? (Basic Sciences)

**66**

\*AlFadhli SM, Nanda A, Al-Timimy BM: Oncogene Notch4 Association with Alopecia Areata (Basic Sciences)

**67**

\*Yazdi AR, Najmabadi H: The prevalence of Thalassemia false results testing ignored by lab-workers in Tehran peripheral labs from 2002 till 2005 (Clinical)

**68**

Al-Majed H, \*Qasem J, Al-Shrayfee Ahmed, Al-Atar A and Ben Naky A: Apolipoprotein E genotyping by gene amplification and restriction enzyme polymorphism in diabetic and heart disease patients. (Clinical)

## **Imaging (Nuclear Medicine and Radiological Sciences)**

**69**

\*Sinan T, Sheikh M, Dashti K, Mukaimi AA, Awadi YA: Percutaneous coblation nucleoplasty of prolapsed intervertebral disc; an emerging alternative to surgery. Initial Kuwait experience. (Clinical)

**70**

\*Surana S.K, Al-Refai D, Sinha N.R: Diagnostic Radiological findings in body packers- study of 15 cases in Kuwait (Clinical)

**71**

Ben Nakhi AM, Zubaid M, \*Sheikh M: Sixty four-detector row CT in coronary angiography: A pictorial review. (Clinical)

**72**

\*Biswas G, Mohanadi S, Salman H, Shukur A, Mutairi A: Transient ischaemic stunning during myocardial gated spect scintigraphy (Clinical)

**73**

Khalil MM, Elgazzar AH, Ziada G, Wafaa Khalil: Performance of OSEM reconstruction in myocardial perfusion SPECT: comparison with FBP in two different extremes of attenuation and scatter. (Basic Sciences)

**74**

\*Abdou T, Al Muhanadi S, Nath SDS, Al Mutairi A: Calculation of retention and clearance indices for pelvi-ureteric junction obstruction patients post diuretic renogram (Clinical)

**75**

Fielding H, Kehinde EO, Owunwanne A, Gopinath S, Abraham M, Mathew M: Radionuclide Imaging to Assess Testicular Reperfusion in Rabbis Following Torsion (Basic Sciences)

**76**

\*Gupta R, Roberts OM, Abdeen S, Al-Bader I, Collier D, Elgazzar AH: Comparative evaluation of Mammography, Ultrasound and Scintimammography in the diagnosis of the Breast diseases. (Clinical)

**77**

Omar AM, Nair MK, Onendeko BO, Marouf R, Higazi Z, Khadadah ME, Qurtom M, Adekile AD, Elgazzar AH: Role of Tc-99m-DTPA Radio-aerosol clearance in the evaluation of pulmonary involvement in adult Sickle Cell Disease (SCD) patients. (Clinical)

**78**

\*Marafi FA, Syed GM, Al-Mutawa QI, Fielding H: Pre-scan water versus citrus juice and salivary clearance: Effect on Technetium-99m pertechnetate Thyroid Scintigraphy image quality. (Graduate: Resident)

**79**

Javid A, Khan HA, Rakesh M, Al-Mohannadi S, Abul-Huda F, Al-Shammari I, Al-Din S, Al-Enezi F, Mahmoud H: Pediatric Hodgkin's Lymphoma: Gallium scan in patients with residual mass after treatment (Clinical)

**80**

Abdulredha AA, Elgazzar AH: Does added value of Whole Body Blood Pool imaging Justify its routine use in Bone Scintigraphy? (Graduate: Resident)

**81**

Nath SDS, Al Muhanadi S, Al Mousawi M, Al Mutairi A, Tamer A: Usefulness of MAG3 renal scanning in detection of renovascular thrombosis post transplantation. (Clinical)

**82**

Abdulla ZS, Kodali SK, \*Habib EA, Al-Danderi ZA : Changed patient referral pattern for Nuclear Medicine over four years. (Clinical)

**83**

Abdulla ZS, \*Kodali SK, Habib EA, Al-Danderi ZA: Decrease in usage of cold kits following pooling of cases for Nuclear Medicine scanning. (Clinical)

## **Medical Education**

**84**

\*Premadasa IG, Al-Jarallah KF, Shehab D, Mathews AT: Clinical skills performed by pre-registration house officers (interns) in Kuwait (Graduate: Resident)

## **Medicine**

**85**

\*Al-sheikh K, Cuizon J, Al-Kanderi G Platelet apheresis: Should we count cycles or target platelet yields (Graduate PhD: Basic Science)

**86**

\*Uthaman B, Abushaban L, Qabandi M, Al-Hay A, Rathinasamy J, Selvan JP, Mittal R: Safety and efficacy of Amplatzer septal occluder to close fenestration after modified Fontan operation (Clinical)

**87**

\*Prasad KYM, Vurgese TA, Mapkar OA : Frequency and aetiology of hypernatremia in adult hospitalised patients in medical wards in a general hospital in Kuwait (Clinical)

**88**

Helal R, Al-Shammari S, Mapkar OA, Nasr M: The influence of insufficient exposure to sunlight on Vitamin D deficiency and related symptoms among women in the State of Kuwait (Clinical)

**89**

\*Reda A, Chattopadhyay A, Al-Othman AN, Bayoumy H, Moharib N, Nazmi N: Coexisting vitamin D deficiency in primary hyperparathyroidism (Graduate: Resident)

**90**

\*Panicker R, Fakim N, Al-Duwaisan AR: Menstrual linked asthma may not be completely suppressed by inhaled steroids. (Clinical)

**91**

\*Al-Shawaf E, Aayed A, Vislocky I, Radomir B, Dehrab N, Tarazi R: Levosimendan or milrinone in the type II diabetic patient with low ejection fraction undergoing elective ischemic heart disease surgery: a pilot randomized controlled trial (Clinical)

**92**

\*Abdella NA, Mojiminiyi OA, Al-Dahi W, Al Mohammedi H El Gebely S, George S, Pinto C, Mathew R Leptin, soluble leptin receptor, and free leptin index in relation to insulin resistance in patients with Type 2 Diabetes (Clinical)

**93**

Al-Shoumer KAS, Vasanthy SN, Doi SAR, Abalkhail SI, Al-Gudaibi MM, Hafez MF: Risk factors and predictors of increased risk in type 2 diabetes in Arabs resident in Kuwait (Clinical)

**94**

\*Al-Adsani AMS, Al-Jassar Sh, Al-Sultan F, El-Feky M, Al-Mezel N, Saba W: Implementing the Diabetes Care Programme standards at the primary health care setting in Kuwait (Clinical)

**95**

\*Al-Adsani AMS, Al-jihma N: Leptin levels in normal-weight, overweight and obese Type 2 Diabetic patients (Clinical)

**96**

Al-Shoumer KAS, \*Vasanthy SN, Doi SAR: The relation between intact proinsulin and adiponectin with insulin resistance (Clinical)

**97**

\*Fakeir A, Bahl SR, Khalil N: Thyroid Hormones in Women with Iron Deficiency Anemia (Clinical)

**98**

Chow R, Al Shemmari S, Jaing T, Tan P, Joseph Rosenthal, Nademane A, Karanes C, Graham M, David Gjertson and Petz L: Hematopoietic stem cell transplantation (HSCT) for benign indications using umbilical cord blood units (UCB) that were not depleted of red blood cells (Clinical)

**99**

\*Bahl SR, Vurgese TA, Fakeir A : High incidence of Idiopathic Thrombocytopenic Purpura (ITP) in Kuwait - a study from medical wards of Al-Jahra Hospital Kuwait (Clinical)

**100**

Al-Fadhli M, Makboul G: Brucellosis and Pyrexia of Unknown Origin in Kuwait (Clinical)

**101**

\*Alaqeel A, Altuwala H, Alfuzan W, Alqallaf A, Alfadli A, Alajmi M: Can AST/ALT Ratio Predict Response To Treatment of Hepatitis C Virus Infection? (Graduate: Resident)

**102**

\*Grover SB, Al-Duajj JY, Shehab El-Din MR: Interventions to reduce perinatal HIV I transimission in Kuwait (Clinical)

**103**

\*Uthaman B, Qabandi M, Abushaban L, Al-Hay A, Rathinasamy J, Selvan JP, Mittal R: Non-surgical closure of large pulmonary arteriovenous fistula using Amplatzer septal occluder (Clinical)

**104**

Christus ST,\*Mittal AK, Verma LK, Bhattacharya A, Akanji AO: Coronary Artery Disease Risk Factors in Arab Women with Coronary Artery Stenosis – A Coronary Angiographic Study (Clinical)

**105**

Salman H, Khan N, Biswas G, Mohannadi S, Shukur M, Eapen T, Mutairi A, Youssef B: Safety, Haemodynamic changes and Predictive Value of Dobutamine Myocardial Scintigraphy: Report on a Series of 372 Patients (Clinical)

**106**

Christus ST, \*Shukur M, Koshy T, Ibrahim AR, Nazir AK: Coronary Artery Disease risk factors and angiographic features in very young Arab men and women ( $\leq$  35 years old) undergoing diagnostic coronary angiography (Clinical)

**107**

\*Shukkuur A.M, Al Sayegh A, Akbar M, Thomas K, Javid M Utility of Holter monitoring in patients with significant symptoms (Clinical)

**108**

\*Hegazy AM, Abdulkader BA,Al-Kandary MH: Cardiac memory versus likelihood of ischemic heart disease in hypertensive patients with ventricular repolarization abnormalities after repetitive uniform ventricular extrasystoles (Clinical)

**109**

\*Hegazy AM, Abdulkader BA, Akbar MA: Validity of the early T wave inversion after ST-segment elevation acute myocardial infarction to predict successful thrombolysis (Clinical)

**110**

Akbar M, Al-Sayegh A, Petrovski P, Dashti R, Baidas G: Optimization of A-V and V-V sequential pacing in CRT patients using PW Doppler, CFM, and 3D advanced quantification echocardiography (Clinical)

**111**

Al-Kandary MH, Hegazy AM, Abdulkader BA : CARDIAC ventricular arrhythmias and reduced parasympathetic-dependent heart rate variability in patients with hyperthyroidism (Clinical)

**112**

\*Abdulkader BA, Hegazy AM: Improvement of quality of care for cardiac patients with acute ST segment elevation myocardial infarction and its influence on cardiac mortality in coronary care unit, Farwania Hospital, Kuwait (Clinical)

**113**

\*Asbeutah AM<sup>1,4</sup>, Asfar SK, Shawa JN, Al-Muzaini FA, Cameron DJ, McGrath PB: Is venous reflux a systemic disease in postthrombotic patients with unilateral DVT episode? (Clinical)

**114**

Sawi MS, Jayakrishnan B, Behbehani N, Al Saidi F, Al Bader M, Al Dowaisan A, Parwer S: Characteristics of patients with bronchogenic carcinoma in Kuwait. (Clinical)

**115**

Siddique I, Akhtar S, Memon A, Hasan F: The Changing Epidemiology of Esophageal Cancer in Kuwait – A Twenty Year Experience (Clinical)

**116**

Siddique I, Al-Mekhaizeem K, Hasan F: Diagnosis of Helicobacter pylori: Improving the sensitivity of the rapid urease (CLO) test by increasing the number of gastric antral biopsies (Clinical)

**117**

\*Behbehani N, Al-Bader M, Al-Ghanem F, Arifhodzic N, Jayakrishnan B, Al-Duwaisan AR: Ther medical resources utilization during thunderstorm asthma outbreak and the morbidity and mortality associated with it. (Clinical)

**118**

Al-Mutairi N: Childhood vitiligo: a hospital-based study from Kuwait (Clinical)

**119**

\*Al-Awadhi A, Olusi SO, Hasan E, Abdullah A: Serum concentrations of cardiac Troponin-I in patients with Rheumatoid Arthritis, Systemic Lupus Erythematosus, Primary Sjogren's Syndrome and Graves' Disease (Clinical)

**120**

Nasr M, Helal R, Al-Assoussy A, Alsaady A: Clostridia Perfringens and Its Relation to Rheumatoid Arthritis. (Clinical)

**121**

Uppal SS, Hussain MAS, Al-Raqum HA, Al-Saeid K, Al-Assousi A, Nampoory N, Abraham M: Henoch-Schönlein's purpura in adults versus children/adolescents: a comparative study (Clinical)

**122**

\*Al-Hilali N, Al-Humoud H, Mina MN, Joseph RA, Puliyclil MA, Nampoory MRN, Johny KV: Intravenous Alfacalcidol once weekly suppresses parathyroid hormone in haemodialysis patients (Clinical)

**123**

Serour M, Alqhenaei H, Al-Saqabi S, Mustafa A, Ben-Nakhi A: Cultural factors and patients' adherence to lifestyle measures in Kuwait (Clinical)

## **Microbiology and Immunology**

**124**

\*Alam FF, Khan ZU, Mustafa AS: Real-time LightCycler PCR for identification of *Candida* species (Basic Sciences)

**125**

\*Khan ZU, Mokaddas E, Al-Sweih N, Farhat D and Chandy R: Candidemia in Kuwait: a ten-year study of species spectrum and antifungal susceptibility profile of *Candida* bloodstream isolates (Basic Sciences)

**126**

\*Theyyathel A, Ahmad S, Khan ZU: Detection of *Aspergillus fumigatus*-specific DNA, (1-3)-beta-D-glucan, and galactomannan in serum and bronchoalveolar lavage specimens of experimentally infected rats (Basic Sciences)

**127**

\*Al-Banna NA, Raghupathy R, Junaid TA, Albert MJ: Characterization of a lung model of infection for *Campylobacter jejuni* (Graduate MSc: Basic Science)

**128**

\*Albert MJ, Haridas S, Dhaunsi GS, Adler B: Identification of the elusive factor of *Campylobacter jejuni* that cross-reacts with cholera toxin (Basic Sciences)

**129**

Rotimi VO \*, Salako NO, Asfour L, Divia M, KoNonen E: Oral carriage of periodontal pathogens in healthy Kuwaiti children and adolescents. (Clinical)

**130**

\*Al-Obaid IA, Al-Mofty S: The Impact of the Antibiotic Sensitivity Pattern of *Salmonella* on the Treatment of Salmonellosis in Kuwait (Clinical)

**131**

\*Mokaddas E, Yousef N, Shatty S, Kumar A: Evaluation of Cepheid IDI- methicillin-resistant *Staphylococcus aureus* (MRSA) assay for direct detection of MRSA from nasal swabs (Clinical)

**132**

Jamal WY\*, Rotimi VO, Suzcs G, Duerden BI: Influence of antibiotic exposure on cell-bound and cell-free *Clostridium difficile* cytotoxin production (Clinical)

**133**

\*Pazhoor A, Salem R, Jamal WY, Rotimi VO: Antibiotic susceptibility pattern of clinically significant bacterial isolates in 2004/2005 at Mubarak Al Kabir hospital (Clinical)

**134**

\*Kumar A, Mokaddas EM, Shatty S Septicaemia in a Burn Unit: A three- years prospective study (Clinical)

**135**

Udo EE, Al-Sweih N, Mathew B, Noronha B: Distribution of erm Determinants in Methicillin-Resistant and -Susceptible Staphylococci (Basic Sciences)

**136**

\*Salako NO, Rotimi VO, Mokaddas E, Philip L, Haidar HA, Hamdan HM: Occurrence of antibiotic-resistant oral anaerobes in healthy versus disabled children. (Basic Sciences)

**137**

\*Dalwai A, Ahmad S, Al-Nakib W: A 'new variant' of coxsackievirus A7 identified to be frequently associated with disease in children in Kuwait (Graduate PhD: Basic Science)

**138**

Essa S, Pacsa A, Nampoory MRN, Said T, Mousawi M, Al-Nakib W: Antibodies to pp150 and pp28 cytomegalovirus antigens protect patients from infection and disease after kidney transplantation. (Clinical)

**139**

\*Heikal M, Chehadeh W, Sarkhouh H, Abdul Khalik D: Association of Parvovirus B19 infection with clinically isolated symptoms (Clinical)

**140**

\*Sarkhouh H, Chehadeh W, Ben Nakhi, Al-Arouj M, Abdella NA, Al-Mohamady H, Al-Shawaf F, Abdulrasoul M, Al-Dahi W, Al-Nakib W: HCV infection as risk factor for diabetes mellitus (Clinical)

**141**

\*Marmash RW, Dalwai A, Molla AM, Szucs G, Albert MJ, Pacsa A: Genotypes of rotaviruses circulating in Kuwait. A preliminary study. (Graduate MSc: Basic Science)

**142**

\*Madi N, Pacsa A, Mustafa AS: Cytomegalovirus (CMV) gB1 and gH1 genotypes are dominant and cause more severe disease among renal transplant patients in Kuwait (Clinical)

**143**

\*Madi N, Pacsa A, Mustafa AS, Saeed T, Nampoory J: Does cytomegalovirus (CMV) develop resistance following antiviral prophylaxis and treatment in renal transplant patients in Kuwait? (Clinical)

**144**

\*Ali M.M, Al-Ali F, Al-Shammari S, Al-Askar H, Ahmad S, Al-Nakib W: Genotype D hepatitis B virus is associated with severe hepatic damage among hepatitis B virus chronically-infected patients in Kuwait (Clinical)

**145**

\*Loutfy S, Khadadah ME, Behbehani NA, Higazi Z, Essa S, Khalik D, Qaseer M, Pulumathethu S, Al-Nakib W: Respiratory syncytial virus (RSV) is the major cause of acute respiratory disease in Kuwait (Clinical)

**146**

\*Loutfy S, Madi N, Khalik D, Chehadeh W: A rapid and sensitive method for the diagnosis of the “Avian Flu” H5 sub-type of influenza A virus in Kuwait (Clinical)

**147**

Al-Hamdan S: Human role in a fully automated viral marker screening system (Abbot Prism™) (Basic Sciences)

**148**

\*Dalwai A, Ahmad S, Sulaiman F, Abdul Raheem J, Al-Nakib W: Echovirus 9 causing severe CNS disease in Kuwait. (Clinical)

**149**

\*Al-Rifaiy AI, Al-Merjan J, Pacsa A: Species B Adenoviruses Causes Frequent Conjunctivitis in Kuwait (Clinical)

**150**

\*Mustafa AS, Al-Attiyah R, Vordermier HM: Immunogenicity of eight recently identified Mycobacterium tuberculosis antigens in infected and vaccinated animals (Basic Sciences)

**151**

\*Ahmad S, Mokaddas E: The occurrence of common and rare rpoB mutations in rifampin-resistant clinical Mycobacterium tuberculosis isolates in Kuwait (Clinical)

**152**

\*Kunjumoidu NP, Ahmad S: Recombinant expression and purification of Mce1C of Mycobacterium tuberculosis (Basic Sciences)

**153**

\*Mokaddas E, Ahmad S, Kunjumoidu NP: Rapid differential identification of Mycobacterium tuberculosis complex and nontuberculous mycobacteria by multiplex PCR targeting oxyR-ahpC intergenic region and the rpoB gene (Clinical)

**154**

\*Hanif SNM, Al-Attiyah R, Mustafa AS: Identification of species-specific and major antigenic proteins of Mycobacterium Tuberculosis to replace Tuberculin in the diagnosis of tuberculosis (Graduate PhD: Basic Science)

**155**

Ali Sher, Iqbal J, Latif SA, Ghuloom HM, Al-Mufti S, Al-Owaish RA and Hira PR: Detection of Og4C3 antigens in the diagnosis of Lymphatic Filariasis by qualitative immunochromatographic technique (ICT) (Clinical)

**156**

Hira PR, Iqbal J, Al-Ali FM, Khalid N, Al-Shelahi FA: Unique endemicity of cryptosporidiosis in children in Kuwait (Clinical)

**157**

\*Chandy R, Joseph L, and Khan ZU: Evaluation of Tobacco agar as a differential medium for *Cryptococcus neoformans* and *Cryptococcus gattii* (Basic Sciences)

**158**

\*Mahmoud FF, Arifhodzic N, Abul HT, Haines DD, Wise J Cetirizine modulates lymphocyte activation in patients with allergic rhinitis and asthma (Basic Sciences)

**159**

Draghijeva E, Egbase P, Mathai S: Resistance of *Escherichia coli* isolates from pregnant women with community-acquired urinary tract infections (Clinical)

## **Neuroscience**

**160**

\*Mohammadi S, Pavlik A : Cellular Stress Response in the Brain: Involvement of NMDA and non-NMDA Receptors (Graduate MSc: Basic Science)

**161**

\*Turcani M, Pavlik A, Turcani P: Effect of propentofylline on excitotoxic brain injury (Basic Sciences)

## **Nutrition**

**162**

\*Al Qaoud N, Jacob S, Prakash P. Can Breastfeeding Protect Kuwaiti Preschool Children from being Overweight? (Basic Sciences)

## **Obstetrics and Gynecology**

**163**

\*Al-Harmi J, Omu AE, Vedi HL, Mechklova L, Sayed A F, Al-Ragum N.S: Magnesium Sulphate Therapy in Severe Preeclampsia and Effects on Obstetric Outcome (Clinical)

**164**

\*Diejomaoh FME, Gupta M, Farhat R, Jirous J, Al-Jaber M, Asiya M: The intrapartum performance of patients presenting with diabetes mellitus in pregnancy (Clinical)

**165**

\*Nandakumaran M, Al-Saleh E, Al-Harmi J, Al-Shammari M, Sadan T, George S: Maternal-fetal Status and Disposition of Cu, Fe, Mo, Se and Zn in Obese Gestational Diabetic Pregnancies (Basic Sciences)

**166**

\*Al-Saleh E, Nandakumaran M, Al-Shammari M, Sadan T, Abraham S, Mannazhath N: Transport of Cisplatin in Human Placenta in Late Gestation: In Vitro Study (Basic Sciences)

**167**

\*Omu AE, Al-Azemi MK, Omu FE, Fatinikun T, Anim JT, Oriowo MA, Mathew C: The effect of lithium on the ontogeny of rat spermatozoa. (Clinical)

**168**

\*Omu AE, Al-Azemi MK, Kehinde EO, Anim JT, Oriowo MA, Mathew C: The mechanisms involved in improved sperm parameters by zinc therapy (Clinical)

**Oncology****169**

\*Vasishta S, Al Saleh K: Profile of radiotherapy treatment in KCCC, Kuwait in the year 2004. (Clinical)

**170**

Abuzallouf S, Motawy M, Thotathil Z: Base line staging tests in primary breast cancer, KCCC experience (Clinical)

**171**

Mittal R, Al Awadi S, Nemej J: Clinical Profile of Children with Medulloblastoma – a KCCC study (Clinical)

**172**

\*Vyas V, Al-Awadi S, Nemej J, Al-Enezi F, Delvadiya MD: Experience with Gefitinib (Iressa) in advanced non-small cell lung cancer at Kuwait Cancer Control Centre (Clinical)

**173**

\*Vasishta S, Varghese A, Ragheb A, Sethuraman TKR, El Hattab O: Radical radiotherapy in cancer uterine cervix – Results and future recommendations. (Clinical)

**174**

Al-Shemmari S, Ameen R: Hodgkin's Disease in Kuwait: epidemiology and clinical features (Clinical)

**175**

\*Al-Shammeri I, Fayaz S, Al-Shammeri J, Mahmood S ED: Is there a significant association between thyroid diseases and breast cancer? (Clinical)

**176**

\*Das DK, Haji BI, Al-Ayadhy B, Mallik MK, George SS, Pathan SK, Francis IM, Sheikh ZA, Sathar SA, Shaheen A, Anim JT: Medullary carcinoma of the breast: Diagnosis by fine needle aspiration cytology (Basic Sciences)

**177**

Abuzallouf S, Motawy M, El hattab O, Thomas G and Fayaz S Rectal cancer; KCCC experience (Clinical)

**178**

Kapila K, George SS, Al-Shaheen A, Al-Ottibi MS, Pathan SK, Sharma PN, Sheikh ZA, Haji BE, Mallik MK, Das DK, Francis IM: Changing spectrum of squamous cell abnormalities observed on Papanicolaou smears in Mubarak Al-Kabeer Hospital over a 14 year period. (Clinical)

**179**

\*Fatma Al-Saeedi: [Methyl-14C]-choline incorporation into nude mice: correlation with [methyl-3H]-thymidine (Basic Sciences)

**180**

Mona KI, Agzamov AI, Al Qattan AM, Hatem M: Sevoflurane anesthesia for painful procedures in the pediatric oncology. (Clinical)

## **Ophthalmology**

**181**

Al-Khudhair M, Al-Qattan A, \*Al-Thuwaikh M, Al-Azmi F, Lukman T Refractive errors among high school students in Kuwait (Undergraduate)

**182**

\*Abdelmoaty S, Behbahani AM: Traumatic hyphema – comparison between different treatment modalities (Clinical)

## **Pathology**

**183**

\*Pathan SK, Sheikh ZA, Al-Ansari TA, Das DK, Kapila K: Fine needle aspiration cytology of testes: A nine-year review of cases from Mubarak Al-Kabeer Hospital. (Clinical)

**184**

Haji BE, Kapila K, Das DK, Junaid TA: Fine needle aspiration cytology of lymphomas of the thyroid: A report of 18 cases. (Clinical)

**185**

\*Abdeen SM, Ali Y, Al-Hunayan A, Al-Awadi KA: The Clinicopathological features of primary renal tumours in Kuwait: A Study of 50 cases from 1990-2005 (Clinical)

**186**

\*George S, Shihab PK, Suresh CG: Insulin-like growth factors (IGF 1 & 2) and their binding protein (IGFBP-3) in Arab subjects with coronary heart disease (Clinical)

**187**

\*Bhattacharya A, George S, Ohaeri JU: Insulin-like growth factors (IGF 1 & 2) and their binding protein (IGFBP-3) in schizophrenic Arab subjects (Clinical)

**188**

\*Mathew R, Shihab PK, Suresh CG, Fatania HR, Al-Radwan R, Akanji AO: Associations of APOE polymorphism with LDL size and subfraction profiles in coronary heart disease (Clinical)

**189**

Olusi SO, Al-Awadhi AM: Microalbuminuria predicts bone loss and decreased bone mineral density in rheumatoid arthritis (Clinical)

**190**

\*Akanji AO, Suresh CG, Al-Radwan R, Fatania HR, Hussain A, Shihab PK, Zubaid M: APOE polymorphism as a genetic risk factor in the genesis and prognosis of acute coronary syndromes in Arab patients in Kuwait (Clinical)

**191**

\*Al-Radwan R, Fatania HR, Suresh CG, Shihab PK, Zubaid M, Akanji AO: Genetic polymorphisms of Human Platelet Antigens (HPA 1 & 2) as novel risk factors for coronary heart disease in the Arab population (Clinical)

**192**

\*Subrahmanya NB, Kapadi SN, Al Hunaidi H, Al Ghadban B, Turkomani A, and Junaid TA: Prevalence of Human Papilloma Virus (HPV) infection in the lower female genital tract lesions: Analysis by light microscopy, immunohistochemistry and in situ hybridisation on paraffin embedded tissues. (Undergraduate)

**193**

\*Jadaon MM, Marouf R, Dashti AA, Mojiminiyi OA, Al-Muzaini H, George S, Abdullah RAN, Lewis HL: Methylenetetrahydrofolate reductase C677T mutation in Arab population and patients with myocardial infarction in Kuwait (Clinical)

**194**

Mojiminiyi OA, Abdella NA, Marouf R, George S, Pinto C, Mathew R: Soluble transferrin receptor, transferrin receptor, ferritin index, and iron status in female patients with Type 2 Diabetes (Clinical)

**195**

Abdullah A, Mojiminiyi OA: Immuno-Unreactive Albumin And Urine Protein Electrophoretic Pattern In Urine Of Patients With Early Diabetic Nephropathy. (Basic Sciences)

## **Pediatrics**

**196**

Syed.K.M.A\*, Saeed.M: Out-come of Very Low Birth Weight(VLBW) babies Born in Ahmadi Hospital (From 1992-2002) (Clinical)

**197**

\*Gulati RR, Sayeda A, Al-Anezi F: Acute poisoning in children in Jahra Health Region. (Clinical)

**198**

\*Al-Naqeeb N, John AB, El-Shorbagy H, Gani AM, Eliwa MS, Azab A: Acquired invasive fungal infection in a Neonatal Intensive Care Unit (Clinical)

**199**

\*Hammoud MS, Raghupathy R Devarajan LV Al-Saban F, Abd-Alwahed E,, Barakat N, Eltomi H, ElSORI D: Cytokine patterns in respiratory distress syndrome indicate different profiles in mild and severe cases (Clinical)

**200**

Redha E, Ridha M, Alaqeel A: Safety and efficacy of carvedilol in children with congestive heart failure (Graduate: Resident)

**201**

Husain E \*: Varicella: pattern of hospitalization and complication in children in Kuwait - 2004 (Clinical)

**202**

Fedora L, Tripat PK, Haiba N: Emergency cesarean section and delivery below 39 gestation week increases the risk for newborn born to the post cesarean pregnant women. (Clinical)

**203**

Mona KI, Agzamov AI, Al Qattan AM, Dubikaitis AY, Maya IP, Hatem M: Sevoflurane anesthesia for magnetic resonance procedures in pediatrics. (Clinical)

**204**

\*AL-Wugyan D. A, AL-Roumi F. A, Zureiqi M.K, AL-Kandari M.A: Children Pain Expression and Assessment in Kuwait (Graduate MSc: Basic Science)

**205**

Al.Saad SA,Alsaid AN: Potter's Syndrome: Report from a tertiary NICU in the State of Kuwait (Clinical)

## **Pharmacology and Toxicology**

**206**

\*Abul HT, Mahmoud FF, Omu AE, Haines DD, Williams J, Gupta M, Mannazhath N: Oxidative stress and cell-mediated immunity in gestational and pre-gestational diabetes mellitus at third trimester of pregnancy (Basic Sciences)

**207**

\*Cojocel C, Thomson MS, Novotny L: Ursolic acid effects on cisplatin nephrotoxicity (Basic Sciences)

**208**

Kombian SB, Edafioho IO, Ananthalakshmi KVV: Determination of a mechanism of action of anticonvulsant aniline enaminones. (Basic Sciences)

**209**

Yousif MHM: Role of Protein Kinases in Mediating Diabetes-Induced Augmented Vasoconstriction to Endothelin-1 in the Renal Arteries of Diabetic Rats (Basic Sciences)

**210**

\*Shihab-Eldeen AA, Mojiminiyi OA, Nampoory MRN, Anwar AA, AbdulAzziz HA: Quantification of sirolimus whole blood levels in clinical samples by high-performance liquid chromatography-tandem mass spectrometry (Basic Sciences)

**211**

\*Katoue MG, Oriowo MA, Khan I: Increased expression and activity of heme oxygenase-2 in pregnant rat aorta is not involved in attenuated vasopressin-induced contraction (Graduate MSc: Basic Science)

**212**

Narayana K: Methyl parathion-an organophosphate insecticide induces biochemical and structural changes in the rat testis (Basic Sciences)

**213**

\*Yousif MH, Benter IF, Abraham S, Cherian A, Oommen E, Canatan H: Inhibition of Ca<sup>2+</sup>/calmodulin-dependent protein kinase II, Ras-GTPase and 20-hydroxyeicosatetraenoic acid attenuate the development of diabetes-induced vascular dysfunction in the rat carotid artery (Basic Sciences)

**214**

\*Al-Saleh FM, Al-Maghrebi M, Benter IF: Angiotensin contributes to captopril-induced cardiac protection in L-NAME-treated SHR (Graduate MSc: Basic Science)

**215**

\*Al-Saleh FM, Al-Shawaf E, Hoteit L: Levosimendan protects against global ischemia-induced cardiac dysfunction in hypertensive rats with endothelial dysfunction (Graduate MSc: Basic Science)

## **Pharmacy**

**216**

\*Phillips OA, Udo EE, Ali AAM, Samuel S: Novel arylcarbonyl- and arylsulfonyl-piperazinyl oxazolidinones with antibacterial activity (Basic Sciences)

**217**

\*Al-lanqawi Y, Abdel-Hamid ME, Abdulmalek K, Phillips D, Matar K, Sharma PN, Capps PAG, and Thusu A: Therapeutic Drug Monitoring of Gentamicin: Evaluation of five nomograms for initial dosing at AL-Amiri hospital. (Clinical)

**218**

Ball DE, Tisocki K, Herxheimer A: Advertising and disclosure of funding on patient organisation websites (Clinical)

**219**

\*Sharaf LH, Abdel-Hamid ME, Kombian SB, Diejomaoh FME: Determination of duphaston in plasma by tandem mass spectrometry: application to therapeutic monitoring of duphaston in pregnancy disorders (Clinical)

**220**

\*Khatab IS, Lila EA, Samy A, Fetouh MI: Studies on the development of sustained release microcapsules of terbutaline sulphate (Basic Sciences)

**221**

Dashti Z, Tisocki K: Knowledge, attitudes and practices of pharmacist regarding smoking cessation in Kuwait (Clinical)

**222**

\*Krishnaiah YSR, Saleh M, Al-Saidan, Veer Raju P, Bhaskar Reddy PR, Satyanarayana V: Suar gum-based colon-targeted metronidazole tablets for the treatment of amoebiasis (Basic Sciences)

**223**

Awad AI, Al-Thauwaini M, \*Abahussain EA: Interest of community pharmacists in health promotion in Kuwait (Undergraduate)

**224**

\*Awad AI, Al-Ebrahim S, Abahussain EA: Pharmaceutical care services in hospitals of Kuwait (Undergraduate)

**225**

\*Nada AH, Friedrich H, Bodmeier R: Formulation of Nifedipine Fast-Release Tablets (Basic Sciences)

**226**

\*Zaghloul A, Mustafa F, Siddiqui A, Khan M: Response surface methodology to obtain beta-estradiol biodegradable microspheres for long-term therapy of osteoporosis (Basic Sciences)

**227**

Ben Thani A, \*Tisocki K: Smoker's attitude towards provision of smoking cessation services in pharmacies (Clinical)

**228**

\*Matowe WC, Abahussain EA, Awad AI, Capps PAG: Kuwait pharmacies blood pressure devices survey (Clinical)

**229**

\*Abdelmoneim AS, Ball DE, Abahussain EA : Public trust in and attitudes towards retail pharmacists in Kuwait (Undergraduate)

**230**

\*Orabi KY, Al-Ghamdi WM, Al-Swailem AM: Cell Free Expression of Cloned Cyanovirin-N Gene (Basic Sciences)

**231**

\*Abou Dheir L, Zaki N, Farres B, El- Badry H, Al- Zoibi, E Medication Error Program at Ahmadi Hospital (Clinical)

## **Physical Therapy**

**232**

\*Alshaiji AM, Alhassawi A, Alkhaldi G, Alshatti TA: Behavioral changes after complete traumatic spinal cord injury in adult female rats (Basic Sciences)

## **Physiology**

**233**

\*Juggi JS, Canatan H, Al-Maghrebi M, Joseph S, Bitar MS, Benter IF: FPTIII improves cardiac recovery by inhibiting farnesylation of Ras-GTPase and activation of mitochondrial ATP-sensitive potassium channels (Clinical)

**234**

Al-Zaid NS, Dashti H, Mathew TC, Juggi JS: Low carbohydrate ketogenic diet enhances cardiac tolerance to global ischemia (Basic Sciences)

**235**

\*J. Ramadan, G.Alex, A. Hamouda: Energy Cost of Islamic Prayer (Basic Sciences)

## **Psychiatry**

**236**

Eid S, Al Zayed A, Maghraby M, Ayad G, Kamel N: Deliberate self harm cases referred for psychiatric assessment (Clinical)

**237**

\*Fido A, Varghese R, Al Saad S BODY MASS INDEX of children with autism in KUWAIT: (Clinical)

**238**

\*Mustafa MA, Eid S, Fawzy AR: Inpatient psychiatric consultation in kuwait – a descriptive study (Clinical)

**239**

\*Awadalla AW, Ohaeri JU: Correlates of subjective quality of life in diabetes care: family caregiver impressions predicted quality of life of patient and caregiver (Clinical)

**240**

\*Akanji AO, Ohaeri JU, Fatania HR, Al-Shammari S, Hussain A, Bhattacharya A: APOE gene polymorphism and blood lipoproteins in Arab schizophrenic patients. (Clinical)

## **Surgery and Transplantation**

**241**

Buresley S, Moniri S, Codaj J, Samhan M, Al-Mousawi M: Ureteric stricture in kidney grafts (Clinical)

**242**

Kehinde EO, Kapila K, JT Anim, Al-Mulla F, Mojiminiyi OA, Abraham V: Comparison of Urine Nuclear Matrix Protein 22 (NMP22) Qualitative Test and Urine Cytology in the Detection of Bladder Cancer at First Presentation and During Surveillance (Clinical)

**243**

Buresley S, Al-Mousawi M: Comparison of open and laparoscopic donor nephrectomy (LDN):The initial one year experience. (Clinical)

**244**

Al-Enezi HK, Al-Kandari AM, Al-Shebeiny YH: Renal trauma in Adan hospital. (Clinical)

**245**

Al-Kandari AM, Elshebiny YH, Al-Enezi HK: Outcome of percutaneous nephrolithotomy (PCNL) in the management of upper urinary stones: Single Center experience in Kuwait. (Clinical)

**246**

\*Nampoory MRN, Johny KV, Mini A, Edison G, Said T, Nair MP, MMA Halim, T Al Otaibi, Asif PA, Samhan M, Al Mousawi M: Determinants and Consequences of elevated Homocysteine levels in Renal Transplant Recipients-A Cross-Sectional study. (Clinical)

**247**

Ali Y, Kehinde EO, Khodakhast F, Jamal WY, Rotimi VO: A study of the bacterial flora of the perineum in adult male urological patients (Clinical)

**248**

Al-Kandari AM, Elshebiny YH, Elhilali M, Al-Enezi HK: Holmium laser enucleation of the prostate: Initial experience in Kuwait (Clinical)

**249**

\*Nampoory MRN, Johny KV, Mini A, Akanji AO, Edison G, Halim MA, Said T, Nair MP, T Al Otaibi, Hassan A, Samhan M, Al Mousawi M: Hyperhomocysteinemia is an independent risk factor for unfavorable outcome in Kidney Transplant Recipients- A Prospective Study (Clinical)

**250**

Alhajri F, AlKandari M, Ahmad A Alaqeel: Bilateral testicular torsion in an adult (Graduate: Resident)

**251**

\*Said T, Nampoory MRN, Pacsa A, Essa S, Madi N, Mini Abraham P, Nair MP, Halim MA, Johny KV, Samhan M and Al-Mousawi M: Cytomegalovirus in kidney transplant recipients; single center experience. (Clinical)

**252**

Mohammad AI, Shuaib A, Hussain J, Koursheed M Preoperative Bone Scan, Liver ultrasonography and Chest radiography For Breast Cancer Is It Mandatory? (Graduate: Resident)

**254**

\*Brook A, Al Qattan F, Varkki Z, Al Adwani M, Negi Vidya, Aghahowa EJ: Deep neck space infections: diagnosis and management (Clinical)

**255**

Ahmed A, Khan MS, Al\_Awadi.NZ: Head injury in Ahmadi Health Area (Clinical)

**256**

\*Al-Sebeih K, Al-Otaibi T: Tracheal resection with end-to-end anastomosis for benign tracheal stenosis (Clinical)

**257**

\*Jamal MH, Reebye SC, Zamakhshary M, Skarsgard ED and Blair GK: Can we predict the failure of chest tube thoracostomy in the treatment of pediatric parapneumonic effusions? (Clinical)

**258**

Ayed AK, \*Chandrasekaran C, Sukumar M: Aspiration versus tube drainage in primary spontaneous pneumothorax: A randomized study (Clinical)

**259**

Al-Hunayan A, Al-Mutar M, Kehinde EO, Al-Ghorory M: The association between plasma homocysteine levels and erectile dysfunction: Study on diabetic patients (Clinical)

**260**

Al-Hunayan A, Al-Muta M, Thalib T, Al-Ghorory M: Prevalence and predictors of erectile dysfunction in newly diagnosed Type 2 Diabetic patients (Clinical)

**261**

Dubikaitis AY, Alisher AI, Al Qattan AM, Mona KI, Maya IPI: Optimization of sevoflurane administration in morbidly obese patients: a comparison with isoflurane using an 'inhalation bolus' technique. (Clinical)

**262**

Abdumadjidov KhA, Parpiev RS: Surgical treatment of the rheumatic heart diseases (Clinical)

**263**

Parpiev RS, Nazirova LA : The first trial of tricuspid incompetence surgical correction in extracorporeal conditions without aortal occlusion. (Clinical)

**264**

Parpiev RS: Immediate results of valvulopreserved cardiac surgeries in patients with mitral valve rheumatic diseases. (Clinical)

**265**

Al Qattan AM, Agzamov AI, Dubikaitis AY, Mona KI: A clinical utility of the effect of AEP monitoring on anesthetic drug Sevoflurane requirements and recovery profile after Laparoscopic Surgery. (Clinical)

**266**

Bang RL, Al-Bader AL, Al-Sayer H, Mattappallil AB, Sharma PN: Role of Zinc supplementation in Burn management (Clinical)

**267**

Raju KT, Hendaway YS, Risk RA, Estrera C, Maligsay F, Afifi M, AL-Hawida AS, AL-Asfour AA, Mansour M, AL-Muzairai I: Bone Marrow Registry in Kuwait (Clinical)

**268**

Al-Hashemi A, \*Jeraq H, Al-Enezi M, Al-Daoud S, Radovanovic Z: Attitudes towards organ donation among Kuwait University students (Undergraduate)

## **Transfusion Medicine**

**269**

Al-Sanea D: Implementation of Internal Assessment in Kuwait Central Blood Bank (Basic Sciences)



**Case Report Abstract List,  
By Subject Area**



## **Anesthesiology**

**270**

\*Jagia M, Guermanov A, Singh RKA, Naik AK: Detection of misplaced subclavian vein catheter by internal jugular vein occlusion test (Clinical)

**271**

\*Naik AK, Singh RKA, Jagia Manish, Guermanov A, Mallick PN, Krishnareddy G Intraoperative myocardial infarction, cardiac arrest survival history. (Clinical)

**272**

\*Naik AK, Guermanov A, Mallick PN, Jagia M, Singh RKA, Krishnareddy G, Hanafy M: Massive hepatic trauma, conservative managements with recombinant activated Factor VII: An experience. (Clinical)

## **Imaging (Nuclear Medicine and Radiological Science)**

**273**

\*Sontenam VSM, Al Adwani M, Negi VC: Complicated acute pancreatitis: Role of interventional Radiologist (Clinical)

**274**

\*Austin ML, Belgrami F, Al-Adwani M: PNET (Primitive Neuroectodermal tumor) of the axilla: A Case Report (Clinical)

**275**

\*Surana S.K, El Gabar Ayad A.A, Al-Refai D, Hebbar S: The role of three dimensional computed tomography imaging in Eagle's syndrome-A case report (Clinical)

**276**

Chandramouli B, Aghahowa EJ, Al-Adwani M: Cerebral Venous Thrombosis - A report of three cases. (Clinical)

**277**

\*Aghahowa EJ, Hoisala VR: Primary aneurysmal bone cyst at C5 and C6 presenting as an extradural mass (Clinical)

**278**

\*Aghahowa EJ, Al-Adwani M: Uterus didelphys --- presenting as an abdominal mass in a menstruating female (Clinical)

**279**

\*Sontenam VSM, Al Adwani M, Bharati CM: Boerhaave Syndrome: A devastating lower esophageal rupture, How common? (Clinical)

**280**

\*Athyal RP, Al-Khawari H, Al-Qabandi WA: CT findings in a case of hepatic focal nodular hyperplasia in a child (Clinical)

## **Medicine**

**281**

\*AL-Qattan SI, Al-Kandary NA, AL-Frhan K: Photo-Superimposition technique for Identification of Unknown Person (Clinical)

**282**

\*Asif PA, Nair MP, Al-Otaibi T, Said T, Halim M, Samhan M, Al Mousawi M: Adult respiratory distress syndrome during Basiliximab treatment in renal transplantation. (Clinical)

**283**

Hayat SJ, Zubaid M, Suresh CG: Acute myocardial infarction following sildenafil intake in a nitrate-free patient without previously documented coronary artery disease (Graduate: Resident)

**284**

\*AL-Qattan SI, Al-Kandary NA, AL-Frhan K: Facial Reconstruction (Clinical)

**285**

Nasr M, Saqur R, Al-Assoussy A, Mustafa M: Libman Sack Endocarditis is not an uncommon presentation of SLE. (Clinical)

**286**

\*Al-Suraikh M, Vurgese TA, Youssef NL: Klinefelter Syndrome (Clinical)

**287**

Fakeir A, Kahvic M, Mohsen N: Von Recklinghausen Disease and Acute Leukemia: A Case Report (Clinical)

**288**

\*Swede M, Al-Fayad H, Abdulmlak S, Hatow M, Kabbara H: Pseudomyxoma Peritonei and Amyloidosis (Clinical)

**289**

Zubair S, Al-Fayad H, Al-Azza D, Ibrahim K: Coronary Dissection (Clinical)

**290**

Khan HA, Hamdan R, Al-Assoussy A, Al-Anzi AA: Isolated Left ventricular Noncompaction (LVNC), A form of adult congenital heart disease. (Clinical)

**291**

\*Vurgese TA, Bahl SR, Al-Suraikh M: Unusual case of bronchiectasis due to IgA deficiency associated with coeliac disease (Clinical)

**292**

Al-Mutairi N: Olmsted syndrome: report of a new case with unusual features (Clinical)

**293**

Uppal SS, Al-Raquum HA, Al-Mutairy M: Shrinking lung syndrome as a presenting manifestation of systemic lupus erythematosus in a Kuwaiti female (Clinical)

**294**

Behbehani A, Taha S, Alzafiri A, Abdulwahab R, Shehata A: Thyrotoxic hypokalaemic periodic paralysis (Clinical)

## **Microbiology and Immunology**

**295**

\*Purohit P, Al-Obaid IA, Omar NJ: HIB vaccine failure: a case report from KUWAIT. (Clinical)

**296**

John AB, Razak EA, Razak EED, Al-Naqeeb N, \*Dhar R: Intractable Bacillus cereus bacteremia in a preterm neonate (Clinical)

**297**

Hira PR, Dabbous H, Amer M, Al-Shammari J, Iqbal J, Khalid N, Francis I, Wilson M, Neafie R, Eberhard M: Zoonotic Onchocerciasis with bilateral ocular Toxoplasmosis: A concurrent infection? (Basic Sciences)

## **Oncology**

**298**

\*Muralidharan KC, Al-Awadhi S, Vyas V, Nemeč JN, El-Khodary A, Al-Enezi F, Delvadiya MD: Primary PNET/Ewing's Sarcoma of the Dura: a case report (Clinical)

## **Ophthalmology**

**299**

Behbehani J, Kazem M, Al-Buloushi A, Ubuweja A: Postoperative Orbital Cellulitis Following Retrobulbar Anaesthesia -Report Of Two Cases (Clinical)

**300**

Kazem M, Behbehani J, Al-Buloushi A, Balamurugan R: Herpes Zoster Orbital Myositis In A Healthy Young Patient - A Case Report (Clinical)

## **Pathology**

**301**

\*Mannan AAS, Rifat, Kahvic M: Proliferating trichilemmal tumor in the chest wall (Clinical)

**302**

\*Mannan A A S Rifat, Kahvic M. Zahir MD: Small cell carcinoma of the urinary bladder: report of a rare case (Clinical)

**303**

ShalbiSA,,El Shiekh ME,Al-Kandary NA: Aortic dissection,Marfan Syndrome, as a cause of sudden death (2 case reports) (Clinical)

**304**

\*Amir T, Jayakrishnan B, Jassar A, Al Saidi F: Primary diagnosis of Pulmonary Echinococcosis by cytological techniques, a Case Report. (Clinical)

**Pediatrics****305**

Al-Fahad TB: Congenital Heart Disease, Cerebral Palsy, Developmental Delay, & GI Abnormalities: A New Syndrome? Case Report & Literature Review (Graduate: Resident)

**306**

Al-Saad SA: A rare etiology for neonatal Respiratory Distress Syndrome: Neonatal interstitial glycogenosis (Clinical)

**307**

\*Soni AL, Surana SK, Al-Sawan RMZ: Short Rib-Polydactyly Syndrome, Type IV: A very rare case from Kuwait (Clinical)

**Pharmacology and Toxicology****308**

\*Al-Fares A, Abdulmalek K: MgSO<sub>4</sub> induced anaphylactic shock: A case report (Graduate: Resident)

**Surgery and Transplantation****309**

\*Halim MA, Nair P, Said T, Samhan M and Mousawi M: Toxic tacrolimus blood levels with rifampicin administration in a renal transplant recipient (Clinical)

**310**

\*Brook A, Al Qattan F, Varkki Z, Ashraf M, Eldin M, Hanafy M: Post-tonsillectomy death due to irreversible hemorrhagic shock: fortunately a rare calamity (Clinical)

**311**

\*Ben-Nakhi M, Jamal-Eddine H, Chandrasekaran C, Ayed A: Major airway injuries following blunt thoracic trauma in children: Review of two cases (Clinical)

**312**

Mustafa D, \*Zahra'a I: Retained Gall Bladder Pouch after Laproscopic Cholecystectomy (Clinical)

**313**

Syed SA, Al Qattan AM, Alisher AI,,Dubikaitis AY, Bahzad M, Mona KI, Maya IP: Management of the Tetanus in ICU. (Clinical)

**314**

Ayyash EH, Jamal MH, Al-dahham AK, Al-mosawi A, Al-qallaf K, Ibraheem G, Al-Banna A and Asfar S: A rare case of primary extragonadal non seminatus germ cell tumour (Clinical)

**315**

Al-Haifi M, Mohammad AI, Mohammad ASM, Jumaa T: Primary torsion of the mentum: Laparoscopic diagnosis and resection. (Graduate: Resident)



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**Original Research Abstracts**  
**By Subject Area**



1

## **Optimization of capillary electrophoretic (CE) enantioseparation for basic drugs with native beta-cyclodextrin as a chiral selector**

Denola, N. <sup>1</sup>, Quiming, N. <sup>1</sup>, \*Catabay, A. <sup>2</sup>, Saito, Y. <sup>1</sup>, and Jinno, K. <sup>1</sup>

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### **Introduction:**

Many compounds of pharmacological importance have one or more centers of asymmetry and usually one of the enantiomers is more active than another which might even be inactive or toxic. Currently many synthetic chiral drugs are marketed as racemates and it is therefore important to develop enantioseparation methods for pharmacological investigation of drug quality control.

### **Methods:**

In a method development for enantioseparation of basic drugs with capillary electrophoresis (CE), uncoated fused silica capillary of 25-75  $\mu\text{m}$  inner diameter (ID) are commonly used. In this study, the advantages of a smaller ID of 20  $\mu\text{m}$  for enantioseparation are presented in the optimization of CE analysis of basic drugs with native beta-cyclodextrin as chiral selector. The apparent binding constants of each enantiomeric pairs were determined and subsequently used as the basis for optimization.

### **Results:**

Significant relationship between the drug structures and the apparent binding constants was observed. The present substituents and their position in the aromatic ring have a great influence in the inclusion complexation behavior with beta-cyclodextrin. Differences and similarities in the optimum conditions obtained for all the drugs were in agreement with the observed relationships.

### **Conclusions:**

The enhanced resolution obtained with the 20  $\mu\text{m}$  ID capillary made analysis of basic drugs with beta-cyclodextrin as the chiral selector fast and efficient. This is in addition to the advantage that smaller amounts of sample volume and reagents are required. The use of this smaller ID capillary must therefore be considered in enantioseparation especially in the analysis of drugs that favor extreme pH wherein solute-capillary wall interaction is negligible.

*Key Words: Capillary electrophoresis; Enantioseparation; Beta-cyclodextrin;*  
*Funding Agency: None*

## **Anatomy**

*Category: Clinical*

### **2**

## **Infraclavicular para coracoid approach of bracheal plexus block.**

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### **Introduction:**

This prospective randomized study was undertaken to evaluate success rate of infraclavicular paracoracoid approach of brachial plexus nerve block performed with a peripheral nerve stimulator.

### **Methods:**

15 patients (ASA I-II) scheduled for orthopaedic gave informed consent. After getting an IV access in the contralateral hand, the vital signs were monitored. 1mg Midazolam was given I/V. Patient was laid supine with the head turned to contralateral side with operated arm lying along the body. Puncture point just below and medial to the coracoid process was prepared aseptically and infiltrated with 3ml of 1% lignocaine. The brachial plexus was located using a nerve stimulator with 22G, 50mm insulated needle using 0.6-1.0mA of 100ms at 2Hz. It was inserted vertically through this point. When unable to identify the plexus, it was withdrawn and redirected slightly towards the coracoid process at 45° angle. Accurate location of the plexus was considered when a distal and maximum motor response was obtained at hand or wrist at 0.6mA, 35ml of 0.5% bupivacaine was injected after aspiration test to avoid intravascular injection. Sensory block of each nerve (radial, median and ulnar nerves) was assessed using light touch in each nerve distribution. Rating was performed using 0=no sensation, 1=dissociation/contralateral arm, and 2=normal sensation. Motor block of radial, median, ulnar and musculocutaneous nerves were evaluated by thumb abduction, thumb adduction, thumb opposition and flexion of elbow; rate scale being 0=complete paralysis, 1=can not move against mild resistance and 2=normal muscular form. A successful block was defined as a complete sensory block was observed distal to elbow. To relieve tourniquet pain the intercostobrachial nerve should be blocked by inserting the needle in medial to coracobrachialis muscle.

### **Results:**

Patient's age was 16-48 yrs. The successful complete block was 92-94%. The needle insertion depth to get maximum motor response was 3.5-4.5cm. Motor block was complete at 25min and surgical duration 100-140min without complications.

### **Conclusions:**

This infraclavicular approach offers an alternative to axillary approach, especially when arm movement is impossible. It is easy and safe to perform.

*Key Words: Local anaesthetic technique-Infraclavicular para c; Brachial plexus block; Local Funding Agency: None*

*Anatomy*

*Category: Basic Sciences*

**3**

**Giant astrocytes in C6 glial cells culture surviving Cisplatin treatment.**

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**Introduction:**

When trated with a single dose of cisplatin the majority of C6 glioma cells in culture died by apoptosis within 48 to 96 h p.t. Some of the surviving cells in this experiment performed phagocytosis of dead cells and, when cultured up to 10 days, they grew into giant cells exceeding 100 um in their size. Ultrastructure of these cells was studied in this research.

**Methods:**

Cultures of immature astrocyte-like C6 glioma cells were treated with a 90 min pulse of Cisplatin (5-10 mg/ml) and examined by TEM at 9 and 10 days later.

**Results:**

Giant astrocytes had very voluminous cytoplasm with several long radial processes and large highly lobulated or fragmented nuclei with micronuclei. Some of the nuclear lobes were interconnected with a very narrow strip of nuclear structure ("nuclear bridge"). Nucleoli were active, reticulated, surrounded with several nuclear bodies (fibrillar spheres) containing small granules or vesicles. Small micronuclei were located close to nuclear blebs of the main part of the nucleus and contained either lose pale or more dense chromatin. No signs of excessive (apoptotic) chromatin condensation or its peripheral accumulation were observed in the main nuclei. The hypertrophic cytoplasm contained vesiculated Golgi apparatus surrounded with excessive network of smooth endoplasmic reticulum, which propagated into processes. Numerous elongated worm-like mitochondria had dense matrix and intact cristae. Large accumulations of lipid droplets were found elsewhere in the cytoplasm and abundant micropinocytotic vesicles were associated with plasma membrane.

**Conclusions:**

Cells surviving mitotic arrest by cisplatin developed into hypertrophic cells resembling the in situ occuring large tumor cells - gemistocytes - displaying morhological signs of a complex, although probably altered (aberrant), metabolic activation.

*Key Words: Giant Astrocytes; Cisplatin; Ultrastructure;*

*Funding Agency: Academy of Science of Czech Republic (AVOZ 50110509) and Kuwait University, Shared Facility, Project No. GM 01/01.*

*Anatomy*

*Category: Clinical*

4

**Coronal incision in cranio-maxillo-facial trauma**

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<sup>2</sup> Department of Anatomy, Faculty of Medicine, Kuwait University

**Introduction:**

The coronal incision provides excellent exposure for craniotomy, craniofacial osteotomy, repair of facial fractures, skullcap grafting, and cosmetic procedures (e.g. the forehead lift). The coronal incision has the merits of distinct exposure and hidden incision scar. Since the introduction of the coronal approach, a variety of modifications camouflaging the incision in the hair have been used. Common postoperative complications are hollowing of the temporal fossa, obvious incision scar, alopecia, ptosis of facial soft tissue, subcutaneous hematoma, injury of frontal branch of the facial nerve, infection, pains, paraesthesia and numbness.

**Methods:**

Our aims are: 1) To review relevant anatomy and describe the surgical technique in detail to avoid complications mentioned above. 2) To evaluate the results of treatment (revascularization will be focused) in 18 consecutive craniofacial trauma patients treated in Al-Adan Hospital during 2004 and 2005.

**Results:**

During relevant period there were 18 patients in whom the coronal approach was utilized for treatment of craniofacial fractures. 16 patients received bicoronal incision while hemicoronal modification was applied to 2 patients (first for ZMC fracture repair and second for harvesting of bone graft because of orbital floor repair). The most common indication was repair of comminutive fractures (n=12) in the frontobasal or frontonasal regions. Pericranial flap was raised in 7 cases to support dural reconstruction and to provide additional barrier between nasal/paranasal cavities and intracranial space. The complications included 2 cases of anesthesia of supraorbital nerve; in 1 case of temporal hollowing temporary paresis of frontal branch of facial nerve appeared.

**Conclusions:**

Appears, that uncompromising care should be taken to protect the scalp vascular supply (frontal scalp area) as well as supra-and subfascial vascular pattern in temporal regions in order to reduce complications.

*Key Words: Coronal incision; Cranio-maxillo-facial trauma; Anatomy of the scalp;*

*Funding Agency: None*

## **Anatomy**

*Category: Clinical*

### **5**

#### **Percutwist: percutaneous dilative tracheostomy.**

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#### **Introduction:**

Percutaneous tracheostomy is performed to minimize prolonged intubations in ICU. The PercuTwist dilator with hydrophilic coating on the thread is the most recent and efficient technique.

#### **Methods:**

20 patients were selected and consent was obtained. Under constant monitor of the vital signs, endotracheal tube was deflated and retracted under FOB and monitor, until the puncture site below the cricoid cartilage was freely accessible and the cuff was reinflated. 14G cannula was inserted through the center of the horizontal incision made below the 2nd tracheal ring. It was inserted vertically and caudally till the tip of the cannula could be seen through the monitor. The stylet was removed and the seldinger wire was advanced through cannula inside the trachea. Cannula was removed and 15mm PercuTwist dilator was passed over the guide wire under the direct vision through the monitor to widen the trachea giving continuous gentle pressure caudally while rotating it clockwise with gradual cutting of the pretracheal soft tissue and tracheal wall by the thread on the PercuTwist dilator till the end of the thread on the dilator could be seen endoscopically inside trachea. The Percutwist dilator was removed from the trachea by rotating anticlockwise direction keeping the guide wire in situ. The PercuQuick tracheostomy tube (8mm) with the hydrophilic coating insertion dilator was advanced over the guide wire caudally. The tracheostomy tube was placed in position and confirmed endoscopically and the cuff was inflated.

#### **Results:**

Patient's age was 30-75 yrs. The procedure was quick and took 8-12 min (puncture of trachea to insertion of tracheostomy tube). 19 out of 20 cases (95%) were performed smoothly whereas one was difficult due to kink of the wire without complications.

#### **Conclusions:**

The PercuTwist dilator tracheostomy technique is really quick, safe, efficient and cost effective alternative to surgical tracheostomy for ICU patients on ventilators. It is performed conveniently at the patient's bedside. It is comparatively quicker than the other percutaneous tracheostomy techniques.

*Key Words: Percutwist Dilator; Intubation;*

*Funding Agency: None.*

**Anesthesiology**

*Category: Clinical*

**6**

**Effect of thiopentone and propofol on Bispectral index**

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**Introduction:**

Hemodynamics and electroencephalography (EEG) monitoring are widely used to monitor depth of anesthesia. Bispectral index (BIS) monitoring is used widely, based on the correlation of phase between different frequency components of EEG. Propofol and thiopentone are most commonly used induction agent. We studied effect of these commonly used induction agent on BIS.

**Methods:**

The randomized controlled study involved 40 ASA I/II patients undergoing general surgical procedures. Patients having neurological, cardiovascular disorders, diabetes or metabolic disorders were excluded. BIS sensors were applied to patient's forehead in awake state. Fentanyl 2mcg/ kg intravenously was administered to all patients. Patients were randomly induced with thiopentone or propofol. Thiopentone and propofol was administered till loss of verbal commands. After ensuring adequacy of mask ventilation, muscle relaxant was administered. BIS, heart rate and mean blood pressure were monitored during study period. Statistical analysis was done using paired t-test and one way analysis of variance (ANOVA) to compare responses of BIS at baseline, 5 minutes after fentanyl administration, post induction agent and after intubation.

**Results:**

Demographic data was comparable in both the groups. BIS values were < 60 in all the 20 patients after propofol administration and in 17 out of 20 patients in thiopentone group. Reduction in BIS was statistically significant ( $p < 0.05$ ) after administration of propofol group compared to thiopentone. Reduction of mean arterial pressure after induction agent compared to preinduction was more and statistically significant in propofol group.

**Conclusions:**

Propofol and thiopentone are equally effective in reduction of BIS to anesthetic range but suppression of EEG activity measured by BIS was found to be more after propofol than thiopentone. Thiopentone is more likely to be associated with lighter planes of anaesthesia and consequent risk of awareness.

*Key Words: Thiopentone; Propofol; Bispectral index;*

*Funding Agency: None*

*Anesthesiology*

*Category: Clinical*

7

## **Clinical Trial of Prolonged Infusions of Rocuronium Bromide in Critically Ill Patients: Effects of Multiple Organ Failure.**

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### **Introduction:**

This study was done to determine the safety, efficacy, dosing requirements, and spontaneous recovery profiles of prolonged infusions of rocuronium bromide in the critically ill.

### **Methods:**

This prospective, nonrandomized, open label trial enrolled 32 ICU patients. Patients who were determined to require neuromuscular blockade for at least 24 hours received a bolus of 0.6 mg/kg of rocuronium. After subsequent recovery of two responses (T2) to the TOF stimulation, an infusion of rocuronium was begun at 10 mg/kg/min and continued for 24 to 120 hours as required by the patients' clinical status.

### **Results:**

Patients were divided into multiple organ failure (MOF) and non-multiple organ failure (non-MOF) groups on enrollment. The mean infusion rates for the MOF and non-MOF groups were 0.2 and 0.5 mg/kg/hour, respectively.

### **Conclusions:**

The mean infusion rate of rocuronium that provides approximately 90% blockade is less for critically ill patients with MOF. Spontaneous recovery was prolonged in patients with MOF.

*Key Words: Rocuronium infusion; critically ill patients; neuromuscular blockade;*

*Funding Agency: ORGANON, USA AND KUWAIT*

*Anesthesiology*

*Category: Clinical*

**8**

**Circumcision in Infants /Neonates with Ring Block (Local Anesthesia)**

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**Introduction:**

Circumcision is the most common but painful surgical procedure when performed in children without anaesthesia with subsequent behavior changes though it is ignored usually.

**Methods:**

Children less than one year were given subcutaneous (S/C) ring block (total cases n=90). In Minor Operation Theatre, the baby was attached to the physical digital monitor for observation of pulse rate, blood pressure, respiratory rate and oxygen saturation by pulse oxymetry, facial expression and crying time. PROCEDURE: Paracetamol suppository was given ½ hour before procedure, local anesthesia lidocaine (1%) 1 ml was given at the base of the dorsal part of penis at 1 & 10°O clock positions to complete 360-degree block. If baby cries we give pacifier to quite the baby.

**Results:**

The complications were small haematoma formation at the injection site in four cases only, And Swelling at the ring block site that sometimes produced difficulty to apply small size clamp. Our study clearly demonstrated that bulk of neonates/infants had circumcision without anesthesia. On comparing clinical parameters with the monitor we noticed that without anesthesia Pulse, BP, respiratory, pulse oxymetry changes were very significant, when using local anesthesia properly pulse did not change significantly, baby stayed quiet. They took his feed without distraction as compared to those who had circumcision without anesthesia who kept on crying continuously during their feed.

**Conclusions:**

Circumcision is a painful procedure The subcutaneous ring block is an easy technique with almost no pain if given cautiously, and can be taught to junior doctors without complications. N.B. This study has published in KMJ 2002, 364:275-277

*Key Words: Circumcision; Subcutaneous ring block; Children;*  
*Funding Agency: None*

*Anesthesiology*  
Category: Clinical

9

## **Phenylephrine Added to Prophylactic Ephedrine during Spinal Anesthesia for Elective Cesarean Section**

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### **Introduction:**

Because ephedrine does not adequately prevent spinal hypotension during cesarean delivery, CAUSES tachycardia and increases the incidence of nausea and vomiting; the authors investigated whether adding phenylephrine to ephedrine would improve its efficacy.

### **Methods:**

Twenty parturients with American Society of Anesthesiologists physical status III who were scheduled for cesarean delivery received a crystalloid preload of 15 ml/kg. Spinal anesthesia was performed using 12.5 mg hyperbaric bupivacaine, 20 µg fentanyl. Maternal heart rate and systolic blood pressure were measured at frequent intervals. A vasopressor bolus was started immediately after spinal injection, either 6 mg ephedrine plus 100µg phenylephrine (Group I, of 10 patients) or 6 mg ephedrine alone (Group II, of 10 patients). Boluses of ephedrine 6 mg were used to treat hypotension defined as systolic blood pressure less than 100 mmHg and less than 80% of baseline.

### **Results:**

Hypotension occurred less frequently in the ephedrine-phenylephrine group than in the ephedrine-alone group: (18% versus 39%). Supplemental ephedrine requirements (12 +/-4 mg, mean +/- SD) was used in former group, whereas (24 +/-6 mg) ephedrine was used in the latter. Tachycardia was less (92 +/- 7 bpm) in the former group compared to (107 +/- 9 bpm) in the latter. Nausea scores (0-3) were less in the ephedrine-phenylephrine group and 0 vs. 1.5. APGAR scores were similarly good in both groups.

### **Conclusions:**

Phenylephrine added to ephedrine decreased postspinal hypotension and tachycardia and decreased incidence of nausea.

*Key Words: Phenylephrine added to ephedrine; Spinal anesthesia; Hypotension; Funding Agency: None*

*Anesthesiology*  
*Category: Clinical*

10

## **Comparative study between Esmolol, Diltiazem, and labetalol in the management of stress response to laryngoscopy and endotracheal intubation**

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### **Introduction:**

Comparative study between Esmolol, Diltiazem, and labetalol in the management of stress response to laryngoscopy and endotracheal intubation. Strict control of blood pressure and heart rate during laryngoscopy is a great challenge, our purpose of the study to find out the drug which is responsible for least stress response.

### **Methods:**

60 patients ASA I and ASA II, undergoing surgical operation were randomly divided in 4 equal groups. The control group (C) received only saline, 2nd group received esmolol (E) 1mg/kg, 3rd group received diltiazem (D) group 0.2mg/kg, labetalol 0.2mg/kg named as (L) group. All the cases were induced with Thiopentone, fentanyl, vecuronium. The hemodynamic parameters were measured systolic diastolic, mean blood pressure as well as heart were noted. Measurements were taken before during and after induction till 8 minutes post induction.

### **Results:**

It was found that HR after laryngotracheal intubation (LTI) increased above base line in control group and all test group but was less in E, L and D groups respectively. Postintubation SBP, DBP, and MBP were increased in C and E groups.

### **Conclusions:**

Esmolol was superior to diltiazem in controlling HR during LTI. Diltiazem was superior to esmolol as regard controlling the value of SBP, DBP, MBP while labetalol hang in between esmolol and diltiazem.

*Key Words: Stress response; laryngoscopy; intubation;*  
*Funding Agency: None*

## **Biochemistry**

Category: Graduate MSc (Basic Science)

### **11**

#### **Can the rat adrenal serve as a model for study of retinoid-X-receptor?**

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##### **Introduction:**

Retinoid-X-Receptor (RXR) is an orphan receptor, whose ligand has not yet been identified. Because RXR recognizes 9-cis-retinoic acid but not retinoic acid, RXR is therefore not the retinoic acid receptor (RAR). New research findings have shown that certain polyunsaturated fatty acids: cervonic acid (C22:6), adrenic acid (C22:4), and arachidonic acid (C20:4) can serve as ligands for RXR. In this respect, both human and rat adrenals store cholesterol ester (CE) as a steroidogenic reserve. The CE composition is predominantly comprised of these fatty acids. Upon stimulation of ACTH, these CEs are hydrolyzed to release cholesterol for steroidogenesis. The role of those liberated polyunsaturated fatty acids is unknown. We hypothesized that the adrenal should express RXR, and the expression is controlled by ACTH.

##### **Methods:**

Wistar male rats were studied (N=16). Rats were stimulated with ACTH (30 µg/100 g, sc) for four consecutive days (N=3); saline-injected rats served as control (N=3). Adrenal RXR and RAR protein levels were determined by Western Blotting, using rabbit polyclonal anti-RXR, anti-RXR-alpha, anti-RXR-beta, anti-RXR-gamma and anti-RAR as primary antibodies, with HRP-conjugated Goat anti-rabbit IgG as the secondary antibody. Luminograms were scanned by a densitometer.

##### **Results:**

Both RXR and RAR were detected in all rat adrenals. Further analysis of RXR revealed alpha and beta isoforms; gamma isoform was not detectable. In response to ACTH-stimulation, the RXR-alpha level was elevated by 70% (60-77%), whereas the RXR-beta level was diminished by 27% (17-40%).

##### **Conclusions:**

The rat adrenal expresses both RXR-alpha and RXR-beta whose levels appear to be regulated by ACTH. Thus, the gland could serve as an excellent model for further study of the mechanistic relationship between the possible polyunsaturated fatty acid ligands and RXR, with reference to steroidogenesis.

*Key Words: Steroidogenesis; Orphan receptor; RXR;*

*Funding Agency: Faculty of Graduate studies*

**Biochemistry**

*Category: Clinical*

12

**New inhibitors for Phosphoenolpyruvate carboxy kinase**

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**Introduction:**

Phosphoenolpyruvate carboxykinase catalyses the first committed step in gluconeogenesis. It converts oxaloacetate to phosphoenolpyruvate at optimum pH of 8.0. In physiological state its action is regulated by insulin. In diabetics (type I & II) there is an elevation of this enzyme and a consequent increase in metabolic intermediates leading to conversion to glucose.

**Methods:**

In this survey several coenzyme analogues were used for the first time both in vitro and in vivo experiments.

**Results:**

Our results suggest that from the inhibitors that were used the two compounds, quinolinic acid and 2-mercaptopycolinic acid were strong inhibitors of the enzyme. In addition when these inhibitors were used in vivo the compound 2-mercaptopycolinic acid showed a very strong reducing effect on blood sugar in diabetic animals.

**Conclusions:**

Therefore we suggest that this compound could be carried through pharmacological trials with the hope that it could be employed as a drug.

*Key Words: Phosphoenolpyruvate carboxykinase; Inhibition; Diabetes;*

*Funding Agency: None*

**Biochemistry**

Category: Graduate MSc (Basic Science)

13

**Ultra-structural changes in experimental colitis: Role of Na-H exchanger-6 isoform**

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**Introduction:**

Background: Experimental colitis is associated with decreased concentrations of ATP which may partly be due to structural and molecular changes in mitochondria. Na-H exchanger (NHE) maintains electrolyte balance and is important for cellular and organeller integrity. Among the nine isoforms, NHE-6 has been disputed to be localized in mitochondria. Objectives: To investigate the role of NHE-6 isoform in experimental colitis induced change in the colonic mitochondria in rats with colitis induced by trinitrobenzenesulphonic acid.

**Methods:**

Polyclonal antibodies (Abs) against NHE-6 were raised in rabbits using a recombinant fusion protein antigen which contained a NHE-6 C-terminus region fused with a bacterial glutathione-S-transferase (GST), and characterized using ECL western blot analysis. Colitis was characterized by measuring the myeloperoxidase (MPO) activity, malondialdehyde (MDA) concentrations and histopathology of colonic tissues. Ultra-structural changes were recorded using transmission electron microscopy (TEM).

**Results:**

The purified Abs reacted selectively with a protein of 80 kD molecular mass in colonic microsomal and mitochondrial fractions. The Abs reaction was completely abolished by the fusion protein antigen, but not by the GST protein alone. NHE-6 protein levels were increased in both fractions from the colitic rat colon. Inflamed colon showed a significant increase in MPO activity and MDA levels together with ulceration and marked increase in inflammatory cells. TEM analysis revealed ultra-structural changes in mitochondria, golgi, and ER in the colitic rat colon and ileum.

**Conclusions:**

The upregulation of NHE-6 expression may cause an increased uptake of Na into the cell cytoplasm and mitochondria leading to mitochondrial swelling and depression of ATP synthesis observed in experimental colitis.

*Key Words: Colitis; Na-H exchanger; Mitochondria;*

*Funding Agency: Kuwait University Research Administration Grant #YM01/05*

## **Biochemistry**

Category: Graduate MSc (Basic Science)

14

### **Induction of oxidative stress by a Zn(II) N-alkylpyridyl-porphyrin photosensitizer**

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#### **Introduction:**

Zn (II) N-methylpyridyl-porphyrin (ZnTMPyP) is a promising new photosensitizer, capable of efficiently killing antibiotic-resistant bacteria and tumor cells. This makes it potential candidate for in vivo photodynamic therapy (PDT). Little is known, however, about the mechanism of its cytotoxic and cytostatic actions. Reactive oxygen species (ROS) production and induction of oxidative stress have been shown to play a key role in PDT. The aim of this study was to determine if ZnTMPyP is capable of inducing oxidative stress in cultured colon

#### **Methods:**

LS174T adenocarcinoma cells were grown to 80-90% confluency. After the addition of the photosensitizer the cells were illuminated with visible light, harvested, washed and used directly for measuring production of aldehydes, GSH/GSSG ratio, and for Hoechst staining. Activities of superoxide dismutase, catalase, glutathione peroxidase, glutathione reductase, and oxidative DNA damage (8-OHdG) were assayed after cells were disrupted by sonication.

#### **Results:**

Illumination of LS174T cells in the presence of ZnTMPyP inactivates glutathione reductase and glutathione peroxidase, and decreases the GSH/GSSG ratio. This coincides with production of 8-OHdG and of toxic aldehydes derived from oxidative fragmentation of lipids. As a consequence, loss of ATP and morphological changes typical for cell death occurred. Absence of light prevented all these effects of ZnTMPyP.

#### **Conclusions:**

The combination of ZnTMPyP and light induces severe oxidative stress resulting from inactivation of antioxidant enzymes and singlet oxygen production. As a result lipid peroxidation and oxidative DNA damage occur, leading to cell death.

*Key Words: Oxidative stress; Photosensitizer; Zn (II) N-methylpyridyl-porphyrin;*

*Funding Agency: Kuwait University Grant YM02/05*

**Biochemistry**

Category: Basic Sciences

15

**Novel high-efficiency photosensitizing agents: isomeric Zn(II) N-alkylpyridyl-porphyrins as photosensitizers**

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**Introduction:**

Photodynamic therapy (PDT) is a minimally invasive approach for the management of both neoplastic and non-neoplastic diseases. It is based on the combined use of a light-absorbing compound (photosensitizer), and irradiation with visible light. Limitations of the presently available photosensitizers have stimulated development of new compounds for use in PDT. The aim of this study was to investigate the photosensitizing activities of the ortho, meta, and para isomers of Zn(II) N-alkylpyridyl-porphyrins (ZnTMPyP) and of the respective metal-free ligands (H<sub>2</sub>TMPyP).

**Methods:**

A human adenocarcinoma cell line LS174T was used as a model system; cells were plated on 96-well plates at a density of about  $5 \times 10^3$  cells per well. After the addition of the respective photosensitizer, plates were illuminated with visible light from two 5 W fluorescent tubes (luminous flux of 0.5 mW/cm<sup>2</sup>). Cell viability was assessed by trypan blue exclusion at fixed times after the illumination.

**Results:**

After 30 min of illumination in the presence of 10 microM of the porphyrins, cell growth was completely inhibited. Approximately 50% of the cancer cells were killed during the illumination period in the presence of 20 microM ZnTMPyP or H<sub>2</sub>TMPyP. However, loss of viability of exposed cells increased progressively after the illumination period indicating that irreversible cell-damaging reactions had been triggered during the light exposure. All these events were totally light-dependent, toxic effects were not observed in the absence of illumination.

**Conclusions:**

The isomers of the ZnTMPyP and the respective free ligands show high photosensitizing efficiency and no toxicity in the dark. No significant differences between the three isomers were found with respect to photo-induced cell killing.

*Key Words: Photodynamic therapy; Photosensitizer; Cancer;*

*Funding Agency: Kuwait University grant YM02/05*

## **Biochemistry**

*Category: Basic Sciences*

**16**

### **Evaluation of a tetrazolium dye for in vivo detection of superoxide**

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#### **Introduction:**

The sulfonated tetrazolium 2, 3-bis (2-methoxy-4-nitro-5-sulfophenyl)-2-tetrazolium 5-carboxanilide (XTT) is advantageous in that it yields a water-soluble formazan, unlike most other available tetrazoliums. XTT is reducible by superoxide, as are other tetrazoliums, but is not directly reduced by xanthine oxidase or by glucose oxidase. This led to the suggestion that XTT reduction might serve as a reliable index of intracellular superoxide production. Since a convenient and reliable measure of in vivo superoxide is needed, but has yet to be found, the cellular reduction of XTT was investigated in order to test its suitability for in vivo superoxide quantification.

#### **Methods:**

XTT reduction (0.1 mM) in superoxide dismutase (SOD) deficient and SOD proficient cells, and in cell-free extracts, was monitored by the change of the absorbance at 470nm. XTT reduction by metabolites was followed in 50 mM imidazole buffer, pH 7.4 at 470 nm. All experiments were repeated 4-5 times.  $P < 0.05$  was accepted statistically significant (Student's t-test).

#### **Results:**

Suspensions of SOD proficient cells reduced XTT both anaerobically and aerobically. The SOD-null cells effectively reduced XTT in the absence of oxygen, but were less active aerobically. The cell-free extracts required NADPH in order to reduce XTT. These reductions were not inhibited by the addition of SOD and hence were not due to superoxide. The intracellular reduction of XTT was found to be due to an enzymatic NADPH:XTT reductase. Glycolytic intermediates such as glyceraldehydes-3-phosphate and dihydroxyacetone phosphate reduced XTT directly.

#### **Conclusions:**

XTT reduction should not be used as a measure of intracellular superoxide production, because cells contain NADPH:XTT reductases, and because XTT can be directly reduced by glycolytic intermediates.

*Key Words: Superoxide; XTT; Sulfonated tetrazolium;*

*Funding Agency: Grant MB07/04 from Kuwait University*

**Biochemistry**

Category: Graduate MSc (Basic Science)

17

**Erythrocyte plasma membrane microdomains: selective distribution of nutrient transporter polypeptides.**

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**Introduction:**

Lipid rafts are cholesterol and glycosphingolipid-rich low density microdomains in cellular plasma membranes that play critical roles in compartmentalization of receptors and signal molecules. Rafts have been investigated as detergent-resistant membrane fractions(DRM)when membranes are extracted with non-ionic detergents. Objectives: to examine the distribution of proteins between DRM and non-DRM membrane domains using Triton X-100 and Brij98 extraction protocols and investigate the distribution of hENT-1(human equilibrative nucleoside transporter-1)and GLUT-1(glucose transporter)between DRM and non-DRM membrane domains.

**Methods:**

Fresh blood was collected from healthy individuals(n=12). DRMs were isolated by ultracentrifugation on sucrose step gradients after treatment of cells with Triton X-100(4oC)or Brij98(37oC)non-ionic detergents. Membrane proteins were separated by SDS-PAGE: hENT-1, GLUT-1 and Band3(anion)transporter proteins were detected by immunoblotting and quantified by scanning densitometry.

**Results:**

Lipid rafts are present in cell membranes at physiological temperatures as well as low temperatures. Stomatin, and flotillins are the major proteins in DRMs isolated using Triton X- 100. Spectrin was clearly present in DRMs isolated with Brij98 and Band3 protein was present in small amounts in DRM. In most samples GLUT-1 seems to be distributed between DRM and non-DRM domains, unlike hENT-1 which is selectively excluded from the DRM microdomains.

**Conclusions:**

This is the first demonstration that the nucleoside transporter hENT-1 is selectively excluded from the DRM microdomains of the human red cell membrane. This selective exclusion was independent of temperature and the non-ionic detergent employed. Since rafts are believed to play important roles in red cell function, selective exclusion of equilibrative nucleoside transport proteins, but not glucose transporters, may reflect possible differences in the control of these two systems.

*Key Words: Erythrocytes; Membrane; Rafts;*

*Funding Agency: College of Graduate Studies, Kuwait University*

**18**

**Induction and characterization of polyclonal antibodies against the human Na-H exchanger-3**

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**Introduction:**

Na-H exchanger (NHE) is responsible for a net uptake of electrolyte and water from the gastrointestinal tract and renal tubules. NHE belongs to a family of nine different genes encoding several related protein isoforms. Of these the isoforms 1 and 3 are best studied, however, their roles in human inflammatory bowel diseases (IBD) remains poorly addressed. IBD remains quite elusive in terms of its etiology, pathogenesis and treatment. Recently, we have shown depression of NHE-1 in human IBD conditions however the role of NHE-3 isoform remains to be elucidated. Objectives: To raise and characterize polyclonal antibodies against the human NHE-3 isoform.

**Methods:**

Polyclonal antibodies were against a C-terminal epitope of human NHE-3 using a GST-tagged recombinant fusion protein raised in bacteria. The recombinant clones were characterized by nucleotide sequencing to confirm the frame and orientation of the selected NHE-3 epitope sequence.

**Results:**

From a positive clone, the fusion protein was raised and purified using an affinity chromatography. The purified fusion protein antigen was injected into two rabbits along with the complete (first dose) and incomplete (subsequent doses) Freund's adjuvant subcutaneous. The blood samples were withdrawn by ear puncture and clotted at 37°C to obtain serum. The antibodies (IgG) were purified from serum using a protein-G affinity column and were characterized using ECL western blot analysis. The antibodies reacted with a protein of 80- 85 kD molecular mass in both the rats and human colonic microsomal fractions. The antibody reaction was completely abolished by the NHE-3 fusion protein, but not by the GST protein. Antibodies could detect the signal in 5-10 ug microsomes at a dilution of 1:8000.

**Conclusions:**

These findings confirmed the specificity and selectivity of the polyclonal antibodies which will serve to address our specific interest on the role of NHE-3 in human IBD conditions.

*Key Words: Colitis; Na-H exchanger; Antibodies;*

*Funding Agency: Kuwait University Research Administration Grant #MB05/04*

**Biochemistry**

*Category: Clinical*

**19**

**Cardiac markers, new definition and reality**

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**Introduction:**

Although the ACC/ESC committee announced their new definition of myocardial infarction that includes troponin rise as best available cardiac marker with one of the following criteria symptoms, or ECG changes. Some hospitals retain their way and criteria for the use of biochemical markers of myocardial damage in patients admitted with chest pain.

**Methods:**

We have evaluated the results of 196 (74 females, 122 males) patients admitted with chest pain. Retrospectively, results of Cardiac markers such as AST, ALT, LDL, CK, CKmb fraction; measured on LX20 Beckman analyzer; and Troponin T (Elecsys Roche) were evaluated and compared.

**Results:**

Troponin T was requested for only three patients (median 1.4 ng/ml). Medians and interquartile ranges (IQR) for other markers were as follows: AST median 26  $\mu$ /L (IQR 19.5-35), CK median 124  $\mu$ /L (IQR 86-178), CKmb median 4 U/L (IQR 34-63), and LDL median 147 U/L (IQR 129.5-189). There were significant difference in the levels of CK and CKmb between males and females (Man-Whitney;  $p < 0.001$ ,  $p = 0.03$  respectively). Other markers didn't show any sex difference ( $p > 0.05$ ). Cardiac markers showed significant linear relationship ( $p < 0.001$ , Spearman correlation).

**Conclusions:**

Biochemical markers of myocardial damage provide a valuable tool in patients with chest pain.

*Key Words: Cardiac markers; ACC/ESC committee; WHO criteria;*

*Funding Agency: None*

20

## **Diabetes-induced activation of peroxisomal functions in kidneys of spontaneously hypertensive rats is Ras -GTPase-mediated**

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### **Introduction:**

Peroxisomes and peroxisome proliferator-activated receptors (PPAR) are known to contribute toward pathogenesis of diabetes and hypertension. Objective of this study was to examine the role of Ras-GTPase in activation of peroxisomal functions in kidneys of diabetic and/or hypertensive rats.

### **Methods:**

Diabetes was induced in male WKY and SHR by streptozotocin (STZ) and animals were divided into eight groups (n=4) for treatment with FPT-III (Ras-GTPase inhibitor). Activities of peroxisomal enzymes, catalase, acylCoA oxidase and beta-oxidation of lignoceric acid were assayed in kidney homogenates. Western blotting was done to detect PPAR-gamma, peroxisome membrane protein (PMP-70) and catalase.

### **Results:**

STZ decreased ( $p < 0.01$ ) catalase activity in kidneys from normotensive and hypertensive rats, however catalase protein was significantly (1.5-fold) increased. Treatment of normotensive or hypertensive diabetic rats with FPT-III, prevented the inhibitory effects of diabetes on catalase enzyme activity. Acyl-CoA oxidase activity and oxidation of lignoceric acid were significantly ( $p < 0.01$ ) increased following STZ-injection in WKY and SHR rats. FPT-III treatment significant ( $p < 0.01$ ) decreased activities of acyl-CoA oxidase and lignoceric acid oxidation only in tissues from SHR. Diabetes increased (3-fold) PMP-70 protein in both WKY and SHR, however FPT- III did not affect diabetes-induced PMP-70 expression in WKY or SHR. PPAR-gamma was not markedly affected by diabetes in WKY or SHR. FPT-III increased (2-fold) the expression of PPAR-gamma in WKY and SHR.

### **Conclusions:**

Increase in expression of PMP-70 and catalase, and activities of acyl-CoA oxidase and lignoceric acid oxidation indicates peroxisome proliferation as a result of STZ-induced diabetes in SHR and WKY rats. FPT-III-mediated effects on peroxisomal functions and PPAR-gamma in kidneys from SHR or WKY rats suggest a role for Ras-GTPase signaling pathways in pathogenesis of diabetes and/or hypertension.

*Key Words: Diabetes; Hypertension; Peroxisomes;*

*Funding Agency: Kuwait University Research Administration (Project No. RM02/03).*

**Biochemistry**

*Category: Clinical*

**21**

**Retrospective analysis of TSH and fT4 results**

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**Introduction:**

It was suggested that retrospective analysis of laboratory results provides a good tool for following patients, establishing local reference range and detecting technical errors. We have studied and evaluated the usefulness of thyroid test results stored in our records.

**Methods:**

Samples from 174 patients (91males, 83 females) suspected of having thyroid abnormalities (mainly hypo or hyperthyroidism) were collected and analysed using Elecsys Roche analyzer. Results were retrieved retrospectively from our laboratory records and assessed for frequency of abnormal TSH and relation with fT4.

**Results:**

Median age 38.5 years (IQR 24.5-46.25) Both genders showed skewed distributions with no difference in the concentration of both hormones (males TSH median 1.4 mUI/l; fT4 median 13.5 pmol/l vs. females TSH median 1.6 mUI/l; fT4 median 13.8 pmol/l). TSH was low in 28 and high in 21 patients while fT4 was low in 2 and high in 2 patients. No difference in the concentration of both hormones in relation to diagnosis (TSH  $p = 0.7$ , fT4  $p = 0.1$ ; Kruskal Wallis test) females, however, showed higher clinical diagnosis of hypothyroidism compared with males (14.6% vs. 11.4%:  $p = 0.04$ ; Chi square test). TSH showed inverse relationship with fT4;  $p = 0.01$ (Spearman's correlation) and high TSH results related to diagnosis ( $p = 0.01$ ; Chi square).

**Conclusions:**

Retrospective analysis provides a valuable tool for assessing patients with suspected thyroid diseases.

*Key Words: Retrospective; fT4; TSH;*

*Funding Agency: None*

## **Biochemistry**

Category: Graduate MSc (Basic Science)

22

### **Membrane properties of erythrocytes from Kuwaiti patients with beta-thalassemia major.**

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#### **Introduction:**

Thalassemias are characterized by severe anemia due to reduced red cell production and survival. Beta-thalassemia is an inherited condition where reduced expression of beta-globin chains leads to precipitation of alpha-globin chains resulting in abnormalities that are characterized by reduced red cell membrane deformability and stability. These changes depend largely on the structure-function properties of the membrane proteins and interactions with other membrane skeleton components. Beta-Thalassemias are relatively common in the Kuwaiti population and pose a significant health care problem. Objective: Investigation of membrane composition, in erythrocytes from beta-thalassemia patients.

#### **Methods:**

Fresh blood samples were collected from beta-thalassemia patients (54) and control subjects (20). Erythrocyte membranes were prepared by hypotonic lysis. Membrane proteins were separated by SDS-PAGE and analyzed and quantified using densitometry after staining. Analysis and quantification of hENT-1, hGLUT-1 and band-3 proteins were performed by immunoblotting and densitometry.

#### **Results:**

The red cell membrane composition of beta-thalassemia patients showed presence of all major bands identified in membranes from control cells. However, protein quantitation showed a large and significant reduction in band-3 (mean=14±0.7 vs 24±1.0 units, p<0.0001) and hENT-1 protein expression (mean=24±1.0 vs 101±3.0 units p<0.0001) but no significant changes in expression of spectrin or hGLUT-1 proteins.

#### **Conclusions:**

A reduction of band-3 protein expression is consistent with reports for non-Arab populations. This is the first demonstration of this phenomenon in erythrocytes from beta-thalassemia patients in the Middle East. The large reduction in band-3 protein may have a direct structural effect on the red cell membrane, while reduction of hENT-1 is associated with reduced nucleoside permeability. Both effects may play a role in membrane instability of red cells in beta-thalassemia.

*Key Words: BetaThalassemia; Membrane proteins; Band 3;*

*Funding Agency: College of Graduate Studies.*

**Biochemistry**

*Category: Basic Sciences*

**23**

**Biochemistry Practical Teaching in Kuwait University Medical College  
– Improvements in Student Performances.**

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**Introduction:**

Biochemistry Department considers practical teaching as an important aspect of its academic mission. The selection of topics and mode of conduct of practical classes have received positive assessments from external examiners. A significant improvement by students in performing biochemistry practical experiments and in their personal behavior in teaching laboratories was observed in recent years. This report was prepared as a part of determination of progress of Biochemistry Department in achieving its academic mission.

**Methods:**

The performance of the students was assessed by examination of accuracy and precision of experimental results produced by year-2003 batch of students, and compared with a previous batch of year-2000. Experiments such as analyses of concentrations of protein and cholesterol in plasma were taken into consideration for data analysis.

**Results:**

The analysis indicated that the accuracy and precision of results produced by year-2003 batch of students had significantly improved compared to a previous batch of year-2000.

**Conclusions:**

The reason for more satisfactory student performance could be multi-factorial. Either, the new system of student intake introduced by Health Sciences Center positively influenced the quality and preparation of its students, or the new measures such as practical 'quiz time' and examination related changes introduced by Biochemistry Department might have enhanced the expectations of students. It could also be due to an improvement in the practical teaching efforts of Biochemistry Department support staff which in turn contributed to a better performance by the students. A closer examination of these factors is required to draw more specific conclusions. In preparing this report the author do not intend to discredit the personal and studious qualities of any of the previous students that attended Biochemistry practical sessions, instead with full respect honor their competence.

*Key Words: Biochemistry Practical; Student Performance; Academic Performance;*

*Funding Agency: None*

**Biochemistry**

Category: Undergraduate

24

**Is the adrenal steroidogenic cholesterol ester-reserve formed before birth?**

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Departments of Biochemistry <sup>1</sup> and Physiology <sup>2</sup>, Kuwait University, Faculty of Medicine

**Introduction:**

In response to ACTH stimulation, adrenal-stored cholesterol ester (CE) is hydrolyzed to liberate free cholesterol (FC) for steroidogenesis. Specifically, adrenal CE is comprised of adrenic acid (CE22:4), arachidonic acid (CE20:4), cervonic acid (CE22:6) and docosapentaenoic acid (CE22:5). Questions: (a) Is this adrenal CE reserve formed before birth (in fetus), or after birth (in neonate)? (b) If already formed in the fetus, would this CE reserve be diminished by parturition-stress?

**Methods:**

Sprague Dawly rats were used for studies. Adrenals were collected from fetuses one day before birth and from neonates within 24 hours after birth. Adult adrenals served as controls. CE and FC were extracted and purified by chromatography. CE profiles were analyzed by HPLC, using cholesterol heptadecanoate as an internal standard. FC contents were determined by cholesterol oxidase.

**Results:**

Adrenal CE reserve was detected in fetuses. There was no diminution of the FC and CE contents through birth. As compared with neonates, the FC and CE contents in adults were further elevated by 30% and 4 fold, respectively. The fetal adrenal CE is comprised of higher mol% of CE22:6 and CE22:4, but lower mol% of CE22:5 and CE20:4, as compared to the adult.

**Conclusions:**

The rat adrenal CE reserve is formed in the fetus. Transition from fetus to neonates does not cause a depletion of either CE or FC content of the gland. The adrenal FC and CE contents both appear to increase during growth from neonate to adult, conceivably, for a steroidogenic readiness to deal with stressful adult life.

*Key Words: Steroidogenesis; Fetal adrenals; Cholesterol;*  
*Funding Agency: None*

## **Screening of Tetracycline Residues in Kuwaiti Marketed domestic Animals tissues by Charm II method**

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### **Introduction:**

Tetracyclines are still the most frequently used antibiotic in animal husbandry. Scientists were alarmed by the high resistance status in gram negative bacteria due to the uses of tetracycline as a growth promoter. The drug remaining in the tissues have raised the question not only of the quality but also the safety of the food. Food Safety and Inspection Service (FSIS) does not permit concentrations of residues in meat and poultry that exceed the tolerances levels published in the Code of Federal Regulations (CFR) which is 40 µg /kg in the final products. Our works determine the prevalence of tetracycline above the threshold level in both local and imported samples by different techniques.

### **Methods:**

A total of 230 of marketed samples, 214 poultry (11.2 % imported) and 17 meats (88.23 % imported), from seven countries origin, collected during a period of January 2005 to January 2006. Screening test was carried out by Charm II test for tetracycline residues using a microorganism containing antibody binding sites along with an exempt amount of <sup>13</sup>C labeled tetracycline. The suspected positive samples were confirmed by liquid chromatography where the microbiological inhibition tests are less specific. Negative and positive controls, and all tissue samples in triplicate, were carried out by each method.

### **Results:**

Charm II screening revealed that 100% of tested meat was within limit, while 5.6% of poultry samples were above the allowed limit. The data confirmed with HPLC, as well control samples, showed 100% agreement with linear calibration graph 20– 100 µg/l, detection limit 12 µg/l, standard deviation 2.5 %, and average recovery was 93 +/- 2 %. The contaminated poultry came from local origin and ranged from 79- 200 µg/kg.

### **Conclusions:**

The use of Charm II technique is successful as screening for tetracycline residue within the allowed limit but HPLC is highly precise for quantitation. Most of Kuwaiti marketed samples are almost free of tetracycline residues.

*Key Words: Drug residues; Tetracycline; Radioimmunoassay;*  
*Funding Agency: None*

*Community Medicine*

*Category: Undergraduate*

26

**Prevalence and associated factors of Irritable Bowel Syndrome among Kuwaiti school teachers in the Capital governorate**

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Department of Community Medicine, Kuwait University Faculty of Medicine

**Introduction:**

Our aim was to determine the prevalence and associated symptoms and factors of Irritable Bowel Syndrome (IBS) among Kuwaiti school teachers working in the Capital governorate.

**Methods:**

Cross-sectional sample survey conducted in December 2005 including 803 Kuwaiti school teachers working in the Capital governorate. Data were collected using a self-administered questionnaire including sociodemographic characteristics, symptoms of IBS, triggering and associated factors, and management of IBS.

**Results:**

The prevalence of physician-diagnosed IBS among Kuwaiti school teachers working in the Capital governorate was found to be 23.8% with female predominance, male: female ratio 1:1.27. Psychological factors such as anxiety, depression, and stress and certain types of food such as dairy products, caffeinated drinks, spicy food, legumes, fruits and vegetables were significantly associated with the initiation of IBS symptoms ( $p < 0.001$ ). GI infection (48.3%) and positive family history of IBS (62.2%) were more often reported by respondents with IBS than those without IBS ( $p < 0.001$ ), in addition to allergy from sea food, fruits and vegetables,  $p$ -value= 0.024, 0.031 respectively. The most frequent method used for IBS management was medication therapy (12.2%), followed by diet control (8.5%), herbal therapy (8.1%) and fiber therapy (5.9%), and only 8.7% reported not using any method to manage IBS. After adjusting confounding between variables, the binary logistic regression confirmed the association of these variables with IBS.

**Conclusions:**

The study supported our hypotheses that IBS is more common among females and that IBS is triggered by psychological factors (anxiety, depression, stress) or intake of certain types of food. There is a need to conduct a larger study to measure the prevalence of IBS.

*Key Words: Irritable Bowel Syndrome (IBS); Factors; Teachers;*  
*Funding Agency: None*

27

## **Prevalence of hypertension and overweight and their associated factors among male high school students in Kuwait**

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Department of Community Medicine, Kuwait University Faculty of Medicine

### **Introduction:**

Hypertension and obesity are major public health problems in Kuwait, but few studies have addressed the prevalence and association of these cardiovascular risk factors in Kuwait's adolescent population. The objectives of this research are: 1) To study the prevalence of hypertension and overweight in male high school students. 2) To identify factors associated with hypertension and overweight 3- To study the relationship between blood pressure and body mass index in this group.

### **Methods:**

This cross-sectional study enrolled 322 male students selected from Capital and Hawalli governorates using a random multi stage cluster sampling. A self administrated questionnaire was completed by all participants. Blood pressure was measured using electronic sphygmomanometers and was classified according to JNC-7. Weight and height were measured using an electronic personal scale, from which body mass index was calculated. Body mass index was classified into weight categories according to CDC criteria.

### **Results:**

The overall prevalence of hypertension among male high school students was 22.0% (27.7% among those =17 years vs. 13.7% among those <17 years;  $p=0.0003$ ). Among the 71 hypertensive students, only 6.2% were aware of their condition and only 1.2% were under medication. Regarding body mass index, the overall prevalence of overweight was 34.8%. The prevalence of overweight was significantly lower among those who exercised more. The prevalence of overweight among Stage 2 hypertension was 48.4% compared to 29.9% in those with normal blood pressure ( $p=0.02$ ).

### **Conclusions:**

The prevalence rates of both hypertension and overweight were high in this age group, with a moderate positive association between hypertension and overweight. Public health programs concerning hypertension and overweight should be conducted to improve their control in this age group.

*Key Words: Hypertension; Body Mass Index; Kuwait;  
Funding Agency: None*

**28**

**Anxiety and depression among medical doctors in Kuwait: prevalence and associated factors**

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Department of Community Medicine, Kuwait University Faculty of Medicine

**Introduction:**

To determine the prevalence of anxiety and depression among medical doctors specialized in Internal Medicine, Surgery, Obstetrics and Gynecology, Pediatrics, and Anesthesia working in Kuwait's five general hospitals (Mubarak Al-Kabeer, Amiri, Adan, Farwania, and Jahra) and to investigate their association with sociodemographic characteristics, professional and work-related conditions, medical and family history, and life events.

**Methods:**

A cross-sectional survey was conducted in September 2005. The self-administered questionnaire included Hopkins Symptoms Checklist-25 as a psychological distress scale with total distress >1.75 as a cut-off to indicate psychological distress.

**Results:**

The prevalence of psychological distress was 24.3% among 310 respondents. Female doctors had a higher distress score than males and age and distress levels were inversely related,  $p < 0.001$ . Kuwaiti doctors had total distress twice that of non-Kuwaiti Arabs,  $p < 0.001$ . Single doctors had higher distress scores than married doctors,  $p < 0.001$ . Distress was highest among Assistant Registrars,  $p < 0.001$  and those in Obstetrics and Gynecology,  $p = 0.006$ . Doctors who sleep in hospital during night-duties, experience frequent verbal or physical abuse, have respiratory or gastrointestinal diseases, and were diagnosed with depression had higher distress than those who did not. There was an inverse relationship between number of experience years and distress as well as between job satisfaction and the percentage total distress. The number of major life events and distress levels were proportional.

**Conclusions:**

Psychological distress is prevalent among medical doctors and is associated with sociodemographic and work-related conditions. Our results invite the health authorities to take action to alleviate doctors' work burden, some of which may be caused by preventable factors. Kuwaiti physicians were found to have higher levels of anxiety and depression than non-Kuwaiti doctors.

*Key Words: Anxiety; Depression.*

*Funding Agency: None*

## **Incidence, causes and mortality due to burns in Kuwait**

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<sup>5</sup>Al-Bahar Eye Centre, Ibn Sina Hospital, Kuwait

### **Introduction:**

Burns are a major health problem in many developed as well as developing countries due to their morbidity, post burn sequelae and mortality. The present study was undertaken to examine the incidence and outcome of burns in Kuwait.

### **Methods:**

From a prospective study on burn patients admitted at Al-Babtain Burn Center in Kuwait during 1993-2004, a total of 2690 cases were retrieved to study incidence, causes and mortality. The data, from in-patients records included age, gender, nationality, as well as clinical factors, such as cause of burn, total body surface area (TBSA), duration of stay and patient's outcome, for analysis. Statistical Software SPSS (PC version 13.0) was used for data management and statistical analysis.

### **Results:**

The overall incidence rate, during 12-year period, was 10.8/100,000 population, being 15.2 in earlier years (1993-95) and 7.7 in recent years (2002-04). A total of 145 (5.4%) patients died, giving an annual average of 12 deaths, and a mortality rate of 0.58/100,000 population. Male/Female ratio, among burn cases, was 2.3:1, while Kuwaiti/ Non-Kuwaiti ratio, was found to be 0.53:1. The main cause of burn was found to be flame (52.5%), followed by scald (36.6%). Kolmogorov-Smirnov z test showed the median age (34 years) and TBSA (75%) significantly higher ( $p < 0.001$ ) among those died, as compared to 22 years and 10 %, respectively in patients survived. The multiple logistic regression model predicted, patients aged 60 years and above, female gender, flame burns and TBSA > 90%, as the most influencing risk factors for a fatal outcome at this center.

### **Conclusions:**

Patients with these characteristics need to be given special attention during in-patient care. The flame burn patients are more vulnerable with a high risk of mortality.

*Key Words: Burns; Incidence; Mortality;*

*Funding Agency: None*

**30**

**Patient satisfaction and perception of quality of care among surgery outpatients at Kuwait's general hospitals**

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**Introduction:** This study, conducted in Kuwait's five general surgical outpatient facilities, was designed to identify factors associated with patient satisfaction with healthcare services and patient perception of the quality of those services.

**Methods:** This cross-sectional study enrolled a consecutive convenience sample of 304 general surgery outpatients from all 5 general hospitals in Kuwait. A questionnaire was composed of 4 parts: socio-demographic, patient assessment of healthcare quality, patient satisfaction and patient preferences. Quality was assessed by questionnaire using 8 components of the care provided. Satisfaction was assessed by questionnaire using 7 components. To evaluate associations between quality and satisfaction, composite scores were calculated by summing the components and dividing by the number of questions. Satisfaction and quality scores were adjusted for age group, gender, nationality and educational level, using multiple logistic regression and cut offs set at score greater than or equal to 2.

**Results:** For overall quality perception, the proportion rating the visit 'Good', 'Very Good' and 'Excellent', was 75%. The median composite quality score was 2.1 and the range was [0.3-4.0] score units. Patient's satisfaction for the overall services provided by the clinics was 77.9%, with lowest scores given for time waiting for a referral and for the doctor. The median composite satisfaction score was 1.9 and the range was [0.3-3.0]. The adjusted odds ratio (AOR) for high satisfaction [95% confidence interval] were significant for age greater than or equal to 50 years old (2.0 [1.0-3.7], compared to the group < 30 years) and for non-Kuwaiti nationality (2.0 [1.1- 3.5], compared to Kuwaiti). The adjusted odds ratios for high quality were similar to those for patient satisfaction.

**Conclusions:** Consistent with studies in other countries, most patients are satisfied with the surgical outpatient clinics in Kuwait. The low satisfaction scores given for time spent waiting for referrals and for the doctor identify specific areas which need to be addressed.

*Key Words: Patient's satisfaction; Quality of health services; Surgical outpatients department;*

*Funding Agency: None*

*Community Medicine*

*Category: Undergraduate*

31

**The acceptability of SMS text and E-mail messages in the clinical management of diabetic patients in Kuwait.**

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**Introduction:**

The objectives of this study are to determine patient preferences for, the current use of, and the factors associated with SMS text and E-mail messaging in the clinical management and education of diabetic patient in Kuwait.

**Methods:**

This questionnaire-based cross sectional survey enrolled 320 patients attending polyclinic based diabetic centres in Kuwait. Two main dependent variables were evaluated: 1. an acceptability score constructed by summing 10 purposes/advantages (+1 each) and 10 disadvantages (-1 each). 2. Acceptance (%) determined by asking whether or not the patient would use the services if available.

**Results:**

The mean age was 49.2 years, with 67% Kuwaiti participants. The majority (82.5%) owns a mobile phone and can write SMS messages (51.3%), whereas, only 20% use E-mail. Less than 1.6% currently use these technologies to contact physicians. Between 60% and 81% of participants agreed with various purposes and advantage of these technologies, but, 23% to 57% reported various disadvantages. The median acceptability score was +3.0 (i.e., on average 3 more "advantages" than "disadvantages", and was not significantly associated with any variable. Almost 3/4 of participant showed acceptance of using SMS text and/or E-mail messages for management of diabetes and education, if available. Of these, 68.2 % preferred SMS and 8.9% preferred E-mail, with an even distribution between men and women. The only variables associated with acceptance after statistical adjustment were higher the level of education and current use of SMS or E-mail.

**Conclusions:**

The majority of diabetics patients would find the use of E-mail or SMS messaging acceptable in the management of their disease. A higher acceptance rate was found among the more educated, and those who currently has the technology, and was not associated with other factors. Further investigations regarding the safety, privacy, effectiveness, and practicality of such services should be performed.

*Key Words: Diabetes Mellitus; SMS text messaging; E-mail messages;*  
*Funding Agency: None*

*Community Medicine*

*Category: Undergraduate*

32

**Driving Behavior of Kuwait University Student in Relationship to Socio-Demographic Variables and Personality**

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Department of Community Medicine, Kuwait University, Faculty of Medicine

**Introduction:**

To assess driving behavior among Kuwait university students; to measure personality features in this selected population; and to study the relationship between risky driving behavior and personality, as well as, with socio-demographic variables.

**Methods:**

A cross-sectional survey was conducted among students from the Faculty of Engineering and from Business/Administration Faculty. A self-administered questionnaire was used to collect data about socio-demographic variables (age, gender, marital status, etc.), driving behavior (using seatbelt, speeding, passing red light, ignoring traffic signs, etc.) and personality types (by a shortened version of Eysenck Personality Questionnaire). The overall response rate was 90.3% in Engineering and 94.8% in Business/Administration Faculty.

**Results:**

The survey comprised 262 male (41.4%) and 371 female (58.6%) students. High risk driving behavior was reported by 41.6% of males and by 25.3% of females. The computed driving behavior score, as an indicator of risky driving behavior, was significantly higher in males. Sanguine type of personality was the most prevalent in males (40.8%), while melancholic in females (36.9%). There was no relationship between driving behavior and personality type, although a significant association with extraversion-introversion and neuroticism scores was recorded in both genders.

**Conclusions:**

The results of this study support the hypothesis that risky driving behavior was related to being a male and having longer driving experience (only in females). No relationship was found between driving behavior and personality, marital status, average grade, nor car category that students usually drive.

*Key Words:.,*

*Funding Agency: None*

**Community Medicine**

Category: Graduate (Resident)

33

**Nutrition Information Seeking Behavior of Obese Kuwaiti Women**

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<sup>2</sup>Central Out Patient Nutrition Clinic, Ministry of Health, Kuwait.

**Introduction:**

Obesity is becoming a world-wide health hazard. Leisurely life, rich food, limited physical exercise, and lack of awareness and use of nutrition information are some of the reasons causing that problem. The objective was to study the nutrition-related information seeking behavior of obese married Kuwaiti women.

**Methods:**

This study targeted obese Kuwaiti women, aged between 20 and 59 years and married with children, who had visited at least three times the Nutrition Clinic of the Ministry of Health. A structured, peer-reviewed and pilot-tested, interview schedule was used. A convenience sample of 45 women was personally interviewed by the second researcher, a trained dietitian.

**Results:**

Most preferred foods were: cheese, vegetables, milk, yoghurt, laban, fruits, and fish, in that order. Top three types of information needed, in order of importance, were: general nutrition information, nutrition information about each food type, and physical exercise information. The top most reliable sources of information, the clinician, medical specialist, and general physician, were not the easily accessible ones. Most easily accessible sources of information were: family members and friends and colleagues. Most useful sources of information were: clinic dietitian, medical specialist, general physician, and clinic brochures, in that order. Use of nutrition information had resulted in: eating more healthy food, doing more physical exercise, reducing weight, and becoming more active. The problems faced while seeking information included: information being contradictory, not clear, and too much; not having time to search information, and not knowing where to go to find information.

**Conclusions:**

There is a need to produce more reliable information and to create adequate channels where such information becomes easily accessible.

*Key Words: Obesity; Women; Information seeking behavior;*

*Funding Agency: None*

*Community Medicine*

*Category: Undergraduate*

34

**Smoking among doctors and their attitude toward patients' smoking**

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Department of Community Medicine, Kuwait University, Faculty of Medicine

**Introduction:**

To estimate the prevalence, and correlates of smoking, among doctors in Kuwait general hospitals and to explore the relationship between doctors' smoking habits and their attitudes toward smoking in patients.

**Methods:**

This was a cross-sectional survey among doctors in departments of Medicine and Surgery from four general hospitals in Kuwait. The data were collected by a self-administered anonymous questionnaire that comprised questions related to three main dimensions, socio-demographic variables, smoking habits and doctor-patient relationship. 378 doctors returned completed questionnaires, yielding a response of 95.9% from those approached.

**Results:**

The prevalence of smoking was 23.9%. In departments of Medicine the prevalence of ever smokers was 20.1%, while in Surgery it was 30.1%. As for clinical practice towards smoking in patients, according to the five A's approach, 78.3% and 70.8% of all doctors reported they always asked about smoking history and always advised their patients to quit, respectively. The remaining practices, assessing patient's willingness to quit, assisting in quitting attempt and arranging a follow up contact for the quitting related problems, were followed by far less frequently. In dealing with smoking patients, the performance of doctors in Medicine was better than that of doctors in Surgery. The difference was statistically significant for all five A's except the last two, were it didn't reach the significance level. Current smokers were less committed to care about patients' smoking, as compared to never smokers.

**Conclusions:**

The high prevalence of smoking among doctors in Kuwait general hospitals raises important public health concern. As tobacco can lead to a huge percentage of morbidity and premature mortality, the role of health care workers should arise to minimize and, eventually, eliminate this worse man made public health disaster. In addition there is an urgent need for an effective intervention to control tobacco smoking among doctors, as well as patients.

*Key Words: Tobacco; Doctors' attitude toward smoking in patients; Smoking;*

*Funding Agency: None*

## **Football injuries among recreational football players in Kuwait**

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Faculty of Medicine, Kuwait, Undergraduate

### **Introduction:**

Few researches in the Middle East have been focused on the prevalence of football injury in the region. Knowledge of the prevalence can help health providers plan a better health system which can accommodate the number of injuries expected. The objective was to determine the prevalence of football-related injuries among recreational football players in Kuwait, as well as sites and types of injury; 2.To identify the reasons for and consequences of injuries; 3. To study the relationship of frequency of injuries with socio-demographic, anthropological and other characteristics of the respondents.

### **Methods:**

A cross-sectional survey enrolled 657 recreational football players from two major public playgrounds in Kuwait, Nuzha and Bayan. The response rate was 91.5%. The questionnaire comprised 3 parts covering socio-demographic characteristics, personal health and habits, and football-related injuries. Two standardized physician balance scales were used to measure the weight and height, in order to calculate the body mass index of each player.

### **Results:**

The overall one year prevalence of injuries in recreational football players was 86.6%. Four or more injuries in the previous year were reported by 44.1% of the players. After a severe injury, a quarter of injured players visited a nurse or doctor, while one-fifth missed that match and another fifth abstained from the following match. A direct relationship was observed between the number of injuries and hours of playing football, while there was an inverse relationship with age. Number of injuries was associated with educational level, being single, of Kuwaiti nationality and the use of protective measures, such as bandages and leg-shields. More than a half of injured players stated that the reason for their injury was direct contact with another player. The most frequently injured site was the lower limb, followed by the upper limb. Concerning lower limb injuries, ankle injury ranked the highest. Every second injured player experienced bruises, every third-muscle strain and every fourth-joint type of injury. Bruises were the most repeated type of injury.

### **Conclusions:**

A very high proportion of injuries, severe enough to require medical care, implies that they are an insufficiently recognized public health problem. Bearing in mind medical, social, and economic burden of the problem, implementation of adequate preventive programs should be considered.

*Key Words: Football; Injury; Recreational;*  
*Funding Agency: None*

*Community Medicine*

*Category: Undergraduate*

**36**

**Knowledge, Perception and Practice of Cosmetic Procedures among University Students in Kuwait**

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**Introduction:**

Nearly 8.3 million cosmetic surgical and non-surgical procedures were performed in the USA in 2003. This represents an increase of 299% since 1997. People aged 18 and younger had less than 3% of all cosmetic procedures performed in the USA. In Kuwait, knowledge about the prevalence of cosmetic procedures and any significant characteristics of its practice is very limited. Objectives: To study the knowledge, assess the perception and estimate the prevalence of cosmetic procedures among university students in Kuwait.

**Methods:**

A cross-sectional study was conducted in 2005 with appropriate review of the departmental ethics committee. A total of 417 students were enrolled after being selected from the governmental and private universities via random multi-stage cluster sampling. Data was collected using self-administered questionnaire.

**Results:**

The prevalence of cosmetic procedures practice was 13.4%. A significant difference was found between type of university attended and this practice, private universities being higher. Students attending pre-university governmental school had performed more cosmetic procedures. A highly significant association was between gender and practice of cosmetic procedures with females performing the majority (80.4%). Out of the 56 students who have performed cosmetic procedures, 14 subjects performed more than 2 procedures. The majority of the minimally invasive and non-invasive procedures were performed in the Kuwaiti private hospitals. Invasive procedures were mostly performed abroad. An inverse relationship was found between the degree of invasiveness and religious permissibility knowledge among the sample population and the students who have performed cosmetic procedures.

**Conclusions:**

This study suggest that the practice of cosmetic procedures among young adults in Kuwait is prevalent and need to be studied in depth focusing on accessibility, informed consent, resource allocation, and monitoring.

*Key Words: Cosmetic procedures; Students; Kuwait;*  
*Funding Agency: None*

37

## **Water consumption and self-reported health problems among Kuwait's young population**

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<sup>1</sup> Medical School and <sup>2</sup> Department of Community Medicine, Kuwait University Faculty of Medicine;

### **Introduction:**

Sub-optimal water-intake is an underestimated health related problem among adolescents. This cross-sectional study aimed to assess the prevalence of sub-optimal water-intake (< 2 liter) among high school students in Kuwait and evaluate the associated factors.

### **Methods:**

784 Kuwaiti high school students, male and female, aged 14 – 19 from 8 schools of the Capital Governorate were included in the study. From each school one section from each grade (10th - 12th) was selected at random and the students were invited to participate. Data were collected using a questionnaire with height, weight, and blood pressure measured for each participant. Simple logistic regression was used to analyze the association of various factors, symptoms and disease conditions with sub-optimal water-intake.

### **Results:**

The mean ( $\pm$  SD) for water-intake (liter) among male and female adolescents was  $1.2 \pm 1.1$  and  $0.7 \pm 0.7$  respectively ( $p < 0.001$ ). Our study estimated 91.7% prevalence of sub-optimal water-intake among high school students. Students were significantly less likely to have sub-optimal daily water-intake if they consume dairy products (OR = 0.4; 95% CI: 0.2-0.8) or if they routinely bought bottled water at school (OR = 0.5; 95% CI: 0.3 – 1.0). Students were more likely to have reported sub-optimal water-intake if they prefer other drinks over water (OR = 3.1; 95% CI: 1.8 - 5.4) or if they reported to forget drinking water (OR = 6.1; 95% CI: 3.2 -11.4) or those who urinate fewer (OR= 3.2; 95% CI: 1.8 – 5.7). The sub-optimal water-intake was significantly associated with diabetes and thyroid disorders.

### **Conclusions:**

Our study estimated 91.7% prevalence of sub-optimal water-intake among high school students. Significant factors included forgetting to drink water and preferring other drinks over water. Proper education of the students about the desired level of water-intake is should be undertaken.

*Key Words: Water consumption; Health problems; Adolescents;*

*Funding Agency: None*

**Dentistry**

*Category: Clinical*

**38**

**Prevalence and severity of periodontal diseases in Kuwaiti patients with diabetes**

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<sup>2</sup> College of Health Sciences, Public Authority for Applied Education and Training

<sup>3</sup> Diabetes Department, Al-Amiri Hospital, Kuwait

**Introduction:**

Despite the high prevalence of diabetes mellitus (DM) in Kuwait, no studies have examined the association between DM and periodontal diseases in Kuwaiti patients. The aim of this study was to investigate the prevalence and severity of periodontal disease in Kuwaiti patients with type 1 and type 2 diabetes mellitus, and to examine the association between periodontal complications and the level of glycemic control.

**Methods:**

258 patients (mean age = 45.5 years) patients with DM (both types 1 and 2) randomly selected from Al-Amiri hospital were examined by one calibrated dental examiner masked to their diabetic status. Recorded clinical parameters included plaque index (PI), gingival index (GI), pocket depth (PD), clinical attachment level (CAL), and bleeding on probing (BOP) on Ramfjord's index teeth. Results were correlated with medical, dental, and social history variables.

**Results:**

The majority of patients in this study exhibited high levels of plaque (mean PI = 1.75) and gingival inflammation (mean GI = 3.29), and high prevalence and severity of chronic periodontitis. Moderate periodontitis (CAL = 5 mm) was found in 70.4% of subjects, and advanced periodontitis (CAL = 7 mm) was found in 38.4% of the patients. Significant correlations were found between HbA1c and both mean PD ( $r = 0.230$ ,  $p < 0.05$ ) and mean BOP ( $r = 0.287$ ,  $p < 0.05$ ). Factors associated with the severity of periodontitis included smoking, male gender, and duration of diabetes.

**Conclusions:**

Periodontal disease is common in both type 1 and 2 diabetic patients in Kuwait, and glycemic control was associated with the severity of periodontal complications.

*Key Words: Diabetes mellitus; Periodontal disease; Oral health;*

*Funding Agency: None*

**Dentistry**

*Category: Clinical*

**39**

**Age specific dental caries experience of Kuwaiti schoolchildren in different governorates**

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**Introduction:**

The aim of this national dental survey was to determine the age specific dental caries experience of Kuwaiti schoolchildren in primary and intermediate government schools in the five different governorates (Ahmadi, Farwaniya, Hawally, Jahra, Capital).

**Methods:**

Altogether 4,588 schoolchildren aged 5 to 14 years were clinically examined for dental caries according to WHO criteria. Descriptive statistics including means and standard deviations were calculated for the caries indices. Kruskal Wallis test was used to test the differences in caries indices between the governorates and age. The Chi-square test was used to find the association between caries-free (dmf/DMF = 0) children by age, sex and governorate.

**Results:**

In primary dentition, the proportion of caries-free children in 5-12-year-olds was 31.9%. Age-specific caries-free proportions in primary dentition were lowest in Ahmadi (18.2%) and highest in Hawally (37.2%) (p<0.001). The mean dft was 2.7, and dfs 5.8. The highest mean values for decayed primary teeth and surfaces were observed in Ahmadi (4.0/8.7) and Capital (2.9/6.4). The remaining governorates had lower than in these two governorates and the lowest were found in Jahra (1.5/3.1) (p<0.001). In permanent dentition, the proportion of caries-free children in 5-14-year-olds was 48%. Age-specific caries-free proportions in permanent dentition were lowest in Ahmadi (25.8%) and highest in Farwaniya (66.1%) (p<0.001). Caries experience (DMFT) for all ages combined was 1.5 and surfaces score (DFS) was 1.9. In permanent dentition caries experience was also highest in Ahmadi (3.0/3.1) and in Capital (1.9/2.5) and lower values in the other governorates (p<0.001).

**Conclusions:**

It is evident from this study that there are differences in caries experience between the governorates. There is a clear need for expanding the national school oral health program to reach those children who are not yet receiving systematic preventive and curative services.

*Key Words: Dental caries; School children; Kuwait;*

*Funding Agency: Ministry of Health, Kuwait and the Forsyth Institute*

**Dentistry**

*Category: Undergraduate*

**40**

**Patient's Opinion To Reveal Health History Information**

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**Introduction:**

Many patients seeking dental care have a significant medical condition that may alter the treatment. This necessitates a good communication between the patient and dentist through personal self reported questionnaire, direct history taken by the dentist, and thorough clinical examination. Because some patients provide inaccurate information on dental health history form, some are looking generally well inspite of having serious disease, and some may refuse to disclose certain information that they perceive as too personal or of no concern to the dentist, these considerations motivated us to initiate this survey. Objective: To determine how willingly dental patients reveal health history information.

**Methods:**

A survey involved 50 adult patients from 5 dental centers, it recorded demographic data including age, sex, nationality, and educational level to determine significant differencies in response within these varies groups.

**Results:**

About 90.8% of the participant necessiated the presence of the medical health history form in dental clinics. Most of the participants (about 92.2%) agreed about the importance of providing the dentist with all medical information. The rest refused due to different reasons; unimportant information (3.4%), privacy (2.9%), or afraid of treatment refusal (1.5%).

**Conclusions:**

Since not all the patients providing accurate information in the health history form, it is essential for the dentist to exercise special care when reviewing a patient's health history and to ensure that the patients understand all of the questions on the form. Also dentists must take universal precautions while treating all patients. Finally, it is the responsibility of the entire dental team to clearly educate the patient regarding the importance of accurate information on the health history.

*Key Words: Behavioral Science; Health Services Research; Health History Information;  
Funding Agency: None*

**Dentistry**

Category: Undergraduate

41

**Yeasts in the Oral Cavities of Kuwaiti Infants**

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**Introduction:**

Yeasts are common colonizers in the oral cavity of infants. The most prevalent species is *Candida albicans*. It has been isolated in 30-60% of healthy oral cavities, and 40% of the mouths of newborn infants. Some local and general factors can predispose to oral infection and proliferation of yeasts in early childhood. Hence the purpose of this study was to investigate the occurrence of *Candida* species in the oral cavity of breast-fed, bottle-fed and infants using pacifiers from one to eighteen months of age.

**Methods:**

The study group comprised 50 children from one to eighteen months of age attending the polyclinics for vaccination. The mothers were interviewed based on a standard questionnaire covering the children's medical histories, and feeding and sucking habits. Samples were collected with sterile swabs from the hard palate and dorsum of tongue. They were immediately smeared onto the surfaces of petriplates with sabouraud dextrose agar. Samples were then cultured to determine level of *Candida* growth and type of *Candida* species. Using Stata 9.1 data were validated and checked for errors and inconsistencies. Ninety-five-percent confidence intervals were calculated and accordingly a p-value which is equal or less than 0.05 was considered to be statistically significant.

**Results:**

The use of pacifier had a strong influence on *Candida* growth. The average probability of *Candida* growth increased 35% when a pacifier was used.

**Conclusions:**

The results suggest that use of a pacifier is an important local factor that influences the colonization and proliferation of yeast in the oral cavity.

*Key Words: Pathology; Oral medicine; Cell culture;*

*Funding Agency: None*

**Dentistry**

Category: Clinical

42

**Factors associated with postoperative sensitivity of amalgam**

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**Introduction:**

Postoperative sensitivity is a common problem after amalgam restorations. The purpose of this clinical study was to identify predictive factors of postoperative sensitivity to cold reported by patients following class I and II amalgam restorations of primary carious lesions.

**Methods:**

One hundred twenty patients were included in the study. Half of the patients had lesions located radiographically in the middle third of dentin, and the other half were located in the inner third of dentin. Patients were telephoned on days 2 and 7 postoperatively and asked whether they experienced sensitivity to cold, and if so, its duration and intensity. If sensitivity remained up to day 7, patients were also contacted on days 30 and 90.

**Results:**

The percentage of females having postoperative sensitivity was higher than that of males at day 2, 7 & 30 (P=0.000, 0.016 and 0.028 respectively). Also a statistical difference according to age of the patient in postoperative sensitivity was noticed at day 2 (P=0.010) but not at day 7 & 30 (P=0.157 and 0.877). Postoperative sensitivity was not significantly different among the different types of teeth at day 2, 7 & 30 (P=0.219, 0.236 and 0.338 respectively). In addition there was no statistical difference between class I and class II in postoperative sensitivity at day 2, 7 & 30 (P=0.219, 0.769 and 0.259 respectively). Patients with preoperative pain had significantly more postoperative sensitivity (P=0.000, 0.000, and 0.004 at day 2, 7 & 30 respectively). Of the 51 teeth that had sensitivity at day 2, 17 had mild pain, 26 were moderately painful and 8 had severe pain.

**Conclusions:**

factors associated with postoperative sensitivity include: age, gender, depth of the cavity and presence of preoperative pain.

*Key Words: Postoperative sensitivity; Amalgam; Factors;*

*Funding Agency: None*

*Dentistry*

*Category: Basic Sciences*

43

## **Reliability of a quality index in panoramic radiographs**

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### **Introduction:**

Faculty of Dentistry in Kuwait University is a dental school with a newly established clinic. A digital radiographic system with a LAN (Dimaxis Pro Version 3.1.0 Planmeca Finland) is installed, including a digital panoramic machine. The objective of this pilot study was to establish the intra observer reliability in assessing the panoramic radiographs from this machine, using success criteria described by Langland et al 2002.

### **Methods:**

One hundred and seven panoramic radiographs taken at the start of the clinic were used. All had been exposed by a dentist with only 2 weeks of very basic practical training in a private Hospital. No retakes were made if a complete image could be captured and stored directly. The panoramics were masked and assessed twice by an experienced radiologist (LK) regarding the presence of quality criteria described by Langland et al. 2002.

### **Results:**

The mean difference between the two assessments was 0.31 and in the majority of the radiographs, the reliability was good with only a minor difference in the repeated assessments.

### **Conclusions:**

The proposed criteria for assessment are useful and can be used in future quality assessments of the panoramic radiographs. The intra observer reliability was good and the difference in assessments was equal to or less than 1 quality criteria in 80 % of all assessments.

*Key Words: Quality assessment; Panoramic radiographs; Reliability;*

*Funding Agency: Research Project No DP01/04, Kuwait University*

**Dentistry**

*Category: Clinical*

**44**

**Variance components of periodontal parameters in a steady-state plaque environment**

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<sup>2</sup> Anaerobe Reference Laboratory, National Institute of Public Health, Helsinki, Finland

**Introduction:**

Consistency of periodontal parameters in a steady-state plaque environment has never been assessed at the site, tooth and subject level. This study describes correlations between subsequent exams derived from multivariate multilevel variance components models.

**Methods:**

40 healthy, nonsmoking volunteers with plaque-induced gingivitis, 19-28 yr old, participated. Periodontal examinations (BL) included probing depth (PD, mm), bleeding on probing (BOP, probing pressure 1.27 MPa), and plaque index (PI, 0-3). Examinations were repeated after 2 and 4 wk, and participants exhorted not to change their oral hygiene habits. Multivariate multilevel models were applied to assess variance components at site, tooth, and subject levels.

**Results:**

Mean PI did not change (mean 1.1, s.d. 0.37-0.40), whereas between 18 and 21% sites bled on probing. Covariance matrices of 4-level (exam, site, tooth, subject) variance components models revealed moderate correlations of PI for subsequent examinations (BL-2 wk; BL-4 wk; 2 wk-4 wk) at the site level (between 0.54 and 0.57) where about 65% of the variation occurred, and tooth level (0.67-0.72), whereas correlations were strong at the subject level (0.76-0.85) where about 15% of the variation was present. In contrast, correlations for BOP were very low at the site level (0.15-0.17), low at the tooth level (0.37-0.46) and strong at the subject level (0.82- 0.87). Little variation of PD was present at the subject level (11%). Correlations between subsequent examinations were high at subject (0.65-0.9) and tooth levels (0.9-0.92) and moderate at the site level (0.51-0.54).

**Conclusions:**

In young adults with plaque-induced gingivitis the amount of supragingival plaque can be regarded stable in subsequent examinations at all site, tooth and subject levels. BOP, in contrast, is highly inconsistent at the site level which may not fit very well with the current cause-and-effect paradigm of plaque invariably inducing gingivitis.

*Key Words: Steady-state plaque; Gingival inflammation; Consistency;*

*Funding Agency: Supported in part by KURA Grants # DS02/02 and DS04/02.*

*Dentistry*

*Category: Clinical*

45

## **Multivariate multilevel models for repeated measures in the study of smoking effects on the association between plaque and gingival**

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### **Introduction:**

Multivariate multilevel modeling was applied to re-analyze repeated measures data on the influence of heavy smoking on the association between the amount of supragingival plaque and gingival bleeding on probing (BOP) in a steady state plaque environment.

### **Methods:**

Data acquired in 65 systemically healthy young adults with mild plaque-induced gingivitis were analyzed. 33 heavy smokers consumed at least 20 cigarettes per day while 32 were non-smokers. Periodontal examinations at the outset consisted of periodontal probing depth, clinical attachment level, BOP, plaque index, and presence of calculus at 6 sites of every tooth present. They were repeated 3 times every 8 weeks.

### **Results:**

A multivariate 4-level variance component model revealed that the odds of BOP was twice as high in smokers. In addition, females had a lower likelihood for BOP but, with increasing bleeding scores during the course of the study, this effect attenuated. Low biserial correlations for BOP at the site level of between 0.11 and 0.2 were found. At the tooth level, correlations were moderate (0.2-0.5), and highest at the subject level (0.8-0.9). Variations at subject and tooth levels were very large at the outset but notably attenuated in the course of the study. Plaque consistently influenced the tendency for BOP with an odds ratio of about 1.7 for each increase in score in both smokers and non-smokers.

### **Conclusions:**

The present study did not reveal evidence for attenuation of the plaque/gingival bleeding relationship in heavy smokers.

*Key Words: Gingival inflammation; Supragingival plaque; Smoking;*

*Funding Agency: Kuwait University Research Administration, Grant # DS02/02*

**Dentistry**

*Category: Clinical*

**46**

**Early identification of orthodontic patients at risk of severe apical root resorption**

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**Introduction:**

A small subgroup of orthodontic patients experiences severe apical root resorption at time of appliance removal. Inferences from epidemiologic studies suggest that predisposition is the major etiologic factor. If so, high risk patients may be identified early in treatment. Our aim was to test this hypothesis.

**Methods:**

We made standardized periapical radiographs of the maxillary incisors before treatment (T1) as well as at mean periods of 6.42 months (SD 0.87, T2), 12.46 months (SD 0.97, T3), and 24.89 months (SD 7.31, end of treatment, T4) after bracket placement of 267 consecutive orthodontic patients of age 18.77±10.09 yrs at T1. We scanned the radiographs and used commercially available software for correction of projection errors and random measurements of tooth lengths. Differences in tooth lengths over time were calculated electronically and interpreted as apical root resorption.

**Results:**

Spearman's rank R demonstrated an association of averaged resorption of all maxillary incisors at T2 vs. at T4 (0.74, P<0.001) and at T3 vs. at T4 (0.86, P<0.001). Only 1.6% and 0.5% of the subjects whose incisors did not show >2.0 mm resorption at T2 and at T3, respectively, had one or more incisors with >5.0 mm resorption at T4, as opposed to 33.3% and 19.0% of those whose incisors did, respectively, (P<0.001). Only 1.4% of the subjects without >3.0 mm incisor resorption at T3 had incisors with >5.0 mm resorption at T4 as opposed to 50% of those with (P<0.001) No association was detected between time from T1 to T4 and resorption at T4 (R=0.07, P=0.25).

**Conclusions:**

The risk of severe apical root resorption is minimal in patients who did not show resorption >2.0 mm on any incisor about 6 and 12 months after bracket placement, regardless of treatment time. The risk is about 50% in subjects with one or more incisors with >3.0 mm resorption about 12 months into treatment.

*Key Words: Apical root resorption; Risk factors; Prediction; Funding Agency: Kuwait University DD07/00*

**Dentistry**

*Category: Clinical*

**47**

## **A Strain and Compression Study Of Dental Anesthesia Needles**

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### **Introduction:**

Injection needle breakage is considered rare, however, a recent study in Kuwait showed that it still seems to occur. The aim of this study was to test mechanical properties of available dental local anesthesia needles marketed in Kuwait.

### **Methods:**

Needle batches from 7 different companies were analyzed. Needle gauges of 25, 27, and 30 as well as lengths between 11 and 35 mm were tested. In total, 320 needles were subjected to tension and compression tests. Tension force needed to break the needle was measured with an Instron, model 4206 universal. Compression force needed for needle bending was measured with a Shimpo Digital Force gauge model FGV-20.

### **Results:**

Regarding tension, multiple regression analysis showed only needle's diameter significantly ( $p < 0.001$ ) influencing the critical force when it broke. Length was not associated with needle breakage ( $p = 0.289$ ). The model explained more than 85% of the variation of force. Regarding compression, both diameter ( $p < 0.001$ ) and length ( $p < 0.001$ ) influenced the force when the needle bent, however in opposite directions. It was noticed that, while certain batches had a low variation of bending forces, some batches contained needles with unpredictable performance.

### **Conclusions:**

Length and diameter cannot fully explain why needles break, in particular when compressed. There is wide variation even within the same needle type and manufacturer.

*Key Words: Dental materials; Anesthetics; Needle;*

*Funding Agency: None*

**Dentistry**

*Category: Clinical*

**48**

### **Variation in Consistency of Dental Needles in Kuwait**

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**Introduction:**

Inconsistency of anesthetic needles cause needle-breakage, due to chemical composition. A study was undertaken to determine the reason for needle-breakage. Objective: Determining variation in needles' consistency as regards their quality and composition.

**Methods:**

Test needles, from five different manufacturers, were randomly selected, and categorized as I, II and III groups. Longitudinal and cross-sections were prepared for elemental X-ray microanalysis. Colored X-ray maps of available elements obtained through qualitative, quantitative tests and X-ray mapping.

**Results:**

The tests revealed presence of iron, nickel, silicon and aluminum in good quality needles. However, variation in consistency of these elements affected needle quality, with incline of carbon, and decline of nickel and aluminum, attributing to their poor quality.

**Conclusions:**

Further research would throw more light in determining good quality anesthetic needles, for better standardizing of needles to prevent needle-breakage, while using them on patients.

*Key Words: Anesthetic needles.Elemental composition;*

*Funding Agency: None*

**Dentistry**

*Category: Clinical*

**49**

**Risk factors for dental caries prevalence in Kuwaiti schoolchildren**

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**Introduction:**

The aim of this national dental survey was to determine the risk factors for dental caries prevalence in Kuwaiti schoolchildren attending primary and intermediate government schools.

**Methods:**

Altogether 4,588 schoolchildren aged 5 to 14 years were clinically examined. The sampling plan was found to have been implemented successfully and provided representative proportions of children by age and sex. Dental caries was diagnosed using a WHO ball tip probe and a mouth mirror utilising the WHO criteria and recorded using the tooth and surface based indices for the primary dentition (dft and dfs) and for the permanent dentition (DMFT and DFS) on an optical scanning chart. Descriptive statistics including means and standard deviations were calculated for the caries indices. Multivariate analysis (logistic regression) was used to find the risk factors for caries prevalence with gender, oral hygiene and age was a covariate factor. Odds ratios (OR) with 95% confidence intervals (95% CI) were also calculated.

**Results:**

In the primary dentition, 68.1% of the children examined had caries, and 31.9% were caries-free in 5-12-year-olds. The mean dft was 4.6 among 5-, 6- year-olds and declined by increasing age to 0.4 (p<0.001). Accordingly the mean dfs was highest at the age of 6 years (9.9) and declined to 0.8 at the age of 12 (p<0.001). In the permanent dentition, 52% of the children examined had caries, and 48% were caries-free in 5-14-year-olds. The mean DMFT increased from 0.3 at the age of 5 to 3.9 at the age of 14 (p<0.001). The corresponding DFS was 0.2 to 5.2. In the permanent dentition, poor oral hygiene (OR=2.0; 95% CI=1.7-2.4; p<0.0001) and increasing age (OR=1.4; 95% CI=1.3-1.5; p<0.0001) were significantly associated with caries risk.

**Conclusions:**

More emphasis on preventive care is required for achieving an increase in caries free proportions and for gaining the declining trend of caries among schoolchildren in Kuwait.

*Key Words: Risk factors; Dental caries; School children;*

*Funding Agency: Ministry of Health, Kuwait and the Forsyth Institute*

**Dentistry**

*Category: Graduate (Resident)*

**50**

## **Reliability of Gingival Bleeding on Probing and Periodontal Probing Depth in Patients with Plaque Induced Gingivitis**

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### **Introduction:**

To assess the reliability of bleeding on probing (BOP) and periodontal probing depth (PD) after repeated probing at a time interval of four hours between re-examination procedures in patients with plaque induced gingivitis.

### **Methods:**

Fifteen non-smoking adult volunteers, 18-25 years of age, with plaque induced gingivitis participated. Full mouth examination was performed twice for the same subjects. Periodontal probing depth (PD1/mm and PD2/mm), bleeding on probing (BOP1 and BOP2), and bleeding index (BI1 and BI2) were assessed at six sites of each tooth present. Probing was repeated 4 hours (T2) after the first probing (T1). Intra- and Inter-examiner patterns of re-examination were considered.

### **Results:**

Results: When ignoring the re-examination pattern, subject-specific analysis revealed mean differences of 0.061, - 0.005, and - 0.003 for PD, BI, and BOP respectively. In addition, kappa statistics were employed for site-specific analysis, in which the highest kappa value of 0.481 was found when assessing PD. Thorough subject-specific analysis of intra-examiner agreement for both examiners showed mean differences close to zero for all three variables. Fair kappa values of 0.544 and 0.465 were obtained from site-specific analysis of PD for E1 and E2, respectively, while poor values were resulted for both BI and BOP. When inter-examiner pattern of re-examination was considered, analysis of agreement revealed mean differences close to zero for all variables. Kappa values were found to be fair for PD, but poor for both BI and BOP.

### **Conclusions:**

It is concluded that no significant difference between inter- and intra-examiner reliability in the assessment of PD, BI, and BOP was found. In general, the assessment of PD showed to have fair agreement, while that of BI and BOP was poor.

*Key Words: Bleeding on probing; Periodontal probing depth; Reliability;*

*Funding Agency: None*

**Dentistry**

*Category: Graduate (Resident)*

**51**

## **Medical Histories of Patients Admitted to Kuwait University Dental Clinic**

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### **Introduction:**

History taking in the dental practice is the most important step in providing safe and tailored treatments to our patients. The aim of this study was to determine the number and type of medical histories of patients admitted to the Kuwait University Dental Clinic within one year. This was done in order to increase the awareness of dentists and students of what conditions they have to face on a day to day basis.

### **Methods:**

1,062 patient files between October 1st 2004 and October 1st 2005 were examined, in which the medical history questionnaires of each were assessed for a positive medical history, as well the age, gender, the nationality of these patients. In addition, the verification of such a history by either the dentist or the student was taken into account.

### **Results:**

It was found that 387 out of 1,062 patients presented with a positive medical history, which accounts for 36% of the patients within that year. 37.5% of these patients were males, while 62.5% were females. The number of patients that presented with at least one medical condition accounted for 57.9%, while those that presented with more than one condition accounted for 42.1%. In addition, cardiovascular problems had the highest frequency with hypertension in the lead affecting 25.8% of the medically compromised patients.

### **Conclusions:**

Since one out of three patients admitted to the Kuwait University Dental Clinic presented with a positive medical history, this emphasizes the importance of taking both a written and verbal history for each patient before beginning any dental treatment in order to avoid any possible complications.

*Key Words: Health services research; Medical Histories; Behavioral Science;*

*Funding Agency: None*

*Dentistry*

*Category: Clinical*

52

## **Relationship between clinicians' educational background and their stated choices regarding retreatment of inadequate fixed prosthodontic restorations.**

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### **Introduction:**

Among the factors influencing clinical decision making, educational background may be one. This study evaluated stated re-treatment choices, in defined, sub-optimal fixed prosthodontic scenarios, among groups of dental professionals in the same educational setting, undergoing, or who had undergone, various programs of prosthodontic or related discipline training, or those who had had no such training at all. The hypothesis was that participants' stated re-treatment decisions are independent of educational history and/or status.

### **Methods:**

The study population (n=75) comprised interns (n=27), various categories of graduate students (n=32), and specialist staff (n=16). Each completed a pre-tested structured questionnaire about their educational background, and were asked to choose a re-treatment option for each of 11 commonly-occurring conditions relating to an existing fixed restoration of sub-standard quality, and each of which had the option to be with/without clinical, and/or patient-perceived problems.

### **Results:**

Variations in choices within and amongst the sub-groups with regard to specific scenarios were commonly noted. Differences that were statistically significant were for faulty occlusion (P=0.013), open margin (P=0.019), defective root filling (P=0.001), periapical radiolucency (P=0.011) and improper pontic design (P=0.005), when no signs and symptoms, no caries or no inflammation were present.

### **Conclusions:**

The results confirm the widely-acknowledged variability in decision making that exists among dental professionals. The differences observed further suggest that an educational dimension cannot be overlooked in the characterization of dentists' stated re-treatment decision choices.

*Key Words: Decision Making; Re-treatment; Prosthodontics;*

*Funding Agency: None*

*Dentistry*

*Category: Undergraduate*

53

## **Dentists' Competence Regarding Dental Management of Diabetic**

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### **Introduction:**

To assess dentists' knowledge when undertaking dental care of diabetic patients.

### **Methods:**

Data was collected by means of a self-completed questionnaire that includes items that test the dentist's knowledge regarding management of diabetic patients. A convenient sample of 50 dentists working in polyclinics, private clinics and dental centres were included in the study.

### **Results:**

Even though diabetes is known to be common in Kuwait, only 46% are equipped with the facilities used to estimate blood sugar level. Although 98% of the dentists provide dental care to controlled diabetic patients, only 30% do so for uncontrolled cases. Dentists are more likely to face hypoglycemic patients. Therefore, 74% were more concerned with hypoglycemia as compared to hyperglycemia. Most of the dentists were not able to differentiate between the signs and symptoms of hypoglycemia and hyperglycemia such as acetone breath and sweaty skin. Regarding the prescription of antibiotics, 52% of the dentists routinely prescribe antibiotics to their diabetic patients.

### **Conclusions:**

Dentists should be more aware of the fact that the prevalence of diabetes mellitus is rising. From these data, it could be suggested that the dentists who participated in this study lacked sufficient information regarding dental management of diabetic patients and have difficulties in recognizing signs and symptoms of hyperglycemia and hypoglycemia. The limitation of the study lies in the fact that the sample of population that participated in the study does not represent all dental professionals in Kuwait.

*Key Words: Diabetes; Sugar Blood; Hypoglycemia;*

*Funding Agency: None*

*Dentistry*

*Category: Undergraduate*

54

## **Cross Sectional Survey of Consent in Oral Surgery**

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### **Introduction:**

Introduction: patient's consent is required before surgical extraction of the third molar to prevent dispute and preserve patient's ethics. Objective: to find different methods used in the informed consent verbal, written, or both and the validity of available consent.

### **Methods:**

Questionnaire was distributed to 21 surgeons and 25 general practitioners in surgical units.

### **Results:**

All surgeons inform patients before surgical extraction of third molar about procedure and complications, while 4% of general practitioners do not. 52% of surgeons use verbal explanation only; however 76% of general practitioners use verbal and written consent. 90% of surgeons and 72% of general practitioners believe that consent protects both patient and dentist rights. 73% of surgeons and 67% of general practitioners who use only verbal explanation think that written consent is better than verbal explanations. 11% of surgeons and 21% of general practitioners using both consents force patients to sign the consent under pressure. 67% of surgeons and 16% of general practitioners think that the available written consent needs modification.

### **Conclusions:**

Most surgeons use verbal explanations, while majority of general practitioners use verbal and written consent. Many surgeons believe that available written consent is not enough and need modifications.

*Key Words: Oral surgery; Ethics; Consent;*

*Funding Agency: None*

**Dentistry**

*Category: Graduate (Resident)*

**55**

## **Facial Symmetry: Attractive or Not?**

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### **Introduction:**

To compare people's perceptions of attractiveness when viewing symmetrical and non-symmetrical versions of the same face following manipulation by computer software. Differences with respect to participants' ethnic backgrounds, age groups and genders, were explored.

### **Methods:**

The study involved a convenience sample of 600 people (300 males 300 females) between the ages of 20-39 years of different ethnic backgrounds, socio-economic classes, and who were willing to participate. Full facial frontal digital photographic views of 10 random faces of different ethnic backgrounds were used, and manipulated by imaging software, so that 2 chimeric faces (symmetrical left-left and right-right composites) were created out of each. The 2 chimeric faces along with the original face were presented to participants, who were asked to select the one, for each of the 10 sets, they considered the most attractive. Descriptive statistics as well as chi-square analysis were performed, with the level of significance set as  $p < 0.05$ .

### **Results:**

The right-right side of the face was preferred by two-fifths of the participants in comparison to the left-left (24%) and the original (20%) faces. Chi-square analysis showed no significant differences in choices by ethnic group, gender or age group, so that None of the variables tested influenced the stated preferences of participants.

### **Conclusions:**

In view of the weight of the descriptive findings among the total group of 600 participants, it would appear that symmetrical faces are preferred by the majority of participants, with more than two-thirds choosing either the right-right or left-left composites. Cultural, age or gender factors seem to play little role in people's perceptions of attractiveness.

*Key Words: Facial Symmetry; Attractiveness; Perception;*

*Funding Agency: None*

*Dentistry*

*Category: Undergraduate*

**56**

## **Knowledge and attitudes of dentists in recognizing and reporting child abuse in Kuwait**

\*Hammadi HA, Ahmad S, Qudeimat MA  
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### **Introduction:**

Child abuse is one of the worlds most significant and yet least recognized health problems. The dentists are in a strategic position to detect the child abuse. The aim of this study was to: 1. Examine knowledge and attitudes of dentists in relation to recognition and reporting cases of child abuse. 2. Assess the awareness of the legal obligation of dentists towards abused children.

### **Methods:**

An anonymous questionnaire was distributed to dentists working in all government hospitals and dental centers. The questionnaire investigated the demographics; education; perceived responsibility; suspicion; action and reasons for non-action; and knowledge regarding definitions and signs and symptoms of child abuse.

### **Results:**

A total of 211 dentists out of 260 responded to the questionnaire yielding a response rate of 81%. Physical and sexual abuse was considered by majority as forms of child abuse. On the other hand, dental care neglect and emotional abuse were considered by 72% and 76% respectively. Overall, 23% suspected at least one case and 16% actually reported a case of abuse during the past year. Only 24% believed that it is their legal obligation to report cases of abuse. Reporting child abuse was statistically significantly associated with: 1. Number of years of experience after attaining the first dental degree (those with less than 5 years experience reported 53% of the cases). 2. The country from which the dentist obtained their dental education (Arab countries 54%). 3. Whether the participant was a general dentist or a specialist dentist (general practitioners 76%). 4. The self reported difficulty in abuse identification (difficult to identify 59%). 5. The dentist's previous suspicion of child abuse (suspected before 88%).

### **Conclusions:**

A need exists for dentists to receive further formal training at the levels of undergraduate, postgraduate and continuing professional dental education in the recognition and reporting of child abuse.

*Key Words: Childhood; Abuse; Dentistry;*

*Funding Agency: None*

**Dentistry**

Category: Graduate (Resident)

57

**Medico-Legal Aspect of Dental Malpractice in Kuwait 2004**

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**Introduction:**

Mistakes can happen to any body but it is also important to prevent it. Our small mistakes can cause drastic changes in the life of the patients. In the Harvard Medical Malpractice Study they reported that medical malpractice causes 300,000 injuries annually in hospitals alone in 1991. OBJECTIVE: a retrospective study done regarding the claims dealt by Kuwait court 2004.

**Methods:**

The data was collected from Forensic Department, Ministry of Interior, General Department of Criminal Evidence in Kuwait. Claims for 2004 are collected and grouped according to malpractice and complications found, damages occurred to patient and comparison done between private and government and between different specialties. Dental claims were compared with the same incidence in medical field and in other part of the world.

**Results:**

The Number of claims found was 48 out of which, 42 against Doctors and 6 against Dentist. Claims for malpractice are considered inherently smaller in dentistry than for medical claims. Which represent 87.5% and 12.5% in medical and dental claims respectively.

**Conclusions:**

12.5% of the medical malpractice trials related to dentists found in Kuwait 2004, while in US Roughly 5% of medical malpractice trials related to dentists (US 2001 Bureau of Justice Statistics, US Department of Justice). Mistakes happens but the most important is how to prevent it and how to satisfy the patient through patient-doctor relationship. Also experimental work should stop, which mean that a doctor or a dentist should do only the work they know, consult with other specialist and if required refer the case. We hope by this study that those in the healthcare services learn from these alleged mistakes of others. Nobody should have to suffer a lifelong disability or die from an easily preventable error.

*Key Words: Oral surgery; Decision Making; Ethics; Funding Agency: None*

*Dentistry*

*Category: Clinical*

58

## **Appropriateness of antibiotic prescription for pediatric dental emergencies in Kuwait**

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<sup>2</sup> Department of Surgical Sciences, Kuwait University Faculty of Dentistry

### **Introduction:**

Guidelines for the management of dental emergencies in children warn against the indiscriminate use of antibiotics to avoid their potential side-effects. The aims of this study were to assess the frequency and appropriateness of antibiotic prescription in pediatric dental emergency clinics in Kuwait.

### **Methods:**

All patients between the ages of 1 to 14 presenting for emergency dental care at Al-Amiri, Al-Adan and Mubarak hospitals during a 30 day period were included in the study. A specially designed form which included the patient's age, gender, chief complaint, diagnosed emergency, treatment provided, and prescription given was used to record the study data. Antibiotic prescription was judged as being indicated or not indicated for each presenting emergency based on established guidelines of emergency dental care and the consensus of 6 specialists in pediatric dentistry.

### **Results:**

A total of 240 (mean age 7.5+ 3.42) pediatric patients required emergency dental care during the study period. Antibiotics were prescribed for 26.7% of patients overall, with amoxicillin syrup being the most prescribed antibiotic. However, when evaluated based on indication, 48.4% of antibiotic prescriptions were found to be not indicated, and included cases such as simple caries, pulpitis and minor gingival abscesses. No significant differences in prescription patterns were found based on gender or age.

### **Conclusions:**

Systemic antibiotics are being used for a significant proportion of pediatric dental emergencies, many of which have no clear indication. Revision of the proper guidelines for antibiotic use by emergency care dentists appears to be warranted.

*Key Words: Antibiotics; Dental emergencies; Pediatric Dentistry;*

*Funding Agency: None*

**Dentistry**

*Category: Clinical*

**59**

**Dental health attitudes and behavior among dental students in Jordan**

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<sup>2</sup>Department of Preventive Dentistry, Jordan University of Science and Technology, Jordan

**Introduction:**

Examine and compare differences in oral health attitudes and behavior among Jordanian dental students.

**Methods:**

Cross-sectional study of 314 dental students at Jordan University of Science and Technology was conducted to compare differences in oral health behavior and attitudes among these students in different levels of academic education. The subjects were surveyed using a modified version of the Hiroshima University Dental Behavior Inventory (HU-DBI) questionnaire (20 Items). Multivariate binary and polytomous logistic regression analyses were performed in order to study change of patterns of statements during preclinical and clinical, and year of study, respectively.

**Results:**

Clinical students brushed their teeth 4 times more often twice daily or more (OR 3.96, 95% CI 1.73-9.05) than preclinical ones. The odds of visiting a dentist only in case of toothache was reduced by a factor of more than 3 among clinical year students (OR 0.30, 95% CI 0.15-0.61). Clinical year students hardly complained of bleeding gums after toothbrushing (OR 0.10, 95% CI 0.03-0.27). On the other hand, a number of items regarding use of dental floss and tooth paste, bad breath, color and appearance of teeth, and cigarette smoking didn't change between preclinical and clinical students. Evaluation of trends during dental studies employing polytomous multivariate logistic regression analysis revealed an abrupt change at the end of preclinical studies for items characterizing professional attitude.

**Conclusions:**

With advancement in dental school, dental student's oral health awareness and attitudes improved in some aspects. Preventive dentistry courses should be taught early in the dental curriculum of the pre-clinical years.

*Key Words: Oral health behavior; Dental health attitudes; Dentistry;*

*Funding Agency: Jordan University of Science and Technology (No. 2002/129).*

**Dentistry**

*Category: Clinical*

**60**

## **Effect of information given to school teachers on knowledge level of tooth avulsion and first aid.**

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### **Introduction:**

Prognosis of tooth replantation is determined by first-aid measures immediately after avulsion. School teachers play an important role and should be informed in first aid. The purpose of the present study was to measure the effect of lectures given to school-teachers.

### **Methods:**

Teachers at two intermediate level schools filled in a questionnaire. The following knowledge areas were measured: <sup>1</sup> general knowledge of tooth avulsion and replantation, <sup>2</sup> knowledge of avulsed permanent and primary teeth, <sup>3</sup> how to clean an avulsed tooth, <sup>4</sup> knowledge importance of extra-oral time, (5) knowledge of different storage media. An acceptable level of knowledge for performing correct first aid measures was defined and the knowledge level of each area was scored. Thereafter, a 30 minute lecture with following discussion was given to 43 teachers. After this information the knowledge level was measured a second time and comparisons were made.

### **Results:**

Improvement of knowledge level to an acceptable level (% of all teachers) was seen in all areas: <sup>1</sup> from 38% to 97%, <sup>2</sup> from 8% to 71%, <sup>3</sup> from 5% to 93%, <sup>4</sup> from 1-74% and (5) from 4% to 86%.

### **Conclusions:**

Giving a short lecture is a very effective method to improve the knowledge level. This study was funded by Kuwait University research grant, Administration Grant No.DS02/03.

*Key Words: Tooth avulsion. Replantation;*

*Funding Agency: Kuwait University, Administration Grant No. DS 02/03*

**Genetics and Molecular Biology**

Category: Graduate MSc (Basic Science)

61

**Evidence of association of Endothelial Nitric Oxide Synthase locus with Systemic Lupus Erythmatosis**

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**Introduction:**

Systemic lupus erythematosus (SLE OMIM 152700) is multi-systemic autoimmune inflammatory disease with partially understood etiology and pathogenesis. Endothelial nitric oxide synthase (eNOS, GeneID 4846) is a mediator of immune and inflammatory responses. The eNOS gene locus was suggestive of linkage with SLE. eNOS 27 base pair variable number tandem repeat (VNTR) polymorphism in Intron 4 was shown to influence eNOS protein synthesis and activity. AIM: To investigate whether the functional VNTR polymorphism of eNOS gene Intron 4 is associated with susceptibility to SLE and its clinical features.

**Methods:**

Genomic DNA extracted from 80 SLE patients and 80 healthy controls matched for ethnicity, gender and age were genotyped for 27-VNTR in Intron 4. VIC labelled primers were used in PCR-Gene Scan Fragment Analysis with ROX400. Chi-square association test, odd ratios were performed to study the phenotype genotype correlation and Hardy-Weinberg equilibrium

**Results:**

Intron 4 in patients was in Hardy-Weinberg disequilibrium due to an excess of homozygous (p=0.01). The Intron 4b allele (5x27 repeat) was significantly associated with SLE, Chi-square association test shows 5.47 at p < 0.025 (OR 1.96, 95%CI 1.76-3.44) as was the genotype 4bb Chi-square association test shows 7.3 at p<0.01 (OR 2.45, 95%CI 1.27-4.69). The frequency of the 4a allele (4x27 repeat) was higher for normal than SLE (25.3 Vs 14.7%) respectively. Which shown that allele 4a is protective (OR 0.5, 95%CI 0.28-0.89) as was the genotype 4ab (OR 0.4, 95%CI 0.2-0.78).

**Conclusions:**

Our results provide genetic evidence indicating that the eNOS locus influences the susceptibility to SLE in Arabs.

*Key Words: Autoimmune disease; Systemic Lupus Erythematosus; Endothelial nitric oxide*  
*Funding Agency: Kuwait University Research Administration Grant*

**Genetics and Molecular Biology**

Category: Graduate MSc (Basic Science)

62

**Estrogen receptor gene silencing in breast cancer cells using siRNA**

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**Introduction:**

Inhibition of estrogen receptor alpha (ERα) is one of the major strategies for prevention and treatment of breast cancer. However, failure to overcome development of endocrine resistance, arising despite continued expression of tumour ERα, limits this approach. Our aim was to produce a model system to investigate cellular consequences of loss-of-function of ERα, by establishing a breast cancer cell line with a permanent source of small interference RNA (siRNA) to specifically inhibit production of ERα protein.

**Methods:**

Three siRNA constructs (pI-III) targeting different sequences of human ERα, and a scrambled sequence, were cloned into the pRNA-U6.1/Neo GenScript vector. MCF7 breast cancer cells were transformed with 2 or 4μg of each plasmid (6 and 24h exposure), using lipofectin or Xtreme reagent conjugates. Transformants were rescued by growth in G418 selection medium. ERα mRNA levels were determined by Real Time RT-PCR of extracted RNA, and ERα protein by Western blotting; normalisation was achieved by simultaneous analysis of β-actin. Presence of plasmid DNA in transformants was verified with primers targeting various regions of the vector.

**Results:**

Stably transfected cells maintaining antibiotic resistance over several passages were established by continuous culture. Linearised anti-ERα-siRNA construct pII most effectively down-regulated ERα (as evidenced by mRNA and protein analysis) in these cells as compared to G418 resistant transformants containing scrambled siRNA; complete knockdown was not observed. Whereas 4μg produced more transformants, 24h exposure did not increase transformation efficiency.

**Conclusions:**

Using ERα siRNA vector constructs, we have successfully established a long term culture of MCF7 breast cancer cells that exhibit decreased expression of ERα. This is hoped to provide a model system in which to study aspects of endocrine resistance. (MSc project supported by KU Grant YS01/04).

*Key Words: Breast cancer; siRNA; Endocrine Resistance;*  
*Funding Agency: KU Grant YS01/04*

63

## **Gene expression profiling induced by Resveratrol, a natural cancer chemopreventive agent, in MDA-MB-231 human breast cancer cells**

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### **Introduction:**

Resveratrol (trans-3,4',5-trihydroxystilbene), a natural compound found in grapes and other food products, has been described to exert cancer chemopreventive activities in humans. However, the cellular and molecular basis of its chemopreventive activity has been largely undefined. Therefore, the present study was undertaken to analyze the differentially expressed genes of the PI3K-AKT signaling pathway by means of gene arrays.

### **Methods:**

cDNA arrays representing 106 human genes of the phosphatidylinositol-3-kinase and AKT (protein kinase B) signaling pathway were hybridized with biotinylated cDNA probes which were synthesized from 3 µg of total RNA using GEMatrix probe synthesis kit (AmpoLabeling-LPR kit) obtained from SuperArray Bioscience. The array membranes were analyzed using the GEMatrix expression analysis suite software provided by SuperArray Biosciences. Western blotting analysis with specific antibodies was used to validate the arrays' gene expression results.

### **Results:**

Out of the total 106 genes, 15 genes were altered (at least 2 fold difference) by resveratrol treatment. Up-regulated genes included AKT3, CASP3, CCND1, PDPK1, PDK2, PPP2R5B, RAF1, RPS6KB1, SGK1, FOS, MLLT7, FAS. Down-regulated genes were TCL1A, BAD and CDKN1A. Western blot analysis confirmed some of these alterations.

### **Conclusions:**

These data will further aid in the elucidation of the mechanisms of action of resveratrol in human breast cancer and eventually validate its chemopreventive action by identifying its molecular targets.

*Key Words: Resveratrol; Breast cancer; Microarrays;*

*Funding Agency: Kuwait University Grant # MB04/04*

**Genetics and Molecular Biology**

Category: Basic Sciences

64

**Molecular and Clinical study of von Hippel-Lindau disease in Kuwait**

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**Introduction:**

Von Hippel-Lindau (VHL) disease (MIM# 193300) is a dominantly inherited cancer syndrome characterized by predisposition to multiple tumors. Mutation in the VHL gene (GenBank accession number AF010238.1) was proven to be the reason for nearly all tested individuals with VHL disease. We are investigating germline mutation in VHL gene of an extended VHL diagnosed family in Kuwait with Arabic/Persian genetic admixture.

**Methods:**

DNA was obtained from the VHL diagnosed family members. Polymerase chain reaction-single strand conformation polymorphism (SSCP) and direct sequencing were used to screen for VHL gene mutation. Ninety healthy Kuwaitis were used as control.

**Results:**

SSCP resulted in clear band shift in two regions of the VHL gene amplified from four VHL diagnosed members. One region was in the promoter which revealed a new polymorphic site (-123A/G) found as heterozygous in 40% of the 90 tested healthy Kuwaiti controls. The second region was in exon 2 and found in all clinically VHL diagnosed but not in some members of the family or the controls. Direct sequencing revealed it as nonsynonymous missense mutation G564T (Trp117Cys). This mutation represents a rare case of VHL disease with no pheochromocytosis. The family pedigree showed the origin of this mutation to be from the Persian side of the family.

**Conclusions:**

We are presenting VHL gene mutation (Trp117Cys) and novel single nucleotide polymorphism (-123A/G) in a second family presented with VHL disease in Kuwait. The first family was diagnosed by our group and found to have mutation at IVS1+1 G>T. Our result will help on developing VHL gene mutation spectrum in this region of the world

*Key Words: von Hippel Lindau; Cancer; Kuwait;*

*Funding Agency: None*

65

## **Up-regulation of Eukaryotic Elongation Factor-1 Subunits in Breast Carcinoma?**

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### **Introduction:**

Wide evidence suggests the involvement of translation elongation factors (EFs) at the onset of oncogenesis. To investigate the potential role of the EF-1 subunits (A, B-alpha, and B-gamma) in formation and progression of breast cancer, we quantified their expression in human breast tissues and cell lines.

### **Methods:**

The mRNA levels of EF-1A, B-alpha and B-gamma in human breast tissues (20 carcinomas, 9 fibroadenoma, and 29 normal) and cell lines (MCF-7, T47D, MDA-231, MCF-10A) were measured by semi quantitative RT-PCR and northern blotting, respectively, using specific primers for the investigated genes. mRNA stability was measured using the inhibitor-chase method. The software package SPSS version 10.1 was employed for all statistical analyses.

### **Results:**

The mRNA expression of the three EF-1 subunits was significantly higher in cancerous over normal tissues (0.817±0.2 vs 0.36±0.1, p<0.05). However, there was no significant difference in their expression between tumor grades (I, II, and III). Overexpression of EF-1 mRNA in breast cancer cell lines were not caused by increased mRNA stability compared to control (t1/2=10 hrs).

### **Conclusions:**

Although not indicative of tumor grading, the elevated levels of EF-1 subunits are suggestive of their early role in the pathogenesis of breast cancer possibly through their increased rate of transcription.

*Key Words: Breast Cancer; Elongation Factor-1; mRNA expression;*

*Funding Agency: MB01/01, Research Administration, Kuwait University*

## **Oncogene Notch4 Association with Alopecia Areata**

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### **Introduction:**

Alopecia areata is a condition associated with autoimmune and atopic disorder which is characterized by hair loss with variable severity. Notch4 gene lies at the centromeric end of class III MHC region approximately 335 kb telomeric of DRB1 locus. Notch4 protein is an oncogene in which its signaling was shown to be a direct determinant of keratinocyte growth arrest and entry into differentiation. As DRB1 was proven to be associated with alopecia of 25-75% scalp hair loss we hypothesized that Notch4 could be a potential candidate gene in the predisposition of Alopecia areata. AIM: Testing the association of Notch4 +3063A to G transition single nucleotide polymorphism at exon 3 result in a nonsynonymous glycine to aspartic acid replacement at amino acid 279 (HGBASE accession number SNP000064388) with various forms of Alopecia areata.

### **Methods:**

Polymerase chain reaction-restriction length fragment polymorphism using Ava I was used to genotype 90 Alopecia areata patients (30 patchy with <25% hair loss, 30 semiuniversalis with 25-50% hair loss and 30 universalis 50% hair loss) in addition to 100 healthy, ethnically matched controls. Chi-square and Odds ratios were used for data analysis.

### **Results:**

There was a significant increase in the frequency of the +3063 AG genotype in the semiuniversalis patients compared to control group (73.3 vs 44%) respectively which showed an association with Chi-square test (17.69,  $p < 0.001$ , OR 3.5 CI 1.95-6.27). While the homozygous genotypes AA or GG were protective as the frequencies in the semiuniversalis patients compared to controls were (26.7 vs 56%) (OR 0.3 CI 0.17-0.53). No association was found between SNP000064388 and neither patchy nor the universalis form of Alopecia areata.

### **Conclusions:**

NOTCH 4 SNP000064388 is associated with the semiuniversalis form of Alopecia areata and can be used in the fine mapping of disease susceptibility genotypes with MHC.

*Key Words: Autoimmunity; Alopecia areata; Notch4;*

*Funding Agency: None*

## **The prevalence of Thalassemia false results testing ignored by lab-workers in Tehran peripheral labs from 2002 till 2005**

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### **Introduction:**

Beta Thalassemia; characterized by the deficiency or absence of beta globulin production, is one of the most widespread inherited disorder in the world. Iran is a country with high prevalence of about 5-10% of trait ones. In order to prevent Major Beta Thalassemia, the couples are screened before their marriage. Sometimes, in repetition premarital screening tests, significant differences between recorded results were found. So the researchers determined to estimate the prevalence of misdiagnosis of screening test in their region.

### **Methods:**

The Median Corpuscular Volume (MCV) and HbA2 in repeated reports from peripheral labs and referral lab were compared and considered in patient phenotype.

### **Results:**

The comparison indicated that 5% of primary reports from peripheral labs were misdiagnosed for Beta Thalassemia traits. Half of them were false positive and the remaining was false negative.

### **Conclusions:**

This result indicates that hematology laboratories have to consider the efficacy of their instruments, their employees' skills, the precision of reported results and wholly lab management more than previous.

*Key Words: Beta Thalassemia; Misdiagnosis; Iran;*  
*Funding Agency: None*

68

### **Apolipoprotein E genotyping by gene amplification and restriction enzyme polymorphism in diabetic and heart disease patients.**

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<sup>1</sup>Public Authority for Applied Education and Training (PAAET), College of Health Sciences, Department of Applied Medical Sciences, <sup>2</sup>Ministry of Public Health, Al-Amiry Hospital, Diabetic Clinic.

#### **Introduction:**

Apolipoprotein E (apoE) is an important constituent of several lipoproteins, mainly VLDL, HDL and chylomicrons; apoE has been associated with risk of developing cardiovascular disease and in familial type II hyper lipoproteiniemia. Genetic variation of the apoE is an important determinant of plasma lipid levels and relative risk of arteriosclerosis. The aim of the study is to establish apolipoprotein E genotype in sample patients with diabetes and coronary heart disease (CHD).

#### **Methods:**

Apolipoprotein E genotype investigation was done on fifty patients sample with a personal history of heart disease (atherosclerosis) and patients with diabetes mellitus. Patients DNA was assayed for point mutation in codons 112 and 158 of the apolipoprotein E gene by PCR and restriction polymorphism (PCR-RFLP). The amplification products were digested with HhaI and subjected to electrophoresis on horizontal agaros gels.

#### **Results:**

Each of the isoforms was distinguished by a unique combination of HhaI fragment sizes that enabled unambiguous typing of all homozygotic and heterozygotic combinations. Neither apoE alleles frequencies nor apoE genotypes frequencies differed between type I diabetic groups with or without heart diseases.

#### **Conclusions:**

Although phenotype was historically performed to assess the isoforms of apoE, PCR-RFLP genotyping could be used as the method of choice for determining apoE polymorphism.

*Key Words: Apolipoprotein E; Polymerase Chain Reaction (PCR); RFLP;*

*Funding Agency: Public Authority for Applied Education and Training (PAAET)*

69

**Percutaneous coblation nucleoplasty of prolapsed intervertebral disc; an emerging alternative to surgery. Initial Kuwait experience.**

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**Introduction:**

Low-back pain is one of the most common causes for seeking professional medical assistance and intervertebral discs are a common etiological factor. Minimally invasive techniques for the treatment of degenerative pathology of the spine have come to be preferred by surgeons since the destructive effect on bony structures is eliminated and scar formation is dramatically reduced. Percutaneous nucleoplasty is a minimally invasive technique which uses Coblation technology to create plasma energy to ablate the nucleus pulposus in a controlled manner for disc decompression. We present our experience with this technique which has been used in Kuwait for the first time.

**Methods:**

Thirty patients presenting with low backache who are found to have a contained disc prolapse on MRI examination and having failed conservative management are selected for treatment by percutaneous nucleoplasty. The procedure involves ablation of the herniated disc by plasma energy generated by coblation technique using Arthrocare 2000. Pain relief is assessed using a visual analogue scale.

**Results:**

Our preliminary results at 3-6 months followup show that the patients experience rapid and sustained pain reduction after the disc nucleoplasty.

**Conclusions:**

The current data about this new technique is insufficient yet, but the preliminary reports indicate that the technique is relatively safe that can be carried out as an outpatient procedure and, the outcomes are encouraging.

*Key Words: Collapsed intervertebral disc; Nucleoplasty; Coblation;*  
*Funding Agency: None*

70

## **Diagnostic Radiological findings in body packers -study of 15 cases in Kuwait**

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### **Introduction:**

Body packers smuggle illicit drugs by concealing internally within their bodies mainly by swallowing drug packets. However, insertion of packets into the rectum and vagina have also been reported. Transportation of illicit drugs through such internal concealment has now become a widespread modus operandi for international drug smugglers. Kuwait, too, is no exception and is experiencing an increasing number of body packers traveling in from neighboring countries. This paper presents the first ever study done in Kuwait on radiological findings seen in body packers. Objectives: To describe the radiological findings of various patterns of drug packets being smuggled by body packers into Kuwait.

### **Methods:**

15 male subjects suspected to be body packers by expert custom officials at Kuwait International Airport were referred to the Farwania Hospital for further diagnosis and management during the period from March, 2003 to June, 2003. All suspected body packers underwent initial radiological evaluation by supine and erect plain radiographs of the abdomen. CT-Scan was performed in two positive and two equivocal cases diagnosed by plain abdominal radiographs.

### **Results:**

Plain radiographs of the 15 suspected body packers diagnosed 12 as positive, 1 as negative and 2 as equivocal. CT-Scan performed on 2 positive cases reconfirmed the presence of drug packets based on their appearance and density values. While CT scan in 2 equivocal cases showed presence of normal inspissated faecal matter with no evidence of drug packets.

### **Conclusions:**

Supine and erect plain radiographs of the abdomen are valuable in the diagnosis and management of body packers. CT-Scan study of the abdomen may be very useful in equivocal cases to document that GIT is clear of drug packets.

*Key Words: Body packers; Plain radiographs; Computed Tomography Scan;*  
*Funding Agency: None*

*Imaging (Nuclear Medicine and Radiological Science)*  
*Category: Clinical*

71

**Sixty four-detector row CT in coronary angiography: A pictorial review.**

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Medicine and Radiology, Kuwait University, Faculty of Medicine.

**Introduction:**

The 64-multidetector CT (MDCT) is rapidly emerging technique for the imaging of coronary arteries. This pictorial review highlights the role of 64-slice MDCT in the assessment of the morphology of the coronary arteries and in the diagnosis of coronary artery disease.

**Methods:**

So far in 10 patients with suspected coronary artery disease, CT scanning of the coronary arteries was done using 64-slice multidetector CT machine. The results were compared with catheter coronary angiography.

**Results:**

In this pilot study the findings of 64-MDCT appear as accurate as the traditional invasive diagnostic technique.

**Conclusions:**

Coronary artery imaging with 64-slice multidetector CT is expected to replace conventional coronary angiography in a select group of patients.

*Key Words: Multidetector CT; Cardiac CT; Coronary Angiography;*  
*Funding Agency: None*

## **Transient ischaemic stunning during myocardial gated spect**

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Department of Nuclear Medicine, Chest hospital, Kuwait city,

### **Introduction:**

Transient left ventricular dysfunction is known to occur following prolonged myocardial ischaemia induced by exercise treadmill or pharmacological stress. Our aim was to detect this phenomenon in patients with stable angina pectoris using myocardial gated spect imaging.

### **Methods:**

We performed two day stress/rest technetium<sup>99m</sup> tetrofosmin myocardial gated spect scintigraphy in 20 patients having class I-III angina pectoris. 15 patients underwent exercise treadmill and 5 dipyridamole stress. Myocardial gated spect imaging was performed 30 minutes after stress using a dual head gamma camera. Perfusion images were analysed using cardiac spect protocol and left ventricular ejection fraction [LVEF] and wall motion /wall thickening was analysed using quantitative gated spect [QGS].

### **Results:**

12 patients showed severe ischaemia with post stress reduction of LVEF [mean 8± 1.6%], 7 of them showed wall motion/wall thickening abnormalities at stress improving at rest. Coronary angiography showed severe triple and double vessel coronary artery disease in all these 12 patients. 6 patients showed mild to moderate ischaemia with post stress reduction of LVEF [mean 1.6± 1%] and their coronary angiograms showed moderate disease in 4 and mild disease in 2 patients. The remaining 2 patients showed normal perfusion with post stress rise of LVEF [mean 7± 1.4%].

### **Conclusions:**

Our study shows that early post stress myocardial gated spect imaging identifies transient left ventricular dysfunction in ischaemic myocardial segments and is a powerful indicator of coronary artery disease

*Key Words: Myocardial gated spect; Left ventricular dysfunction; Myocardial ischaemia;*  
*Funding Agency: None*

73

### **Performance of OSEM reconstruction in myocardial perfusion SPECT: comparison with FBP in two different extremes of attenuation and scatter.**

Khalil MM <sup>1</sup>, Elgazzar AH <sup>1</sup>, Ziada G <sup>1</sup>, Wafaa Khalil <sup>2</sup>

<sup>1</sup> Nuclear Medicine Department, Faculty of Medicine, Kuwait University; <sup>2</sup> Biophysics Department, Faculty of Science, Cairo University

#### **Introduction:**

Iterative reconstruction such as Ordered Subset Expectation Maximization (OSEM) has become an acceptable alternative to Filtered Back Projection (FBP) in Single Photon Emission Computed Tomographic (SPECT) imaging. The objective of the study was to optimize the number of iterations and subsets in cardiac SPECT imaging in comparison to FBP using two different chest phantoms.

#### **Methods:**

Cylindrical and anthropomorphic-chest phantoms were used with cardiac insert of an anteroseptal defect. A clinically relevant acquisition (64x64 matrix, 36 projections) was applied with proper activity concentrations in cardiac, lung, and liver compartments. FBP and OSEM were used in image reconstruction. Subsets selected were 2, 4, 8, and 24; and number of iterations was 2, 4, and 8-96 at steps of 8 iterations. Iterative reconstructions were postfiltered by 3D Butterworth filter of 0.40cycle/cm and FBP was prefiltered by 0.40 cycle/cm. The coefficient of variation (sd/mean\*100) was calculated for two normal slices but contrast was calculated for the perfusion defect relative to anterior wall. Noise analysis was computed by ROIs drawn over the lung region.

#### **Results:**

For the cylindrical phantom, subsets of 2, 4, 8, and 24 using 4 iterations provided a uniformity improvement (with respect to FBP) of 45%, 37%, 33%, and 40% respectively. These improvements were less with further iterations. Contrast improved only by 2 and 4 subsets (4.5% and 3.8%) but not by 8 and 24 subsets (-2.2% and -8.7%) at 24 iterations. In anthropomorphic phantom, the image uniformity improved by (8.8%, 17.4%, 13.5%, and 6.6% by 2, 4, 8, and 24 subsets respectively at 16 iterations. However, at 24 iterations the contrast improved by 2 and 4 subsets and worsened by 8 and 24 subsets (4.5%, 3.7%, -2.2%, and -8.7% respectively). Noise analysis calculated from lung ROIs has indicated that low subsets are associated with lower noise which increased substantially with an increase in subsets size and iterations.

#### **Conclusions:**

For cardiac SPECT imaging, lower number of subsets could provide an improvement in image uniformity, contrast, and noise. The number of iterations, however, controls the degree of improvement. Furthermore, higher burdens of attenuation and scatter introduced by the anthropomorphic compared with cylindrical phantom have changed significantly the performance of OSEM reconstructions relative to FBP. This might have a direct clinical impact in considering patient habitus in iterative (OSEM) reconstructions.

*Key Words: Iterative Reconstruction; Filtered Back Projection; Cardiac SPECT Imaging;*  
*Funding Agency: None*

## **Calculation of retention and clearance indices for pelvi-ureteric junction obstruction patients post diuretic renogram**

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Department of Nuclear medicine, Organ transplant center, Ibn Sina Hospital.

### **Introduction:**

Suspected Pelvic-ureteric Junction (PUJ) obstruction in pediatric patients is one of the main causes of renal dysfunction. The purposes of this study were: <sup>1</sup> to calculate the retention and clearance indices in PUJ obstructed pediatric patients post diuretic renogram, and <sup>2</sup> to assess the validity of retention and clearance indices in the diagnosis of PUJO patients.

### **Methods:**

Thirty- nine patients with age range from (13 days-14yrs) came to the department with suspicion of PUJ obstruction. All of them had a diuretic mercapto-acetyltriglycine with the calculation of retention and clearance indices. Twenty-two patients were having PUJO post diuretic renogram and seventeen patients were having no obstruction post diuretic renogram. The calculation of the retention and clearance indices is according to the following equation: Retention index=Min value in time activity curve / Max value in time activity curve \*100 Clearance index=100 – Retention index \*100

### **Results:**

In the obstructed patients post diuretics, the retention index was 72.5%±12.3% and the clearance index was 27.5%±12.3%. In addition, retention index for the non-obstructed patients post diuretics was 29.8%±9.3% and clearance index was 70.2%±9.3%.

### **Conclusions:**

In conclusion, retention index in obstructed patients post diuretic should normally exceed 50% and clearance index should be less than 50%. While in non- obstructed patients post diuretics retention index should be normally less than 50% and clearance index should be more than 50%. So, retention and clearance indices were found to be effective values in the assessment and diagnosis of kidney status in suspected PUJO pediatric patients.

*Key Words: Retention index; Clearance index; Mercapto-acetyltriglycine;*  
*Funding Agency: None*

## **Radionuclide Imaging to Assess Testicular Reperfusion in Rabbits Following Torsion**

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<sup>1</sup> Departments of Nuclear Medicine; <sup>2</sup> Department of Surgery, Faculty of Medicine, Kuwait University, Kuwait.

### **Introduction:**

In a torted testis it has been speculated that a time interval exists after which ischemic injury becomes permanent and consequently reperfusion is ineffective. The aim of this study was to determine the time interval within which adequate reperfusion can occur in an experimental animal model using radionuclide imaging techniques.

### **Methods:**

Testicular torsion was created in 36 month old male New Zealand white rabbits by cross-clamping the left spermatic cord for periods of ischemia lasting 15, 30, 60, 120, 180 min and infinite. Three rabbits were used for each clamping period. The rabbits were injected with 1.0 mCi of Tc-99m HMPAO at 1, 14, 30 and 90 days following the release of the clamping to assess reperfusion. Dynamic imaging of the testes was performed for 45 min. Regions of interest (ROI) were drawn over the testes and time activity curves generated. The right testis served as control. Using bilinear interpolated background subtraction techniques, the perfusion to the testes was obtained. Histograms of the total left testicular perfusion normalized to the right testis (control) were plotted. The images were analyzed visually.

### **Results:**

The images of the torted left testis were comparable to those of the control right testis for 15, 30, and 60 minutes torsion indicating adequate testicular reperfusion following torsion. However the torted left testis was not seen after 120, 180 min and infinite torsion thereby indicating lack of reperfusion. ROI image analysis confirmed the visual observations.

### **Conclusions:**

The data show that adequate testicular reperfusion can be reestablished for up to 60 min after testicular torsion in a rabbit model.

*Key Words: Testicular; Radionuclide; Imaging;*  
*Funding Agency: None*

76

## **Comparative evaluation of Mammography, Ultrasound and Scintimammography in the diagnosis of the Breast diseases.**

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### **Introduction:**

The aim of this prospective study was to compare the diagnostic efficacy of mammography, ultrasound and technetium-99m methoxyisobutylisonitrite (99mTc-MIBI) scintimammography (SM) in the diagnosis of the breast diseases. Histopathological findings were the gold standard.

### **Methods:**

Eighty patients with symptomatic breast underwent mammography and /or ultrasound of the breast followed by SM at Mubarak-Al-Kabir Hospital from May 2003 to April 2004.

### **Results:**

Twenty-five patients with 27 lesions were malignant and 55 patients with 65 lesions were benign. Sensitivity, specificity, positive predictive value, negative predictive value and accuracy of combined use of mammography and ultrasound showed these parameters to be 89%, 94%, 86%, 95% and 92% respectively whereas with SM, these were found to be 92%, 72%, 58%, 96% and 78%. SM had slightly better sensitivity than combined mammography and ultrasound (92% vs 89%). However, combined mammography and ultrasound clearly showed higher specificity (94% vs 72%), (PPV 86% vs 58%) and accuracy (92% vs 78%). Fibroadenomas were the commonest cause of false positive results on SM followed by epithelial hyperplasia, fibrocystic changes and sclerosing adenosis. Negative predictive values were similar for both modalities. A highly significant association was seen with SM as a diagnostic tool for the detection of malignant lesions in the breast (chi-square = 32.28, p<0.01). Combined use of mammography and ultrasound showed stronger association compared to SM (chi-square = 61.67, p< 0.0001).

### **Conclusions:**

In this study, SM showed slightly better sensitivity than combined mammography and ultrasound. Combined mammography and ultrasound clearly showed higher specificity.

*Key Words: Mammography & Ultrasound breast; Breast diseases; Scintimammography;*  
*Funding Agency: None*

## **Role of Tc-99m-DTPA Radio-aerosol clearance in the evaluation of pulmonary involvement in adult Sickle Cell Disease (SCD) patients.**

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Qurtom M<sup>3</sup>, Adekile AD<sup>5</sup>, Elgazzar AH<sup>1,2</sup>.

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### **Introduction:**

Radio-aerosol clearance test is a sensitive non-invasive procedure for evaluation of alveolar permeability. It is particularly valuable in patients with interstitial lung disease, sarcoidosis and diabetes mellitus and smokers. Prior studies in our institution reported delayed clearance in diabetes and enhanced clearance in smokers. Objective: The objective of this prospective study is to investigate the role of Tc-99m-DTPA aerosol in evaluation of pulmonary involvement in steady state otherwise healthy SCD patients in correlation with pulmonary function tests (PFT).

### **Methods:**

A total of 43 randomly selected adults (24 SS and 19 Beta-(0)-thal) aged 16 to 45 yr (27+/-10 yr) were studied. After a five minutes inhalation of 35 mCi (1295 MBq) of Tc99m-DTPA lung ventilation dynamic anterior and posterior images were acquired for up to 90 min. Values of T1/2 clearance were compared to the PFT and to Penetration index (PI).

### **Results:**

Delayed Tc99m-DTPA clearance was in 22 subjects (51.2%) while 10 (23.3%) there was accelerated clearance. Subjects with enhanced clearance showed better PFTs than those with delayed or normal clearance. Significant negative correlation of DTPA clearance with forced expiratory volume in 1 sec (FEV1), forced vital capacity (FVC) and total lung capacity (TLC) and significant positive correlation with age was shown.

### **Conclusions:**

Majority of SCD adult patients have delayed radio aerosol clearance. Patients with increased clearance showed better PFTs than those with normal or delayed clearance. The half time clearance is found to be useful for evaluating pulmonary involvement in SCD. The radio aerosol clearance test is a useful tool for evaluation of adult SCD patients.

*Key Words: Tc-99m DTPA Aerosol; Sickle cell disease; Lung clearance;*  
*Funding Agency: None*

*Imaging (Nuclear Medicine and Radiological Science)*  
*Category: Graduate (Resident)*

78

## **Pre-scan water versus citrus juice and salivary clearance: Effect on Technetium-99m pertechnetate Thyroid Scintigraphy image quality**

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### **Introduction:**

Salivary clearance is enhanced by lemon juice administration. This clearance should affect radionuclide imaging quality by improving contrast. We wished to investigate this clearance on thyroid radionuclide imaging.

### **Methods:**

Among the routinely referred patients for thyroid scintigraphy, 31 patients (8 males and 23 females) were prospectively selected. The liquids chosen to investigate were water, orange juice and lemon juice. One of these liquids was chosen at random and given to the patient post-injection and pre-imaging. An anterior static planar image was taken for each patient using a General Electric Mollinium Gamma Camera equipped with parallel hole collimator. Counts from regions of interest drawn on the anterior image corresponding to the salivary gland image and background were used to obtain a count ratio. Statistical analysis of the grouped count ratio results was performed.

### **Results:**

Data of thirty one patients (8 males, 23 females) was grouped according to ingested liquid. T-test was performed and revealed more background clearance in the lemon juice group compared to the orange juice and water groups with high significance ( $p = 0.01$ ).

### **Conclusions:**

Lemon juice administration post-injection and pre-imaging significantly clears background and inturn improves radionuclide thyroid imaging by improving contrast.

*Key Words: Thyroid; Radionuclide imaging; Lemon juice;*  
*Funding Agency: None*

79

## **Pediatric Hodgkin's Lymphoma: Gallium scan in patients with residual mass after treatment**

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Hussain Makki Al Jumma Center for Specialized Surgery, Kuwait

### **Introduction:**

In Hodgkin disease residual mass detected on CT scan after treatment pose a clinical problem as it may contain viable tumor cells or, alternatively, may consist of only fibrotic or necrotic tissue. The purpose of this study was to evaluate the role of gallium scan in pediatric patients with residual disease on CT after treatment.

### **Methods:**

Retrospective study of 16 pediatric patients (9 males/7 females) who had post-treatment residual CT abnormalities. Average age was  $10 \pm 3.48$  years. Nine were stage II and seven stage III or IV patients. Six had systemic symptoms and 7 patients had bulky disease at diagnosis. Histopathology revealed Mixed Cellularity (MC) in 6 and Nodular Sclerosis (NS) in 10. Images acquired on third (whole body and SPECT of chest) and fifth day (spot views of desired area) post  $75\mu\text{Ci/kg}$  of Gallium. Both CT and Gallium scans were performed at diagnosis, following two/four cycles of chemotherapy and after treatment. All patients studied at the time of diagnosis had abnormal gallium accumulation and mass on CT.

### **Results:**

The mean follow up period after completion of treatment was 58 months (40-90). 14/16 patients with negative post therapy gallium scan and residual CT abnormalities remained in complete remission. 2/16 patients with positive post therapy gallium scans, one (NS stage-II) showed uptake at sites of initial disease post 2 cycles while post therapy scan showed new area of activity at a different site. This patient received high dose chemotherapy and died subsequently. Other patient (MC stage-IV) showed normal gallium follow up scan after 4 months and was in complete clinical remission for 63 months.

### **Conclusions:**

This study highlights role of gallium in evaluating viable residual disease in pediatric patients with residual CT abnormalities. Negative post therapy Gallium scan reliably predict long term remission while positive scan guide clinicians to decide for early alternate therapy.

*Key Words: Pediatric Hodgkin's lymphoma; Gallium-67; Residual mass;*  
*Funding Agency: None*

80

## **Does added value of Whole Body Blood Pool imaging Justify its routine use in Bone Scintigraphy?**

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Department of Nuclear Medicine, Mubarak Al Kabeer Hospital and Faculty of Medicine, Kuwait University.

### **Introduction:**

Bone Scintigraphy (BS) using Technitium-99m Methylene Di-Phosphonate (MDP) is a common nuclear medicine procedure used worldwide to assist in the diagnosis of different pathologies affecting the skeletal system. The procedure can be obtained as a static survey (delayed images acquired 3 hours post injection) or in 3-phase (an immediate dynamic flow followed by blood pool where the radiotracer is in the soft tissue followed by delayed images). With the advent of new technology regarding the acquisition, storage and processing acquired data; multiple images are obtained for the region of interest or for the Whole Body (WB). We advocated that the use of (WB) acquisition in blood pool may add additional diagnostic information. The aim of this study is to determine whether this acquisition mode in blood pool has a value to justify its use routinely.

### **Methods:**

All patients referred to our department for (BS) from 1st December 2004 till 31st March 2005 were included. A (WB) blood pool was acquired in addition to images that done routinely and accepted by international procedure protocols. Two nuclear medicine physicians were asked to report the study. Comments reported on any findings that were gained from (WB) blood pool image which could have been missed; if procedure done using spot blood pool images as the usual practice.

### **Results:**

Of the 179 patients studied, 46 patients had positive findings on WB blood pool images [n=13 males (7%), n= 33 females (18%)]. Positive cases had findings seen in regions other than the region of interest for which the patient was referred. These included; the differentiation between active bony diseases versus non active in joints other than the joint under investigation, visualization of early bony uptake in metabolic bony diseases indicating activity of disease, determining the age of fractures; whether old or recent; and better evaluation of lesions causing referred pain where spot image would be taken to an area other than the location of the actual lesion.

### **Conclusions:**

The findings in this study with the use of routine (WB) blood pool are encouraging. Based on the fact that the maximum information should be obtained from the single radioisotope injection; and the finding of additional diagnostic information for the bone pathology, we advocate the use of WB blood pool routinely.

*Key Words: Bone Scintigraphy; Whole Body blood pool; Value;*  
*Funding Agency: None*

81

## **Usefulness of MAG3 renal scanning in detection of renovascular thrombosis post transplantation.**

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Kuwait

### **Introduction:**

Vascular thrombosis is a rare complication of renal transplantation that occurs in post operative period. Early diagnosis of this condition is critical as the graft kidney is prone to rupture if treatment is not started early.

### **Methods:**

Our study group consisted of 138 patients who underwent baseline MAG3 renal scan either immediately after transplant or on the first post operative day. In case there was an abnormality in the initial study, the renal scan was repeated in weekly intervals.

### **Results:**

Criteria for diagnosis was severely impaired perfusion in the vascular images and photopenic defects in parenchymal images. It was not possible to differentiate between arterial and venous thrombosis by the nuclear method hence all these cases were called vascular thrombosis. Out of 14 patients who had positive scan findings 10 patients had radiological and biopsy evidence of renovascular thrombosis. Four patients showed falsely positive scan findings which was later proved to be due to renal infection. Sensitivity and specificity of renal scanning to detect renovascular thrombosis was 100% and 97% respectively. Based on the scan findings 5 graft nephrectomies were performed which was positive for renovascular thrombosis by biopsy. Five patients had sub-segmental infarction which was confirmed by CT scan and conservatively managed.

### **Conclusions:**

Radioisotope renal scanning is sensitive, non invasive and requires no patient preparation. Based on our study we recommend immediate renal scan after transplantation to check the vascular anastomosis in the patients who have had prolonged period of hypotension and dehydration during surgery. A follow up scan should be done in recipients with hypercoagulable states who are prone to asymptomatic infarction and patients who complain of sudden graft pain tenderness, haematuria and oliguria

*Key Words: MAG3 Scan; Vascular thrombosis; Infarction;*  
*Funding Agency: None*

82

## **Changed patient referral pattern for Nuclear Medicine over four years.**

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Department Of Nuclear Medicine, Al-Jahra Hospital, Kuwait.

### **Introduction:**

Several changes have taken place at Al-Jahra hospital over the past 5 years following recruitment of new doctors in the Nuclear Medicine as well as in other specialties (Endocrinology, Pediatric pulmonology, Nephrology and Urology), organizing continuing medical education (CME) for the referring physicians, introduction of new operational policies and starting of accreditation work.

### **Methods:**

A retrospective analysis is done to know the change in referral pattern before (2000) and after (2004) the start of these changes. Patient data for the years 2000 and 2004 were compared.

### **Results:**

There is a major fall in the number of Thyroid (303 vs. 114) and Gallium (65 vs. 15) scans for the years 2000 and 2004 respectively, and a major increase in Milk (3 vs. 138) and DMSA (88 vs. 217) scans with a reversal of referral pattern for Renograms & DMSA scans (194 & 88 in 2000 vs. 135 & 217 in 2004 respectively). These changes match, respectively, with the above-mentioned specialities, thereby attributing the change to their recruitment. The change in the acquisition (10sec. per frame instead of 1min. per frame) and display (10sec. per frame instead of 5min. per frame images with normal and reflux-positive frames in the hard copy with a narrow window setting to show even mild reflux) parameters of milk scan has resulted in a positivity rate of >85 % (as per reports) in 2004 as compared to 0 % in 2000. This apparently contributed for more referrals. These parameters were changed by the new Nuclear Medicine physician with experience in Pediatric Nuclear Medicine, suggesting his role along with the pediatric pulmonologist in the increase in Milk scans.

### **Conclusions:**

Proper policies, discussions and education of the referring physicians complemented by recruitment of new specialists with their better understanding of the investigations sought resulted in major changes in the referral pattern for Nuclear Medicine scans at Al-Jahra hospital.

*Key Words: Nuclear Medicine; Referral pattern; Changes;*  
*Funding Agency: None*

83

### **Decrease in usage of cold kits following pooling of cases for Nuclear Medicine scanning.**

Abdulla ZS, \*Kodali SK, Habib EA, Al-Danderi ZA  
Department Of Nuclear Medicine, Al-Jahra Hospital, Kuwait

#### **Introduction:**

Acute shortage of Nuclear Medicine technologists in the year 2003 resulted in only one technologist available for several months of the year working as radiopharmacist, physicist and technologist for two gamma cameras. Added to this workload was, patients defaulting on their appointments, resulting in wastage of some radiopharmaceutical preparations (cold kits and radioactivity) as well as the technologist's time. This has prompted us to make a decision to pool and do scans of the same kind on only particular days of the week to prevent wastage of materials and time. A study was undertaken to know the change in the requirement of cold kits before and after the implementation of this decision.

#### **Methods:**

The order placed in the year 2003 (before pooling) for cold kits required in the year 2004 was compared with the order placed in the year 2004 (after pooling) for the year 2005.

#### **Results:**

The total number of cold kits ordered decreased from 609 in 2004 to 325 in 2005, a fall by approximately half (46.6 %). MDP for bone scan (132 vs. 45), Tin colloid for liver and milk scans (105 vs. 35), DMSA for renal scan (55 vs. 25), DTPA for renogram and lung ventilation study (45 vs. 25), MAG-3 for renogram (42 vs. 30) and Myoview for cardiac scans (100 vs. 40) recorded the major fall in requirement. Brom-IDA for hepatobiliary scan (24 vs. 20) and MAA for lung scan (68 vs. 50) (both of which are usually not pooled due to the urgency of doing them on the same day or at the earliest) recorded marginal decrease in requirement, while pyrophosphate for MUGA and myocardial infarction imaging (28 vs. 35) and MIBI for parathyroid scan (10 vs. 20) recorded a marginal increase in the order for the year 2004 vs. 2005 respectively.

#### **Conclusions:**

Pooling of particular type of scans on some particular days of the week has decreased the requirement and thereby the cost of cold kits by approximately half, with better utilization of radioactivity and the technologists' time.

*Key Words: Pooling; Cold kits.*

*Funding Agency: None*

## Medical Education

Category: Graduate (Resident)

84

### Clinical skills performed by pre-registration house officers (interns) in Kuwait

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<sup>1</sup> Kuwait Institute for Medical Specialization; <sup>2</sup> Department of Medicine, Kuwait University Faculty of Medicine

#### Introduction:

Pre-registration House Officers (interns) follow rotations in Medicine, Surgery, Obstetrics & Gynecology and Pediatrics. This study aims to identify the clinical skills they performed and how frequently these were undertaken.

#### Methods:

PRHO's in the 2002/03, 2003/04 and 2004/05 cohorts responded anonymously to a questionnaire that listed 53 important clinical skills. Each indicated using a checklist whether he or she performed the skill himself/herself and the number times it was done.

#### Results:

265 questionnaires were available for analysis (response rate 72%). The table shows the percentages of trainees who performed the essential skills more than once or did not perform them.

Clinical Skill Performed	more than once (%)	Did not perform (%)
Basic X-ray interpretation	97.4	1.1
Basic ECG interpretation	95.9	2.3
Arterial puncture for blood gas analysis	84.9	4.2
Inserting urethral catheter	77.7	12.1
Blood sampling	77.4	10.6
Nasogastric feeding	72.5	12.5
Inserting intravenous line	71.7	8.7
Urine examination	64.2	25.3
Microbiological sampling	61.1	27.6
Administering cardio-pulmonary resuscitation	61.1	20.0
Pleural tap	55.1	27.2
Securing airway	50.6	27.9
Artificial ventilation	40.8	42.3
Lumbar puncture	38.1	45.3
Insertion of thoracic drainage	32.5	55.5
Blood film examination	34.7	52.1
Endotracheal intubation	32.8	47.6
Cardiac defibrillation	31.3	53.6
Inserting central venous catheter	30.9	58.9
Treatment of tension pneumothorax	26.4	57.0
Needle aspiration of knee joint	21.5	67.9

**Conclusions:** The results of the study demonstrate that the PRHO's should have full exposure to many essential clinical skills such as endotracheal intubation, administering cardio-pulmonary resuscitation, inserting urethral catheter, inserting intravenous line etc. Curriculum planners and trainers supervising the PRHO's need to ensure that PRHO's receive sufficient opportunities during the training program to get experienced in essential clinical skills.

*Key Words: Pre-registration House Officers [PRHO] training; Clinical skills; Kuwait; Funding Agency: None*

**Medicine**

Category: Graduate PhD (Basic Science)

85

**Platelet apheresis: Should we count cycles or target platelet yields**

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**Introduction:**

Single donor platelet (SDP) is the only collection procedure in Kuwait Central Blood Bank (KCBB) for platelet component from donors who meet our criteria and fulfill the requirements of international standards. Platelet apheresis can be achieved either by collecting a fixed number of cycles ( we used to collect 6cycles) or by depending on the predetermined target platelet yield. The total platelet count per pack collected using the first procedure was showing low total yield and therefore we choose to evaluate both procedures to choose the best which meet our requirements and AABB standards.

**Methods:**

Platelet apheresis for both procedures was collected by Haemonetics MCS+ cell separators, following manufacturer instructions. Pre-donation Weight, height, haematocrit(Hct) and platelet count were determined and entered into the machine. At the end of each donation process total platelet count was calculated. 1- 53 procedures done based on fixing the number of cycles (6cycles each). 2- 43 procedures done based on fixing total platelet yield (3.0x10<sup>11</sup> /collection)

**Results:**

By analyzing the results from both procedures, we come out with the following results: 1- 26.4% of the collected platelet apheresis units using the first technique were of low unaccepted total platelet yeild less than 3.0x10<sup>11</sup>/collection.(low count in range of 2.67 ± 0.21) 2- 6.97% of the collected platelet apheresis units using the second technique were of low

**Conclusions:**

we choose based on the results to do the platelet apheresis procedures depending on fixing the needed target platelet yield, and target platelet yield were increased to 4.0x10<sup>11</sup> to reduce the percent of un-acceptance. Meanwhile this procedure is time saving and much easier.

*Key Words: Single donor platelet; Platelet apheresis; Total platelet yield;*

*Funding Agency: None*

**Medicine**

Category: Clinical

86

**Safety and efficacy of Amplatzer septal occluder to close fenestration after modified Fontan operation**

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**Introduction:**

Closure of patent fenestration after modified Fontan operation(FO)helps to eliminate hypoxia,paradoxical embolism and ventricular volume overload.This study evaluates the safety and efficacy of Amplatzer septal occluder (ASO) to close the fenestration.

**Methods:**

After hemodynamic and angiographic assessment, patients with patent fenestration and mean pulmonary artery pressure (PAP)=20 mm HG were selected for closure, irrespective of ventricular function. Ones with PAP > 15 mm Hg, had test occlusion to assess suitability for closure. After angiographic localization and balloon sizing, ASO (1-2 mm more than the balloon waist) was inserted through a long sheath across the fenestration under fluoroscopic guidance.

**Results:**

Over the past 4 years, nine patients (age 4-18 yrs) had fenestration closure using ASO (size 5- 13 mm) 1.5 to 8 years after FO. The mean caval pressure of 14 mm Hg increased to 17.5 mm Hg; mean PAP of 13.5 increased to 17 and mean aortic saturation of 87% increased to 95% after closure. Three patients had associated ventricular dysfunction and mild atrio-ventricular valve regurgitation with favourable hemodynamics after balloon occlusion. Follow-up (range 0.5-5 yrs) showed complete occlusion in all except one (trivial right to left shunt). Saturation was maintained around mean 96 % on pulse oximetry. Depressed ventricular function appeared to improve on follow-up although with treatment. There was no symptomatic or clinical evidence of increased systemic venous congestion. There was no immediate or late complications related to the procedure.

**Conclusions:**

We conclude that patent fenestration after FO can be closed safely, effectively and non- surgically using ASO. Even patients with mildly raised pulmonary artery pressure and mild to moderate ventricular dysfunction appear to benefit from the fenestration closure, possibly because of elimination of the hypoxia and ventricular volume overload due to right to left shunting.

*Key Words: Amplatzer septal occluder; Fontan operation; Fenestration of Fontan operation; Funding Agency: None*

**Medicine**

*Category: Clinical*

**87**

**Frequency and aetiology of hypernatremia in adult hospitalised patients in medical wards in a general hospital in Kuwait**

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**Introduction:**

Hypernatraemia is a common electrolyte abnormality in the medical wards of any general hospital. A retrospective study of patients admitted in medical wards in Jahra Hospital from July – December 2005 was carried out with the objective of reviewing the aetiology of Hypernatraemia. An incidence of 5.04% was noted. Hypernatraemia defined as Serum Na > 145 mmol/L. The aim of our study was to define causes of Hypernatraemia in medical wards of a general hospital so that immediate attention is drawn to these causes and prompt treatment is carried out.

**Methods:**

Retrospective study of adult patients in medical wards from JULY- DEC 2005 for prevalence of Hypernatraemia. Hypernatraemia defined as S.Na > 145 mmol/L. All blood samples were analysed in Biochemistry Department on LX 20 machine. Information regarding age, sex, highest serum sodium, clinical diagnoses and further clinical information suggesting causes of Hypernatraemia was gathered.

**Results:**

Out of 1825 patients analysed between July – Dec 2005, 92 patients (5.04%) had Hypernatraemia. 41 patients were male (44.56%) and 51 patients (55.43%) were female. The mean age was 67.05 yrs, commonest age group being 65 – 75 yrs. Mean S. Na in study was 153 mmol/L. Forty percent of hypernatremic patients had increased insensible water losses, 35% renal water loss (DI) and 25% increased enteral water losses. Among major causes of Hypernatraemia were Dehydration, Diabetes Insipidus, Drugs and Pyrexia. Of 35% of patients with DI; 29% had NDI (17% hypercalcemic, 7% hypokalemic, 3% druginduced) and 8% CDI. Mortality was 34% for all patients, but hypernatremia contributed to mortality in only 14%.

**Conclusions:**

Overall incidence in our study was 5.04% of all patients in the medical wards. Commonest cause was Dehydration and the commonest age was 65-75 yrs.

*Key Words: Hypernatraemia; Dehydration; Diabetes Insipidus.;*  
*Funding Agency: None*

## **Medicine**

*Category: Clinical*

**88**

### **The influence of insufficient exposure to sunlight on Vitamin D deficiency and related symptoms among women in the State of Kuwait**

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#### **Introduction:**

Background: Vitamin D deficiency due to insufficient exposure to sunlight due to almost complete covering of the skin by clothing, and inadequate consumption of dairy products leads to osteomalacia that usually complicated by osteoporosis in young, healthy women. Objectives: To study Vitamin D deficiency as a cause of osteomalacia and osteoporosis.

#### **Methods:**

we recruited 24 consecutive patients with osteomalacia. The clinical parameters recorded were: age, sex, exposure to sunlight, diet, and symptoms of generalized weakness, numbness and bone pain, and myopathy. The biochemical parameters recorded initially and after treatment with high dose of vitamin D.

#### **Results:**

All 24 patients were females and the mean age and standard deviation (SD) were  $23.08 \pm 9.14$  years. The means and SD of the initial biochemical parameters and during treatment respectively were: serum calcium =  $2.12 \pm 0.14$ ,  $2.24 \pm 0.37$  mmol/L (normal = 2.2-2.6), serum phosphate =  $0.88 \pm 0.26$ ,  $1.28 \pm 0.24$  mmol/L (normal=0.8-1.6), alkaline phosphatase =  $413.1 \pm 292.2$ ,  $220.7 \pm 186.0$  mmol/L (normal=95-200), urinary calcium=  $1.26 \pm 0.95$ ,  $2.16 \pm 1.67$  mmol/24 hr (normal=0.33-7.5, urine phosphate= $8.10 \pm 6.14$ ,  $8.52 \pm 8.87$  mmol/24 hr (normal=13-42), serum PTH=  $38.68 \pm 23.43$ ,  $10.85 \pm 4.49$  pmol/L (normal=0.7-5.6), 25(OH)D=  $8.10 \pm 8.05$  nmol/L (normal=23-113) and bone densitometry scan=  $-2.086 \pm 0.91$ . The symptoms and signs improved during treatment. There were no symptoms of hypercalcemia.

#### **Conclusions:**

Osteomalacia due to vitamin D deficiency secondary to insufficient sunlight exposure and inadequate dairy product consumption is not uncommon in women of Al-Jahra region of Kuwait in spite of the sunny climate. They improved symptomatically and biochemically, without ill effects, after treatment with high dose of vitamin D, and after health education that helped in greater exposure to sunlight and an increase in consumption of dairy products to obtain approximately 1 g of calcium daily.

*Key Words: Osteomalacia; High dose vitamin D; Sunny climate;*

*Funding Agency: None*

**Medicine**

Category: Graduate (Resident)

89

**Coexisting vitamin D deficiency in primary hyperparathyroidism**

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**Introduction:**

Primary hyperparathyroidism is a syndrome with variable clinical expression, presenting as asymptomatic hypercalcemia in the West and with predominant bone disease in Asian countries. Coexisting vitamin D deficiency may modify the clinical presentation of primary hyperparathyroidism. The present study was aimed to evaluate the vitamin D status in patients with primary hyperparathyroidism and to correlate it with the bone disease.

**Methods:**

Ten patients; 8 women, 2 men with documented primary hyperparathyroidism (age range 17-71 years) seen over the past 4 years were studied to investigate the clinical impact of vitamin D deficiency.

**Results:**

Four patient had normocalcemic hyperparathyroidism and 6 had severe vitamin D deficiency (< 20nmol/L). Parathyroid adenectomy was performed in all except two patient and four patient received Alendronate 70 mg weekly. Mean serum calcium, phosphate, 25OHD3 and PTH concentrations were  $2.8 \pm 0.37$  mmol/L;  $0.92 \pm 0.16$  mmol/L,  $20.6 \pm 8.2$  nmol/L and  $50.1 \pm 22.6$  pmol/L respectively. Baseline lumbar and hip BMD total 'T' score revealed significant osteopenia (mean + SD);  $-2.5 \pm 0.5$  and  $-1.7 \pm 1.3$  respectively. Concomitant use of vitamin D significantly improved the Lumbar BMD (P= 0.025) but not the hip BMD (P=0.14).

**Conclusions:**

Vitamin D deficiency is quite common among patients with primary hyperparathyroidism in Kuwait. The predominant bone disease is probably due to prolonged primary hyperparathyroidism coexisting with low vitamin D status.

*Key Words: Vitamin D deficiency; Primary hyperparathyroidism.*

*Funding Agency: None*

**Medicine**

*Category: Clinical*

**90**

**Menstrual linked asthma may not be completely suppressed by inhaled steroids.**

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**Introduction:**

Exacerbation of asthma during the perimenstrual period in asthmatic females in the reproductive age has been documented. We investigated the characteristics of asthma in a group of Kuwaiti patients in the procreative age, stable on inhaled steroids.

**Methods:**

A total of 20 asthmatic females aged 20 to 45 years with moderate to severe asthma, stable on beclomethasone or Fluticasone inhalers were studied. They had regular menstrual cycles, without any other diseases, or any other treatment aside asthma. They had no peri-menstrual or any exacerbation of asthma six months prior to the study. They were provided with peak flow meters to measure the morning on waking up, and evening at bed time peak expiratory flow rates (PEFR). The best of three PEFR values were recorded twice daily. They received instruction on the proper use of flow meter and maintenance of a diary.

**Results:**

The PEFR graphs were plotted for all the 20 patients separately and the graphs were analyzed, and found that they had a depressed PEFR for a period of 5 to 8 days (average: 6.28 days) during the peri-menstrual period. The PEFR dipping occurred during a period varying from 6 days prior to the onset of the menses (d-6) and up to 8 days after the onset of the menses (d+8). The maximum fall of the PEFR was from 35.2% to 40.5% (average: 36.4%) of the best value of PEFR recorded for each patient. It was also noted that that PEFR of these patients showed an improvement during the mid portion of the cycle. This corresponds to the ovulation period.

**Conclusions:**

Our study showed that a total of 7 out of 20, that is 35% of patients with stable treated asthma were having a dipping of the PEFR in the perimenstrual period. Therefore in stable and clinically silent female asthmatics in their reproductive age on inhaled steroids, stepping down of the treatment should be done carefully as it may lead to worsening of asthma or precipitate acute severe attack in the perimenstrual period.

*Key Words: Inhaled steroids; Peak expiratory flow rate (PEFR); Perimenstrual Asthma; Funding Agency: None*

**Medicine**

Category: Clinical

91

**Levosimendan or milriNone in the type II diabetic patient with low ejection fraction undergoing elective ischemic heart disease surgery: a pilot randomized controlled trial**

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**Introduction:**

Levosimendan is a new inotropic agent that opens myocardial adenosine triphosphate-dependent potassium (KATP), and like milriNone inhibits phosphodiesterase III (PDE III), and therefore work synergistically with calcium sensitization to improve myocardial performance. This study compares the hemodynamic profiles of two groups of type II diabetic patients with preoperative depressed myocardial function, who underwent elective surgery for coronary artery disease, and who received levosimendan or milriNone for post cardiopulmonary bypass low-output syndrome.

**Methods:**

Fourteen patients and sixteen patients received levosimendan and milriNone infusions respectively for the treatment of post low-output syndrome within the first twelve hours after separating from cardiopulmonary bypass. The hemodynamic, mixed venous oxygen saturation, oxygen extraction ratios and other biochemical profiles including arterial lactate concentrations were serially documented and compared in both groups for the first 48 hours after the diagnosis.

**Results:**

The hemodynamic and biochemical profiles of both treatment groups were normalized. However, the cardiac index and mixed venous oxygen saturation were statistically significantly higher in the levosimendan group with p-values of.01 and <.001 respectively. The pulmonary capillary wedge pressure, the systemic vascular resistance, and the oxygen extraction ratios were statistically significantly higher in the milriNone treatment group with p-values of.04,.01 and.003 respectively. All the hemodynamic values of the milriNone g

**Conclusions:**

Levosimendan treatment was found effective and more efficient than milriNone for treating the hemodynamic manifestations of post-cardiopulmonary bypass low-output syndrome. However, this does not yet have clinical significance.

*Key Words: Ardiopulmonary bypass (CPB); Low-output syndrome; Levosimendan;*

*Funding Agency: None*

**Medicine**

Category: Clinical

92

**Leptin, soluble leptin receptor, and free leptin index in relation to insulin resistance in patients with Type 2 Diabetes**

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**Introduction:**

In obesity, soluble leptin receptor (sOb-R) binds leptin with high affinity resulting in an inverse relationship. Although hyperinsulinemia is known to be associated with elevated leptin levels, the role of the different leptin sub-fractions (free leptin and free leptin index (FLI - the ratio of serum leptin to sOB-R)) in the development of insulin resistance has not been elucidated. This study evaluates the associations of leptin, sOb-R and FLI in patients with Type 2 diabetes and varying degrees of insulin resistance.

**Methods:**

Fasting sOb-R, leptin, insulin, glucose levels, homeostasis model assessment (HOMA) index for insulin resistance and high-sensitivity CRP (hs-CRP) were determined in 127 patients with Type 2 diabetes. Age, waist circumference (WC) body mass index (BMI), systolic and diastolic blood pressure, haemoglobin A1C, and lipid profile were also evaluated. Patients were categorized by BMI and degree of insulin resistance.

**Results:**

The mean  $\pm$  SD leptin (46.30 $\pm$ 22.36 ng/mL versus 23.78 $\pm$ 19.15 ng/mL,  $p < 0.0001$ ) and FLI (3.33 $\pm$ 3.31 ng/U versus 1.51 $\pm$ 2.01 ng/U,  $P < 0.001$ ) were significantly higher in females than males but the sOB-R levels were not significantly different (19.43  $\pm$  8.36 U/mL versus 20.98 $\pm$ 8.42 U/mL,  $p = 0.12$ ). Leptin and FLI showed stepwise increase with increasing categories of BMI while sOB-R showed stepwise decrease. We found statistically significant negative correlations between circulating sOb-R concentration and WC ( $r = -0.29$ ), BMI ( $r = -0.48$ ), leptin ( $r = -0.34$ ); hs-CRP ( $r = -0.24$ ) and Triglycerides ( $r = -0.19$ ). There was an inverse relationship between HOMA index and sOB-R levels ( $r = -0.18$ ), whereas a positive correlation was noted with leptin ( $r = 0.22$ ) and FLI ( $r = 0.19$ ). Leptin and FLI were significantly higher in patients with HOMA index  $> 2$  compared to those with HOMA  $< 2$  but sOB-R levels were significantly lower.

**Conclusions:**

Low sOb-R levels and high leptin and FLI are obesity-dependent markers of insulin resistance.

*Key Words: Soluble Leptin Receptor; Free Leptin Index; Diabetes;*

*Funding Agency: Kuwait Foundation for the Advancement of Science Grant number 2004-07-02*

**Medicine**

*Category: Clinical*

**93**

**Risk factors and predictors of increased risk in type 2 diabetes in  
Arabs resident in Kuwait**

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**Introduction:**

Increased circulating cytokines are well known to be strongly associated with inflammation which is currently viewed as a possible key player in the etiology of type 2 diabetes and the metabolic changes associated with insulin resistance.

**Methods:**

In an attempt to assess cytokine changes in Arab subjects, we studied 54 Arab patients with type 2 diabetes and 47 normal controls (matched for age, sex and BMI). Levels of adiponectin, resistin, Tumor necrosis factor-alpha (TNF-alpha), interleukin 1 beta (IL-1-beta), interleukin-6 (IL-6) and insulin were evaluated after an overnight fasting. Insulin resistance was calculated for all subjects using the HOMA-IR formula.

**Results:**

Arabs with type 2 diabetes had significantly higher resistin ( $p < 0.001$ ), IL-1-beta ( $p < 0.001$ ), IL-6 ( $p < 0.001$ ) and TNF-alpha ( $p < 0.001$ ) than controls. Although Arabs with type 2 diabetes were more insulin resistant ( $p < 0.001$ ), their adiponectin levels were significantly lower ( $p < 0.01$ ) than those of controls. TNF-alpha was correlated positively with IR ( $p < 0.001$ ) and IL-6 ( $p < 0.05$ ) and negatively with adiponectin ( $p < 0.05$ ). Log resistin showed a positive correlation ( $p < 0.01$ ) while log adiponectin showed a negative correlation ( $p < 0.05$ ) with IR. These correlations remained significant even after corrections for age, BMI or gender.

**Conclusions:**

In conclusion, increased levels of TNF-alpha, IL-6, IL-1-beta and resistin are hallmarks of type 2 diabetes in Arab subjects. Since TNF-alpha, IL-6 and log resistin are positively correlated with IR, and IR is well known risk factor for diabetes and complications, increased serum levels of TNF-alpha, IL-6, IL-1-beta and resistin may be considered predictors or risk factors for worsening control and progression of type 2 diabetes.

*Key Words: Cytokines; Diabetes; Arabs;*

*Funding Agency: None*

**Medicin**

*Category: Clinical*

**94**

**Implementing the Diabetes Care Programme standards at the primary health care setting in Kuwait**

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**Introduction:**

Diabetes Care Programme (DCP) was established in order to improve the quality of diabetes care at the Primary Health Care (PHC) Setting in Kuwait. Twelve standards were set out to improve the structure and process of diabetes care. On 2001, the standards were disseminated to physicians working in the diabetic clinics at the PHC setting. Annual audits on 5 selected diabetic clinics showed improvements in the quality of diabetes care. We carried out this study to evaluate the adherence to implementation of the standards and the quality of diabetes care in all centers that provide diabetes services at the PHC setting in Kuwait.

**Methods:**

Since 2003, an audit has been conducted for all centers in the PHC setting that provide diabetes care services by on-site visits and medical record review. Medical records were included only if the patients had had three or more visits during the year.

**Results:**

In 2003, a total of 34 centers were visited and 820 medical records were reviewed. On-site visits revealed that only 19 out of the 34 clinics had appointment registry. Although the majority (98%) of the patients had diabetes appointment booklets and that 96% had their appointment registered in these booklets, only 65% were adherent to their appointment. The majority of the patients (88%) had a file. The review revealed that of all subjects, 29 and 22% had fundus and foot examination respectively. The proportion of patients who were asked for smoking status was 19%. Of all subjects 46, 64, and 28% were tested for HbA1c, serum creatinine, and microalbuminuria respectively. The proportion of patients who were tested for triglycerides, total cholesterol, HDL-cholesterol, and LDL cholesterol was 65, 65, 24, and 21 % respectively.

**Conclusions:**

DCP standards were implemented in the PHC setting. However, the quality of diabetes care is still not optimal. Further interventions are needed to lead to improvements in the structure and process of diabetes care in Kuwait.

*Key Words: Diabetes; Standards; Quality of care;*  
*Funding Agency: None*

**Medicine**

Category: Clinical

95

**Leptin levels in normal-weight, overweight and obese Type 2 Diabetic patients**

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**Introduction:**

Results of clinical studies on serum levels of leptin in Type 2 diabetes were inconsistent. The aim of this study was to measure serum leptin in normal-weight, overweight and obese type 2 diabetic patients and to study the relationship of leptin with several factors.

**Methods:**

We measured leptin in serum of 6 normal-weight (4 male and 2 female), 14 overweight (11 male and 3 female) and 30 obese (11 male and 19 female) Type 2 diabetic patients. The following variables were collected for each patient: height, weight, BMI, smoking status, insulin, C-peptide, HbA1c, creatinine, lipids, presence of diabetic retinopathy and nephropathy and treatment with insulin.

**Results:**

Leptin was found to be statistically significantly lower in normal-weight and overweight than obese Type 2 diabetic patients (17.52+18.88 vs. 13.05+12.52 ng/ml vs. 34.98+16.01, respectively; p=0.0001). Women had statistically significant higher leptin levels than men (42.68+11.046 vs. 12.04+8.72 ng/ml, p=0.0001). When serum leptin levels were compared between the three groups of weight in both gender, it was only significantly different in men but not women. In addition, non-smokers had statistically significant higher leptin levels than current and former smokers (33.06+18.05 vs. 10.52+ 7.74 vs. 14.48+10.42, respectively, p=0.001). There was no significant difference in plasma leptin levels between patients with retinopathy and nephropathy than those without these complications. Serum leptin levels were positively correlated to BMI (r=0.71, p=0.0001), serum insulin (r=0.33, p=0.018) and high-density lipoprotein cholesterol (r=0.38, p=0.006), whereas creatinine had negative correlation (r=- 0.42, p=0.004). No relationship was found with age, C-peptide, metabolic control, triglycerides, LDL-cholesterol and insulin therapy.

**Conclusions:**

In Type 2 diabetes, women and obese men showed higher leptin levels. There was no relationship between leptin and microvascular complications, or insulin therapy.

*Key Words: Diabetes; Leptin.*

*Funding Agency: None*

**Medicine**

*Category: Clinical*

**96**

**The relation between intact proinsulin and adiponectin with insulin resistance**

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**Introduction:**

Intact proinsulin is a precursor of insulin, which binds to insulin receptors and has only weak hypoglycemic effect. It can be detected at low concentrations (<10pmol/L) in the blood of healthy persons but is expected to be raised in insulin-resistant subjects and patients with type 2 diabetes. Adiponectin is a protein expressed in adipose tissue, and in contrast to proinsulin, its concentration is decreased in patients with type 2 diabetes. This study aimed to explore the relationship of intact proinsulin and adiponectin with insulin resistance.

**Methods:**

A case control study was designed involving 54 type 2 diabetes patients with age, sex and BMI matched 47 normal controls. Fasting intact proinsulin and adiponectin levels were measured using commercial kits and insulin resistance (IR) was calculated by the homeostasis model assessment (HOMA)-formula. Statistical analysis was performed using a two-tailed Student's t-test where single comparisons were made. Linear regression analysis and bivariate correlation were used to determine correlations between various parameters. Specificity and sensitivity were determined using standard formula.

**Results:**

Log intact proinsulin correlated positively with log HOMA-IR ( $r=0.693$ ,  $p<0.001$ ), whereas log adiponectin demonstrated negative correlation with log HOMA-IR ( $r=-0.456$ ,  $p<0.001$ ). The ratio of log intact proinsulin to log adiponectin positively correlated with log HOMA ( $r=0.652$ ,  $p<0.001$ ). At a cutoff value of 10 pmol/L, intact proinsulin specificity was 93.1% while sensitivity was 92.86%. In contrast, at mean $\pm$ SE (4.9 $\pm$ 0.25) adiponectin value for diabetics, the specificity was only 83.87% and the sensitivity was 78.85%. However, intact proinsulin/adiponectin ratio reached 96.43% specificity and sensitivity of 84.21% with this mean adiponectin value.

**Conclusions:**

Elevations of fasting intact proinsulin is more specific marker for insulin resistance than adiponectin. Due to high sensitivity and specificity in conjunction with the positive correlation detected, intact proinsulin/adiponectin ratio is shown to be a reasonable indicator of insulin resistance.

*Key Words: Intact proinsulin; Adiponectin; Insulin resistance;*

*Funding Agency: None*

**Medicine**

Category: Clinical

97

**Thyroid Hormones in Women with Iron Deficiency Anemia**

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**Introduction:**

Two billion people worldwide have anemia, approximately 50% of this anemia can be attributed mainly to iron deficiency. The most dramatic effect is increased risk of female mortality and morbidity specially during childbearing period. Previous research has shown that iron deficiency may affect thyroid function. Objective: The objective of this study was to investigate thyroid hormone (TSH&T4) status in women with iron deficiency anemia.

**Methods:**

A sample of 63 women with iron deficiency anemia were selected according to WHO criteria, while 24 non diseased women were selected as control group. For each case demographic characteristics were also recorded. For both groups EDTA blood and serum were collected and assayed for CBC parameters, s. ferritin, s.iron, transferin saturation, s.TSH and s.T4.

**Results:**

Hematological indices confirmed that all selected women have iron deficiency anemia. Using t-test to compare thyroid functions between the two groups, which was confirmed also by Mann-Whitney non parametric test, the results indicated that T4 level was significantly lower in patients group ( $p < 0.004$ ) while TSH level was significantly higher in patient's group ( $p < 0.073$ ). Moreover, when thyroid functions were tested against different age groups, KrusiKal- Wallis test (non-parametric ANOVA), showed non-significant differences in different age groups with iron deficiency anemia.

**Conclusions:**

Women with iron deficiency anemia may have impaired thyroid hormones status. However, no significant difference between different age groups could be detected.

*Key Words: Thyroid Hormones; Anemia; Iron Deficiency;*

*Funding Agency: None*

**Medicine**

Category: Clinical

98

**Hematopoietic stem cell transplantation (HSCT) for benign indications using umbilical cord blood units (UCB) that were not depleted of red blood cells**

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**Introduction:**

UCB is an attractive unrelated source for HSCT of benign indications; however, cell dosage is a critical factor for UCB HSCT. The red cell depletion (RCD) and post-thaw wash techniques that are widely used incur significant nucleated cell loss. Two strategies to minimize cell loss are to deplete plasma, but not the red blood cells (PD) during processing and forego post-thaw wash.

**Methods:**

A retrospective analysis was performed on 28 patients with benign disorders who were transplanted with 31 PD UCB units (3 double cords) with 13 thalassemias, 4 AA, 5 WAS, 2 SCID, 2 osteopetrosis, 1 sickle cell disease, and 1 unspecified metabolic disorder.

**Results:**

Transplant characteristics: patient median age 4 years old (range 03-27); median weight 16 kg (range 4.5-43); male 57%; median # HLA ABDR matches of 4.0 (5-6/6; 7-5/6; 12-4/6; 4-3/6); median pre-freeze TNC dose 7.7 x 107/kg; median post-thaw TNC dose as reported by TC 7.7 x 107/kg; median pre-freeze CD34 dose 3.1 x 105/kg; transplants outside of U.S. 68%; non-myeloablative 6%; 25% post-thaw washed (W), 61% infused without post-thaw wash (NW), 16% unknown post thaw manipulation. The median time to engraftment for ANC 500 (n=21), platelet 20K (n=20), and 50K (n=18) are 17.5 days (range 11-41), 48.0 days (range 13-82), and 56.5 days (range 21-96) respectively. No major adverse event was observed in either the W or the NW group, and the median time to engraftment for ANC 500, platelet 20K and 50K for W vs. NW were 27 vs. 12 days, 58 vs. 44 days, and 73 vs. 53 days respectively. The unadjusted cumulative incidence (C.I.) of ANC500 and platelet 20K and 50K engraftment are 89 7%, 89 7%, and 87 8% respectively. The incidence of reported grade II acute GVHD was 33%, and None had grade III-IV acute GVHD. 50% developed limited chronic GVHD (7/14), and so far only one patient was reported to have extensive chronic GVHD. With a median follow-up of 356 days (range 93-1,100 days), the Kaplan-Meier estimates of 1-year TRM, OS and disease-free survival were 11 6%, 89 6% and 89 6% respectively.

**Conclusions:**

These results demonstrate that HSCT using unrelated PD UCB can be performed safely and effectively in patients with benign disorders, and post-thaw washing may delay engraftment of HSCT using PD UCB.

*Key Words: Cord blood; Benign; Transplant;*

*Funding Agency: None*

*Medicine*

*Category: Clinical*

99

**High incidence of Idiopathic Thrombocytopenic Purpura (ITP) in Kuwait - a study from medical wards of Al-Jahra Hospital Kuwait**

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**Introduction:**

ITP is a common hematological condition but shows significant variation in incidence in different regions of the world. The incidence of ITP in international studies suggests an incidence of 46 new cases per million population in children and 38 new cases per million in adults. While the incidence of ITP in both sexes is reported to be equal among children a female preponderance is reported in adults. A study of all thrombocytopenia cases was carried out in the medical wards of Al - Jahra hospital and we tried to find the incidence of ITP in our hospital and Jahra region.

**Methods:**

A study of all thrombocytopenia patients admitted to the adult medical wards of Al-Jahra hospital was carried out over a period of 2 years(2003,2004). Significant thrombocytopenia was defined as platelet count of  $100 \times 10^9/l$ .

**Results:**

ITP was found to be the commonest cause of thrombocytopenia in medical wards of our hospital making up 41.2% of all cases. A total of 34 new cases of ITP were diagnosed over a period of 2 yrs. The male female ratio showed a marked female preponderance with 22 female cases and 12 male cases 1.8:1. As our hospital is the only admitting hospital of the region, extrapolating the results to Jahra regions population of 280,000 the incidence of ITP comes to be 60 per million per year. Even if a few patients are admitted to private hospitals it would only add further to the incidence.

**Conclusions:**

The incidence of ITP of 60 per million per year in our study is far higher than 38 per million per year as reported in international studies. The only previous report from Kuwait showed an incidence of 125 per million but that study was in paediatric age group. The female preponderance in our study also corresponds to the studies carried out internationally. This study is first of its kind in adult patients in any hospital in Kuwait. Weather ethnic or environmental factors play a role in the phenotype of this disease needs further epidemiological study.

*Key Words: Idiopathic thrombocytopenic purpura; Anti-platelet antibodies; Bone marrow*

*Funding Agency: None*

**Medicine**

Category: Clinical

100

**Brucellosis and Pyrexia of Unknown Origin in Kuwait**

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**Introduction:**

Objectives: Pyrexia of Unknown Origin (PUO) is a problem frequently faced by clinicians and of interesting challenges. This study was undertaken to investigate PUO and to compare between brucellosis patients and other causes of PUO.

**Methods:**

Between January 2001 and December 2004, all patients who were admitted to Infectious Disease Hospital with PUO were included in this study. Patients' records were reviewed. Ages, gender, nationality, occupation, residence, laboratory investigations as IgA, IgG, IgM and blood culture were recorded.

**Results:**

One hundred and thirty patients were admitted with PUO to the hospital. Their median age was 38.5 years (range: 14-80 years). The mean duration of hospitalization was 8.7±7.8 days. Infectious diseases were the most common causes of PUO. Brucellosis was the main cause of PUO among the hospitalized patients. (n=80, 58.8%). Other infectious diseases were the cause in 27 (19.85%) patients. Miscellaneous diseases such as thyroiditis, granulomatous hepatitis and other non-infectious causes of PUO were diagnosed in 14 (10.3%) patients. Alanine Amino Transferase (ALT) was significantly higher in brucellosis cases than other PUO patients (p=0.005). However, White Blood Cell count was higher in patients of other PUO than brucellosis patients (8.5±4.04 Vs 7.1±3.91) (p=0.048). Brucellosis was commonly diagnosed among the Asian population (58.8%, p=0.022). The study revealed that exposure to brucellosis is high among persons in high-risk occupations

**Conclusions:**

Infections remain the most important cause of PUO in Kuwait, confirming the trends found earlier in other studies. Brucellosis was the common infectious cause of PUO. Furthermore, it is common among persons in high-risk occupations.

*Key Words: Brucellosis; Pyrexia of Unknown Origin; Infectious Diseases;*  
*Funding Agency: None*

**Medicine**

*Category: Graduate (Resident)*

**101**

**Can AST/ALT Ratio Predict Response To Treatment of Hepatitis C Virus Infection?**

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**Introduction:**

Hepatitis C virus is becoming a significant cause of morbidity in Kuwait. Furthermore, the cost of treatment is extremely high and there is a need to establish the factors that determine response to treatment. The aim of this study was to evaluate AST/ALT ratio AAR a simple non-invasive predictive factor of response to treatment in patients with chronic hepatitis C viral infection.

**Methods:**

269 patients (235 males, 34 females) were retrospectively studied. Diagnosis of HCV was based on HCV-RNA level determined with PCR. Laboratory data (LFT and serial HCV-RNA level) were collected from patient's case records before, during and after treatment with pegylated interferon and ribavirin. Patients were reviewed after one year of follow-up.

**Results:**

The results showed that AST/ALT ratio of 0.4 could be used as a cut off point. Patients who's AAR was  $\geq 0.4$  before treatment failed to respond to treatment when compared to the patients whose pretreatment AAR was  $< 0.4$  ( $p < 0.0001$ ).

**Conclusions:**

From the results of this study, it seems that pretreatment AAR can be used as a factor to predict response of treatment in HCV infected patients. Further prospective studies are required to confirm these results.

*Key Words:; Hepatitis C virus; Liver Cirrhosis;*

*Funding Agency: None*

**Medicine**

*Category: Clinical*

**102**

**Interventions to reduce perinatal HIV I transmission in Kuwait**

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**Introduction:**

The overall reported rate of mother to child transmission of HIV in the absence of use of antiretroviral drugs or other interventions ranges from 15%-40%. HIV can be transmitted during pregnancy(5%), at delivery(10%-15%), or afterwards through breast feeding(10%-15%).

**Methods:**

From January 1990 to December 2005 there have been 30 children born to 16 HIV positive mothers. Eight mothers having 18 pregnancies were unaware of their positive status and hence no interventions could be done to prevent mother to child transmission. In this group 3 children (17%) were affected. Eight mothers, who were aware of their being HIV positive, having 12 pregnancies had interventions to stop mother to child transmission according to the international recommendation. Eight of these children have been negative for HIV for more than 1 year and remaining on an average of 6 months with a transmission rate of 0%.

**Results:**

In the pregnant women known to be HIV positive we used antiretroviral drugs ( of which Zidovudine was a part) to reduce maternal viral load, avoidance of invasive manipulation of the fetus during pregnancy, elective caesarian section to reduce exposure of child to maternal genital secretions or blood, avoidance of breast feeding and prophylaxis to the newborn.

**Conclusions:**

Combination of strategies during pregnancy, delivery and after delivery minimizes HIV transmission to the baby. To avoid accidental transmission of HIV to the baby because of unknown status of HIV of pregnant women, it is recommended that antenatal screening of all pregnant women to be made available

*Key Words: HIV; Anti Retroviral Drugs.*

*Funding Agency: None*

**Medicine**

Category: Clinical

103

**Non-surgical closure of large pulmonary arteriovenous fistula using Amplatzer septal occluder**

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**Introduction:**

Pulmonary arteriovenous fistula (PAVF) is generally treated with coil embolization. However large PAVF needs several coils for effective closure and is associated with risk of systemic embolization. This study evaluates the effectiveness of non-surgical closure of large PAVF using Amplatzer septal occluder (ASO) (AGA Medical Corporation, USA).

**Methods:**

After hemodynamic evaluation and angiographic localization of PAVF, the feeding pulmonary artery (PA) was selectively cannulated by a long guiding sheath and ASO of the same size as the diameter of the feeding PA was delivered to occlude it. The device position and closure were verified by angiography.

**Results:**

Over the past one year three patients (age 17-56 yrs) were diagnosed to have large PAVF. They presented with chest infection and hypoxia, brain abscess and coma, dyspnea and pallor respectively. Arterial saturation ranged from 57-90%. Each had PAVF from the right upper, right lower and left lower lobe PA. One drained directly, and the other two by two large pulmonary veins, to the left atrium. All were closed using ASO (7, 8, 16 mm) and one needed additional Amplatzer duct occluder (6-8 mm). All had complete occlusion and saturation rose to 97-98%. There were no immediate or delayed complications. Follow-up (3-12 months) showed disappearance of the lung shadow and normal arterial saturation.

**Conclusions:**

We conclude that large PAVF can be treated safely, effectively and non-surgically using ASO.

*Key Words: Pulmonary arterio-venous fistula; Amplatzer septal occluder; Non-surgical closure; Funding Agency: None*

**Medicine**

Category: Clinical

104

**Coronary Artery Disease Risk Factors in Arab Women with Coronary Artery Stenosis – A Coronary Angiographic Study**

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**Introduction:**

The prevalence of coronary artery disease (CAD) continues to rise rapidly in affluent Arab countries. Although men are more frequently affected than women, there is increasing anecdotal evidence that the prevalence in women is rising. It is unclear if the CAD risk profile for women is similar to that in men. This study therefore evaluated the prevalence of CAD risk factors in Arab women presenting for coronary angiography and attempted to correlate the risk factor profiles in these patients with angiographic severity of disease.

**Methods:**

The study included 93 Arab women who randomly presented for coronary angiography. Post-angiography, the patients were categorized on the basis of any coronary segment stenosis as: normal (N, without any stenosis, n=24 (26%)) and diseased (D, with stenosis, n=69 (74%)). Detailed demographic and anthropometric data including history of classical CAD risk factors was collected from each subject, who also had fasting blood collected for measurement of (i) serum glucose, lipid and lipoprotein levels by routine Autoanalyzer techniques and; (ii) Lp(a), total homocysteine by dedicated ELISA.

**Results:**

Groups N and D did not differ significantly in age (respectively 51.3±9.6 vs. 54.6±9.7 yr, p NS), BMI (32.9±6.9 vs. 30.4±6.4 kg/m<sup>2</sup>, p ns), waist circumference (106.4±13.4 vs. 104.0±11.6 cm, p ns), WHR (0.99±0.08 vs. 0.99±0.05, p ns) and degree of physical activity (about 80% sedentary). Both groups appeared equally severely generally and centrally obese. The frequencies of the other classical risk factors were: diabetes (N, 38%, D, 77%, p < 0.001), hypertension (N, 67%, D, 74%, p ns); dyslipidemia (N, 29%, D, 77%, p < 0.001); postmenopausal state (N, 46%, D, 64%, p ns). Total cholesterol, triglycerides, apoB, LDL, Lp(a) and total homocysteine levels did not differ between the two groups; however, group N had generally higher apoA1 and HDL levels (p < 0.03).

**Conclusions:**

In female Arab patients with angiographically proven CAD, diabetes and dyslipidemia (specifically low HDL and apo A1) are the important identified risk factors for CAD. Other classical risk factors such as obesity, hypertension, Lp(a) and homocysteine are found in equal prevalence in those with and those without angiographically proven CAD. Acknowledgements: We are grateful to retired Prof George Cherian for initiating these studies

*Key Words: Coronary artery disease; Lipid profile; Angiography;*

*Funding Agency: None*

**Medicine**

*Category: Clinical*

**105**

**Safety, Haemodynamic changes and Predictive Value of Dobutamine Myocardial Scintigraphy: Report on a Series of 372 Patients**

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**Introduction:**

In patients (pts) with limited exercise capacity and chronic obstructive airways disease (COAD) dobutamine myocardial perfusion SPECT (DMP) is the method of choice for evaluating pts with known or suspected coronary artery disease (CAD) and predicting the outcome.

**Methods:**

We studied 372 consecutive pts (110 men, 262 women, mean age 55 yrs). All pts had COAD and were unable to perform treadmill exercise. 105 pts were known diabetics and 99 had controlled hypertension. 67 pts had history of previous myocardial infarction. Dobutamine was infused IV at incremental doses every 3 min. Electrocardiogram, blood pressure (BP) & heart rate were recorded during test & at recovery. Myocardial SPECT was done using Tc-99m Tetrofosmin & a dual head camera. Mean follow up (F/U) was 37 months.

**Results:**

At peak DMP, 301 pts felt palpitations and 93 pts chest pain. Heart rate increased from 70 +/- 17 bpm to 135 +/- 12 bpm in 300 pts. BP rose from 135 +/- 17 mm Hg to 175 +/- 15 mm Hg. 72 pts had mild transient hypotension. ST depression occurred in 89 pts. 310 pts developed benign ventricular extrasystoles, 15 had a short run of ventricular tachycardia: all arrhythmias disappeared by stopping the dobutamine infusion. DMP was normal in 223 pts, 61 pts had a fixed defect (scar) and 88 pts a reversible defect (ischemia). Because of logistics & technical reasons we could not perform angiography on pts with a normal DMP, so available data are not enough to obtain sensitivity or specificity of the test. However we do have a powerful negative predictive value in pts with a normal DMP, since none of those pts had an acute coronary event or death during F/U.

**Conclusions:**

In conclusion, DMP is a safe & accurate non-invasive technique for evaluating pts with COAD & limited effort tolerance; it also has a good prognostic value in the long term F/U of these pts.

*Key Words: Dobutamine SPECT; Chronic Obstructive Airways Disease; Coronary Artery  
Funding Agency: None*

**Medicine**

*Category: Clinical*

**106**

**Coronary Artery Disease risk factors and angiographic features in very young Arab men and women ( $\leq$  35 years old) undergoing diagnostic coronary angiography**

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**Introduction:**

The prevalence of coronary artery disease (CAD) is rising alarmingly and is seen to affect even very young patients. It is unclear if the CAD risk profile in the very young is similar to that in the more elderly. This study therefore evaluated the prevalence of CAD risk factors in very young ( $\leq$  35 years old) Arabs presenting for coronary angiography (CAG) and attempted to study the risk factor profiles in these patients.

**Methods:**

The study included 141 Arab nationals who randomly presented for coronary angiography. Risk factors for CAD, and Angiographic features were analyzed.

**Results:**

There were 141 Patients of whom 132 were males. Mean age was 31.55 Years. In 93 (66.4%) there was past history of Myocardial Infarction. Others were studied with a diagnosis of Unstable angina or for evaluation of Chest pain. Smoking was the commonest risk factor seen in 73.8% followed by history of hyperlipidemia in 57.1%. Though mean Cholesterol was 4.99 M Mol/L, mean LDL Cholesterol was 3.27 M Mol/L. Significant CAD was present in 57.4% and mild disease in 11.3%. Medical treatment was the treatment option in 61.7%. Percutaneous or surgical revascularization was required in the rest.

**Conclusions:**

In very young Arab nationals undergoing CAG smoking and hyperlipidemia were the common risk factors for CAD. Angiographic CAD was seen in 68.7 %. Though the majority could be managed by medical management revascularization was needed in 32.3%. Young patients with CAD need to be studied in more detail with regard to the risk factors and mechanism behind early onset CAD. Acknowledgements: We acknowledge the assistance of the Cardiac Cath Lab staff of the Chest Diseases Hospital in this study.

*Key Words: Very young Arabs; Coronary artery disease; Angiographic features; Funding Agency: None*

**Medicine**

*Category: Clinical*

**107**

**Utility of Holter monitoring in patients with significant symptoms**

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**Introduction:**

The aim of the study was to determine the correlation between the clinical presentation and Holter Monitor findings in symptomatic patients.

**Methods:**

Four hundred consecutive patients who were referred for Holter Monitoring in a randomized population. Data were entered and analysed using SPSS version 13.0.

**Results:**

There were 400 patients, of which 212 were males (53%) and 188 females (47%) with the mean age of 37.62 years. Among these patients 288 (72%) were Kuwaitis and 112 (28%) were non Kuwaitis. Analysis showed 316 patients present with palpitation, 15 patients with dizziness, 28 patients with syncope and 41 patients with other symptoms. Positive Holter findings were seen in 30 patients (7.7%) and of which 5 patients (1.3%) had supraventricular tachyarrhythmias, non sustained ventricular tachycardia in 19 patients (4.8%), significant pause in 3 patients (0.8%) and heart blocks in 3 patients (0.8%). Kuwaiti Patients had a high percentage of positive Holter findings on analysis (19%) as compared with non-Kuwaiti population.

**Conclusions:**

In our study population the diagnostic yield of Holter monitoring in symptomatic patients was limited. Holter Monitor analysis showed that ventricular tachycardia was associated more with the male population, elderly age group, hypertrophic cardiomyopathy, valvular heart disease and Ischemic heart disease.

*Key Words: Holter monitoring; Correlation; Palpitation;  
Funding Agency: None*

**Medicine**

*Category: Clinical*

**108**

**Cardiac memory versus likelihood of ischemic heart disease in hypertensive patients with ventricular repolarization abnormalities after repetitive uniform ventricular extrasystoles**

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**Introduction:**

To investigate the utility and value of changes in ventricular repolarization after premature ventricular complexes (PVC'S) for prediction of the hypertensive patients with likelihood of ischemic heart disease.

**Methods:**

Two hundred and ten hypertensive patients were included and stratified into: Group I: included 80 patients with T wave inversion after PVC'S and group II: included 130 patients with normal T wave after PVC'S. Ambulatory 24-hour ECG, ambulatory 24-hour blood pressure recording, transthoracic echocardiography, treadmill exercise ECG test and stress thallium scintigraphy were performed for all patients.

**Results:**

Predictive indices revealed that persistent symmetrical T wave inversion after repetitive uniform PVC'S = 30 minutes can be considered as indicators for prediction of IHD in hypertensive patients as sensitivity was 80%, specificity =73%, accuracy =78%, positive predictive value =83% and negative predictive value=69%, respectively. Kappa coefficient value (K) indicated that there was a good agreement between changes in ventricular repolarization after PVC'S and the results of stress thallium scintigraphy (K=0.827). Receiver operating characteristic (ROC) curve data revealed that the cut-off value of T wave inversion voltage to predict IHD in hypertensive patients was 2.2 mV with sensitivity=66% and false positive =35%, and area under curve was 0.716, but the cut off value of time for resolution of T wave inversion to predict IHD was 34 minutes with sensitivity =83% and false positive =18% and area under curve was 0.873.

**Conclusions:**

In spite of limitations and confounders, we propose that changes in repolarizing current after repetitive uniform PVC'S could be due to cardiac memory or IHD but persistent symmetrical T wave changes following resumption of sinus rhythm is an independent variable which may provide statistically significant prediction to identify hypertensive patients with likelihood of IHD.

*Key Words: Cardiac Memory; Ventricular Repolarization; Hypertension;*  
*Funding Agency: None*

**Medicine**

Category: Clinical

109

**Validity of the early T wave inversion after ST-segment elevation acute myocardial infarction to predict successful thrombolysis**

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**Introduction:**

To investigate the relation between the early T wave inversion after thrombolytic therapy and the likelihood of successful reperfusion.

**Methods:**

Hundred and ninty five patients with ST segment elevation acute anterior myocardial infarction were included between February 1997 and February 2004. Transthoracic echocardiography and coronary angiography were performed. The patients were stratified into two groups, group I: included 102 patients with T wave inversion after thrombolysis and the group II: included 93 patients with T wave upright after thrombolysis.

**Results:**

There was a significantly higher number of patients in group I who had single vessel disease (LAD) than those of group II ( $p < 0.05$ ). Predictive indices revealed that the early T wave inversion after thrombolytic therapy is a valid indicator to predict successful thrombolysis status. The sensitivity was 72%, specificity =70%, accuracy =71%, positive predictive value =75% and negative predictive value=66%. Stepwise multivariate analysis revealed a significant association between the age of the patients, residual coronary stenosis, chest pain to thrombolytic therapy and the early T wave inversion after thrombolytic therapy of acute myocardial infarction ( $p < 0.05$ ). ROC curve data of early T wave inversion for prediction of successful thrombolysis in the patients with TIMI flow grade 2-3, revealed that there was sensitivity =72%, false positive =38%, area under curve=0.629 with T wave amplitude = 2-5 mm and the probability of error was 36%. The sensitivity was 80%, false positive= 31%, area under curve=0.715 with T wave amplitude = 6-9mm and probability of error =30%.

**Conclusions:**

Inspite of limitations and confounders, the early inversion of T wave after acute myocardial infarction is an independent variable and a statistically significant predictor which can help to suggest successful thrombolysis status.

*Key Words: Acute myocardial infarction; Thrombolytic therapy; Ventricular repolarization; Funding Agency: None*

*Medicine*

*Category: Clinical*

110

**Optimization of A-V and V-V sequential pacing in CRT patients using PW Doppler, CFM, and 3D advanced quantification echocardiography**

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**Introduction:**

CRT (Cardiac Resynchronization Therapy) for severe HF is a newly implemented method for electrical support of the failing heart. Approximately 30% of patients did not respond to this treatment modality. Optimization methods are sought to decrease this considerable number of patients. A-V (atrioventricular) and V-V (ventriculoventricular) optimization are some of them. Aim of the study is to combine ECHO (PW Doppler and advanced 3D) assessment with CRT device reprogramming in order to achieve an optimal re-synchronization pacing regimen for the

**Methods:**

Ritter [9] method for A-V delay optimization was used. After that, 4 different V-V sequential pacing regimens were utilized - simultaneous V-V pacing, RV only, 20 msec LV first, 40 msec LV first. Each regimen was assessed by 3D advanced quantification ECHO on the Philips IE 33 system, and 3 basic ECHO parameters were compared- number of synchronized LV segments, LVEF and LV stroke volumes. In addition, MR (Mitral Regurgitation) was assessed by CFM (Color Flow Mapping)

**Results:**

This is a pilot study of 10 patients who were put on biventricular pacing therapy 1 to 3 months prior to the optimization. 8 of them have an additional ICD device, 9 of them are male, 6 of them had some clinical improvement after CRT, 4 did not feel any change. The assessed parameters (number of synchronized LV segments, LVEF and LV stroke volume) have shown significant improvement in all patients. MR did not show significant change.

**Conclusions:**

A-V and V-V sequential pacing optimization of CRT patients using ECHO can be a valuable method to improve clinical outcomes and reduce number of non-responders among patients with severe HF. Large scale clinical comparative trials need to be performed in order to prove the efficacy of these new methods.

*Key Words: Cardiac Resynchronization Therapy; Ventriculo-Ventricular Optimization; Mitral Funding Agency: None*

**Medicine**

*Category: Clinical*

**111**

**CARDIAC ventricular arrhythmias and reduced parasympathetic-dependent heart rate variability in patients with hyperthyroidism**

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**Introduction:**

To investigate that impaired parasympathetic autonomic input to the heart in hyperthyroid patients is associated with ventricular arrhythmias.

**Methods:**

Forty eight hyperthyroid patients and 50 euthyroid subjects were included. Ambulatory 24-hour ECG, ambulatory 24-hour BP monitoring, treadmill exercise ECG test and echocardiography were performed. Frequency domain derived variables were Low - frequency (LF) (representing sympathetic and vagal activity) and frequency domain derived high frequency (HF) (representing pure vagal activity). Hypertensive, diabetic and ischemic heart disease patients were excluded.

**Results:**

Predictive indices revealed that reduced parasympathetic activity can be considered as indicators for prediction of significant ventricular arrhythmias in hyperthyroid patients as sensitivity was 80%, specificity =79%, accuracy =78%, positive predictive value =83% and negative predictive value=69%, respectively. There was a significant reduction in the value of the markers of parasympathetic activity in the patients with than those without complex ventricular arrhythmias (P<0.05). Multivariate analysis revealed a significant association between reduced parasympathetic activity and the presence of significant ventricular arrhythmias in hyperthyroid patients (P<0.05). Simple linear regression analysis revealed that there was a significant correlation between T3 serum level and circadian heart rate variation (r=0.978, P=<0.05). Receiver operating characteristic (ROC) curve data revealed that the best cut-off value of LF/HF ratio to predict significant ventricular arrhythmias in hyperthyroid patients was 9.2 with sensitivity=66% and false positive =35%, and area under curve was 0.716.

**Conclusions:**

We propose that impaired parasympathetic activity can be considered as an independent variable for prediction of significant ventricular arrhythmias in hyperthyroid patients.

*Key Words: Heart Rate Variability; Ventricular Arrhythmias; Hyperthyroidism;*

*Funding Agency: None*

**Medicine**

*Category: Clinical*

**112**

**Improvement of quality of care for cardiac patients with acute ST segment elevation myocardial infarction and its influence on cardiac mortality in coronary care unit, Farwania Hospital, Kuwait**

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**Introduction:**

To find out the relation between improved quality of care and in-hospital mortality and morbidity rate in patients with acute ST segment elevation myocardial infarction (STEMI) in our hospital.

**Methods:**

Consecutive eighteen hundred patients with ST segment elevation AMI were included. Transthoracic echocardiography and coronary angiography were performed. Patients were stratified into: Group I: included 1632 survivors and the group II: included 168 cardiac deaths.

**Results:**

Over 6-years registry, the mortality rate was 10.3%, but the rate is significantly decreased over the last 2-years registry as it was 5.1% compared with 10.5% over 1999-2000, as there was a significant decrease in chest pain to admission time ( $50 \pm 22.4$  minutes in 2003-2004 versus  $95 \pm 16.2$  minutes in 1999-2000,  $p < 0.01$ ) and we started fibrin specific thrombolysis (rapilylin and tenecteplase) on November 2002, also there was an increased number of patients referred for coronary angiography and coronary intervention (116 patients in 2003-2004 versus 43 patients in 1999-2000,  $p < 0.01$ ). We found 19% of our patients had in-hospital heart failure with a significant increase in the percentage in the female patients ( $p < 0.05$ ) and 5% of our patients developed reinfarction with a significant increase in the male patients versus female patients ( $P < 0.05$ ). Stepwise logistic multivariate analysis revealed a significant correlation between the gender, size of infarction, percutaneous coronary intervention, chest pain to thrombolytic therapy, fibrin specific thrombolysis, mechanical complications and cardiogenic shock as an independent variables and the cardiac mortality rate after acute STEMI ( $< 0.05$ ).

**Conclusions:**

The in-hospital mortality rate of acute STEMI in Farwania hospital is 10.3% over the last 6 years registry, but the mortality rate and treatment trends in our hospital after acute STEMI have improved over the last 2 years registry.

*Key Words: Quality of care; Acute myocardial infarction; Cardiac Mortality;*

*Funding Agency: None*

**Medicine**

*Category: Clinical*

**113**

**Is venous reflux a systemic disease in postthrombotic patients with unilateral DVT episode?**

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**Introduction:**

Using non-invasive methods, we studied subjects for one year after they presented with an index deep vein thrombosis (DVT) to investigate reflux development and changes in resting venous diameters in the DVT and the non-DVT lower limbs.

**Methods:**

Twenty subjects (40 limbs) with acute unilateral proximal DVT were studied for one year after being diagnosed by ultrasound and clinical examination and treated with low-molecular-weight-heparin (LMWH) followed by at least 3 months of oral anticoagulant therapy entered the study. Following an acute DVT episode, subjects undergo clinical examination using (clinical, etiologic, anatomic, pathophysiology) clinical classification to determine the venous disease severity and duplex ultrasound to assess DVT resolution, vein diameter, and venous reflux at common femoral veins (CFV), great saphenous vein (GSV), femoral vein (FV), popliteal vein (PV) and small saphenous vein (SSV) in both limbs at intervals of 0, 3, 6, and 12 months follow-up periods. Venous reflux was defined as a valve closure time more than one second.

**Results:**

There were 13 men and 7 women, their average age ( $\pm$ SD) was 40.8 years ( $\pm$ 11.3 years) and average body mass index ( $\pm$ SD) was 27.7 kg/m<sup>2</sup> ( $\pm$ 3.7 kg/m<sup>2</sup>). At the end of 12 months follow-up, there were 17 out of 20 limbs with non-occlusive thrombus. Out of these 20 limbs 16 (80%) developed venous reflux. There were 8 limbs in clinical classes 4-6. In the contralateral 20 limbs without DVT, there were no DVT reported during the 12 months follow-up periods and there were only 4 limbs developed transient reflux at the sapheno-femoral (SFJ) at 6 and 12 months follow-up periods. Overall multivariate ANOVA, considering DVT and non-DVT limbs together, showed that there was a significant time effect. Univariate ANOVA showed this was due to significant changes in diameters with time in all veins, except for the short saphenous vein (SSV). However, only the femoral vein (FV) showed a significant "limbs x time" interaction ( $F = 4.7, p = 0.006$ ), indicating that there were differences between DVT and non-DVT limbs for this vein only. The differences between DVT and non-DVT limbs in FV were significant at each of the 3 time points.

**Conclusions:**

Venous reflux is highly likely to occur in DVT limbs but it may also develop in the non-DVT limbs following an episode of thrombosis within a year follow-up period. Longer term observational studies are needed.

*Key Words: Deep vein thrombosis; Chronic venous insufficiency; Venous reflux;*

*Funding Agency: None*

**Medicine**

Category: Clinical

114

**Characteristics of patients with bronchogenic carcinoma in Kuwait.**

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**Introduction:**

The spectrum and the incidence of lung cancer are changing all over the world and have regional differences. This study was done to see the clinical pattern of the disease in Kuwait.

**Methods:**

Data on admitted patients with bronchogenic carcinoma in the Chest Unit, Allergy Center during a 4 year period, January 2001 to December 2004. were collected retrospectively.

**Results:**

There were 108 patients: 94 (87%) were males. 41 (38%) were Kuwaitis. The other major nationalities were Egyptians 8 (7.4%), Indians 8 (7.4%), Pakistanis 7 (6.5%) and Bangladeshis 14 (13.0%). Mean age of the patients was 56.40 ± 11.15 years. 91 (84.3%) of them were smokers. Cough (90.7%), dyspnoea (62.0%), chest pain (52.8%), weight loss (39.8%), fever (24.9%) and hemoptysis (34.3%) were the major symptoms. Mean FEV1% was 64.42 ± 20.73 and FVC% 69.91 ± 18.69. Squamous cell carcinoma was seen in 35 (32.4%), Adenocarcinoma in 29 (26.9%), Small cell carcinoma in 11 (10.2%) and NSCLC in 23 (21.3%) patients. Right sided lesions were seen in 58 (53.7%) and left in 48 (38.9%) patients. FNAC (40.7%) followed by bronchoscopy (36.1%) were the major diagnostic methods. In patients with haemoptysis 56.8% were having squamous cell carcinoma (p=0.020). Other symptoms did not differ with respect to histology. Bronchoscopy was the main diagnostic method in squamous cell and FNAC in NSCL. 73.3% of the pleural studies showed feature of adenocarcinoma (p<0.001). Squamous cell was more common in > 50 age group where as adenocarcinoma in < 50 (p=0.666). 71.4% of the Bangladeshis were in the 31–50 year age group, the mean age being 47.14 ± 4.19 (p<0.001). Adenocarcinoma was more common in women.

**Conclusions:**

Symptoms and presentation generally did not differ from the rest of the world. Squamous cell carcinoma was still the major type. In the young lung cancer was more common among patients from Bangladesh.

*Key Words: Lung cancer; Kuwait; Bronchoscopy;*

*Funding Agency: None*

**Medicine**

Category: Clinical

115

**The Changing Epidemiology of Esophageal Cancer in Kuwait – A Twenty Year Experience**

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**Introduction:**

The incidence of adenocarcinoma (AC) of the esophagus and gastric cardia is reportedly increasing in the world, while the incidence of squamous cell carcinoma (SCC) of the esophagus is mostly stable or decreasing. The aim of this study is to determine the incidence rates of these malignancies in Kuwait over a 20 year period.

**Methods:**

The Kuwait Cancer Registry, established in 1979, collects information on malignant neoplasms according to the recommendations of the International Agency for Research on Cancer (IARC). Kuwaiti nationals with AC of the esophagus and gastric cardia, as well as SCC of the esophagus were identified in the registry for a 20 year period between 1980 and 1999. Age- standardized rates (ASR) were calculated for these malignancies using the World Health Organization (WHO) world standard population distribution as reference.

**Results:**

The ASR (per 100,000) for AC of the esophagus and gastric cardia and SCC of the esophagus are shown in the Table. The ASR for AC of the esophagus and gastric cardia has increased slightly from 4.6 in 1979-84 to 6.0 in 1995-99, while the ASR for SCC has fallen from 31.2 in 1979-84 to 7.9 in 1995-99.

**Table**

Type of Malignancy	Age-standardized rates (per 100,000)			
	1980-84	1985-89	1990-94	1995-99
AC	4.6	6.3	6.5	6.0
SCC	31.2	14.6	17.8	7.9

**Conclusions:**

The incidence of AC of the esophagus and gastric cardia has increased slightly, while the incidence of SCC of the esophagus has decreased markedly in Kuwaiti citizens between 1980 and 1999. Further research into esophageal and gastric cardia adenocarcinoma is needed to clarify the risk factors and mechanisms responsible for these changing trends as well as geographical disparities in incidence.

*Key Words: Adenocarcinoma; Squamous cell carcinoma; Esophagus;*

*Funding Agency: None*

**Medicine**

Category: Clinical

116

**Diagnosis of Helicobacter pylori: Improving the sensitivity of the rapid urease (CLO) test by increasing the number of gastric antral biopsies**

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**Introduction:**

To determine if the diagnosis of Helicobacter pylori (H. pylori) by a rapid urease test (CLO test) improves if the number of gastric antral biopsies placed in the test is increased from one to four.

**Methods:**

Patients found to have H. pylori infection by the C13 urea breath test were invited to participate in the study. Those patients who had taken an antibiotic or a proton pump inhibitor in the preceding 4 weeks were excluded. Patients included in the study were then randomly divided into 4 equal groups (Groups I-IV). All patients then underwent an upper gastrointestinal endoscopy. Patients in Group I had one gastric antral biopsy taken for a rapid urease test (CLO Test) during endoscopy, while those in Groups II, III and IV had two, three and four biopsies taken for CLO test, respectively. The CLO tests were incubated at 37 degrees Celsius for up to 24 hours, and read for positivity at 1, 6 and 24 hours.

**Results:**

There were 100 patients (56 males), with a mean age of 36.0 (S.D. 11.3) years, who were divided into the four groups, with 25 patients in each group. A total of 13 (52%) patients had a positive CLO test in Group I, compared to 17 (68%) in Group II, 19 (76%) in Group III and 24 (96%) in Group IV. All 24 (100%) patients in Group IV who had a positive CLO were positive within one hour of incubation compared to 10/19 (53%) in Group III, 3/17 (18%) in Group II and 1/13 (8%) in Group I (Table 2).

**Conclusions:**

1. The diagnosis of H. pylori by rapid urease test is improved by increasing the number of gastric antral biopsies from one to four in the CLO test. 2. The time taken for the rapid urease test to become positive decreases as the number of gastric antral biopsies is increased from one to four in the CLO test. 3. Rapid urease test may fail to diagnose H. pylori infection in up to 4% of patients even when four gastric antral biopsies are placed in the CLO test.

*Key Words: Helicobacter pylori; Rapid urease test; Gastric biopsies;*

*Funding Agency: None*

**Medicine**

*Category: Clinical*

117

**Ther medical resources utilization during thunderstorm asthma outbreak and the morbidity and mortality associated with it.**

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**Introduction:**

To determine the extent of the thunderstorm storm asthma outbreak on 16th November 2005 and the limitation of medical resources.

**Methods:**

A structured self administered questionnaire was completed by heads of the Emergency department ED of all 6 public general hospitals in Kuwait and a random sample of 19 primary care centers (PCC) across Kuwait.

**Results:**

The response rates for ED and PCC were 5/6 (83%) and 16/19 (84%). All E.D and 15/16 PPC noticed unusual increase in the number of asthma patients on that day. During 24 hour period a total of 3109 asthma patients presented to 5 E.D and 3704 presented to 16 PCC. There were 20 patients who arrived to ED in very serious condition, 9 admitted to ICU,s and 41 admitted to general hospital wards. There were 6 patients who arrived dead with history of asthma, 4 to E.D and 2 to PCC. The medical resources utilization questionnaire showed that all ED felt there were not enough beds to accommodate the patients. In 4 ED patients had to be treated while seated in corridors or waiting rooms. All E.D called for extra nurses and 3 called for extra doctors. Shortage in nebulizer machines and extra ones were brought from other areas of the hospital was noted in 4 E.D. There was some shortage in medications 1 ED ran out of Atrovent ( Ipratropium Bromide) solution, 2 ran out of I.V steroid, 2 ran out of Salbutamole inhalers and 1 ran out of inhaled steroid. Similar findings were found in PPC: 12 felt there were not enough rooms to accommodate the patients, 8 experienced shortage of doctors and nurses and 11 had shortage in nebulizers. Five PPC ran out of Salbutamole solution, 4 of Ipratropium Bromide solution, 5 of Salbutamole inhalers, 5 of inhaled steroids, 2 of prednisone tablets and 2 of inhaled steroids.

**Conclusions:**

Our results show that on 16th Nov 2005, there was a major outbreak of thunderstorm asthma in Kuwait causing significant morbidity and mortality with understandable limitation of medical resources.

*Key Words: Asthma; Thunderstorm; Mortality;*  
*Funding Agency: None*

**Medicine**

*Category: Clinical*

**118**

**Childhood vitiligo: a hospital-based study from Kuwait**

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**Introduction:**

Vitiligo is an acquired, pigmentary disorder of skin and hair characterized by well-circumscribed, asymptomatic white cutaneous macules devoid of identifiable melanocytes. Vitiligo is prevalent among children in Kuwait however no data exist from this part of the world about epidemiological features of vitiligo in children. This prospective study was carried out to learn more about epidemiology and clinical features of childhood vitiligo from this part of the world.

**Methods:**

All new patients attending the outpatient clinics of the Department of Dermatology of Farwaniya Hospital, between January 2003 and January 2004, were examined to detect vitiligo among them. All new patients  $\leq$ 12 years of age with vitiligo were included in this study. A complete history and a thorough clinical examination were done. Screening was also done for autoimmune and endocrine disorders by history, clinical examination and relevant investigations.

**Results:**

Out of 37246 new patients examined there were 88 children (14.38%), 41 boys and 47 girls. In majority of the cases (51.14%) vitiligo started between 8 and 12 years. The number of patients with positive family history of vitiligo was 24 (27.27%). Vitiligo vulgaris (generalized vitiligo) was the most common type. Three patients had anti-thyroid antibodies but None of these patients had clinical evidence of thyroid disease.

**Conclusions:**

In conclusion, we present for the first time, data for childhood vitiligo from Kuwait and from also from the Middle East. Children here are developing vitiligo at a little later age compared to other studies and we could identify anti-thyroid antibodies in three children, however other epidemiologic features appear to be similar to those observed in the previously published studies. Our group is of the view that epidemiological aspects of childhood vitiligo are no different from vitiligo in adults.

*Key Words: Childhood; Vitiligo; Autoimmune disorders;*

*Funding Agency: None*

**Medicine**

*Category: Clinical*

**119**

**Serum concentrations of cardiac Troponin-I in patients with Rheumatoid Arthritis, Systemic Lupus Erythematosus, Primary Sjogren's Syndrome and Graves' Disease**

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**Introduction:**

Some reports in the literature suggest that cardiac troponin-I (cTnI) is falsely elevated in patients with seropositive rheumatoid arthritis (RA) because of the presence of rheumatoid factor (RF). But, there are no reports in the literature on cardiac cTnI concentrations in other autoimmune diseases. We therefore decided to measure the serum concentrations of cTnI in patients with seropositive and seronegative RA, systemic lupus erythematosus (SLE), primary Sjogren's syndrome (pSS) and Graves' disease (GD) in order to find out if this cardiac marker is falsely elevated or not.

**Methods:**

Serum samples were drawn from 50 patients with seropositive RA, 50 patients with seronegative RA, 50 patients with SLE, 20 patients with pSS and 15 patients with GD. We measured cTnI levels using the Beckman Access Immunoassay system in these serum samples.

**Results:**

Of the 50 patients with seropositive RA, 5 had cTnI levels higher than 0.1ng/ml (the diagnostic range for myocardial infarction in our hospital laboratory) while None of the patients with seronegative RA or SLE or pSS or GD had level above this range. Furthermore, univariate regression analysis showed a positive association ( $r = 0.35$ ,  $P = 0.02$ ) between cTnI and rheumatoid factor in patients with seropositive RA.

**Conclusions:**

Using the Beckman Access Immunoassay system for cTnI quantitation, it was found that some patients with seropositive RA had falsely elevated cTnI while no patient with seronegative RA or SLE or pSS or GD had.

*Key Words: Cardiac troponin-I; Rheumatoid arthritis.*

*Funding Agency: None*

**Medicine**

*Category: Clinical*

**120**

**Clostridia Perfringens and Its Relation to Rheumatoid Arthritis.**

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**Introduction:**

Rheumatoid arthritis is a chronic progressive, potentially crippling disease. Sulphasalazine was screened for disease modifying properties. It has been shown to have anti-inflammatory and immuno-modulating effects. The aim of this work is to evaluate: 1-the efficacy of SAS in a proportion of RA patients. 2-Correlation between it and radiological profile of the RA patients. 3-The effect of SAS therapy on faecal counts of CL. Perfringens..

**Methods:**

Sixty patients with active RA were randomly allocated into 2 groups: - the SAS-treated group (40) and the control group (20). The following parameters were assessed, pain VAS, duration of EMS, hand grip strength, HAQ score, CRP, RF, titre, Faecal CL. Perfringens count, Radiological scores of hands and feet.

**Results:**

Improvement in the SAS group was significantly higher than in control group. After 12 weeks and onwards with regard to pain score, duration of EMS, HAQ score, ESR and CRP. Radiological damage was found to progress significantly in both groups, Faecal CL. perfringens count decreased significantly in the SAS group.

**Conclusions:**

SAS is effective in RA patients although could not halt radiological progression. But it can slow the progression of radiological damage, Faecal counts of CL. Perf. Were Reduced by SAS irrespective of therapeutic response suggesting that the anti-rheumatic Effect of SAS is not depend on its anti-bacterial activity.

*Key Words: Rheumatoid arthritis; Clostridia Perfringens; Sulphasalazine;  
Funding Agency: None*

**Medicine**

*Category: Clinical*

121

**Henoch-Schönlein's purpura in adults versus children/adolescents: a comparative study**

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**Introduction:**

The objective of this study was to assess the possible differences in etiological and clinical factors between children/adolescents (< or = 20 years) and adults (> 20 years) with Henoch- Schonlein purpura (HSP).

**Methods:**

A retrospective-cum-prospective study of consecutive patients with HSP who presented to our teaching hospital over 5 years. Patients were classified as having HSP according to the criteria proposed by Michel et al.

**Results:**

102 patients (43 of all patients being male and 59 female) were classified as having HSP; 20 of the patients were adults (mean age 32.1 +/-11.7 years) and 82 were children/adolescents (mean age 6.2 +/- 2.6 years). We were unable to identify any precipitating event in 40% of the adults and 37% of the children/adolescents. The frequency of previous drug treatment and of previous upper respiratory tract infection was similar in both groups. At symptom onset, palpable purpura was the chief clinical manifestation in both groups. However, renal involvement, in all its aspects, was more frequent and severe in adults. Adults also had a higher frequency of diarrhoea and leucocytosis, but a lower frequency of thrombocytosis. The frequency of joint manifestations, nausea, vomiting, malena and intussusception was equal in both groups. Adults required more aggressive therapy, and had a longer hospital stay (10.2 vs. 4.3 days). The outcome was relatively worse in adults, with complete recovery in 18 adults (90%) compared to 81 children/adolescents (98.8%) after a mean +/- SD follow up of 2.8 +/-1.7 and 2.4 +/-1.3 years, respectively.

**Conclusions:**

In conclusion the clinical picture of HSP in adults is similar to that in children, though the frequency and severity of renal involvement is greater in them. Adults also require more aggressive treatment and have a longer hospital stay.

*Key Words: Henoch-Schönlein's purpura.Clinical study;*

*Funding Agency: None*

**Medicine**

Category: Clinical

122

**Intravenous Alfacalcidol once weekly suppresses parathyroid hormone in haemodialysis patients**

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**Introduction:**

Oral and intravenous (IV) pulse therapies with vitamin D are effective in suppressing parathyroid hormone (PTH) secretion in haemodialysis (HD) patients with secondary hyperparathyroidism. This study was undertaken to evaluate IV administration of high dose of alfacalcidol once weekly in patient with high PTH with or without parathyroid adenomas.

**Methods:**

Eleven adult chronic HD patients with intact parathyroid hormone (iPTH) >88 pmol/L were selected for this prospective study. All patients were refractory to other regimens of vitamin D therapy. All patients were given a high dose of alfacalcidol IV once weekly at the end of dialysis session for 12 weeks. Alfacalcidol starting dose was 4 µg which was increased and/or decreased by 1µg per week according to serum corrected calcium (cCa) and phosphate (P) levels. Serum Ca, P, and Alkaline Phosphatase (ALP) levels were measured weekly and iPTH every 4 weeks. Parathyroid gland ultrasound and scan were done at the beginning and at the end of the study.

**Results:**

At 8 weeks iPTH level decreased significantly from 128.12±35.42 to 54.35±24.80 pmol/L (p=0.003), and at 12 weeks iPTH decreased to 40.39±26.67 pmol/L from baseline (p=0.003). ALP also decreased significantly at 8 weeks from 146.09±57.39IU/L at baseline to 111.33±49.42 IU/L (p=0.026), and at 12 weeks ALP decreased to 88.55±28.98 IU/L from baseline (p=0.003). Serum levels of cCa and P showed no significant rise during the study period. The mean weekly dose of alfacalcidol was 9.18±1.25 µg by the 6th week of the study period. At the end of the study, the maintenance dose was 7.27±2.87µg weekly. At the end of the study, Parathyroid adenomas disappeared in 2 patients.

**Conclusions:**

These results indicate that IV administration of high single weekly dose of alfacalcidol suppresses parathyroid hormone. A high once weekly dose of alfacalcidol did not cause significant increase in Ca or P. Alfacalcidol can be used as an alternative to surgical parathyroidectomy.

*Key Words: Alfacalcidol; Parathyroid hormone; Hemodialysis;*

*Funding Agency: None*

**Medicine**

*Category: Clinical*

123

**Cultural factors and patients' adherence to lifestyle measures in Kuwait**

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**Introduction:**

This study was undertaken to measure adherence, and barriers of compliance to lifestyle recommendations, among patients with high cardiovascular risk factors.

**Methods:**

Data are from 334 adult men and women with hypertension, diabetes mellitus type2, or both, who completed a routine clinic visit from six family practice centers. Trained staff used a structured questionnaire to obtain a detailed medical history, regarding exercise habits and barriers to adherence to diet and exercise programs. Clinical criteria assessed were height, weight, control of blood pressure and blood sugar.

**Results:**

From the study sample, 63.5% reported that they are not adhering to any diet regimen, 64.4% were not on regular exercise, and 90.4% were overweight and obese. The main barriers to adherence to diet were: unwillingness (48.6%), difficult to adhere to a diet different from their families (30.2%) and social gatherings (13.7%). On the other hand, the main barriers to adherence to exercise were: lack of time (39%), co-existing diseases (35.6%) and adverse weather conditions (27.8%). Factors interfering with adherence to lifestyle measures among the total sample were: traditional Kuwaiti food (79.9%), stresses (70.7%), fast food (54.5%), high frequency of social gatherings (59.6%), abundance of maids (54.1%) and excessive use of cars (83.8%).

**Conclusions:**

The majority of individuals in the sample was overweight, did not engage in recommended levels of physical activity, and did not follow dietary recommendations. Additional cultural and demographic variables need to be considered to improve adherence to lifestyle.

*Key Words: Patient adherence; Lifestyle measures; Hypertension;*

*Funding Agency: None*

## **Real-time LightCycler PCR for identification of Candida species**

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### **Introduction:**

Invasive fungal infections have become major causes of morbidity and mortality among immunocompromised patients. However, an early diagnosis of invasive candidiasis remains problematic and challenging. In addition, Candida species identification is essential to institute an early appropriate therapy. In this study, we have established a melting temperature analysis method for early detection and identification of Candida species using real-time polymerase chain reaction (PCR) methods by the LightCycler System.

### **Methods:**

Genomic DNA were isolated from standard strains of *C. albicans*, *C. glabrata*, *C. tropicalis*, *C. parapsilosis*, and *C. dubliniensis* using standard procedures. The isolated DNA were amplified in the LightCycler System by PCR and semi-nested PCR using Candida-genus as well as Candida species-specific primers, respectively and SYBR Green dye containing reaction mixtures according to the manufacturer's instructions. The real-time PCR products were analyzed for melting temperature using the program built-in within the LightCycler System.

### **Results:**

The melting temperature analysis of real-time PCR amplified DNA from various reference Candida species using genus-specific primers showed that *C. albicans* and *C. dubliniensis*, which can not be distinguished by the germ tube method, could be differentiated by real-time PCR. Furthermore, the differentiation between *C. glabrata* and *C. parapsilosis* was possible using nested PCR in real-time PCR. The species identification results using LightCycler are obtained in a single working day, which includes DNA isolation, real-time PCR and melting temperature analysis.

### **Conclusions:**

The melting temperature analysis using real-time PCR is a quick and promising method for the differentiation of clinically important Candida species.

*Key Words: Candida; Melting-curve analysis; Species identification;*  
*Funding Agency: Supported by Kuwait University grant MI04/05*

## **Candidemia in Kuwait: a ten-year study of species spectrum and antifungal susceptibility profile of *Candida* bloodstream isolates**

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### **Introduction:**

To study the species spectrum and antifungal susceptibility profile of bloodstream yeast isolates obtained during 1996-2005.

### **Methods:**

All the bloodstream yeast isolates were examined by germ-tube test. Isolates which were positive by germ tube test were provisionally identified as *C. albicans* or *C. dubliniensis*, and their identity was further confirmed by observing typical colonial and microscopic morphology on sunflower seed agar. The isolates which did not form germ tubes were tested for carbohydrate assimilation profile to determine their specific identity. Four antifungal agents, namely amphotericin B, fluconazole, 5-flucytosine, and voriconazole were tested by Etest. The susceptibility breakpoints were based on National Committee for Clinical Laboratory Standards (NCCLS) criteria or those published by reference laboratories, and were as follows: amphotericin B <1 µg/ml, fluconazole <32 µg/ml, 5-flucytosine <16 µg/ml, and voriconazole <1 µg/ml.

### **Results:**

In all, 597 bloodstream yeast isolates were identified. *Candida albicans* was the predominant species (40%), followed by *C. parapsilosis* (31%), *C. tropicalis* (12.7%), *C. glabrata* (4%), and other *Candida* species (12%). None of the isolates of *C. albicans*, *C. tropicalis*, and *C. glabrata* were resistant to amphotericin B. Of 214 isolates of *C. parapsilosis* tested, only 4 (1.8) exhibited MIC of > 1 µg/ml. Resistance to fluconazole was observed in 10 (3.8%) isolates of *C. albicans* and in 2 (5.8%) isolates of *C. glabrata*. Resistance to 5-flucytosine was observed in 2 (0.9%) isolates of *C. albicans*, 8 (8.8%) isolates of *C. tropicalis*, and 3 (1.5%) isolates of *C. parapsilosis*. All the isolates of *C. albicans*, *C. tropicalis*, and *C. parapsilosis* were susceptible to voriconazole.

### **Conclusions:**

*C. albicans* is the predominant species causing candidemia in Kuwait, followed by *C. parapsilosis*. Although fluconazole is widely used in clinical practice in Kuwait, resistance to this drug continues to remain low.

*Key Words: Candidemia; Antifungal susceptibility; Candida;*

*Funding Agency: This work was supported by Kuwait University Research grant No. [MPI 118]*

126

**Detection of *Aspergillus fumigatus* -specific DNA, (1-3)-beta-D-glucan, and galactomannan in serum and bronchoalveolar lavage specimens of experimentally infected rats**

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**Introduction:**

The aim of this study was to detect *Aspergillus fumigatus*-specific DNA by nested PCR (nPCR) in serum and bronchoalveolar lavage (BAL) specimens of experimentally infected rats and compare the results with (1-3)-beta-D-glucan (BDG) and galactomannan (GM) detection.

**Methods:**

Thirty Wistar rats, immunosuppressed with an intraperitoneal injection of cyclophosphamide (70 mg/kg) were infected with  $1 \times 10^6$  *A. fumigatus* conidia. The rats were sacrificed on day 1, 3, 5, 7 and 9 post-infection in groups of six each and their BAL, blood, and lungs were cultured.

**Results:**

The *A. fumigatus*-specific DNA, BDG and GM in serum and BAL were detected by nPCR, Fungitell kit and *Aspergillus Platelia* kit, respectively. Base line values were obtained by using sera from six healthy rats. Except the lungs, blood and BAL specimens of all the infected rats were negative for *A. fumigatus* culture. The BDG, GM and nPCR positivity in serum specimens was 80%, 76% and 63%, respectively. The sensitivity of GM and nPCR tests in BAL specimens was 76% and 70%, respectively.

**Conclusions:**

The data suggest that BDG and GM appear early in the course of infection, and have similar kinetics ( $r=0.483$ ,  $p=0.007$ ). Hence, their combined detection could be useful in the early diagnosis of invasive aspergillosis.

*Key Words: Aspergillus fumigatus; Galactomannan; (1-3)-beta-D-glucan;*

*Funding Agency: The study was supported by Kuwait University Research grant No. MI 04/02.*

**Microbiology and Immunology**

Category: Graduate MSc (Basic Science)

127

**Characterization of a lung model of infection for *Campylobacter jejuni***

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**Introduction:**

*Campylobacter jejuni* is a major foodborne pathogen that causes gastroenteritis. The infection manifests either as inflammatory diarrhea or watery diarrhea. Guillain Barré Syndrome is an important sequel. Many aspects of the pathogenesis and immune mechanisms remain obscure, due to the lack of a suitable animal model of infection. A mouse pulmonary model has been previously established for *C. jejuni*, but has not been characterized well. It was suggested that pro-inflammatory cytokines participate in the tissue response. This study was aimed at characterizing the mouse pulmonary model of *C. jejuni* infection for pathological lesions and cytokine responses in various organs.

**Methods:**

*C. jejuni* strain 81-176 was intranasally inoculated into BALB/c mice while control mice were inoculated with PBS. At days 1, 3 and 5 post-infection, the mice were sacrificed. Blood and organ homogenates (lung, spleen, liver, small and large intestines) were studied for bacteriological counts. Levels of the pro-inflammatory cytokines (TNF-alpha, IFN-gamma, IL1-beta), and the anti-inflammatory cytokines (IL4 and IL10) were estimated by ELISA. Histopathological evaluation of lung lesions was performed by standard staining methods.

**Results:**

At 72-120 h post-infection, histological examination of the lungs revealed focal peribronchial inflammation, aggregates of macrophages, lymphocytes, and neutrophils, and bronchopneumonia. Control mice had interstitial expansion only. *C. jejuni* was isolated from blood and all organs at 24 h. Thereafter, it was recovered from the intestine only. Preliminary cytokine results indicated that different organs respond by producing different trends of pro-inflammatory versus anti-inflammatory cytokines during the infection process.

**Conclusions:**

*C. jejuni* infection resulted in pneumonia by day three of infection. The lung model suggested the inflammatory and systemic nature of the infection, with a predilection for the intestine.

*Key Words: Campylobacter jejuni; Cytokines; Lung model;*

*Funding Agency: College of Graduate Studies, Kuwait University*

128

## **Identification of the elusive factor of *Campylobacter jejuni* that cross-reacts with cholera toxin**

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<sup>2</sup>Department of Microbiology, Monash University, Australia

### **Introduction:**

*Campylobacter jejuni* causes diarrhoea. It is reported to produce a toxin similar to cholera toxin (CT) of *Vibrio cholerae* (CTLT). CTLT is thought to contribute to watery diarrhoea. There is controversy on the existence of CTLT. A definite proof can be obtained by cloning its gene (ctlT) and studying the functional activity of the expressed protein. We investigated the nature of CTLT.

### **Methods:**

Reference cultures reportedly producing CTLT, clinical isolates of *C. jejuni* and fully genome-sequenced strain, NCTC 11168 were studied. They were grown in recommended broth for CTLT production. Filter-sterilised supernatant from culture was tested for functional CTLT by Chinese hamster ovary (CHO) cell assay (positive, if elongation of =50% cells in monolayer) and immunoreactive CTLT against rabbit antibody to CT, by Western blot. CT - cross-reactive protein band was sequenced. The outer membrane protein of *C. jejuni*, PorA was expressed in fusion with glutathione-S-transferase using the vector pGEX-4T-1 (Amersham).

### **Results:**

All isolates tested negative for CTLT by CHO cell assay. All isolates including NCTC 11168 which does not have the ctlT gene showed two bands (78.6 kDa and 53 kDa) on Western blot with rabbit antibody to CT. By screening with normal rabbit serum, the 53 kDa band only was shown to be specific. The N-terminal amino acid sequence of the specific 53 kDa band from NCTC 11168 revealed that it is porA.

### **Conclusions:**

All strains tested were negative for functional CTLT production using CHO cell assay. A 53 kDa protein, which is PorA from all strains cross-reacted with antibody to CT on Western blot. Thus, cross-reactivity of PorA with CT leads to the erroneous conclusion that *C. jejuni* produces a biologically active CTLT. PorA is non-reactive for CHO cells.

*Key Words: Campylobacter jejuni; Cholera toxin; PorA;*

*Funding Agency: Kuwait University research grant (MI02/01)*

## **Oral carriage of periodontal pathogens in healthy Kuwaiti children and adolescents.**

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### **Introduction:**

There is a strong association between destructive periodontitis and *Actinobacillus actinomycetemcomitans*, *Tannerella forsythensis* and *Porphyromonas gingivalis* and to a lesser extent *Prevotella intermedia* and *Prevotella nigrescens*. Unlike most oral anaerobes, these periodontal pathogens do not colonize the oral cavity in early childhood, but only later in life, if ever. The objective of this study was to determine their carriage in the oral cavity of generally healthy children and to establish the favorable age period for their stable colonization.

### **Methods:**

Plaque and/or saliva samples were obtained from 140 children, divided into three age groups: 6-9 (n=60), 10-12 (n=40) and 13-15 years (n=40). The samples were subjected to molecular analyses based on multiplex PCR of the genes encoding the 16S rRNA (16S rDNA) as well as cultural techniques, including strict anaerobic conditions.

### **Results:**

In the age group 6-9 years, *P. nigrescens* was the most prominent in both plaque and saliva samples of 41.7% and 31.7% children, respectively, followed by *P. intermedia* (18.3 and 6.7%), *T. forsythensis* (18.3 and 5%), and *A. actinomycetemcomitans* (16.7 and 31.7%). *P. gingivalis* was detected in only one (1.7%) saliva sample and in None of the plaque samples. In the saliva of the age group 10-12 years, *P. nigrescens* was detected in 62.5%, followed by *A. actinomycetemcomitans* in 27.5%, *T. forsythensis* in 17.5%, *P. intermedia* in 15% and *P. gingivalis* in 2.5%. Also in the older age group, 13-15 years, the salivary carriage rates were essentially similar to the age group 10-12 years. The PCR technique was more sensitive than the cultural methods.

### **Conclusions:**

These target pathogens were detectable in the oral cavity right from the period of permanent dentition. Except for *P. gingivalis*, the other periodontal pathogens colonize the oral cavity of a large number of young healthy individuals in early childhood onwards.

*Key Words: Oral carriage; periodontal pathogens; Childhood;*

*Funding Agency: Kuwait University Grant No. DS 03/02*

## **The Impact of the Antibiotic Sensitivity Pattern of Salmonella on the Treatment of Salmonellosis in Kuwait**

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### **Introduction:**

Salmonellosis is a term refers to infections caused by Salmonella species. It involves two broad clinical syndromes. The prolonged bacteraemic illnesses of typhoid and paratyphoid (enteric) fever are caused by exclusively human pathogens, Salmonella typhi and Salmonella paratyphi A, B, and C. The acute diarrhoeal illnesses caused by the animal adapted salmonella serotypes. Enteric infections caused by non-typhoid Salmonellae are usually self-limiting. Antibiotic therapy is essential for enteric fever and invasive salmonellosis. Since 1989 the spread of multi-drug resistant strains, MDR (i.e., simultaneously resistant to chloramphenicol, co-trimoxazole and ampicillin) of S. typhi and non-typhoid Salmonellae in many areas of the world has become a major problem. Third generation cephalosporins and quinolones have proved to be effective alternatives. They are up to 400 times more active in vitro than ampicillin or chloramphenicol.

### **Methods:**

All strains of Salmonella sp isolated from patients in all general hospitals during 2004 were sent to the Public Health Laboratory to confirm the identification and for sensitivity testing. Identification was done by VITEK and by serotyping. Sensitivity testing was done by the disc diffusion method.

### **Results:**

434 strains of Salmonella sp. were tested. 379 strains were non-typhoid Salmonellae, 41 were S. typhi, 13 were S. paratyphi A, and 1 was S. paratyphi B. 3.2%, and 48.8% of non-typhoid Salmonellae, and S. typhi were MDR, respectively. 76.8%, 19.5%, and 15.4% of non-typhoid Salmonellae, S. typhi, and S. paratyphi A were ciprofloxacin sensitive, respectively. 97.1%, 100%, and 100% of non-typhoid Salmonellae, S. typhi, and S. paratyphi A were ceftriaxone sensitive, respectively.

### **Conclusions:**

Resistant strains are emerging. Ciprofloxacin may not be used for empirical treatment of invasive adult salmonellosis, and ceftriaxone could be the drug of choice.

*Key Words: Salmonellosis; Ciprofloxacin; Ceftriaxone;*

*Funding Agency: None*

131

## **Evaluation of Cepheid IDI- methicillin- resistant Staphylococcus aureus (MRSA) assay for direct detection of MRSA from nasal swabs**

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### **Introduction:**

Treatment of Staphylococcus aureus infections has become a real challenge with emergence of methicillin- resistant strains. Early screening for methicillin-resistant Staphylococcus aureus (MRSA) nasal carriage can be part of an effective infection control programme for MRSA. Objectives: To evaluate a new technique (Cepheid IDI-MRSA assay, USA) using real time PCR for direct detection of MRSA from nasal and other swabs against the conventional culture techniques.

### **Methods:**

Nasal swabs from documented cases of MRSA and random cases for MRSA screening are included using Copan Venturi Transystem swabs (Copan, Italy). Documented MRSA swabs other than nasal swabs such as wounds, axilla and groin are also included. DNA extraction is done using Cepheid Smart Cycler II (USA). A run with IDI-MRSA assay protocol is then created with positive and negative assay run controls. The clinical specimens are cultured using conventional techniques and read twice; in the first 24 hours and then after 48 hours.

### **Results:**

One hundred and fifty four clinical specimens are included in the evaluation. Using the IDI- MRSA 26 out of 34 (77%) cases of documented MRSA turned positive while the conventional culture method failed to diagnose 19 of those cases within 24 hours but turned to be positive in 6 of the 19 after 48 hours. Seven out of 8 specimens were negative by both IDI-MRSA and culture method. In the random cases, out of 67 specimens, 63 (94%) were negative by both methods in the first 24 hours ( true negative). In MRSA documented specimens other than nasal swabs 17 of 34 cases were positive by IDI-MRSA and only 11 of them were positive by culture method in the first 24 hours.

### **Conclusions:**

IDI- MRSA is a rapid test for the early detection of nasal carriage of MRSA. The sensitivity and specificity of the new method is 93 and 94% respectively.

*Key Words: Methicillin- Resistant Staphylococcus Aureus; Direct detection; Nasal;*

*Funding Agency: None*

**132**

**Influence of antibiotic exposure on cell-bound and cell-free *Clostridium difficile* cytotoxin production**

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<sup>2</sup>Regional Laboratory of Virology, ANTSZ, Szabadsag, Hungary and <sup>3</sup>Department of Microbiology, Cardiff University, Cardiff, UK.

**Introduction:**

*Clostridium difficile* is the main causative agent of hospital-acquired diarrhoea, a toxin-mediated disease which is driven by exposure to antibiotics. The objective of this study is to quantitatively determine the effects of different concentrations of antibiotics on cell-bound and cell-free cytotoxin B production.

**Methods:**

Ampicillin, cefotaxime, clindamycin, metronidazole and vancomycin were tested. These antibiotics are either incriminated as trigger drugs or used for its therapy. Toxigenic strains, isolated from clinical cases, and a non-toxigenic strain (negative control) were used for the study. The strains were grown in liver broth and brain heart infusion containing MICs and sub-MICs of the 5 antibiotics. Filtered cell-free supernatant and supernatant of sonicated cells were tested for cytotoxicity activity (CA) on Vero cell lines.

**Results:**

Cefotaxime induced more cell-free cytotoxin than the cell-bound cytotoxin at the same MICs and sub-MICs. Induction of cell-free cytotoxin by ampicillin was 18 times higher than the control, reaching maximum level between ½ and ¼ MICs compared with cell-bound cytotoxin at 1/8 MIC. On the other hand, clindamycin induced cell-free cytotoxin in a normal distribution fashion; while the cell-bound cytotoxin was linear and at higher levels. Metronidazole caused an 8.8-fold and 11-fold increase of cell-free cytotoxin at MIC and ¼MIC, respectively compared to the control. It also induced a higher cell-bound CA at 23times the control at 1/32 MIC. Exposure to vancomycin increased the cell-bound cytotoxin from 15 to 38-fold at the MIC to 1/64MIC. It induced high cell-free CA at the MIC, 24-fold, then increased in a gentle linear way.

**Conclusions:**

After exposure of *C difficile* to both antibiotics that drive CDAD as well as those used in its therapy appreciable cell-free and cell-bound cytotoxic activities are produced. The highest activities occur mostly at sub-inhibitory concentrations.

*Key Words: Clostridium difficile; Antibiotics; Cytotoxin;*

*Funding Agency: Unfunded*

133

### **Antibiotic susceptibility pattern of clinically significant bacterial isolates in 2004/2005 at Mubarak Al Kabir hospital**

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#### **Introduction:**

Proper antibiotic use reduces mortality and morbidity associated with infectious diseases. However, antibiotic resistance continues to plague antimicrobial chemotherapy of infectious diseases. Although in vitro and in vivo episodes of antibiotic resistance may not correlated well, in vitro antibiotic resistance should not be ignored during patient therapy with antibiotic. The aim of the study is to investigate any trend in the antibiotic susceptibility pattern of clinically significant isolates obtained from Mubarak Al Kabir Hospital patients in 2004/2005.

#### **Methods:**

All clinically significant gram-positive (GPB) and gram-negative bacteria (GNB) were included. Bacteria were identified by automated VITEK-2 machine using GPB and GNB cards. Antibiotic susceptibility testing was done by VITEK-2 machine and supplemented with manual E test whenever applicable.

#### **Results:**

A total of 1524 and 2151 GPB were isolated in 2004 and 2005, respectively, compared with 2629 and 3901 GNB isolated in 2004 and 2005, respectively. Significantly, *Escherichia coli* resistance to cefuroxime and cefotaxime increased from 22 to 41% and 11 to 35% in 2004 and 2005, respectively. There were also notable increases in the resistance rates of *Pseudomonas aeruginosa* to ceftazidime (16 vs 26%), ciprofloxacin (16 vs 28%), imipenem (10 vs 24%) and piperacillin/tazobactam (25 vs 33%) in 2004 vs 2005, respectively. Appreciable higher resistance rates were observed with *Citrobacter* spp., and other problematic hospital-acquired bacteria in 2005 than in 2004. MRSA resistance to erythromycin and fusidic acid increased from 75 to 84% and 59 to 77%, respectively in 2004 and 2005. Penicillin and cefotaxime resistance in *Streptococcus pneumoniae* remained stable in 2005.

#### **Conclusions:**

The perceived increase in the resistance rates of the target bacteria to commonly used antibiotics in our hospital is unacceptably high and alarming. It calls for a national surveillance and timely intervention

*Key Words: Antibiotic resistance; Bacterial isolates.*

*Funding Agency: None*

***Microbiology and Immunology***

*Category: Clinical*

**134**

**Septicaemia in a Burn Unit: A three- years prospective study**

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Microbiology Division, Laboratory Department, Ibn Sina Hospital

**Introduction:**

The major challenge for a burn team is infection which is known to cause over 50% of burn deaths. Objective: This prospective study was carried out to determine the number and type of septic episodes in a burn unit over 3 years period, to evaluate the correlation between the development of septicemia and various risk factors, and to determine the antimicrobial susceptibility pattern of the bacterial isolates and their relation to the current antibiotic policy.

**Methods:**

All patients with significant positive blood culture admitted to the Burn Unit in IBN SINA Hospital in Kuwait from January 2003- till December 2005 was included in the study. Both the number and type of septic episode were determined using Vitek II. Three risk factors were determined which were the percentage of burn, intensive care unit (ICU) stay and timing of grafting. The antimicrobial susceptibility pattern of the isolates were also determined using Vitek II.

**Results:**

Out of 4165 patients admitted to the Burn Center over the 3 years period, 97 (2.3%) patients developed septicemia with a total number of 158 septic episodes. Out of these episodes 73(46.2%), 75(47.5%) and 10(6.3%) were Gram-positive, Gram-negative and fungal sepsis respectively. Fifty-three percent of the septic episodes were in patients admitted to ICU with direct relationship to the percentage of burn. Resistance to third generation cephalosporins predominated in Gram-negative bacteria and dropped sharply over the 3 years period. All Gram-positive isolates were uniformly susceptible to glycopeptides and linezolid

**Conclusions:**

Incidence of septicemia in our Burn unit during the study period was low with significant drop in both numbers of septic episodes and antimicrobial resistance among bacterial isolates over the 3-year period.

*Key Words: Septicaemia; Burns; Antibiotics;*

*Funding Agency: None*

## **Distribution of erm Determinants in Methicillin-Resistant and - Susceptible Staphylococci**

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### **Introduction:**

Erythromycin resistance in staphylococci can be due to target modification, enzymatic inactivation or active efflux of the antibiotic. This study was conducted to investigate the distribution of erm genes in erythromycin-resistant staphylococci isolated from Kuwait hospitals.

### **Methods:**

A total of 101 staphylococci consisting of 50 methicillin-resistant *S. aureus* (MRSA), 25 methicillin-susceptible *S. aureus* (MSSA) and 26 coagulase – negative staphylococci (CNS) were studied for constitutive or inducible clindamycin resistance using the disk approximation method (D-test). Minimum inhibitory concentrations (MIC) for erythromycin, clindamycin, roxythromycin and spectinomycin were determined with Etest strips according to manufacturer's instructions. The presence of ermA, ermB, ermC, msrA, linA and spectinomycin adenylyltransferase, ant(9) was detected in PCR experiments using synthetic primers with appropriate controls.

### **Results:**

Fifty-six (55.4%) isolates (30 MRSA, 12 MSSA and 14 CNS) expressed constitutive resistance to erythromycin and clindamycin whereas 30 (29.7%) isolates (17 MRSA, 11 MSSA, 2 CNS) expressed inducible clindamycin resistance. Four CNS isolates were erythromycin-resistant but clindamycin-susceptible. Fifty (49.5%) isolates (39 MRSA, 10 MSSA and 1 CNS) contained ermA; 35 (34.7%) isolates (8 MRSA, 11 MSSA, 16 CNS) contained ermC; five (4.9%) isolates (1 MRSA, 4 CNS) contained msrA. The ant(9) gene was detected in 22 MRSA, 3 MSSA and 1 CNS isolates with spectinomycin MIC greater than 1024mg/L. Twenty-one (20.8%) isolates (17 MRSA, 3 MSSA and 1 CNS) contained genes for both ermA and ant(9) enzymes and five MRSA isolates were positive for both ermC and ant(9) genes. None of the isolates contained genes for ermB and linA. No correlation was established for multiple erm genes carriage and high MIC values.

### **Conclusions:**

This study demonstrated that ermA was the most common erm determinant in MRSA from Kuwait. In contrast, ermC was more common in MSSA and CNS. Although genes for msrA were rare, they were detected mostly in CNS and in only one MRSA isolate.

*Key Words:* staphylococci; erm genes

*Funding Agency:* Kuwait University Research Administration Grant MI 03/01

136

## **Occurrence of antibiotic-resistant oral anaerobes in healthy versus disabled children.**

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### **Introduction:**

To compare the prevalence and antibiotic susceptibility profiles of anaerobic bacteria isolated from oral cavity of healthy children (HC) and children with disabilities (DC) in Kuwait.

### **Methods:**

Plaque samples were collected from 102 HC and 102 DC from tooth and tongue surfaces, cultured on appropriate media for isolation of anaerobic bacteria and representative colonies were identified to species level using API 20A test kits. Antibiotic susceptibility testing was performed by determining the MICs of 9 antibiotics (amoxicillin/clavulanate, cefoxitin, clindamycin, imipenem, metronidazole, piperacillin, tazobactam, tetracycline and vancomycin) using E-test strips.

### **Results:**

Results were interpreted according to NCCLS interpretive criteria and subjected to SPSS statistical analysis for comparison. Result: Total of 190 (41.8%) and 265 (58.2%) anaerobes were isolated from HC and DC respectively. *Prevotella* spp. were predominant in both groups (35% in HC and 36% in DC) followed by *Fusobacterium* spp. (25% and 24% respectively). Among HC, *Prevotella* spp. showed highest resistance to amoxicillin/clavulanate (26%), while among DC it was with piperacillin (13%). *Fusobacterium* spp. from HC showed highest resistance to tetracycline (8%) while those from DC showed resistance to amoxicillin/clavulanate and piperacillin (8%). *Bacteriodes* spp. from the HC was resistant to piperacillin (12%); whilst only 7% were resistant to clindamycin among DC. In case of *Porphyromonas* spp. 14% were resistant to amoxicillin/clavulanate among the DC and 5% were resistant to tetracycline among the HC. Gram positive anaerobes isolated showed no resistance to any of the tested antibiotic. The mean percentage of resistance by the total anaerobes was towards amoxicillin in HC (4%) and DC (5%) children ( $P > 0.946$ ).

### **Conclusions:**

The data showed a difference in the level of resistance of oral anaerobic bacteria isolated from healthy and disabled children to some commonly used antibiotics in dentistry.

*Key Words: Antibiotic resistance; Anaerobes; Childhood;*

*Funding Agency: Kuwait University Research Grant No. DP01/01*

137

## **A ‘new variant’ of coxsackievirus A7 identified to be frequently associated with disease in children in Kuwait**

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### **Introduction:**

Coxsackievirus A7 (CA7) infrequently causes disease in humans worldwide. We have isolated an enterovirus which was genotyped as coxsackievirus A7 causing non-specific febrile illness in Kuwait in the summer 2003. We have therefore initiated a study to investigate the prevalence of this virus in enteroviral diseases in Kuwait.

### **Methods:**

Suspected enteroviral disease cases admitted to different hospitals from 2003-2005 in Kuwait were investigated using semi-nested RT-PCR. The presence of the enterovirus was confirmed using an enterovirus specific probe. The enteroviruses were then genotyped by sequencing the 5'UTR and the VP4 coding region. The sequences were then analyzed by BLAST, ClustalW and phylogenetic analysis package (PHYLIP).

### **Results:**

CA7 accounted for 43% (15 of 34) of the enteroviruses identified in febrile illness. Of the 22% (6 of 28) of enteroviral myositis investigated, CA7 was detected in 66% (4 of 6) of the cases. Furthermore, 17% (25 of 147) of enteroviral CNS disease cases were due to CA7. Phylogenetic analysis showed that the 5'UTR of the CA7 isolate clustered with the prototype CA7 (Parker strain) whereas the VP4 coding region clustered with enterovirus 71. Therefore the CA7 isolate might be an intertypic recombinant of CA7 and enterovirus 71.

### **Conclusions:**

Although CA7 has not been reported previously to cause frequent illness, it appears to be an emerging enterovirus causing frequent disease in Kuwait. Phylogenetic analysis revealed that the CA7 isolate might have emerged due to intertypic recombination with enterovirus 71. Such a recombination event might have imparted this isolate the potential to emerge as an important disease-causing enterovirus. We therefore aim to characterize the virus by fully sequencing the genome of this variant.

*Key Words: Coxsackie virus A7; Recombination; Enteroviral diseases;*  
*Funding Agency: None*

138

### **Antibodies to pp150 and pp28 cytomegalovirus antigens protect patients from infection and disease after kidney transplantation.**

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#### **Introduction:**

One of the most important and common complications following organ transplantation is infection with Cytomegalovirus (CMV). The immunological factors, that confer protection against infection and disease due to CMV, are not well characterized. This study aims at identifying antibodies to those antigens which contribute to the protection against CMV infection and/or disease.

#### **Methods:**

In this study 77 kidney recipients (KR) were enrolled. All had CMV antibody due to previous infection. The virus is most probably present latently in their body. However, the nature and type of antibody to CMV is not known. KR were followed up for a period of 6 months after transplantation for the development of active CMV infections by the antigenemia assay. The antibody responses before and after transplantation to 5 CMV-related peptides antigens; pp65, gB, pp150, pp28 & pp38 were investigated by ELISA and the results were correlated with the development of CMV infections/disease.

#### **Results:**

During the follow-up period 23 (30%) of the 77 KR had an active CMV infection. Among these CMV infected KR, there was only one patient who had antibodies to both pp150 and pp28 antigens. In contrast, 26 of 54 (48%) KR who did not develop CMV infection/disease, had such antibodies ( $p < 0.0001$ ). There was, however, no significant difference in the antibody responses to the other three CMV peptide antigens between the infected and non-infected KR ( $p > 0.05$ )

#### **Conclusions:**

The findings of this study suggest that antibodies against pp150 and pp28 antigens may play an important and protective role against the reactivation (and probably primary infection) of CMV infections after transplantation. These results also suggest that patients lack antibodies to pp 150 and pp 28 prior to transplantation are probably at "high risk" of developing CMV infection and hence have to be closely monitored.

*Key Words: kidney transplantation; Cytomegalovirus-peptides; Humoral immunity;*

*Funding Agency: Kuwait University, Project No. MI 03/02*

**139**

**Association of Parvovirus B19 infection with clinically isolated symptoms**

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**Introduction:**

Parvovirus B19 (B19) is the main cause of erythema infectiosum in children. The virus may also be associated with a wide spectrum of clinical symptoms, such as arthropathy, anaemia, myocarditis and hepatitis. The association between B19 and these diseases has not been investigated in Kuwait. The aim of the study was to investigate the association between B19 infection and the development of clinically isolated symptoms with unknown origin.

**Methods:**

The case-control study included 118 serum samples obtained from patients suffering from isolated fever (33 children, 8 adults), rash (11 children, 6 adults), anaemia (15 children, 13 adults), or arthropathy (14 children, 18 adults), and 121 control subjects (75 children, 46 adults). All these samples have been previously tested negative for cytomegalovirus, Epstein-Barr virus, human herpes virus type 6, rubella virus, measles virus, adenoviruses, and enteroviruses. The presence of B19 infection in serum samples was investigated by detection of B19 DNA using semi-nested PCR.

**Results:**

B19 DNA has been detected in 21 (17.8%) out of 118 patients with clinically isolated symptoms, and 4 (3.3%) out of 121 control subjects (odds ratio, OR = 6.4; 95% CL, 1.9-22.9). The prevalence of B19 infection was significantly higher in children with symptoms (23.3%) than children without symptoms (1.3%; OR = 22.5; 95% CL, 3-466.4;  $p < 0.001$ ). The B19 infection frequencies in children with respect to clinical symptoms were as following: fever (24.2%,  $p < 0.001$ ), rash (27.3%,  $p = 0.006$ ), anaemia (20%,  $p = 0.01$ ), and arthropathy (28.6%,  $p = 0.002$ ). The B19 infection frequencies in adults with respect to clinical symptoms were as following: fever (12.5%,  $p = 0.5$ ), rash (0%), anaemia (38.5%,  $p = 0.01$ ), and arthropathy (0%).

**Conclusions:**

Our results suggest that B19 infection should be considered in the differential diagnosis of clinically isolated symptoms, especially if one or more of these symptoms occurred in children.

*Key Words: Parvovirus B19; Diagnosis; Prevalence;*

*Funding Agency: None*

### **HCV infection as risk factor for diabetes mellitus**

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#### **Introduction:**

A relationship between Hepatitis C virus (HCV) infection and the development of type 2 diabetes (T2D) has been recently reported in several previous studies. This association between HCV infection and glucose intolerance (GI) has not been investigated in Kuwait. The aim of this study was to determine whether or not HCV infection is a risk factor for the development of GI in patients living in Kuwait.

#### **Methods:**

A total of 217 HCV-positive patients, 125 HCV-negative patients with liver disease, 188 patients with T2D, 102 patients with type 1 diabetes (T1D), and 189 control subjects, have been enrolled for this study. The presence of diabetes was ascertained by using American Diabetes Association guidelines based on fasting plasma glucose measurement. Presence of HCV infection was assessed by testing for serum HCV-specific antibodies and HCV RNA.

#### **Results:**

The prevalence of GI was higher in the HCV-infected patients than in HCV-negative patients with liver disease (41.9% versus 21.6% respectively,  $p < 0.001$ ). Logistic regression showed that age was the only independent predictor for GI, and that GI occurred more often in Kuwaiti HCV-infected patients aged 50 or more (adjusted OR = 3.9; 95% CL, 1.2-12.3). After adjustment for these factors and for gender, HCV-positive patients were more than two times more likely to have GI than patients with other liver disease (adjusted OR = 2.2; 95% CL, 1.2-3.9). Ten (5.3%) out of 188 T2D patients had evidence of past or ongoing HCV infection compared to 3 (1.3%) out of 232 control subjects including T1D patients (adjusted OR= 5.1; 95% CL, 1.2-21.5,  $p < 0.05$ ).

#### **Conclusions:**

This is the first report showing that HCV infection is an important risk factor for the development of glucose intolerance and type 2 diabetes in Kuwait.

*Key Words: Diabetes; Hepatitis C Virus; Liver Disease;*

*Funding Agency: College of Graduate Studies, Kuwait University, Grant No. 204121459*

**Microbiology and Immunology**

Category: Graduate MSc (Basic Science)

141

**Genotypes of rotaviruses circulating in Kuwait. A preliminary study.**

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**Introduction:**

Before incorporating rotavirus vaccine into the childhood vaccination program in Kuwait, it is essential to identify the rotavirus genotypes causing severe gastroenteritis among children. Knowing the pattern of the circulating genotypes gives the basis for selecting the best possible vaccine formulation to be included into the vaccination schedule of children. The study aimed at genotyping rotavirus strains in samples of children admitted to hospitals with severe diarrhea.

**Methods:**

Samples of 33 children (< 5 years old) admitted with severe diarrhea were screened for rotaviruses by an ELISA kit. Positive samples were processed for viral nucleic acid extraction and a modified version of RT-PCR developed in the Virology Unit was used for determining the genotypes. This assay identifies the 4 most common genotypes of human rotaviruses (G1- G4).

**Results:**

Of the 33 stool samples, ELISA detected the rotavirus in 18 of them indicating that in nearly half of the children with diarrhea, rotavirus was the cause. By the RT-PCR assay, 17 of the ELISA positive samples could be genotyped. Fourteen of them were G1, one was G2, one G4, and one sample contained a mixture of G1 and G2. In one of the ELISA positive rotavirus samples genotyping could not be done.

**Conclusions:**

The fact that half of the children suffered from rotavirus infection underlines the importance of rotavirus infection in children less than 5 years of age in Kuwait. According to these preliminary results, majority of severe rotavirus diarrhea cases are caused by genotype G1. This is important in view of the vaccine (Rotarix) planned to be introduced in Kuwait. It seems to be an appropriate choice since it is based on the live, attenuated, human G1 genotype. Anyhow, it remains to be seen whether this vaccine gives protection against other type of rotaviruses causing diarrhea in Kuwait.

*Key Words: Rotavirus diarrhea; Genotype; Vaccination;*

*Funding Agency: College of Graduate Studies, Grant No: 202122153 and Office of the Vice Rector for Research, Grant No: MK01/04, Kuwait University*

142

## **Cytomegalovirus (CMV) gB1 and gH1 genotypes are dominant and cause more severe disease among renal transplant patients in Kuwait**

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### **Introduction:**

Cytomegalovirus (CMV) infection is a major cause of morbidity and mortality in kidney transplant recipients and is associated with an immunosuppressive state and allograft rejection. Viral strain variation may affect the outcome of CMV infection. Both gB and gH glycoproteins are key targets for the neutralizing antibodies and are involved in viral entry into cells suggesting that these genetic variations could affect the viral pathogenicity and clinical outcome in immunocompromised patients. This study focuses on studying the frequency and possible role of the different CMV gB and gH genotypes in the development of disease among kidney transplant patients in Kuwait.

### **Methods:**

Restriction Fragment Length Polymorphism technique (RFLP) was used for the identification of different of gB and gH genotypes of CMV among kidney transplant patients. A region of high sequence variability in gB (UL-55) and gH (UL-75) genes were amplified by PCR and then treated with different restrictions enzymes. Different gB and gH genotypes were identified according to the restriction patterns.

### **Results:**

Among 42 kidney transplant patients investigated, CMV gB I genotype was more frequently found among both symptomatic and asymptomatic patients than other gB genotypes ( $P>0.05$ ). Furthermore, gH I genotype was more frequently found among both symptomatic and asymptomatic patients than gH II genotype ( $P>0.05$ ). However, there was significant differences in the frequency of gH I and gH II genotype among symptomatic as compared with asymptomatic patients ( $P=0.04$ ,  $P=0.04$ , respectively). In addition, both gB I and gH I genotypes were significantly more associated with the development of systemic CMV disease than the other genotypes.

### **Conclusions:**

Our data suggests that certain CMV genotypes are more frequently found than other genotypes among kidney transplant patients and both gB and gH genotypes can indeed influence the clinical outcome of CMV infection in kidney transplant patients

*Key Words: Cytomegalovirus; Genotype; Restriction Fragment Length Polymorphism technique; Funding Agency: Research projects grants YM 04/02 and College of Graduate Studies*

143

## **Does cytomegalovirus (CMV) develop resistance following antiviral prophylaxis and treatment in renal transplant patients in Kuwait?**

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### **Introduction:**

Ganciclovir is currently the drug of choice for the prevention and treatment of cytomegalovirus (CMV) disease, and its use has led to a decline in CMV disease and associated morbidity in solid organ transplant recipients. However, with the advent of widespread and prolonged use of oral ganciclovir for CMV prophylaxis and the use of immunosuppressive drugs, ganciclovir-resistant CMV mutants are emerging and are associated with disease progression. Mutations in UL97 and UL54 of CMV confer ganciclovir resistance to CMV. In this study, we investigated the presence of drug resistant mutants of CMV in kidney transplant patients given ganciclovir whether prophylactically, pre-emptively or therapeutically.

### **Methods:**

Sequencing of both CMV UL97 and UL54 genes was performed to detect the presence of CMV antiviral resistance in patients who received ganciclovir and had prolonged detectable CMV DNA in their blood during antiviral treatment. Genotypic analysis of CMV antiviral resistance was performed by amplifying both UL97 and UL54 genes and then analyzed by CEQ 8000 Genetic Analysis System DNA sequencer (Beckman Coulter). Blast analysis software was used to analysis and alignment of the sequences obtained from the automated sequencer with the sequences of wild type CMV strains in the Gene bank to identify any of the known mutations in UL97 or UL54 genes.

### **Results:**

Sequencing results showed no mutations in either UL97 or UL54 gene of CMV and therefore the CMV strains in kidney transplant patients who received ganciclovir either prophylactically, pre-emptively or therapeutically were from the wild type.

### **Conclusions:**

Our results suggests that CMV management and immunosuppression protocols for kidney transplant patients followed in the Organ transplant Centre, Kuwait, is very effective in reducing the opportunity of developing CMV antiviral resistance.

*Key Words: Cytomegalovirus; Ganciclovir; Drug resistance;*

*Funding Agency: Research projects grants YM 04/02 and College of Graduate Studies*

144

### **Genotype D hepatitis B virus is associated with severe hepatic damage among hepatitis B virus chronically-infected patients in Kuwait**

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#### **Introduction:**

There is growing evidence that HBV genotypes may play some role in causing different disease profiles in chronic hepatitis B (CHB). Therefore, we aimed to investigate the association of viral genotype and the development of severe hepatic damage among Kuwaiti CHB patients.

#### **Methods:**

Sixty-four CHB patients were enrolled in this study. The age, LFTs, HBeAg and anti-HBe, histology was all analyzed for each patient. HBV DNA was detected in all 64 isolates. HBV genotype, serotype and YMDD variants were determined for the isolates by using PCR and sequencing analysis of the HBV pol gene including the YMDD locus. Sequences of local isolates were compared with HBV strains in the GenBank.

#### **Results:**

Of the 64 CHB patients, 86% of the strains were genotype D/ayw, followed by 6.25% genotype A/adw. Interestingly, mixed genotypes (D+F, D+A) and C/D hybrid were observed among the local isolates. Male ratio was twice as that for female. Genotype D-infected patients were anti-HBe positive significantly more and had higher ALT levels ( $P < 0.05$ ). Furthermore, rtM204 I/V identified in 4/64 HBV strains tested; 3 patients were on lamivudine for 3-5 yrs and the remaining did not receive any treatment.

#### **Conclusions:**

The predominance of genotype D/ayw coincided with the HBV genotypes expected from the local population. Infection with genotype D maybe associated with severe hepatic damage. However, occurrence of heterogeneous populations in clinically local samples indicates that HBV exists as a quasispecies. With regards to disease presentation at the commencement of treatment, YVDD and YIDD types tended to have similar findings with respect to age and histology.

*Key Words: Chronic hepatitis B virus infection; YMDD locus; Severe hepatic damage;*

*Funding Agency: Research project grants YM02/03 and the College of Graduate studies*

145

## **Respiratory syncytial virus (RSV) is the major cause of acute respiratory disease in Kuwait**

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### **Introduction:**

Acute respiratory Disease (ARD) is the leading causes of morbidity and mortality in children. Recently, we have established a sensitive and specific multiplex RT-PCR (MRT-PCR) assay for diagnosing ARD caused by nine common respiratory viruses which include; respiratory syncytial virus (RSV), influenza A and B (Flu A, B), parainfluenza viruses types 1,3 (PIV1,3), adenoviruses (AdV), human rhinoviruses (HRV), and human coronaviruses (HCoV)-OC43, - 229E..

### **Methods:**

Respiratory specimens were collected from 150 patients presented with lower respiratory tract infections (LRTI) and were then investigated using MRT-PCR for the presence of nine respiratory viruses. The MRT-PCR utilized 9 primer sets which were used to amplify the virus genomes by targeting the following genes: fusion protein for RSV between (nucleotides 6227 and 6466), non structural proteins for Flu A and B (nucleotides 467 to 656 and 732 to 977, respectively), hemagglutinin-neuraminidase for PIV1 (nucleotides 7372 to 7551), fusion protein for PIV3 (nucleotides 5073 to 4907), hexon protein for AdV (nucleotides 2755 to 2888). VP4 protein for HRV (nucleotides 452 to 566), and N protein for HCoV 229E, OC43 (nucleotides 762 to 1219, and 655 to 1025, respectively).

### **Results:**

Of the 150 patients investigated, 60 or 40% were found positive for a respiratory virus by MRT-PCR and confirmed by dot blot hybridization. Twenty of the sixty (33%) patients were positives for RSV; 11 of 60 (18 %) for Flu A; 10 of 60 (16.6%) for HRV; 7 of 60 (11.6 %) for AdV; 5 of 60 (8 %) for Flu B; 5 of 60 (8 %) for PIV-1; and 2 of 60 (3%) for PIV-3. None of the patients investigated for HCoV-OC43 or-229E were found positive.

### **Conclusions:**

Our preliminary findings clearly show that RSV is by far the most common viral cause of ARD in Kuwait, followed by influenza A virus and human rhinoviruses.

*Key Words: Respiratory viruses; MRT-PCR; Acute respiratory Disease;*

*Funding Agency: Research Administration Project grant No. MI 01 / 04 from Kuwait University*

146

## **A rapid and sensitive method for the diagnosis of the “Avian Flu” H5 sub-type of influenza A virus in Kuwait**

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### **Introduction:**

The highly pathogenic avian influenza (H5N1) virus “Bird Flu” continues to pose a serious global human public health risk and the potential for a pandemic remains great. Therefore, the need for a rapid and sensitive method to diagnose the infection, sub-type the virus and measure the quantity of the virus in respiratory and other samples (which predicts the potential severity and seriousness of the disease) is of paramount importance in the management of this pandemic.

### **Methods:**

We have developed a sensitive and specific multiplex RT-PCR capable of detecting common respiratory viruses causing acute respiratory disease in Kuwait. Those found positive for influenza A virus, were then subjected to a quantitative Real-Time PCR to sub-type the virus as H5 and to measure the amount of virus in respiratory samples. A 189 bp fragment of the influenza virus A H5 gene was amplified with specific primers and quantitatively detected with probes supplied in the LightMix (TIB MOLBIOL, Berlin). The supplied standard dilutions of influenza A H5 virus cDNA ranging from ten to million copies/ml allows the absolute quantification of the viral cDNA in the unknown samples.

### **Results:**

A standard curve using standard increasing dilutions of influenza A H5 was plotted to quantitate influenza A virus of the H5 subtype. The minimum detection limit was 10 copies/ml. Specificity of the primer/probe mixture was tested on samples containing rhino-, corona-, RSV, measles and mumps viruses. Out of the 10 of 80 (12.5%) patients with acute respiratory disease which were influenza virus A positive, None was found to be of the H5 sub-type of influenza A virus so far in Kuwait.

### **Conclusions:**

The combination of the multiplex RT-PCR developed in our laboratory and the LightMix system used in sub-typing and quantitation of influenza A virus of the H5 subtype is a rapid and sensitive assay for the rapid diagnosis of influenza A H5 sub-type.

*Key Words: Influenza; Bird Flu; Real time PCR;*

*Funding Agency: Supported by Research Administration Project grant No. M1 01/04., Kuwait University*

147

## **Human role in a fully automated viral marker screening system (Abbot Prism™)**

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### **Introduction:**

Background: The main activity of microbiology unit in Kuwait central Blood Bank is to screen all blood and blood components units for viral markers to ensure that it is free from viruses, parasites or other microbes which are causing Transfusion Transmitted Disease. In 1970 only 2 tests were performed HBsAg and VDRL. Gradually, the presence of other viral markers forced the blood bank community to add more tests to reach 9 tests in 1997, according to the international regulations. In year 2000, Chemiluminescent assay replaced the ELISA assay in 5 microbiological tests. This is a totally automated system. All assays being processed simultaneously, all results will be available at the same time. This will decrease human errors as well as time and effort.

### **Methods:**

Prism using chemiluminescence technology. chemiluminescence is an emission of light (luminescence) produced by a chemical reaction.

### **Results:**

**Table.** Comparison between invalidation test Run (off time) in 2002 and 2003

	Channel 1(HTLV)	Channel 2(HCV)	Channel 3(HIV)	Channel 4(HBsAg)	Channel 5(HBC)	Total
2002	7	14	13	15	21	60
2003	9	17	5	4	13	48

### **Conclusions:**

Although prism is A fully Automated, However medical technologist have great rote to avoid invalidation test Run (offline).

*Key Words: Viral Marker Screening System; Enzyme Linked Immunosorbent Assay [ELISA]; Funding Agency: None*

### **Echovirus 9 causing severe CNS disease in Kuwait.**

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#### **Introduction:**

Enteroviruses are recognized as the major cause of aseptic meningitis, particularly in children; however, they vary in their neurotropism and neurovirulence depending on the genotype. The aim of this study was to investigate the role of enteroviruses in CNS disease and to identify the genotypes of enteroviruses causing CNS disease in Kuwait. This is the first study to investigate the role of enterovirus genotypes involved in the development of CNS disease in Kuwait.

#### **Methods:**

Suspected cases of enteroviral CNS disease admitted to different hospitals from 2003-2005 in Kuwait were investigated prospectively using semi-nested RT-PCR. The presence of enterovirus RNA was confirmed using an enterovirus specific probe. The enteroviruses were then genotyped by sequencing the 5' UTR and the VP4 coding region. The sequences were analyzed by BLAST, ClustalW and PHYLIP phylogenetic analysis package. Enteroviral load was determined by ABI prism real time PCR.

#### **Results:**

Enteroviral RNA was detected in the CSF of 26% (168 of 647) of patients presenting with CNS disease. Echovirus 9 caused 40% (66 of 168) of the CNS disease cases, while echovirus 11, coxsackievirus A7 and coxsackievirus B5 caused 16% (27 of 168), 15% (25 of 168) and 9% (14 of 168), respectively. Significantly, echovirus 9 caused 68% (24 of 35) of the more severe CNS disease cases (encephalitis and those cases presenting with febrile convulsions / seizures) and only 34% (42 of 123) of the mild CNS disease mainly meningitis. Echovirus 11 and coxsackievirus B5, in contrast, caused only mild CNS disease. Enteroviral load in the severe CNS disease cases was higher than that observed in mild disease.

#### **Conclusions:**

Echovirus 9 is the most common causative agent of severe CNS disease in Kuwait. Such data benefited overall patient management and is substantial in directing efforts towards development of antiviral chemotherapy

*Key Words: Enterovirus; CNS disease; Echovirus 9;*

*Funding Agency: This study was supported by research grants MI 04/01*

149

## **Species B Adenoviruses Causes Frequent Conjunctivitis in Kuwait**

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### **Introduction:**

Little is known about adenovirus (Ad) infections of the eye in Kuwait, yet such infections are common world-wide. No antiviral agent effective against Ads is available for clinical use. The form, severity, and mode of transmission, of infection vary according to the infecting serotype. Thus, early diagnosis is crucial for patient management and the prevention of epidemics. In this study we developed a PCR-based sequencing assay to study the association of Ads with eye infections in Kuwait.

### **Methods:**

One hundred and thirty nine eye swabs were collected at Al-Bahar Ophthalmology Center, Kuwait, from 109 patients presenting with different forms of eye infections suspected to be caused by Ads. Samples were screened by Ad hexon-specific PCR, and PCR-positive samples were sequenced by dye terminator cycle reaction. The DNA sequences of the virus were analyzed using a Beckman Coulter Sequencer and were compared to the Ad hexon gene sequences published at the GenBank.

### **Results:**

Fifty-nine of 139 (42%) eye swabs [54 of 109 (50%) patients] were found positive for Ads by PCR. PCR-positive patients presented with epidemic keratoconjunctivitis, pharyngoconjunctival fever, and non-specific conjunctivitis. Of the 21 samples so far sequenced, 18 (86%) were identified as species B (13 as Ad serotype 7 (Ad7), 3 as Ad3, and 2 as Ad14), while the remaining 3 (14%) were identified as species D (2 as Ad8 and 1 as Ad37).

### **Conclusions:**

Our preliminary data suggests that adenovirus species B serotypes appears to be the most common adenoviruses causing conjunctivitis in Kuwait. This study is in progress.

*Key Words: Eye infections; Adenoviruses; PCR-based sequencing;*

*Funding Agency: Research administration (Grant No.YM01/04)*

150

### **Immunogenicity of eight recently identified Mycobacterium tuberculosis antigens in infected and vaccinated animals**

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#### **Introduction:**

The development of novel vaccine strategies supplementing Mycobacterium bovis BCG (BCG) constitutes an urgent research challenge.

#### **Methods:**

To identify potential subunit vaccine candidates, we have tested a series of 8 recently identified M. tuberculosis antigens in M. bovis infected and BCG vaccinated animals. These antigens were characterised on the basis of their ability to induce in vitro IFN-gamma responses in infected or BCG vaccinated calves.

#### **Results:**

We were able to establish a hierarchy of these antigens based on how frequently they were recognised in both groups of animals. In particular, we were able to prioritise 3 frequently and strongly recognised proteins, Rv0287, Rv1174c, and Rv1196 for future evaluation as subunit vaccine to be used in BCG-protein heterologous prime-boost vaccination scenarios. In addition, the antigen most dominantly recognised in M. bovis infected cattle in this study, Rv3616c, was significantly less frequently recognised by BCG vaccinees, and could be a target to improve BCG by increasing its secretion in a recombinant BCG vaccine. The epitopes recognised by central memory and effector T cells of Rv1196 were also compared and distinct epitope repertoires of central memory T cells were defined.

#### **Conclusions:**

A panel of four antigens with potential in vaccine development against tuberculosis was identified for future studies.

*Key Words: Tuberculosis; Recombinant antigens; Vaccines;*

*Funding Agency: Kuwait University Research Administration grant No. MI02/02*

151

## **The occurrence of common and rare rpoB mutations in rifampin-resistant clinical Mycobacterium tuberculosis isolates in Kuwait**

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### **Introduction:**

Rifampin (RIF) resistance in Mycobacterium tuberculosis usually indicates multidrug-resistant tuberculosis and its early detection is vital for better prognosis. RIF-resistant strains contain mutations mostly within RIF-resistance-determining region (RRDR), mostly codons 516, 526 or 531, or rarely in N-terminal region of rpoB gene. This study detected rpoB mutations in RIF-resistant M. tuberculosis strains isolated in Kuwait during 2001-2004.

### **Methods:**

Mutations in two rpoB regions were studied by line probe assay (LiPA) and/or DNA sequencing in 32 RIF-resistant and 21 -susceptible M. tuberculosis strains. Fingerprinting of isolates carrying identical mutations was performed by double-repetitive-element-PCR.

### **Results:**

The LiPA correctly identified all susceptible strains. The DNA sequence of RRDR and N-terminal rpoB region from 5 isolates was identical to the sequence from reference M. tuberculosis strain. The LiPA identified 24 of 32 phenotypically documented RIF-resistant M. tuberculosis isolates as RIF-resistant with specific detection of mutations in 19 isolates while 8 strains were identified as RIF-susceptible. The RRDR sequencing confirmed the results for 19 isolates and identified precise mutations in the other 5 isolates. Mutations at rpoB531 (12 of 32) were most common. The RRDR sequencing also identified insertion 514TTC mutation in 3 and no mutation in 5 of 8 isolates that were detected as RIF-susceptible by LiPA. Two of the latter 5 isolates contained V146F mutation in rpoB N-terminal region. Most isolates with identical rpoB mutations exhibited unique fingerprinting patterns.

### **Conclusions:**

Nearly 91% of RIF-resistant M. tuberculosis strains isolated in Kuwait during 2000-2004 were rapidly (1-2 days) identified by LiPA and/or DNA sequencing. The occurrence of rare rpoB mutations, insertion 514TTC in 3 (9%) and V146F in 2 (6%), in RIF-resistant M. tuberculosis strains from Kuwait is the highest reported so far from anywhere in the world.

*Key Words: Mycobacterium Tuberculosis; Rifampin; rpoB mutations;*

*Funding Agency: Funded by Research Grants MI116 and MI 06/02*

152

## **Recombinant expression and purification of Mce1C of Mycobacterium tuberculosis**

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### **Introduction:**

The pathogenesis of Mycobacterium tuberculosis is due to its ability to invade and survive in mammalian cells including macrophages. Previous studies have shown that mammalian cell entry (mce) domain of Mce1A encoded by mce1 operon facilitates uptake of native or fusion Mce1A protein-coated latex beads into mammalian cells. The cloning, expression and purification of Mce1C, also encoded by mce1 operon, was performed to determine if the mce domain in Mce1C also facilitate uptake of latex beads into mammalian cells.

### **Methods:**

The protein coding region of mce1C was amplified by PCR using genomic DNA from M. tuberculosis H37Rv. The amplicon, after confirming its identity, was cloned in pGES-TH-1 vector system that allows fusion protein expression with two affinity tags, glutathione S-transferase (GST) at the N-terminal end and 6xHis tag at the C-terminal end, in Escherichia coli. The fusion protein expression was detected by SDS-PAGE and characterized by Western blotting. The recombinant protein in the inclusion bodies was solubilized in urea and purified through affinity chromatography using Ni-NTA Sepharose.

### **Results:**

The PCR cloning strategy resulted in successful in-frame cloning of mce1C of M. tuberculosis in the pGES-TH-1 vector system for expression of Mce1C as GST-Mce1C-6xHis fusion protein. The GST-Mce1C-6xHis fusion protein was expressed at high levels in E. coli BL-21 cells, migrated to its expected position in SDS-PAGE gel and reacted with anti-GST and anti-penta-His antibodies. The fusion protein accumulating in inclusion bodies during expression was solubilized in urea and purified to near homogeneity by Ni-NTA Sepharose matrix.

### **Conclusions:**

The mce1C gene from M. tuberculosis has been successfully cloned, recombinantly expressed and the GST-Mce1C-6xHis fusion protein purified from E. coli cells. The purified fusion protein preparation may now be used for culture invasion assays using fluorescent latex beads and mammalian cell cultures.

*Key Words: Mycobacterium tuberculosis; Mammalian cell entry protein; Mce1C;*  
*Funding Agency: Funded by Research Administration grant MI 05/00*

153

## **Rapid differential identification of *Mycobacterium tuberculosis* complex and nontuberculous mycobacteria by multiplex PCR targeting oxyR-ahpC intergenic region and the rpoB gene**

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### **Introduction:**

Most mycobacterial infections are caused by *Mycobacterium tuberculosis* complex (MTC) strains; however, infections by non-tuberculous mycobacteria (NTM) are increasing particularly among immunocompromised patients. The NTM infections are difficult to treat as their susceptibility to antituberculosis treatment vary. Conventional species-specific identification is delayed due to slow-growing nature of mycobacteria. This study developed multiplex PCR targeting rpoB gene and oxyR-ahpC intergenic region (IGR) for detection and differentiation of clinical isolates as MTC or NTM in primary culture.

### **Methods:**

The multiplex PCR targeting oxyR-ahpC IGR and rpoB was developed using 20 *Mycobacterium* species. The amplicons of 473 bp and 235 bp for MTC members and 0 bp and 136 bp from NTM are expected. The extracted DNA from bacterial growth in mycobacterial growth indicator tubes (MGIT system) from 100 consecutive isolates recovered from various specimens at Chest Diseases Hospital in Kuwait were then tested. The results were validated by DNA sequencing of species-specific internal transcribed spacer (ITS) region of rDNA.

### **Results:**

Multiplex PCR with template DNA from reference *Mycobacterium* species yielded expected amplicons. When 100 consecutive clinical *Mycobacterium* species isolated in Kuwait were tested, 92 strains yielded MTC member-specific amplicons and DNA sequence of ITS region from 10 randomly selected isolates matched completely with the ITS sequence from *M. tuberculosis*. Eight isolates were identified as NTM and DNA sequencing of ITS region confirmed the NTM status of each of these isolates.

### **Conclusions:**

A multiplex PCR assay has been developed for rapid detection and differentiation of *Mycobacterium* species into the broad categories of MTC and NTM directly from MGIT culture. Rapid identification of NTM infections in Kuwait particularly among immunocompromised patients will greatly help in appropriate therapy and proper management of these patients.

*Key Words: Mycobacterium tuberculosis; Non-tuberculous mycobacteria; Identification;*  
*Funding Agency: Funded by Kuwait University grant MI 02/04*

154

## **Identification of species-specific and major antigenic proteins of *Mycobacterium Tuberculosis* to replace Tuberculin in the diagnosis of tuberculosis**

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### **Introduction:**

Tuberculosis (TB) is a major global health threat with 8 to 10 million people developing active disease and 23 million dying of TB annually. Although, tuberculin is widely used to detect infection with *Mycobacterium tuberculosis*, its diagnostic efficacy is limited due to antigenic crossreactivity with the BCG vaccine and environmental mycobacteria, e.g. *M. avium* and *M. vaccae* etc. The aim of this study was to identify *M. tuberculosis*-specific proteins to replace tuberculin in diagnostic applications.

### **Methods:**

DNA corresponding to five major antigenic proteins of *M. tuberculosis*, i.e. PE35, PPE68, CFP10, ESAT6 and Rv3619c were PCR-amplified from the genomic DNA of *M. tuberculosis*, cloned and expressed in *Escherichia coli* and the expressed proteins were purified by affinity chromatography. Antigen-specific antibodies, raised against the purified proteins in rabbits, and reverse transcriptase-PCR were used to detect gene expression in mycobacteria at protein and mRNA levels, respectively. The diagnostic potential of the proteins was investigated by studying tuberculin-type delayed type hypersensitivity (DTH) responses in guinea-pigs infected with *M. tuberculosis*, BCG, *M. avium* and *M. vaccae*.

### **Results:**

All of the five proteins (PE35, PPE68, CFP10, ESAT6 and Rv3619c) were expressed at protein and mRNA levels in *M. tuberculosis*, but None of them were expressed in *M. avium* and *M. vaccae*, and only Rv3619c was expressed in BCG. The studies in guinea-pigs showed that PE35, PPE68, CFP10, ESAT6 and Rv3619c proteins elicited positive DTH responses in *M. tuberculosis*-infected but not in *M. avium* and *M. vaccae*-infected animals, whereas only Rv3619c elicited positive DTH responses in BCG-infected guinea-pigs.

### **Conclusions:**

PE35, PPE68, CFP10, ESAT6 proteins are specific to *M. tuberculosis* and induce positive DTH responses only after infection with *M. tuberculosis*. These proteins could therefore replace tuberculin in order to discriminate between infection with *M. tuberculosis*, BCG vaccination and exposure to environmental mycobacteria.

*Key Words: Mycobacterium Tuberculosis; Species-specificity; Diagnosis;*  
*Funding Agency: This study supported by Research Administration grant YM 01/03*

155

**Detection of Og4C3 antigens in the diagnosis of Lymphatic Filariasis by qualitative immunochromatographic technique (ICT)**

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**Introduction:**

The diagnosis of lymphatic filarial infection is based on detecting microfilariae (MF) by microscopy on blood collected at mid-night. The feasibility of testing and the relatively low sensitivity of microscopy have lead to new diagnostic tools to detect mf. This study evaluates a new immunochromatographic test (ICT) to detect filarial infection.

**Methods:**

During the period of five years, January 2001 to December 2005, a total of 1022, 872 people were screened and 202 individuals were found positive for microfilaria (mf) of *Wuchereria bancrofti* in thick blood film. All 202 filaria positive cases were used for further studies in wet mount, nuclepore membrane filtration and ICT filariasis tests. Twenty five individuals were registered as endemic and non-endemic control.

**Results:**

1022,872 immigrants were screened in five years and 202 (0.02%) were found infected with *Wuchereria bancrofti*. Most of these infected individuals were from India (90.0%), Sri Lanka (7.0%) and (1.0%) each from Nepal, Bangladesh and Indonesia. The infected individuals were between the ages of 20 – 45 years. The youngest patient was 20 years old (one subject only); the oldest was 45 years old (one subject only). The infection was higher in the age group of 30 - 35 years and the males (70.0%) were infected more than females (30.0%). All individuals 202 were positive with ICT method (100% sensitivity), 160/202 (79%) were positive in wet-mount and 122/202 (60%) were positive in Nuclepore membrane filtration method. Among the control groups; the ICT method detected filarial antigen in 5/25 (20.0%) in the control group from endemic region, however, all the controls from the non-filaria endemic area were negative.

**Conclusions:**

ICT test is a rapid, simple test and has a high sensitivity and specificity (100%) suitable.

*Key Words: Wuchereria bancrofti; Immunochromatographic techniques; Filariasis endemic; Funding Agency: MOH*

### **Unique endemicity of cryptosporidiosis in children in Kuwait**

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#### **Introduction:**

Cryptosporidiosis is recognized worldwide as a significant cause of diarrhoeal diseases in both adults and children especially in children less than 2 years of age. Objectives: *Cryptosporidium* spp. isolated from young children in Kuwait were characterized at the molecular level to understand the transmission of infection. The study was approved by the Ethical Committee, Faculty of Medicine, Kuwait.

#### **Methods:**

Over a period of 3 years, faecal specimens from 62 Kuwaiti children with persistent diarrhoea found to be positive for *Cryptosporidium* spp by microscopy. They were genotyped by PCR- RFLP and sub-typed by amplifying an 850-bp fragment of the GP60 gene by nested PCR. Informed consent was taken from all individuals included in the study.

#### **Results:**

The median age of infected children was 4.5 years, and the majority of the infections ( 77%) occurred during the cooler months of November to April, indicating a marked seasonal variation. Fifty-eight of the children (94%) had *Cryptosporidium parvum*, three (5%) had *C. hominis*, and one had both *C. parvum* and *C. hominis*. Altogether, 13 subtypes of *C. parvum* and *C. hominis* were observed, with 92% specimens belonging to the common allele family IIa and the unusual allele family IIc.

#### **Conclusions:**

Our study revealed a very different distribution of *Cryptosporidium* genotypes in Kuwaiti children as compared to other tropical countries. The genotypes and subtypes isolated are discussed with relation to the seasonality and possible mode of transmission of this infection in Kuwait.

*Key Words: Cryptosporidiosis; Genotype; Children with diarrhoea;*

*Funding Agency: The financial support for this study was provided by Kuwait University*

157

## **Evaluation of Tobacco agar as a differential medium for *Cryptococcus neoformans* and *Cryptococcus gattii***

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### **Introduction:**

Cryptococcosis is one of the leading pulmonary and systemic mycoses occurring worldwide. In this study, we have evaluated the efficacy of tobacco agar as a differential medium for *Cryptococcus neoformans* and *C. gattii*.

### **Methods:**

One hundred ninety-nine isolates of *C. neoformans* and *C. gattii* which included reference strains (n=6), and clinical (n=9), and environmental isolates (n=184) were evaluated for their ability to produce brown pigment on tobacco agar. Of these, 132 belonged to *C. neoformans* and 67 to *C. gattii*. In addition, reference strains and clinical isolates of *Cryptococcus laurentii* (n=1), *C. humicola* (n=1), *Candida albicans* (n=55), *C. parapsilosis* (n=9), *C. tropicalis* (n=8), *C. krusei* (n=5) and *C. glabrata* (n=7) were also tested. The composition of tobacco agar was as follows: tobacco 25 g, agar 20 g, distilled water 1 liter; pH 5.4. The test cultures were streaked on the medium and plates were incubated at 28°C and examined for development of brown-colored colonies up to 96 h.

### **Results:**

All the isolates of *C. neoformans* and *C. gattii* developed brown-colored colonies within 48 h. Induction of brown pigmentation was discernible as early as 12 h. Colonies of *C. gattii* were distinguishable from *C. neoformans* by their ability to acquire more intense brown pigmentation, besides being more mucoid and shiny. None of the *Candida* or other *Cryptococcus* species produced brown-colonies on this medium.

### **Conclusions:**

The selective melanization of *C. neoformans* and *C. gattii* isolates on tobacco agar confirms its utility as a differential medium with 100% specificity. The medium has also the potential to differentiate *C. neoformans* from *C. gattii* on the basis of color intensity and colony characteristics. Acknowledgement: Environmental isolates were provided by H. S. Randhawa, Delhi

*Key Words: Cryptococcus neoformans; Tobacco agar; Identification;*

*Funding Agency: None*

## **Cetirizine modulates lymphocyte activation in patients with allergic rhinitis and asthma**

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### **Introduction:**

Histamine plays a prominent role in the pathophysiology of allergic diseases; therapeutic intervention is usually focused on blocking this biogenic amine. It is hypothesized that antihistamines can modulate part of immunological mechanisms involved in the pathogenesis of allergic inflammation through the inhibition of leukocyte recruitment and activation, and by the reduction of adhesion molecules, in addition to their antihistaminic properties. The anti-inflammatory properties of cetirizine, a putative H1-receptor antagonist needs further clarification. The aim of this study was to elucidate the role of cetirizine in regulating lymphocyte activation in patients with allergic rhinitis and asthma.

### **Methods:**

Sixteen patients were treated with cetirizine (10 mg/ day) for one month and lymphocyte percentage expression of activation markers and adhesion molecules were measured by flow cytometry and inflammatory cells were counted by conventional staining before and after treatment.

### **Results:**

A significant reduction of eosinophils but not neutrophils was detected in actively treated patients ( $p < 0.05$ ). Cetirizine treatment induced a significant decrease in frequency of the effector helper/inducers cells (CD4+CD29+) and activated T cells expressing IL-2R alpha (CD4+CD212+), ( $p < 0.05$ ). On the other hand, a significant increase in frequency of Treg cells (CD4+CD25+) ( $p < 0.001$ ) and T cells expressing the adhesion molecule L-selectin (CD4+CD62+) ( $p < 0.01$ ) was observed.

### **Conclusions:**

These results show the Cetirizine effectiveness in exerting anti-inflammatory activity by reducing activated T lymphocytes. The significant increase in Treg cells and L-selectin suggests their involvement in modulating immune activation in patients with allergic rhinitis and asthma.

*Key Words: Cetirizine; Asthma; Lymphocytes;*  
*Funding Agency: None*

159

## **Resistance of Escherichia coli isolates from pregnant women with community-acquired urinary tract infections**

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### **Introduction:**

Urinary tract infections (UTIs) are the most common bacterial infections during pregnancy, associated with risk to the fetus and the mother. However, when pregnant women do have a UTI, they have a higher risk and number of upper UTIs compared with lower UTIs. The aim of this study was to analyse the resistance of Escherichia coli (E.coli) isolates from pregnant women with uncomplicated community-acquired urinary tract infections (CA-UTI) in London hospital over a period of two years.

### **Methods:**

Over a period of two years (January 2004-December 2005) a total of 2737 urine samples from pregnant women were investigated. 91 pregnant women with signs of CA-UTIs were enrolled in the study. The strains isolated from the patients who had significant bacteriuria were included in the microbiological analysis. The identification of the strains was performed using API 20 E system (BioMerieux), while their susceptibility was determined by disk diffusion method. The interpretation of the results was realized according to NCCLS guidelines.

### **Results:**

From the whole number of 2737 urine samples from pregnant women, 112 (4.1%) were positive and 2625 - negative. The predominant bacterial pathogen was E.coli - in 91 patients (81%). High resistance to the beta-lactam antibiotics was noted, especially to Ampicillin, Amoxicillin/Clavulanic acid, Cephalotin - 68%, 55% and 75% respectively. Low resistance to Cefuroxime - 13%, Ceftriaxone - 3% and Gentamicin - 8% was noted.

### **Conclusions:**

According to the results, E.coli was the most common causing uropathogen in pregnant women. Continues monitoring of E.coli antimicrobial susceptibility pattern is warranted to guide clinicians for the proper use of antibiotics, especially in the risk groups.

*Key Words: Urinary tract infections; Uropathogens; Antimicrobial resistance;*  
*Funding Agency: None*

*Neuroscience*

*Category: Graduate MSc (Basic Science)*

**160**

## **Cellular Stress Response in the Brain: Involvement of NMDA and non-NMDA Receptors**

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### **Introduction:**

In response to stress, cells usually express immediate-early and heat shock genes. Their protein products are essential in helping cells to cope with the stress and/or to survive. We studied the relationship between the activation of NMDA and non-NMDA glutamate receptors and induction of stress proteins, Fos and Hsp70, in periventricular regions of the brain.

### **Methods:**

Glutamate, NMDA, AMPA and KA were dissolved in sterile PBS. Five microL of PBS (control) or of each drug solution was injected into the left lateral ventricle of anesthetized rats (120-180 g) using Kopf stereotaxic frame. Following 1-4 hrs post injection, rats were perfused with fixative. Brains were sectioned on vibratome for Fos or Hsp70 immunohistochemistry employing an avidin-biotin-complex technique. Sections were evaluated with light or fluorescence microscope equipped with ColorView camera. We used Soft Image System analysis for quantitative evaluation of glial/neuronal Fos or Hsp70 cell densities.

### **Results:**

Controls showed a low-level Fos induction in most areas of the brain, with no significant difference between the left and right sides. Glutamate agonist treated rats induced a marked Fos labelling in most periventricular regions. After 4 hours, Fos was significantly more induced by NMDA in neurons of hippocampal regions CA3 and dentate gyrus and in neuroglia of corpus callosum as compared to KA, AMPA or glutamate. Fos induction was selectively delayed in CA3 region following AMPA or KA treatment. Furthermore, CA3 neurons showed early signs of degeneration and many underwent necrosis. Stress protein Hsp70 did not appear during first 4 hrs following any of above treatments.

### **Conclusions:**

Early Fos induction following intraventricular administration of glutamate agonists is an important marker of an in vivo cell stress response. The lack of Fos induction may indicate transition from cell stress to excitotoxic cell injury leading to neurodegeneration and cell death.

*Key Words: Fos and Hsp70; Glutamate receptor agonists; Computerized image analysis;*

*Funding Agency: College of Graduate studies, Kuwait University*

161

### **Effect of propentofylline on excitotoxic brain injury**

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#### **Introduction:**

Several clinical trials indicate a positive response to propentofylline in Alzheimer disease and vascular dementia. Propentofylline has been shown to exert neuroprotection probably mediated via activation of adenosine receptors and cAMP dependent signalling, stimulation of nerve growth factor release, reduced release of free oxygen radicals and inflammatory cytokines as well as restriction of microglia and astrocyte activation. Pathological glia activation stimulated by excitotoxic compounds, inflammatory proteins, beta-amyloid or brain ischemia is postulated as a common pathogenic factor for progressive nerve cell damage in vascular and Alzheimer dementia. However, a reduction of microglial activation after excitotoxic injury by propentofylline was not documented in in-vivo conditions.

#### **Methods:**

Activation of glial cells typically found in neurodegenerative diseases was induced by systemic injection of kainic acid (12mg/kg, i.p.) to 5-week old male Sprague-Dawley rats. Propentofylline (10mg/kg, i.p.) was applied 30 min before administration of kainic acid. Activation of microglia and postulated protective effect of propentofylline were investigated 6 hours after kainic acid injection. Immediate-early protein c-Fos, heat shock protein Hsp70 and microglial antigen CD11b were detected immunohistochemically in sections of rat brain with primary antibodies sc-52, SPA-810, and OX-42, respectively, and ABC technique.

#### **Results:**

Systemic administration of kainic acid resulted in fast induction of a reactive phenotype in microglia and early invasion of leucocytes to piriform cortex. Some limbic and neocortical neurons expressed heat shock protein HSP70. Propentofylline applied 30 min before the kainic acid did not decrease the reactive phenotype of microglial cells.

#### **Conclusions:**

These findings confirm that activation of microglia contributes to kainic acid excitotoxicity, but this activation could not be reduced by propentofylline.

*Key Words: Propentofylline; Excitotoxicity; Microglia;*

*Funding Agency: Kuwait University, MY33*

*Nutrition*

*Category: Basic Sciences*

162

## **Can Breastfeeding Protect Kuwaiti Preschool Children from being Overweight?**

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### **Introduction:**

Studies which suggest that breastfeeding may be protective against the development of overweight in children, has raised expectations that prompting breastfeeding may help to control/minimize this situation. Objectives of our study is to find out the association between breastfeeding and overweight in Kuwaiti pre-school children.

### **Methods:**

The samples were selected from clinics and kindergartens of all governorates during the period from September 2003 to June 2004 by survey method. The sample consisted of 2291 (1092 males and 1199 females) Kuwaiti pre -school children and their mothers in the age group of 4-6 years. The data were collected from civil identity cards, actual height and weight measurements and demographic and feeding information by administering a pre-tested open-ended questionnaire. Weight status for children was defined using BMI –for – age percentiles from the revised CDC growth charts. Children who fall in 85th-94th percentiles were considered at risk of overweight and >95th percentile as over weight.

### **Results:**

No significant dose dependant association or a recognizable threshold effect of breastfeeding and BMI status of the pre-school children were found after adjusting the effect of other variables (AOR) with 95% confidence level. There was significant ( $p<0.001$ ) association of BMI and age, as age increased the risk of overweight and overweight increased. A significant ( $p<0.001$ ) association was also found between the ratio of overweight children (AOR 1.77-3.94) and obese mothers. Hence the strongest predictor of child BMI status may be mother's concurrent BMI among Kuwaiti pre-school children.

### **Conclusions:**

The associations of breastfeeding with the risk of being overweight and overweight in Kuwaiti pre-school children are inconsistent. Breastfeeding is strongly recommended but it may not be as effective as moderating other factors such as dietary habits and physical activity, in protecting children from becoming overweight

*Key Words: Breast feeding; Kuwaiti Preschoolers; Overweight;*  
*Funding Agency: None*

163

## **Magnesium Sulphate Therapy in Severe Preeclampsia and Effects on Obstetric Outcome**

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### **Introduction:**

Preeclampsia is a major complication of pregnancy, affecting 5-10 percent of all pregnancies with severe maternal morbidity and mortality and perinatal mortality.

### **Methods:**

To evaluate the use of Magnesium Sulphate as an anticonvulsant treatment of Preeclampsia, and the effects on Obstetric outcome. Patients and Methods: The study involve 350 women with severe preelampsia at Maternity Hospital from January 1, 2002 to December 31, 2004 with inclusion criteria of BP  $\geq$  160/110 mmHg plus Proteinuria 0.5-5 g/24 hours and Oliguria. Evaluation included history, examination and investigations: CBC, liver and renal function tests. A loading dose of MgSO<sub>4</sub> 4 g IV was given over 20 minutes and at 1 g/ hour and 24 hours after delivery.

### **Results:**

The mean age was 29.7 $\pm$ 6.7 years and parity 1.24 $\pm$ 0.34 (primigravida 51.7%). Antenatal complications included Oliguria (8.6%), HELLP Syndrome (6.6%), Abruptio placenta (4.9%), Eclampsia (3.4%), Preterm birth (55.4%; 9.0% below 30 weeks). Delivery included Caesarean section (53.5 %), Vacuum/Forceps (8.1%), Stillbirth in 1.8%, low Apgar score 1-6 in 31.3% at 1 min and 2.7% at 5 minutes, early neonatal deaths 0.9%, Perinatal deaths in 2.7%. Serum Mg was 1.4 $\pm$ 0.6 m/L. and mild toxicity with reduced tendon reflexes in 1.2% of patients (with serum Mg<sup>3</sup> 2.0 mg/L) and seizures with therapy 0.3 % (3% pre-admission). No maternal death.

### **Conclusions:**

Preeclampsia causes severe maternal and perinatal morbidity. Magnesium sulphate is safe for mother and fetus, with mild toxicity. Monitoring is essential.

*Key Words: Preeclampsia; Maternal and Perinatal morbidity; Mild Toxicity;*

*Funding Agency: None*

## **The intrapartum performance of patients presenting with diabetes mellitus in pregnancy**

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### **Introduction:**

The incidence of diabetes mellitus in Kuwait, 14.8%, is high. Gestational diabetes mellitus (GDM) may progress to diabetes mellitus (DM) in 17-63% of women in 5-16 years after delivery. An increased incidence of operative delivery, maternal complications and birth trauma have been reported in pregnancies complicated by DM. We were motivated to study the intrapartum performance of pregnancies complicated by DM.

### **Methods:**

A pilot study (April-June, 2005) of cases of DM admitted into the labour wards of Maternity Hospital was undertaken. Consecutive patients with no medical complications admitted for induction of labour during the study period served as control. The ethnicity, obstetric/medical history and the antenatal course of the index pregnancy were extracted. The intrapartum, postpartum and the neonatal outcome were documented. Statistical analyses were performed using chi-square and alternate Welch t tests.

### **Results:**

During the study period 3005 patients were delivered at Maternity hospital and 177 of these, the study population, presented with DM, an incidence of 6%. 48.6% of these patients were Kuwaitis; non-Kuwaiti Arabs and Indians were 23.2% and 19.2% of the study population. 72.3% of the patients presented with GDM. The significant complications were pregnancy induced hypertension, 7.3% and premature rupture of membranes 7.9%. 177 induction patients served as control. The incidence of caesarean section in the study, 32.8%, was significantly higher than the rate of 14% in the control,  $P < 0.0001$ . Although the mean gestational age at delivery in both groups were comparable,  $P = 0.659$ , the mean birth weight in the study group was significantly higher,  $3.315 \pm 0.605$  vs  $3.053 \pm 0.686$ ,  $P = 0.0008$ . The neonatal complications in the diabetic patients were shoulder dystocia 2.3%, Erb's palsy 1.1%; there were more stillbirths in the control group.

### **Conclusions:**

The incidence of diabetes mellitus is high and the rate of caesarean section significant. The maternal and neonatal morbidity were high. A prospective study is recommended for enhanced management guidelines.

*Key Words: Diabetes; Pregnancy; Outcome;*

*Funding Agency: None*

165

## **Maternal-fetal Status and Disposition of Cu, Fe, Mo, Se and Zn in Obese Gestational Diabetic Pregnancies**

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### **Introduction:**

Obesity is known to be a major risk factor for several disease states including diabetes mellitus. Paucity of data on maternal-fetal disposition of essential trace elements in obese diabetic pregnancies prompted us to undertake this study.

### **Methods:**

Maternal venous and umbilical arterial and venous samples were collected from obese gestational diabetic patients (Body Mass Index >30) and control obese pregnant women (Body Mass Index >30) at time of spontaneous delivery or cesarean sections and concentrations of essential trace elements such as Cu, Fe, Mo, Se & Zn determined in various samples by atomic absorption spectrophotometry. Activities of antioxidant enzymes, superoxide dismutase, glutathione peroxidase and total antioxidant activity in maternal and umbilical blood were assessed using appropriate reagent kits. Maternal-fetal disposition and exchange parameters of elements studied were assessed using established criteria.

### **Results:**

Cu, Fe, Mo, Se and Zn levels in serum of control obese pregnant women at time of delivery averaged 2404.0, 2663.0, 110.89, 0 and 666.0 ug/L respectively while in obese diabetic group, values of above elements averaged 2441.0, 2580.0, 13.3, 85.1 and 838.9 ug/L respectively. Umbilical vein/maternal vein ratios of Cu, Fe, Mo, Se and Zn in control group averaged 0.24, 1.38, 1.08, 0.92, and 1.34 respectively while in diabetic group, fetal-maternal ratios of these elements averaged 0.42, 0.85, 0.95, 1.05 and 1.15 respectively. Cu:Zn ratio in maternal vein of study group (4.09 ± 0.29) was significantly higher (Student's t-test; p < 0.05) than that of controls (3.73 ± 0.32). Varying differences were noted in case of antioxidant enzyme activities between the two groups.

### **Conclusions:**

We conclude that obesity is associated with changes in maternal-fetal disposition of some essential trace elements and antioxidant enzyme status in gestational diabetes and that these changes, could pose a health risk for the mother as well as the baby in the womb.

*Key Words: Obesity; Essential Trace Elements; Maternal-fetal exchange;*  
*Funding Agency: Kuwait University Research Grant# MO01/00*

166

## **Transport of Cisplatin in Human Placenta in Late Gestation: In Vitro Study**

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### **Introduction:**

Platinum containing drugs are widely used clinically in treatment of malignancies. Paucity of data on maternal-fetal transport of one such drug, cisplatin in humans, prompted us to study its placental transport characteristics in vitro.

### **Methods:**

Human placentae were collected post-partum. Cisplatin, along with antipyrine as internal reference marker were then injected as a single bolus (100ul) into the maternal arterial circulation of perfused placental lobules and serial perfusate samples collected over a period of 5 minutes. National Culture and Tissue Collection medium, diluted with Earle's buffered salt solution was used as the perfusate. Cisplatin concentration was determined by atomic absorption spectrophotometry (Perkin Elmer, USA) while antipyrine concentration in samples was assayed by spectrophotometry (UV-160 PC, Shimadzu, Japan). Transport and pharmacokinetic data of study and reference substances were computed using standard transport parameters.

### **Results:**

Differential transport rate of cisplatin for 10,25,50,75 and 90% efflux fractions in fetal venous effluent averaged 0.49±/0.02, 1.23±/0.03, 2.41±/0.04, 3.67±/0.03 and 4.48±/0.07 minutes in 12 perfusions representing 0.07, 0.97, 0.96, 0.97 and 0.99 times antipyrine value. Analysis of Variance (ANOVA) did not show any significant difference (p>0.05) between control and study group values. Transport fraction (TF) of cisplatin, expressed as fraction of the drug appearing in fetal vein, during study period of 5 minutes averaged 9.00±/0.52% of bolus dose while antipyrine TF averaged 68.60±/2.01% of injected bolus dose, representing 1.31% of reference marker value. Student's t-test showed cisplatin and reference marker TF values to be significantly different (p<0.05)

### **Conclusions:**

We report for the first time that cisplatin transport is negligible in human placenta at term. We speculate that the risk for neonate from cisplatin use in pregnancy is minimal when used in critical clinical situations.

*Key Words: Cisplatin; Maternal--fetal exchange; Placental Perfusion;*

*Funding Agency: None*

167

**The effect of lithium on the ontogeny of rat spermatozoa.**

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**Introduction:**

Lithium deficiency is associated with reproductive failure, infertility and impaired growth in rats and goats. Lithium therapy for bipolar disorders is associated with high preterm birth rates, cardiovascular abnormalities (Ebstein anomaly). Information on the effects of lithium on spermatogenesis and sexual function is scanty. Objective of study: To investigate the effects of Lithium on spermatogenesis and contractility of Vas deferens in rats.

**Methods:**

Adult male SD rats were studied in four subgroups of Cadmium only (In 5mg imp), Cadmium (in 5mg imp) +Lithium (100 mg orally), Lithium only given in water and Control, for two weeks and sacrificed. Serum and testicular homogenates were used to evaluate levels of Lithium, IL-4, TNF-a, Bcl-2 and Bax by ELISA, Testosterone by RIA, histopathological changes and apoptosis of testicular cells were evaluated with microscopy. Vasa deferentia isolated from adult male rats were set up in tissue baths containing physiological solution at 37°C and different concentrations of Ca<sup>2+</sup> and Li<sup>2+</sup> and their effects on the electrical contraction recorded.

**Results:**

Lithium + Cadmium compared to Cadmium only was associated with reduction of serum levels of TNF-a (19 versus 45 pg/L, p<0.01), Malonaldehyde (7 vs 12, p<0.05), and Bax (88 versus 216, p<0.001), and increase of IL-4 (7 versus 2, p<0.05), Zn-Cu SOD (4 versus 2, p<0.05), Bcl- 2 (256 versus 90, p<0.001) and Testosterone (17 versus 5 mmol/L, p<0.01), histologically (Johnssen score of 7 versus 3 p<0.01) and reduced contractility of vas deferens caused by Calcium of 25 percent with 10 mg of Li and 50 percent with 100 mg.

**Conclusions:**

Lithium has a role in reproduction in the rat through its antioxidant activity, promotion of T helper cytokine profile, anti-apoptotic effects through enhancement of Bcl-2 expression during spermatogenesis and modulation of the contractility of vas deferens.

*Key Words: Vas Deferens Contractility; Lithium; Spermatogenesis;*

*Funding Agency: None*

*Obstetrics and Gynecology*

*Category: Clinical*

168

**The mechanisms involved in improved sperm parameters by zinc**

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**Introduction:**

Asthenozoospermia is caused by free radicals, sperm apoptosis, antisperm antibodies and abnormality of the sperm tail. The mechanisms involved in improved sperm parameters by Zinc therapy are not fully understood. Objective of study: To determine the role of Zinc therapy in asthenozoospermic men and effect on oxidative stress, apoptosis and sperm fertilising capacity.

**Methods:**

Forty-five men with asthenozoospermia i.e > 40 percent are immotile sperm, were randomized into three therapy groups: Zinc only, Zinc + Vit E and Zinc + Vit E + C and control group. Normozoospermia i.e count 20-250 million/ml, in couples with female factor infertility problem and oligozoospermia served as initial controls. Semen analysis was according to WHO guidelines. MDA, TNFa, Total antioxidant Capacity (TAC), superoxide dismutase (SOD) and glutathione peroxidase (GPX) were determined in the semen and serum. Antisperm antibodies IgG, IgM and IgA were evaluated by immunobeads. Sperm chromatin integrity was determined by acid-induced denaturation of sperm DNA and acridine orange staining and evaluated by light microscopy and by electron microscopy. Effect of Zinc on in-vitro induced sperm oxidative stress by NADH was evaluated.

**Results:**

Asthenozoospermia was significantly associated with oxidative stress with higher seminal levels of MDA (8.8 versus 1.8 mmol/L, p<0.001) and TNFa (60 versus 12 pg/L, p<0.001), and low TAC (1.8 versus 8.4, p<0.01), SOD (0.8 versus 3.1, p<0.01) and GPX (1.6 versus 4.2, p<0.05), compared to normozoospermia. Antioxidants and Zinc only were associated with comparably improved sperm parameters. In the in-vitro experiment Zinc supplementation was associated with less oxidative stress, sperm apoptosis (2.4 versus 9.6%, p<0.01) and sperm DNA fragmentation Index (14 to 29%, p<0.05) compared to Zinc deficiency.

**Conclusions:**

Asthenozoospermia is associated with oxidative stress and apoptosis, which can be prevented by Zinc therapy.

*Key Words: Asthenozoospermia; Zinc therapy, Modulation; Sperm DNA;*

*Funding Agency: None*

## ***Oncology***

*Category: Clinical*

**169**

### **Profile of radiotherapy treatment in KCCC, Kuwait in the year 2004.**

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Kuwait Cancer Control Centre, Kuwait.

#### **Introduction:**

Kuwait Cancer Control Centre is the only centre providing radiotherapy treatment in Kuwait. The aim of this study is to describe the profile of patients treated with radiotherapy in the year 2004 and the profile of the existing radiotherapy treatment machines in our centre.

#### **Methods:**

Data was collected from 1st January to 31st December, 2004 from LANTIS, our teletherapy machine registers and from the log books which document the machine breakdowns.

#### **Results:**

A total number of 1,708 new patients were registered in our centre in the year 2004 and 654 patients received treatment on teletherapy units, 17 of whom also received brachytherapy. There was no waiting list. Four hundred and fifty three patients (69.27%) received radical treatment after conformal radiotherapy planning and 201 (30.73%) were treated with palliative intent. Of the radical treatment group, 194 patients (42.83%) belonged to breast cancer. About half of the palliative treatments was for bone metastasis. Eighty percent of the patients completed their treatment without interruption or gap of more than 6 days. A total number of 16,119 treatments were delivered on our three teletherapy machines combined. Our Primus Linear Accelerator and Mevatron KD2 Linear Accelerator were partially (when >50% patients were not treated) or totally out of order for total of 8 & 9 working days respectively in that year, required preventive maintenance on another 3 days each and official holidays were 13. Elite telecobalt had no breakdowns.

#### **Conclusions:**

Our patient demographics match that of Europe and U.S.A. The number of teletherapy units in our centre are adequate as per ESTRO recommendations, but breakdown rate was higher, leading to 20% patients not completing their treatment within the scheduled time.

*Key Words: Radiotherapy.Profile;*

*Funding Agency: None*

**Oncology**

*Category: Clinical*

**170**

**Base line staging tests in primary breast cancer,KCCC experience**

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**Introduction:**

Metastatic workup for patients newly diagnosed as having breast cancer is variable. Routine bone scan, liver ultrasound and chest x-ray are often performed without any evidence to support their usefulness.

**Methods:**

A retrospective review of patients with breast cancer referred to our center from 1993 until 1998 was performed to determine the value of staging investigations in detecting metastases. Patients were identified through the Kuwait Cancer Registry.

**Results:**

Of the total 785 patients referred to our center after initial diagnosis, we found distant metastases at the time of primary diagnosis in 36 patients (4.6%). Bone metastases were found in 29 patients (3.7%), pulmonary metastases in 6 patients (0.8%) and liver metastases in 5 patients (0.6%). Overall, 0.7% of patients with clinical stage I and II disease had metastases compared with 13.1% of patients with clinical stage III disease.

**Conclusions:**

Our results confirm the low yield of routine bone scans, liver ultrasound and chest x ray among patients with asymptomatic early stage (I and II) breast cancer. Therefore, we do not recommend these tests for such patients; although intensive investigations are appropriate for more advanced (stage III) tumors.

*Key Words: Breast cancer; Staging; Radiologic investigations;*

*Funding Agency: None*

## **Oncology**

*Category: Clinical*

**171**

### **Clinical Profile of Children with Medulloblastoma – a KCCC study**

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#### **Introduction:**

Medulloblastoma (MB) are malignant neuroectodermal tumors. They constitute 20-25% of all central nervous system tumors in pediatric age group and are commonest solid tumors of childhood. Their treatment include initial surgery followed by radiotherapy and / or chemotherapy. This study was undertaken to analyze the complete epidemiological, clinical, and outcome of children who were treated with the diagnosis of MB at our hospital.

#### **Methods:**

In this is a retrospective study, 10 years (1995–2004) medical records of patients with MB, were analyzed. Of the 30 patients registered with this diagnosis, medical data was available only for 23 patients.

#### **Results:**

The median age was 5 years (range 2 months – 11.5 years). Sex ratio was equally distributed (11:12). All patients came after surgery for the resection of the primary tumor. Majority (13/23) had subtotal resection. Three patients did not receive chemotherapy. Radiotherapy was not given to 5 patients. Three patients showed progressive disease during therapy. Twenty two patients who took treatment, 11 achieved complete response (CR), 5 had partial response (PR), 1 had progressive disease (PD), while 1 had no response. Four out of 11 patients with CR progressed, while 3 of 5 with PR status progressed. Second line treatment was offered to only 5 patients. In the final analysis, The over all survival is 40%. There were 11 deaths, 3 lost to follow-up. Seven patients are alive with CR status, while two patients are alive with some residual disease. The medial follow-up period of alive patients is 1 year (range 5 months to 2.5 years). Of the 9 patients alive, 7 patients had total or near total resection.

#### **Conclusions:**

The extent of initial surgery is very important factor in the long term survival of children with MB. Adjuvant therapy with chemotherapy and radiotherapy does help in improving the disease free survival.

*Key Words: Childhood Cancers; Brain Tumors; Medulloblastoma;*

*Funding Agency: None*

## **Oncology**

*Category: Clinical*

172

### **Experience with Gefitinib (Iressa) in advanced non-small cell lung cancer at Kuwait Cancer Control Centre**

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#### **Introduction:**

Patients with advanced Non small cell lung cancer (NSCLC) who progress on two line of chemotherapy have few options. The epidermal growth factor receptor – tyrosine kinase inhibitor (EGFR-TKI) Gefitinib (Iressa) has antitumor activity and favourable tolerability in patients with recurrent advanced NSCLC. With the current recommendations from US-FDA which restricts its use in NSCLC only in a clinical trial setup, prompted us to review our data.

#### **Methods:**

Retrospective data review of 7 patients who took gefitinib at our centre was made. There were 4(57%) females and 3(43%) males. All of them received 250 mg/d of gefitinib until treatment failure, or disease progression. Outcomes analyzed included clinical response and adverse events.

#### **Results:**

Nonsmokers were 3(43%) and smokers were 4(57%). Six patients (86%) belonged to stage IV and one (14%) was stage III. According to the ECOG performance score, 3(43%) patients were PS I, 2(28.5%) were PS II and 2(28.5%) were PS III. Predominant histology was adenocarcinoma. Gefitinib was used after 3 previous lines of chemotherapy in one patient and after 2 lines of chemotherapy in all other patients. Median duration of Gefitinib received was 15 months ranging from 3 months to 38 months. Most common adverse effect of the drug was skin rash, followed by diarrhea. Subjective response was noted in 5(71%) patients in form of better control of cough dyspnea and weight gain in 2(29%) other patients it didn't help. Objective response was noted in form of 3(43%) partial responses 2(28.5%) stable diseases, in rest of the 2(28.5%) patients progressive disease was noted. Two patients continue to receive Gefitinib with favourable partial response, one patient changed over to chemotherapy after progression on gefitinib and remaining four died of progressive disease.

#### **Conclusions:**

oral gefitinib was well tolerated and effective in this group of patients with otherwise limited choices.

*Key Words: EGFR inhibitor; Gefitinib; Non small cell lung cancer;*

*Funding Agency: None*

**Oncology**

*Category: Clinical*

173

**Radical radiotherapy in cancer uterine cervix – Results and future recommendations.**

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Kuwait Cancer Control Centre, Kuwait.

**Introduction:**

Radiotherapy has firmly established its role in the treatment of carcinoma uterine cervix. The aim of this study is to analyse pelvic control after treatment with radical radiotherapy, causes of failure and their therapeutic implications.

**Methods:**

This study is a retrospective analysis of forty-six newly diagnosed patients of invasive cancer uterine cervix treated with radical radiotherapy ( external beam radiotherapy + intra-cavitary brachytherapy ) between 1995 and 1999.

**Results:**

More than half the patients were in stage II with the next highest percentage ( 21%) in stage III. Twenty - eight percent patients were younger than 40, 30.5% were between 40 and 49 years and 26% between 50 and 59 years. Sixteen (34.78%) of these patients relapsed. The five year disease free survival for stage IB & IIA combined (9 patients) was 72.6%, stage IIB- 41%, stage IIIB - 44%. Further analysis revealed that pelvic tumour control correlated well with total radiation dose to ICRU Point A. The disease free survival and overall survival were significantly worse in patients that received doses less than 79.9 Gray compared to those who received 80 Gray and above. Prolongation of treatment time and interruptions during external radiotherapy were associated with a poor outcome.

**Conclusions:**

Local failure is a major component of failure with radiotherapy treatment in advanced stages of cervical cancer and local control has significant impact on survival. Therefore, radiation regimens should be individualized, and more aggressive treatment should be used in late stage disease to maximise the pelvic control rate. The overall treatment time should be as short as possible and any planned or unplanned interruptions or delays should be avoided.

*Key Words: Cancer uterine cervix; Radical radiotherapy; Pelvic control;*  
*Funding Agency: None*

**Oncology**

Category: Clinical

174

**Hodgkin's Disease in Kuwait: epidemiology and clinical features**

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**Introduction:**

Hodgkin disease (HD), a lymphoid malignancy, commonly encountered in children and young adults. It is a highly curable disease. There is a wide geographic variation in incidence. Little data is available about this disease in Kuwait. The aim of this study is to examine this disease extensively in Kuwait: in terms of its incidence, histologic subtypes, epidemiological and clinical features, and treatment outcome.

**Methods:**

All patients with HD evaluated at Kuwait Cancer Control Center with tissue materials available for review between 1998 and 2003.

**Results:**

During this period of time 196 cases were evaluated. The annual incidence rate was up to 1.8 per 100,000 population, with disease predominance among males. 47.4% were Kuwait nationals and other Arabs accounted for 36.2%. The most common histology was nodular sclerositis (49.5%), while mixed cellularity histology was the 2nd most common and accounted for 23.5% of all cases. B symptoms were not commonly reported in only 35.2% of cases. Most cases were early stage I or II (61.1%). The complete remission rate was 68.4%, relapse 3.6%, refractory 1% and 4.1% dead.

**Conclusions:**

Hodgkin's disease is not a common malignancy in Kuwait, it is a highly curable disease with high cure rates.

*Key Words: Hodgkin's disease; Epidemiology; Treatment;*  
*Funding Agency: Kuwait University, Project MM01/03*

**Oncology**

Category: Clinical

175

**Is there a significant association between thyroid diseases and breast cancer?**

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**Introduction**

The relationship between thyroid diseases and breast cancer has long been a subject of debate. Many reports have linked breast cancer with hyperthyroidism, hypothyroidism, thyroiditis and goiter. On the other hand, other reports have rejected the idea and denied any association. Aim of the study was to investigate the association of thyroid diseases and breast cancer in patients with breast cancer.

**Methods:**

The prevalence of thyroid diseases was examined in 612 consecutive breast cancer patients coming for follows up after surgery, seen over 1yr period. All subjects were submitted for clinical examination, ultrasound evaluation, and thyroid function test and if the clinical situation necessates, fine needle aspiration cytology. All thyroid diseases were included (thyroid cancer, hyperthyroidism, hypothyroidism due to autoimmune thyroiditis, euthyroid nodular goiter) excluding simple diffuse goiter. Initial diagnosis was taken as the primary diagnosis.

**Results:**

Out of 612 breast cancer patients, 156(25.5%) were found to have a thyroid disease. More than 60% of them had hypothyroidism due to autoimmune thyroiditis, 21% euthyroid nodular goiter, 11% with toxic diffuse or nodular goiter and 7% had thyroid cancer.

Thyroid cancer	11/156 (7%)
Hyperthyroidism	18/156(11.5%)
Hypothyroidism	94/156(60.3%)
Euthyroid nodular goiter	33/156(21.2%)

**Conclusions:**

The study indicates the usefulness of screening of thyroid disease in all patients of thyroid cancer. It also denotes a good association between thyroid diseases and breast cancer.

*Key Words: Thyroid diseases; Breast cancer; Association;*

*Funding Agency: None*

**Oncology**

Category: Basic Sciences

176

**Medullary carcinoma of the breast: Diagnosis by fine needle aspiration cytology**

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**Introduction:**

Medullary carcinoma (MC) is an uncommon malignancy of the breast, which presents as a well circumscribed mass, composed of poorly differentiated cells with scant stroma and prominent lymphoid infiltration. There are very few studies and case reports to highlight the fine needle aspiration (FNA) cytologic features of this neoplasm.

**Methods:**

During a period of 5 years (1998-2002), 9 cases of MC of the breast were diagnosed by FNA cytology. Age of the patients ranged from 28-47 years (median, 41 years).

**Results:**

These 9 MC cases constituted 2.7% of all malignant breast tumors diagnosed during the period. The neoplastic cells were present as a varying mixture of compact clusters, discohesive groups, and singly dispersed cells. Background was rich in lymphoid cells in all. Acinar/tubular formation was noticed in 4 (44.4%). High and moderate degree of pleomorphism was noticed in 5 and 4 cases respectively. The cells were round to polyhedral with irregular nuclear outline. Intracytoplasmic lumen with secretions were present in 2 cases. Nucleoli were prominent in all the cases. Mitotic figures were seen in 5 (55.5%) cases. Tumor giant cells were present in 3 and necrosis in 2. Of the 6 cases with histopathology, 5 were reported as medullary carcinoma and one as ductal carcinoma NOS. Immunohistochemical studies performed in 3 cases revealed ER+ in 1, PR+ in 1, c erb B2+ in 2, and cathepsin+ in 2.

**Conclusions:**

FNA cytology is a useful tool in the diagnosis of this uncommon variant of high-grade breast cancer.

*Key Words: Medullary Carcinoma; Breast; Fine needle aspiration cytology;*

*Funding Agency: None*

**Oncology**

*Category: Clinical*

177

**Rectal cancer;KCCC experience**

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**Introduction:**

Incidence of colorectal cancer has wide geographical variation. Disease pattern in developing countries is different from developed countries. This analysis was undertaken to describe patient profile and to review the outcome of adjuvant therapy for colorectal cancer at Kuwait Cancer Control Center.

**Methods:**

We retrospectively evaluated colorectal cancer patients diagnosed between 1998- 2004. One hundred and ninety three patients with rectal and rectosigmoid cancer were included. Only 11% of the patients were diagnosed with stage I, 28% with stage II, 53% were stage III and 7.9% were stage VI. About 76.6% had anterior resection while 23.3% had abdomino-perineal resection or Hartman procedure. Only 63.2% of the patients received radiotherapy, and of those only 36 patients had preoperative radiotherapy. Only 35.2% of patients received adjuvant chemotherapy.

**Results:**

The male to female ratio was 1.4 and the median age of the patients was 52.11 years. Cancer of the rectum constituted 64.2% while rectosigmoid cancer constituted 35.8% of the cases. About 17.7% had tumor located within 5 cm from anal verge. Locally advanced or metastatic diseases were found in 67.6%. Tumor involving more than ½ of the lumen circumference was found in 49.1% of cases. Liver was the most frequent site (14.5%) of metastasis followed by lung (4.1%). Well, moderately and poorly differentiated adenocarcinoma constituted 16.8%, 68.8% and 14.5% of the cases respectively. The disease free survival was influenced significantly by the lymph nodes status and chemotherapy. Among the whole group, the local recurrence was 18.7%, while the disease free survival and overall survival were 42.7 and 90.04% respectively.

**Conclusions:**

Rectal cancer in Kuwait is different from western countries with a high propensity for locally advanced tumors because of delayed referral and misdiagnosis.

*Key Words: Colorectal cancer; Adjuvant treatment; Radio-chemotherapy;*

*Funding Agency: None*

**Oncology**

*Category: Clinical*

**178**

**Changing spectrum of squamous cell abnormalities observed on Papanicolaou smears in Mubarak Al-Kabeer Hospital over a 14 year period.**

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**Introduction:**

The aim of this study was to determine the incidence of squamous cell abnormalities in cervical smears seen in Mubarak Al-Kabeer Hospital, Kuwait and document any change in the pattern of these lesions.

**Methods:**

Over a 14-year period (1992 to 2005) 93534 cervical smears were studied. Conventional Pap smears were first examined by cytotechnicians and finally reported by cytopathologists. The smears were classified according to the modified Bethesda System.

**Results:**

Smears from 90069 patients were found satisfactory for reporting. The unsatisfactory smears comprised 3.7% of the total smears. Atypical squamous cells of undetermined significance (ASCUS) were seen in 1951 cases (2.2%); atypical glandular cells of undetermined significance (AGUS) – 701 cases (0.8%); low grade squamous intraepithelial lesion including human papilloma virus changes (LSIL) – 887 cases (0.98%); high grade squamous intraepithelial lesion (HSIL) – 198 cases (0.2%) and carcinoma 88 cases (0.1%) of which 49 cases (0.05%) were squamous cell carcinoma. Comparison of average cases/annum during the study period revealed a significant increase in ASCUS from 1.13% to 2.83% (p<0.001) and AGUS from 0.33% to 1.08% (p<0.001). However, percentage of LSIL, HSIL and carcinoma detected in Pap smears remained the same.

**Conclusions:**

A significant linear trend (p<0.001) was observed in satisfactory smears, ASCUS and AGUS over the years. However, no significant change was found in the detection of LSIL, HSIL and carcinoma. A reduction in the age of LSIL/HSIL and a trend of increase in the Kuwaiti women over the years was also observed which makes screening of young women essential in Kuwait.

*Key Words: Pap smears; Squamous Cell Abnormalities; Kuwait;*

*Funding Agency: None*

**Oncology**

Category: Basic Sciences

179

**[Methyl-14C]-choline incorporation into nude mice: correlation with [methyl-3H]-thymidine**

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**Introduction:**

[Methyl-11C]-choline positron emission tomography(PET) is proving to image many types of cancer such as prostate cancer. Its uptake is rapidly cleared from the blood and stays constant in tumor cells after intravenous injection of this tracer in humans. It is well known that cancer is characterized by uncontrolled and increased cell proliferation. In previous study, choline incorporation in vitro was investigated using breast cancer MCF-7 cells and found strong correlation with cell proliferation. But because of the differences in many factors that could affect the results in vivo study, our previous in vitro study was extended to investigate the in vivo choline incorporation and correlated with the well-known cell proliferation assay: [methyl- 3H]-thymidine uptake.

**Methods:**

In this study, female nude mice (n=4) were inoculated subcutaneously with breast tumor MCF-7 cells in the left flank. Tumor's growth was observed routinely in each nude mouse, till tumors were developed within 2-3 weeks to a size of nearly 0.5 cm<sup>3</sup>. Nude mice were injected simultaneously under light anesthesia with 1 μCi (37 kBq) [methyl-14C]-choline and [methyl- 3H]-thymidine each into a femoral vein for 10 min. This is to simulate the incorporation of [methyl-11C]-choline in tumor cells during a PET scan. After 10 min, mice were dissected and the tumors were harvested and weighed. [Methyl-14C]-choline and [methyl-3H]-thymidine activity were determined, expressed as counts per minute (C.P.M.) per weight in gram, and correlated.

**Results:**

the results showed that the in vivo [methyl-14C]-choline incorporation does not correlate (P=0.2) with [methyl-3H]-thymidine incorporation.

**Conclusions:**

These are preliminary results and showed that the in vivo incorporation of [methyl-14C]- choline may not reflect tumor cell proliferation. However, these results should be taken with caution and more investigations to be carried out in order to confirm these results.

*Key Words: PET; Cancer Proliferation; Choline;*

*Funding Agency: Kuwait University Research Grant No. [ZM 01/05] (RIG)*

## ***Oncology***

*Category: Clinical*

**180**

### **Sevoflurane anaesthesia for painful procedures in the pediatric oncology.**

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#### **Introduction:**

For children with cancer receiving curative treatment, the pain of diagnostic and therapeutic procedures is often worse than that of the disease itself. In order to evaluate if light sevoflurane anaesthesia in the pediatric oncology ward (POW) could improve the management of procedure pain and anxiety, a questionnaire was developed.

#### **Methods:**

Sevoflurane anaesthesia via face mask was performed successfully in 110 children during lumbar puncture and/or bone marrow aspiration in the POW, with short recovery time and without major adverse events.

#### **Results:**

All 110 patients have received sevoflurane anaesthesia, 60 females and 50 males; mean age was 7 years (range 2–16). Among those who received sevoflurane anaesthesia, the diagnoses were acute lymphatic leukemia in 60, lymphoma in 40 and tumor in the other 10 children. Duration of anaesthesia was 5 – 15 min. The recovery from sevoflurane anaesthesia in children were fast, pleasant and without any postanaesthetic complications. All parents/patients reported advantages with anaesthesia in the POW compared with the operating room. In the list of stated advantages, 88% marked 'familiar nurses and doctors', 84% 'familiar environment', 80% 'closer to own room', 68% 'the child more calm', 72% 'shorter waiting-time', 60% 'faster recovery', 44% 'shorter fasting-time' and 44% 'parents more calm', as benefits. For future procedures requiring anaesthesia to reduce pain, discomfort and/or anxiety, 99% of the parents/patients preferred sevoflurane anaesthesia.

#### **Conclusions:**

If anaesthesia is chosen for invasive procedures, this study suggests that sevoflurane anaesthesia in the POW is preferred by parents and children

*Key Words: Paediatric oncology; Sevoflurane anaesthesia; Invasive procedure;*

*Funding Agency: ABBOTT, USA*

## ***Ophthalmology***

*Category: Undergraduate*

**181**

### **Refractive errors among high school students in Kuwait**

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#### **Introduction:**

Our study was to estimate the prevalence of refractive errors and uncorrected vision problems, especially myopia among high school students in Kuwait and to identify the factors related to it.

#### **Methods:**

A sample of 709 students, aged 15-18 years, from three governorates (Capital, Ahmadi, and Farwania) was studied. The students' eyes were examined using non-cycloplegic autorefraction. Information on risk factors (such as life style and family history) and socio-demographic data were obtained using a short self-administered questionnaire.

#### **Results:**

The prevalence of refractive errors was as follows: myopia [spherical equivalent (SE) < -0.5 D] 48.2%, hyperopia (SE > +0.5 D) 19.3% and astigmatism (cylinder < -0.5 D) 77.5%. The prevalence of uncorrected errors was also found to be alarmingly high: 85% of any refractive errors and 41% of myopia were found to be not corrected. A number of factors were found to be significantly related to the students' visual acuity being uncorrected. Gender, family income, governorate, and parental education were found to be the related factors. The risk estimate for male students was about 2.7 compared to female counterparts. The odds of being not corrected were 4.4 times higher among students with low combined family income compared to those with high family income. Among those students who have parents with primary or less educational level, the risk estimate of neglecting any refractive error was 2.3 times more than those who have parents with university or above level.

#### **Conclusions:**

The prevalence of refractive errors as well as uncorrected errors was alarmingly high to justify a mass eye screening program in the schools in Kuwait.

*Key Words: Myopia; Hyperopia; Astigmatism;*

*Funding Agency: None*

182

## **Traumatic hyphema – comparison between different treatment**

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### **Introduction:**

Hyphema, the presence of blood in the anterior chamber (AC), is a common indication for emergency admission after an eye injury. Most cases of hyphema are the result of concussive injury to the anterior segment of the eye, which causes bleeding from the root of the iris near the AC angle or in some cases haemorrhage from the ciliary body. This prospective, randomised study was performed to determine the best treatment available for mild noncomplicated traumatic hyphema.

### **Methods:**

This study comprised 120 patients who fulfil the criteria of our study. Those patients were admitted in our center through the eye casualty department and they were randomly divided into three equal and similar groups, one group received predforte® eye drops, the other received predforte® and Cyclogel® 1% eye drops and the control group received tears natural® eye drops. For each patient the following characteristics were recorded: age, sex, size of hyphema on admission and its grading, visual acuity (VA) at presentation, intraocular pressure (IOP), fundus examination and occurrence of complications and outcome.

### **Results:**

The final visual acuities were nearly the same as all (100%) the patients in the second and third groups had best corrected visual acuity (BCVA) of >20/40 and 36(90%) patients in the first group had BCVA of > 20/40 as 4 (10%) patients of this group developed traumatic cataract and had a BCVA of 20/100. No significant differences were demonstrated between the three groups with respect to initial size of hyphema, hyphema resorption time, final visual acuity outcome, and hyphema complications.

### **Conclusions:**

In cases of mild simple traumatic hyphemas not exceeding 50%, simple lubricating drops probably is most efficient and safe treatment.

*Key Words: Management; Traumatic hyphema; Topical steroids;*  
*Funding Agency: None*

**Pathology**

*Category: Clinical*

**183**

**Fine needle aspiration cytology of testes: A nine -year review of cases from Mubarak Al-Kabeer Hospital.**

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**Introduction:**

Fine needle aspiration cytology (FNAC) of the testes has seen a sharp rise in popularity, as it is less invasive than a testicular biopsy and provides useful information about sperm production in obstructed or failing infertile testes. It is a reliable and easy method to provide a cytologic picture of the testes and also helps to rule out any tumor. The cytologic diagnosis is made by identification of the population of cell types present.

**Methods:**

Over a 9-year period (97-05) 986 patients underwent FNAC of the testes, in the cyto-lab of MAK hospital. The request for aspiration was for infertility (888), scrotal swellings (83) and mass in the testes (14). Air-dried smears stained with May Grunwald Giemsa (MGG) were prepared from each case of infertility, while both alcohol fixed Papanicolaou smears and MGG smears were prepared for the other cases.

**Results:**

36 (4.06%) of the 887 cases referred for infertility were inadequate. Of the 851 (95.94%) adequate smears, 391 (45.94%) showed normal maturation, 52 (6.11%) hypo-spermatogenesis, 243 (28.55%) Sertoli cells only, 16 (1.88%) testicular atrophy and 149 (17.51%) maturation arrest with 113 (13.28%) showing an early arrest and 36 (4.23%) showing a late defect. Of the 98 cases sent as scrotal swellings, 14 (14.28%) were reported as tumors [adenomatoid tumor 06, seminoma 03, Yolk sac tumor 01, suspicious of germ cell tumor 02, and spindle cell tumor 01], 15 (15.31%) cases were of inflammatory nature, including granulomatous inflammation. In 69 of the 98 scrotal swellings (70.41%), mainly spermatocele, spermatocytic granuloma and hydrocele were detected.

**Conclusions:**

FNAC is a simple, fast and reliable method for assessing spermatogenic activity and can be used to rule out tumor. When spermatogenesis is absent, FNAC is unable to specify the cause but does help in management.

*Key Words: Aspiration cytology; Testes; Infertility;*

*Funding Agency: None*

**Pathology**

*Category: Clinical*

**184**

**Fine needle aspiration cytology of lymphomas of the thyroid: A report of 18 cases.**

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**Introduction:**

Thyroid lymphomas (TL) are rare. They appear as diffuse large B-cell lymphomas (70%) or as mucosa associated lymphoid tissue (MALT) lymphomas (6-27%). We report 18 cases of TL diagnosed on fine needle aspiration cytology (FNAC) over a period of 16 years.

**Methods:**

18 cases of TL were retrieved and reviewed from the files of the cytology laboratory, Mubarak Al-Kabeer Hospital from 1989 – 2005.

**Results:**

Age of the patients ranged from 22 – 62 years with an average of 65 years. There were 6 males and 12 females. Ten cases had associated cervical lymphadenopathy which was bilateral in 6 of them. The right, left and both lobes were involved in 4, 8 and 6 cases respectively. A cytologic diagnosis of Non Hodgkins lymphoma diffuse large B cell was rendered in 12 cases, suggested in 2 cases and in three cases features of florid Hashimoto's thyroiditis (HT) were seen along with the possibility of a lymphoreticular malignancy. Two of these three cases were confirmed on histology to be MALT lymphomas. One case reported as malignant on cytology was detected to have Hodgkins disease. In 2 of the 5 cases immunocytochemistry ICC on aspirate smears was helpful in reaching the diagnoses.

**Conclusions:**

Cytologic diagnosis of thyroid lymphomas especially the high grade (diffuse large B cell) is easy and ICC can confirm suspicious cases. MALT lymphomas pose a diagnostic dilemma as they are usually associated with HT. However, FNAC helps in identifying the suspicious cases.

*Key Words: Cytology; Lymphomas; Thyroid;*

*Funding Agency: None*

**Pathology**

Category: Clinical

185

**The Clinicopathological features of primary renal tumours in Kuwait:  
A Study of 50 cases from 1990-2005**

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**Introduction:**

Renal cell carcinoma ( RCC ) is a tumour that arises from renal tubular epithelium. It is considered as an uncommon cancer in Kuwait, accounting for less than 4% of all malignancies. To the best of our knowledge, there is little information available on the epidemiological, clinical, histopathological and other prognostic measurements of the renal cell carcinomas in Kuwait. Objective of this study is a comprehensive descriptive presentation of the pathological criteria of RCC in Kuwait.

**Methods:**

Archival histology sections ( H&E ) & reports of cases previously diagnosed as RCC from 1990-2005 were obtained from the surgical pathology files of Histopathology Unit of Mubarak Al-Kabeer Hospital. The histology, the clinical & survival findings were correlated.

**Results:**

The mean age of the patients was 54.5 years, range (16-76.5) years. There were 36/50 (72%) males and 14/50 (28 %) females. The male: female ratio was 2.6: 1. Among these 50 patients there were 26 (52 %) Kuwaitis and 24 (48 %) non-Kuwaitis. Among Kuwaitis, there were 18 (69% ) males and 8 (31 %) females. Among non-Kuwaitis, there were 18 (75%) males and 6 (25 %) females. The majority were on the right at the upper pole ( 40% ).The majority of tumours were 300-500grms ( 20% ) in weight and a diameter of 2-9cms. The RCC showed clear cell type in (48%) with alveolar and acinar differentiation ( 24%). The RCC that showed worst invasion & highest mortality rate were in males (67%); heavy smoker( 33%) located on the right side ( 35%) and more than 9 cms in diameter.

**Conclusions:**

RCC in Kuwait is more common among males than females and among Kuwaitis more than the non-Kuwaitis. The tumours with the worst prognosis which were characterized by shorter period of survival, higher histological grade with invasion were larger than 9 cms and heavier than 300gms; located on the right side at either upper or lower poles. Smoking is considered a risk factor for RCC in Kuwait.

*Key Words: Renal cell carcinoma; Clinicopathological; Kuwait;*

*Funding Agency: None*

**Pathology**

Category: Clinical

186

**Insulin-like growth factors (IGF 1 & 2) and their binding protein (IGFBP-3) in Arab subjects with coronary heart disease**

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**Introduction:**

Insulin-like growth factors (IGFs 1 & 2) and their binding proteins (especially IGF-BP3) are important in the development of the vascular system. There is also some circumstantial evidence that IGFs mediate the atherosclerotic process and development of vascular lesions in diabetes. It has also recently been suggested that low levels of IGF-1 and high levels of IGFBP-3 in circulating blood could be risk markers for coronary heart disease (CHD). These suggestions remain speculative. In this study, we evaluated and compared blood levels of IGF-1, IGF-2 and IGFBP-3 between patients with established CHD and an age-matched healthy control (HC) population.

**Methods:**

There were 2 groups of subjects; (i) patients with CHD (n= 53) all male, aged 50.1 +/- 6.8 yrs; (ii) healthy control (HC) subjects (n=40, 39 M, 1F), aged 42.4 +/- 8.4 yrs. Both groups were matched for body mass index(BMI) (28.8 +/- 4.4 vs. 29.4 +/- 4.4 kg/m<sup>2</sup>) and waist-hip ratio(WHR) (0.94 +/- 0.04 vs. 0.91 +/- 0.20). None of the subjects were diabetic. Fasting blood samples were obtained from each subject for measurement of glucose, insulin, lipids/lipoproteins (by routine Autoanalyzer techniques) and IGF-1, IGF-2 and IGFBP-3 by ELISA (using dedicated kits supplied by Diagnostics Systems Laboratories Inc, USA) and results were compared between HC and CHD subjects by ANOVA.

**Results:**

The patients with CHD had lower fasting serum levels of IGF-1 (13.0 +/- 8.6 vs. 23.5 +/- 10.9 nmol/L, p<0.001) and IGF-2 (150.9 +/- 41.0 vs. 176.6 +/- 53.6 nmol/L, p< 0.03) than the healthy controls. Additionally, serum IGFBP-3 levels were significantly higher in the controls than in those with CHD (197.5 +/- 52.9 vs. 142.7 +/- 43.1, p< 0.001). These observations are consonant with previous reports in the literature.

**Conclusions:**

The results suggest that in the Arab subjects studied, perturbations in the interactions between IGFs and their binding proteins (IGF-BP3) could be important risk markers for coronary heart disease. This observation provides yet another avenue for pharmacological intervention in the atherosclerotic process.

*Key Words: IGF-1, IGF-2 & IGFBP-3; Enzyme Linked Immunosorbent Assay [ELISA];*

*Funding Agency: Kuwait University Research Administration Grant # MG 01/03*

**Pathology**

Category: Clinical

187

**Insulin-like growth factors (IGF 1 & 2) and their binding protein (IGFBP-3) in schizophrenic Arab subjects**

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**Introduction:**

Insulin-like growth factors (IGFs) are believed to be intimately involved in brain development with established roles in neuroprotection following neuronal damage, neurogenesis, myelination, synaptogenesis and dendritic branching. Recently IGFs have also been suggested as underlying the association of fetal and pre-adult growth with schizophrenia. Indeed characteristic morphological changes of schizophrenia have been seen in transgenic animals when IGF-IGFBP relationships are perturbed. In this study, we aimed to compare circulating levels of IGF1, IGF2 and IGFBP-3 between patients with diagnosed schizophrenia (SZ) and a healthy control (HC) population to assess the role, if any, of IGFs as risk associations with schizophrenia.

**Methods:**

The two groups of subjects, matched for age and sex were: (i) SZ: n=53(52M, 1 F) non-diabetic Arab patients diagnosed with schizophrenia according to the DSM IV criteria, and on follow-up at the Psychological Medicine Hospital; (ii) HC: n=40 (39M, 1F) apparently healthy subjects recruited from the Kuwait Central Blood Bank. Fasting serum IGFBP-3 and IGFs 1 & 2 levels were measured in each subject by non-extraction ELISA using dedicated kits (DSL Inc, Webster, TX, USA). The differences in serum levels of IGFBP-3 and IGFs 1 & 2 were then assessed between the two groups. Anthropometric data were also collected for both the groups. The results were compared between the groups by ANOVA.

**Results:**

The respective ages (yr), Body Mass Index (BMI) (kg/m<sup>2</sup>) and Waist - Hip Ratio (WHR) for the SZ and HC groups were: 40.5 ±11.3 vs. 42.4±8.4; 27.8±8.0 vs. 29.4±4.4; 0.89±0.10 vs. 0.91±0.20 (all p NS). There were no statistically significant differences in the levels of IGF1 between HC and SZ. However, IGF-2 (nmol/L) was significantly higher in SZ than in HC (193.6±44.9 vs. 176.6 ±53.6, p<0.03). Also, IGFBP-3 levels (nmol/L) were higher in HC than in SZ (197.5±52.9 vs. 187.9 ± 43.1), although this difference failed to achieve statistical significance.

**Conclusions:**

IGF-2 levels are higher and IGFBP3 levels possibly lower in schizophrenic patients than in an age, body mass and sex matched healthy control group. These observations are of interest, and suggest a possible role for insulin-like growth factors in the development of schizophrenia..

*Key Words: Insulin-like growth factors; Schizophrenia; Enzyme Linked Immunosorbent Assay*

*Funding Agency: Kuwait University Research Administration Grant # MG 02/02*

## **Pathology**

*Category: Clinical*

**188**

### **Associations of APOE polymorphism with LDL size and subfraction profiles in coronary heart disease**

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#### **Introduction:**

The Apolipoprotein E (APOE) gene locus is polymorphic, with three major known alleles, epsilon 3, epsilon 4 and epsilon 2, which confer increased coronary heart disease (CHD) risk. Low density lipoprotein (LDL), another major CHD risk factor, is characterized on basis of size and density into 2 main profiles: A - large, buoyant LDL; B -small, dense LDL. The latter has also been associated with further increase in CHD risk. In this study, we investigated the relationship of specific APOE polymorphic patterns with LDL size and subfraction profiles in patients with CHD and healthy control subjects.

#### **Methods:**

We recruited 2 groups of male subjects: A: Healthy controls (n=65, aged 40.6±8.7yr); B: Patients with CHD (n=50, aged 55.1±8.7). APOE genotypes were determined for all the subjects by validated PCR-RFLP methods while LDL size and subfractions were assessed by a high resolution, non-gradient PAGE (LIPOPRINT®). Lipid analyses were done by Autoanalyzer techniques. The association of specific APOE alleles & genotypes with LDL size and subfraction patterns were then assessed. Mann-Whitney U test was used to compare the results between and within the groups.

#### **Results:**

In patients in either group (controls v. CHD) considered as a whole, percentage large buoyant LDL (pattern A) was greater in controls (50.94±5.59 v. 44.90±10.32, p<0.05) and percentage small dense LDL (pattern B) greater with CHD (12.4±11.28 v. 5.3± 6.34, p<0.05). Additionally, the latter had smaller average particle size (261.7±11.27 v. 268.3±5.1Angstrom units, p< 0.05). In controls, percentage small dense LDL (pattern B) was significantly lower in those with APOE2 than in those with APO nonE2 (1.78±2.86 v. 5.89±6.58, P< 0.05); and percentage large buoyant LDL (Pattern A) were found significantly higher in APOE4 than in APO nonE4 (54.08±4.57 v. 50.16±5.58, p<0.05). There were however no such findings in relation to APOE type and LDL size and subfraction profiles in patients with CHD.

#### **Conclusions:**

These results confirm observations in other populations of increased levels of small dense LDL in patients with CHD. While the APOE allelic pattern was related to LDL subfraction profiles in healthy control subjects, such association could not be demonstrated in those with CHD..

*Key Words: APOE Polymorphism; LDL Subfraction; Coronary Heart Disease;*  
*Funding Agency: Kuwait University Research Administration Grant # GM 01/03*

**Pathology**

*Category: Clinical*

**189**

**Microalbuminuria predicts bone loss and decreased bone mineral density**

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**Introduction:**

Microalbuminuria has been associated with vascular damage. We hypothesised that microalbuminuria may also damage bone leading to generalised bone loss. The objective of this study was therefore to find out if microalbuminuria is associated with increased urinary excretion of type 1 collagen cross-linked N-telopeptides (NTx) and decreased bone mineral density (BMD) in patients with rheumatoid arthritis (RA). No such study has been reported upon in the literature.

**Methods:**

We recruited 60 ambulant patients who fulfilled the American College of Rheumatology criteria for RA and 60 age- and sex-matched healthy controls. Subjects with known past or present history of hypertension, congestive heart failure, diabetes mellitus, renal failure, abnormal liver functions and obesity were not included. The bone mineral density (BMD), the spot urinary:creatinine albumin ratio, urinary NTx, ESR and serum C-reactive protein (CRP) concentrations of the subjects were determined by appropriate methods.

**Results:**

Fourteen out of 60 patients with RA compared with 1 out of 60 healthy controls had microalbuminuria. More over, in multivariate regression analysis, microalbuminuria was positively associated with DAS28, NTx, CRP and negatively with BMD in patients with RA.

**Conclusions:**

We concluded that microalbuminuria predicts bone loss in RA.

*Key Words: Microalbuminuria; Bone loss; Bone Mineral Density;*

*Funding Agency: None*

**Pathology**

Category: *Clinical*

190

**APOE polymorphism as a genetic risk factor in the genesis and prognosis of acute coronary syndromes in Arab patients in Kuwait**

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**Introduction:**

The role of Apolipoprotein E (APOE) genetic polymorphism as a contributor to the genesis and prognosis of acute coronary syndromes is unclear. In the Arabian Gulf Region, coronary heart disease (CHD) remains the greatest cause of adult mortality. In this study, we investigated the frequencies of APOE polymorphisms in Kuwaiti Arab subjects presenting with acute coronary syndromes, and related these patterns to associated changes in lipoprotein profiles and other prognostic variables such as admission levels of brain natriuretic peptides (BNP) and cardiac troponin I (cTnI).

**Methods:**

We studied 2 groups of age-matched Kuwaiti Arab subjects: <sup>1</sup> Group A: 247 apparently healthy control (HC) subjects recruited from the Central Blood Bank; <sup>2</sup> Group B: 257 patients within 24hr of admission for clinically and biochemically confirmed acute coronary syndrome (ACS). Each subject had APOE genotyping by validated PCR/restriction digestion methods. Admission levels of troponin, BNP, homocysteine and insulin were measured by automated ELISA using validated kits. Lipids and lipoproteins (cholesterol (TC), triglycerides (TG), HDL, LDL, apoB) and glucose, and uric acid levels were also measured by routine AutoAnalyzer techniques. The results obtained were compared between the two groups.

**Results:**

The APOE2 allele was less frequent in patients with ACS ( $p < 0.005$ ). The E4 frequencies were similar. There were no differences in the genotype frequencies (E3E3, E3E4, E4E4, E2E4, E2E3 and E2E2) between the two groups. The lipid and lipoprotein and other biochemical variables showed slight differences on the basis of allelic patterns, particularly in the patients with ACS. While BNP levels in patients with ACS did not appear to be related to APOE alleles, it appeared that patients with E2 and less convincingly, E3 alleles, appeared to have lower admission cTnI level possibly signifying less severe disease than those with the allele E4.

**Conclusions:**

(i) Frequencies of APOE2 allele were lower in patients with ACS suggesting a possible relationship with susceptibility to the disease; (ii) specific APOE allelic and genotypic patterns influence lipid and lipoprotein levels in patients with ACS and in HC; (iii) patients with the E2 allele had lower troponin levels possibly signifying less severe disease.

*Key Words: APOE Polymorphism; Acute Coronary Syndromes; PCR/restriction digestion.;*  
*Funding Agency: Kuwait University Research Administration Grant # MG 01/03*

## **Pathology**

*Category: Clinical*

**191**

### **Genetic polymorphisms of Human Platelet Antigens (HPA 1 & 2) as novel risk factors for coronary heart disease in the Arab population**

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#### **Introduction:**

Human platelet membrane glycoproteins (also called human platelet antigens HPA 1 & 2) are platelet specific alloantigens located on GP IIIa and GP Ib-alpha, respectively. They act as receptors for vWF, fibrinogen and thrombin and plays major roles in platelet-adhesion, aggregation and thrombin formation. HPA I & 2 have two alleles each, with variable frequencies in different populations. This genetic polymorphism is considered a putative risk factor for coronary heart disease (CHD) especially in Caucasian populations. In this study, we have compared frequencies of specific HPA 1 & 2 alleles in two groups of Arab subjects with and without diagnosed CHD with the aim of establishing an association between HPA 1 & 2 and risk factor for CHD.

#### **Methods:**

We studied 2 groups of patients: <sup>1</sup> 257 patients with clinically and biochemically confirmed CHD, admitted into a coronary care unit for an acute coronary syndrome; <sup>2</sup> 140 apparently healthy control subjects recruited from the Central Blood Bank. Genotyping for HPA 1 & 2 was done using an established PCR-allele specific restriction digestion method. The respective alleles and genotypes identified were categorized according to the ISBT nomenclature as: HPA 1 (HPA-1a1a, HPA-1a1b and HPA-1b1b) and HPA-2 (HPA-2a2a, HPA-2a2b and HPA-2b2b). The frequencies for each of these alleles and genotypes were then compared between the two groups using chi-square test.

#### **Results:**

The HPA-1 genotype/allele frequencies for controls and CHD patients were respectively as follows: 1a1a - (80.7% vs.75.9); 1a1b - (17.2% vs. 23.0%); 1b1b - (2.1% vs.1.2%); 1a (89.3% vs. 87.4%); 1b (10.7% vs. 12.7%). There were no statistically significant differences in these allele/genotype frequencies between the groups. The HPA-2 genotype/allele frequencies for controls and CHD patients were respectively as follows: 2a2a (73.6 % vs. 74.7%, p ns); 2a2b (22.1% vs. 24.9%, p ns); 2b2b (4.3% vs. 0.4%, p < 0.01), 2a (84.6% vs. 87.2%); 2b (15.4% vs. 12.8%). The frequency of homozygous 2b genotype was therefore higher in control subjects than in CHD patients, suggesting a possible protective influence.

#### **Conclusions:**

(i) HPA 1 polymorphism did not appear to be associated with CHD; (ii) the HPA-2b2b genotype could play protective role in terms of platelet adhesion, thrombus formation and risk of atherogenesis.

*Key Words: HPA Genetic Polymorphism; Coronary Heart Disease; PCR-allele specific*

*Funding Agency: Kuwait University Research Administration Grant # MG01/03*

**Pathology**

*Category: Undergraduate*

192

**Prevalence of Human Papilloma Virus (HPV) infection in the lower female genital tract lesions: Analysis by light microscopy, immunohistochemistry and in situ hybridisation on paraffin embedded tissues.**

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**Introduction:**

According to recent studies the worldwide prevalence of HPV in cervical carcinomas is 99.7%. Vaccines against high-risk HPV types are already in the clinical trial stage. However there is little information about the prevalence of HPV in lower female genital tract lesions in Kuwait. Our aim was to find this using immunohistochemistry and in situ hybridization [ISH] methods and compare it with the light microscopic finding of koilocytotic atypia.

**Methods:**

In the period between May 2002 and December 2005, cases with a diagnosis that is known to be associated with HPV infection like cervical intraepithelial neoplasia, cervical carcinoma, condyloma accuminatum, condylomatous change, vulval intraepithelial neoplasia and vaginal intraepithelial neoplasia were included in the study. In addition some cases of chronic cervicitis were also included to act as controls from otherwise healthy population. Koilocytotic atypia was evaluated by light microscopic examination. Immunohistochemistry was performed using polyclonal rabbit anti-bovine papilloma virus antibody [DAKO Corp.], which reacts with papilloma virus genus specific structural antigens regardless of host species. ISH was performed using DakoCytomation ISH detection system for biotinylated DNA probes. Initially a wide spectrum probe that reacts with multiple types of HPV was used and positive cases were then typed using six different Type specific DNA probes against HPV types 6, 11, 16, 18, 31 and 33.

**Results:**

A total of 128 cases were included in the study with a diagnosis of chronic cervicitis in 37, condylomatous change in 18, cervical condyloma in 3, CIN-I in 25, CIN-II in 11, CIN-III in 13, cervical carcinoma in 10, vulval condyloma in 6, VIN in 1, vulval carcinoma in 1, VAIN-III in 1, vaginal condyloma in 2. Koilocytotic atypia was recorded in 55 cases, immunohistochemistry was positive in 30 cases and ISH was positive in 18 cases. All the 37 cases of chronic cervicitis were negative for HPV by all three methods. HPV typing could be performed in 11 of the 18 ISH positive cases and Type 6 was detected in 2, Type 11 in 3 and Type 16 in 3 while 3 cases were negative for all the six different probes that were used.

**Conclusions:**

Excluding the 37 cases of chronic cervicitis where HPV was not expected, light microscopy was able to detect in 60.44% of cases [55/91], immunohistochemistry in 33% of cases [30/91] and ISH in 19.8% [18/91]. Light microscopy and immunohistochemistry are more sensitive while ISH appears to be more specific and with the advantage of establishing the type of HPV.

*Key Words: HPV; Immunohistochemistry; In situ hybridisation;*

*Funding Agency: None*

**Pathology**

Category: Clinical

193

**Methylenetetrahydrofolate reductase C677T mutation in Arab population and patients with myocardial infarction in Kuwait**

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<sup>1</sup> Department of Medical Laboratory Sciences, Kuwait University Faculty of Allied Health Sciences; <sup>2</sup> Department of Pathology, Kuwait University Faculty of Medicine.

**Introduction:**

Methylenetetrahydrofolate reductase (MTHFR) is an enzyme involved in body folate metabolism. Also, MTHFR participates indirectly in an amino acid conversion from homocysteine into methionine. A cytosine to thymine mutation in the MTHFR gene (C677T) was discovered in 1995. The mutant gene is translated into defective thermolabile enzyme molecules leading to deficiency in the MTHFR enzyme, with the consequence of accumulation of homocysteine in the blood (Hyperhomocysteinaemia; HHC). Homocysteine has cytotoxic effects, and HHC was found by some studies to be associated with cardiovascular diseases. This study was objected to study the prevalence of MTHFR C677T mutation and the risk of developing myocardial infarction (MI) in Arabs living in Kuwait.

**Methods:**

PCR and RFLP techniques were used to test for the presence of MTHFR C677T mutation in 100 MI patients and 100 healthy controls, all of whom were of Arab ethnicity living in Kuwait. Total serum homocysteine level (tHcy) was tested using IMx homocysteine assay from Abbott diagnostics, North Chicago, IL, USA, according to the manufacturer's directions.

**Results:**

The MTHFR C677T mutation was present in 28 MI patients (23 heterozygous and 5 homozygous) and in 32 healthy subjects (29 heterozygous and 3 homozygous). No difference in the prevalence of the mutation was found between the two study groups (p=0.54). Mean tHcy was higher in MI patients than in healthy subjects (13 vs. 10 umol/L, respectively; p<0.01). 17 MI patients (17%) and 8 healthy subjects (8%) had HHC (P<0.05).

**Conclusions:**

Arabs have a high prevalence of MTHFR C677T mutation (32%). HHC, but not MTHFR C677T mutation, is a risk factor for the development of MI in Arabs in Kuwait (2.4-fold increased risk).

*Key Words: Methylenetetrahydrofolate reductase C677T mutation; PCR; Homocysteine;*

*Funding Agency: None*

**Pathology**

Category: Clinical

194

**Soluble transferrin receptor, transferrin receptor, ferritin index, and iron status in female patients with Type 2 Diabetes**

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**Introduction:**

Anaemia is a common finding in Type 2 Diabetic (T2DM) patients. Diagnosis of iron deficiency anaemia (IDA) in diabetic patients is difficult because of complications which cause anaemia with high ferritin levels (as in anaemia of chronic disease, ACD), even in the presence of iron deficiency. Soluble transferrin receptor (sTfR), derived primarily from erythroid progenitor cells in the bone marrow, has emerged as a reliable index for the integrated effects of iron reserve, iron availability, and erythropoietic stimulation. The aim of this study was to evaluate iron metabolism parameters (ferritin, iron, transferrin and sTfR) and erythropoiesis-stimulating factor (serum erythropoietin (Epo)) in assessing anaemia in female patients with Type 2 diabetes.

**Methods:**

High-sensitivity CRP (hs-CRP), full blood count, Epo, sTfR, transferrin, transferrin saturation, ferritin, and iron were determined in 96 female patients with T2DM. Patients were classified as anemic (Hb <12 g/dl) or normal and the sTfR/log ferritin ratio (sTfR-F index) > 0.8 was used as a marker for identification of iron-deficient erythropoiesis.

**Results:**

18 (18.8%) patients were anemic and all had either IDA or were classified as having ACD. hs-CRP was not significantly different between the normal (median (range) = 0.50 (0.1 5.0 mg/L) and anemic (median (range) = 0.30 (0.1 2.1 mg/L) groups. Of the anemic patients, 44% had IDA and 56% had ACD and, among the latter group, 70% showed evidence of a defective endogenous Epo production (Epo < 5mU/mL) and 50% had sTfR-F index > 0.8. Regardless of the cause of the anaemia, sTfR > 1.7 ug/ml and sTfR-F index > 0.9 correctly identified anemic patients with 100% sensitivity.

**Conclusions:**

Majority of anemic female patients with T2DM have ACD with low Epo and/or iron-deficient erythropoiesis. sTfR and sTfR-F index could be used as tools for diagnosis and selection of therapeutic modality in diabetic patients with anaemia.

*Key Words: Soluble Transferrin Receptor; Transferrin Receptor–Ferritin Index; Diabetes;*

*Funding Agency: Kuwait Foundation for the Advancement of Science Grant number 2004-07-02*

**Pathology**

Category: Basic Sciences

195

**Immuno-Unreactive Albumin And Urine Protein Electrophoretic Pattern In Urine Of Patients With Early Diabetic Nephropathy.**

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**Introduction:**

Diabetic nephropathy (DN) is a significant cause of morbidity and mortality in patients with diabetes mellitus and microalbuminuria has been established as a risk factor for the development and the progression of diabetic renal and cardiovascular diseases. The test is based on immunological detection of small quantities of urine albumin but recent studies have demonstrated the presence of a modified form of albumin not detected by currently available antibodies. Quantitation of this modified form of albumin has been used to predict onset of DN in diabetic patients earlier than by conventional immunoassays.

**Methods:**

We tested the correlation of microalbumin:creatinine ratio, measured by two immuno-nephelometric methods that use different albumin calibrators and antibodies (anti-microalbumin (MA) and anti-albumin, (A)) with electrophoresis using densitometry and the total protein value to estimate the albumin concentration. 51 microalbuminuria positive (12 micro- and 39 macro-albuminuric) urines from diabetic patients were studied.

**Results:**

The mean (SEM) urine albumin were 509 (65) mg/g (electrophoresis); 1120 (160) mg/g (MA) and 1192 (170) mg/g (A) and all methods showed significant ( $p < 0.0001$ ) correlations with each other. Bland-Altman analyses showed that electrophoretic and MA methods significantly underestimated the albumin concentration. In all macroalbuminuric patients, staining the electrophoretic strips with silver-stain revealed the presence of more proteins than detected with conventional methods. These additional proteins were absent from the urine of microalbuminuric patients.

**Conclusions:**

Some antibody-based methods underestimate the degree of microalbuminuria in the urine of diabetic patients which contains a greater variety of proteins than previously recognised. Proteomic analysis of the additional proteins may enable the characterisation of proteins that could be used for earlier detection of individuals at high risk of developing DN.

*Key Words: Immunoreactive Albumin; Urine Electrophoresis; Albumin Variants;*

*Funding Agency: None*

**Pediatrics**

*Category: Clinical*

**196**

**Out-come of Very Low Birth Weight(VLBW) babies Born in Ahmadi Hospital (From 1992-2002)**

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**Introduction:**

Neonatal Intensive care is a rapidly developing sub-speciality. Survival of Very Low Birth Weight (VLBW) babies less than 1500 gms, vary considerably and depends upon the facilities and expertise of the NICU. AIMS; To describe the mortality, survival of VLBW infants born in Ahmadi hospital during an 11 year period(1992-2002) and to describe the outcome of the survivors.

**Methods:**

Birth records of all VLBW (<1500gms)babies born in Ahmadi Hospital during above period mentioned were studied. Patien case file were used to get information about their progress. In case of any missing information, patients parents were contacted on telephone to obtain the relevent data.

**Results:**

A total of 175 VLBW babies were identified from 18182 babies born during the period.(1992-2002), at Ahmadi Hospital. The VLBW babies accounted for 0.96% of the total live born babies. 48(27.4%) died and 127 (72.6%) survived beyond the first year of life. Out of 127 survivors, 105(83%) were found to be NORMAL and 8(6%) are Handicaped. 14 patients(11%) could not be traced. The deaths and survival rates according to the weight and gestation have been calculated.Out of 118 babies between 1000-1500 gms. 98(83%) survived. 31 weighed between 750-999 gms, and21(68%)survived.26 babies weighed under 750 gms. and 8(31%) survived. Similarly 57 babies were born less than 28 weeks of gestation and 26(46.5%) survived. 81 babies were born between28-32 weeks of gestation and 70(86.5%) survived. 37 babies born after 32 weeks of gestation, 31(86.2) survived. All these survival rates are un corrected for lethal congenital anomalies

**Conclusions:**

Survival and their development of VLBW babies born in Ahmadi Hospital appear to be very encouraging. A formal neurological and developmental examination of the survivors is planned.

*Key Words: VLBW-Very Low Brith Weight.;*

*Funding Agency: None*

*Pediatrics*

*Category: Clinical*

**197**

## **Acute poisoning in children in Jahra Health Region.**

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Department of Pediatrics, Al-Jahra hospital, Kuwait.

### **Introduction:**

To identify the high risk factors and the causative agents for acute poisoning in children in Jahra health region from 1992 till 1996.

### **Methods:**

A retrospective study of 207 children admitted as acute poisoning over four and a half year period from 1992 till 1996.were reviewed. The data was analyzed and compared with the previous statistics of Kuwait and the other parts of the world.

### **Results:**

Poisoning among children accounted for 1, 58% of all pediatric admissions (13080) during the study period in our hospital. The majority of children 73.91% children were in the age group between one and three years. Male children were affected more than the female children. Easily available analgesics were implicated as the commonest medicinal causative agents responsible for acute poisoning. Kerosene ingestion still remained the commonest house hold hazardous product for acute poisoning in children. All the causative agents were found to be improperly stored at home. Majority of poisonings occurred accidentally at home. There was no mortality. All patients left home in good condition after getting appropriate health education.

### **Conclusions:**

Lack of education, overcrowding, poor socioeconomic status, improper chemical dispensing were the leading risk factors identified in our study. Significant morbidity is caused by acute poisoning in children. Poison prevention programme should be an integral part of all well baby clinics, even before a child is mobile. Parents and caretakers should be counseled on how to poison proof their child's environment.

*Key Words: Poisoning; Acute; Children;*

*Funding Agency: None*

**Pediatrics**

*Category: Clinical*

**198**

**Acquired invasive fungal infection in a Neonatal Intensive Care Unit**

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Department of Pediatrics, Al-Adan Hospital, Kuwait

**Introduction:**

Acquired Invasive fungal infection(AIF)is common in the very low birth weight infants(VLBWI=1.5KG).Several risk factors have been identified.Avoiding these risk factors may decrease the incidence of this infection.Objective:To assess the effect of early introduction of enteral feeds, early removal of central vascular lines(CVL)and the prophylactic administration of nystatin on the incidence of AIF in the VLBWI

**Methods:**

The study was conducted in a neonatal intensive care unit(NICU) during 1999-2002 where we introduced a new standard of care for the VLBWI:1.early introduction of enteral feeds 2.Reduction in the duration of CVL.In addition we studied the effect of added prophylactic oral nystatin to the subset of the extreme low birth weight infants(ELBWI=1kg)during 2001- 2002.The incidence of AIF during 1999-2002 was compared with the cohort of infants with the same characteristics admitted to the unit during 1997-1998(Control Period).

**Results:**

The study sample included 393 infants and the control 176. The incidence of AIF in VLBWI was high during the control period(14%)it reduced to 5.5% during 1999-2000(Period I)and to 0% during 2001-2002(Period II).Enteral Feeding was started at a significantly earlier median age in infants during period I&II(2&3 days respectively)versus the control group(5 days)(P value < 0.0005).CVL was kept for a significantly shorter time (median 6&8days) during period I&II compared to 12 days during the control period(P Value 0.001).Consequently median days of total parenteral nutrition dropped significantly from 25 days during the control period to 11&15 days during period I&II (P Value<0.0005) and median days of hospitalisation dropped significantly from 50 days during control period to 40&46 days during period I&II (P Value 0.001 & 0.004)

**Conclusions:**

This study has shown that the incidence of AIF can be reduced by introducing a protocol based care. Nystatin appears to have an additional advantage.

*Key Words: Preterm; Candidiasis; Central vascular line;*

*Funding Agency: None*

*Pediatrics*

*Category: Clinical*

**199**

## **Cytokine patterns in respiratory distress syndrome indicate different profiles in mild and severe cases**

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<sup>2</sup> Department of Neonatology, Maternity Hospital,, Kuwait

### **Introduction:**

Despite significant advances in prenatal and neonatal care, respiratory distress syndrome (RDS) continues to challenge neonatologists. The precise etiologic and pathogenetic events leading to RDS are unclear, but the levels of some pro-inflammatory cytokines have been shown to be elevated in infants with RDS. The objective of this project was to determine whether levels of pro-inflammatory and anti-inflammatory cytokines are different in mild and severe RDS.

### **Methods:**

Serum and bronchioalveolar lavage (BAL) were collected from 20 infants with mild RDS and 20 infants with severe RDS. Serum and BAL samples were analyzed for levels of IL-1beta, IL-6, IL-8, IL-10 and TNFalpha; using ultrasensitive ELISA.

### **Results:**

Serum Levels of the anti-inflammatory cytokine IL-10 were significantly lower in severe RDS as compared to mild RDS, while the levels of the pro-inflammatory cytokines IL-1beta, IL-6, IL-8 and TNFalpha were higher in severe RDS. Levels of IL-1beta; and IL-8 In bronchioalveolar lavage (BAL) samples, were significantly higher in severe RDS than in mild RDS. Ratios of pro-inflammatory to anti-inflammatory cytokines were consistently higher in severe RDS than in mild RDS in both serum and BAL samples.

### **Conclusions:**

A stronger bias towards pro-inflammatory cytokines is evident in the serum and BAL of infants with severe RDS as compared to mild RDS suggestive of possible involvement of pro-inflammatory cytokines in the etiology of severe respiratory distress syndrome.

*Key Words: Respiratory distress syndrome,; Pro-inflammatory cytokines; Anti-inflammatory*  
*Funding Agency: Kuwait University, Grant No (MK 01/03)*

**Pediatrics**

Category: Graduate (Resident)

**200**

**Safety and efficacy of carvedilol in children with congestive heart failure**

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**Introduction:**

To study safety and efficacy of Carvedilol in children with dilated cardiomyopathy (CMP) and congestive heart failure (CHF) of different etiologies.

**Methods:**

13 patients with dilated CMP & CHF with left ventricular ejection fraction (LVEF) =40% despite triple therapy with angiotensin converting enzyme inhibitors (ACEI), digoxin, and diuretics were included. Patients were treated with carvedilol as adjunct therapy to ACEI, digoxin and diuretics. All were in New York Heart Association (NYHA) functional class II-IV.

**Results:**

Carvedilol was started at a mean of  $10.3 \pm 7.6$  months after the diagnosis of CMP. Mean age at initiation of therapy was  $8.3 \pm 7.2$  years. The initial dose ranged from 0.02 to 0.04 mg/Kg/day in two divided doses with incremental increase every 1-2 weeks until reaching 1 mg/kg/day, with a maximum dose not to exceed 25 mg twice daily. Adverse effects occurred in 3 patients (23%): one with borderline hypotension and two with 1st degree heart block. All 3 patients tolerated carvedilol after adjusting the dose. No patient required discontinuation of the drug. The mean LVEF (%) improved from  $29.6 \pm 6.2$  to  $38.2 \pm 14.2$  ( $p < 0.001$ ). Ten patients showed improved NYHA functional class with no patient showing any worsening from baseline status.

**Conclusions:**

Carvedilol is safe and well tolerated in children with CHF when added to standard therapy for CHF.

*Key Words: Carvedilol; Congestive heart failure; Dilated cardiomyopathy;*

*Funding Agency: None*

*Pediatrics*

*Category: Clinical*

**201**

## **Varicella: pattern of hospitalization and complication in children in Kuwait - 2004**

Husain E \*

Department of Pediatrics, Al- Amiri Hospital

### **Introduction:**

Varicella is a highly contagious infection that is thought to be a benign disease by most pediatricians. The disease may require hospitalization and can be associated with severe complications. The purpose of this study was to describe the pattern of hospitalization and complications in children with varicella.

### **Methods:**

Retrospective review of medical records of children admitted with varicella infection to the Infectious Diseases Hospital in Kuwait in 2004.

### **Results:**

A total of 325 children with varicella were admitted during the study period. The mean age was  $4 \pm 3.5$  years and the majority (77%) were between 1-6 years of age. Of all the patients, 54% were hospitalized during the months of May-July, 2004. The mean duration of illness prior hospitalization was  $4 \pm 2$  days. The average length of hospitalization was  $4 \pm 2$  days. Underlying medical conditions were present in 96 (30%) of the patients. Complications were documented in 187 (58%) of the hospitalized children. These included: cutaneous 86, gastrointestinal 54, neurological 29, respiratory 7, hematologic 7, musculoskeletal 2, and sepsis 2. Four patients (1%) required intensive care admission. However, there were no mortalities.

### **Conclusions:**

Though varicella is thought to be a benign disease, our data shows that the disease results in hospitalizations either for various underlying conditions or for associated complications. This infection puts a burden on the families, society and the health care system. The findings call for the evaluation of the inclusion of the varicella vaccine in the routine childhood vaccine in Kuwait.

*Key Words: Varicella; Childhood; Kuwait;*

*Funding Agency: None*

*Pediatrics*

*Category: Clinical*

202

**Emergency cesarean section and delivery below 39 gestation week increases the risk for newborn born to the post cesarean pregnant**

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**Introduction:**

Many studies have demonstrated safety of a vaginal birth after cesarean, but less studies are comparing neonatal outcome after repeat cesarean and vaginal birth after cesarean.

**Methods:**

A retrospective analysis was conducted for children born in our hospital from 1.1.2003 till 31.12.2004 to the women who had prior cesarean delivery. Data were ascertained from the medical records. Outcomes studied included admission on NICU and mechanical ventilation during at least first 36 hours after delivery.

**Results:**

There were 197 babies born to the women with prior cesarean section during the study time period. The newborns were divided into Group A: born by repeat cesarean section (RCS) – 130 (66%) and Group B: vaginal birth after cesarean section (VBAC) – 67 (34%) NICU admission was done for 41 (31,5%) from VBAC group children compared to 9 (13,4%) from RCS group children ( $p < 0,001$ ) Non of the children needed mechanical ventilation from VBAC group compared to 11(8,46%) children from RCS group ( $p < 0,001$ ) Detailed analysis showed that mechanically ventilated children were born at 33,6 gestation week compared to the non ventilated children born at 38,6 gestation week ( $p < 0,001$ ) as well as NICU admitted children were born at 36,5 gestation week compared with non NICU children who were born at 38,9 gestation week ( $p < 0,001$ )

**Conclusions:**

Children in our institution born vaginal to the women who had prior cesarean delivery needed less frequently NICU admission and mechanical ventilation compared to the children born after repeat cesarean section. Vaginal birth after cesarean was done for more mature babies then repeat cesarean section.

*Key Words: Newborn; Emergency Cesarean section; Post cesarean pregnancy;*

*Funding Agency: None*

*Pediatrics*

*Category: Clinical*

**203**

**Sevoflurane anesthesia for magnetic resonance procedures in**

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Department of Anaesthesiology & ICU, Al Sabah Hospital, Kuwait City, Kuwait

**Introduction:**

To assess the efficacy and safety of sevoflurane anesthesia in children during magnetic resonance imaging (MRI) procedures.

**Methods:**

The patients were 105 ASA-I-II children, mean weight 13 +/- 10 Kg and mean age 2.9 years (range 1 day-10 years), twenty (20%) of whom were under 3 months old. Induction was gradual with 6 – 8 % sevoflurane in a mixture of nitrous oxide and oxygen, after 2 min patients have been intubated with LMA sizes 1 – 3 and followed by maintenance with 1-2% sevoflurane in the same mixture through tubes while the patient breathed spontaneously.

**Results:**

All procedures were performed satisfactorily. 2 – 5 minutes after anesthesia, 88% of the patients were fully awake. None suffered prolonged sedation and no serious complications occurred during the study period. After recovering from anaesthesia, 6 patients (5 %) suffered transient episodes of excessive agitation, usually 5 minutes after awakening. Patients have been discharge to home after 15 – 20 min.

**Conclusions:**

This study indicates that sevoflurane is safe and effective for sedating children, including newborn infants, who must undergo magnetic resonance imaging (MRI).

*Key Words: Sevoflurane; Magnetic Resonance Imaging; Sedation;*

*Funding Agency: ABBOTT, USA - KUWAIT*

**Pediatrics**

*Category: Graduate MSc (Basic Science)*

**204**

**Children Pain Expression and Assessment in Kuwait**

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Kuwait University; Faculty of medicine, Department of community medicine and behavioral Sciences

**Introduction:**

Objective: The aim of this study is to evaluate the ability of children to describe, localize, and intensify their current pain. And compare it to their parent's assessment. And to examine the factors associated with the child's description and assessment of pain intensity

**Methods:**

A cross-sectional survey, the total number of subject in this study was 281 children from 6-12 years old, native Arabic speaking, presenting with acute pain to the emergency room, and accompanied by at least one adult. Data were collected in Amiri, Mubarak Al-Kabeer, Adan, Farwaniya and Jahra hospitals by a self – administered questionnaire from the adult at the same time information were collected from the child by interview. The refusal rate was only 1.7%.

**Results:**

Children described their pain using 23 wordings. The commonest sites of pain were the abdomen, pelvis, and loin. Children with no past experience of pain reported their current pain as of high intensity. There was no agreement in the assessments of pain intensity between the children and their accompanying adults.

**Conclusions:**

Children of school age should take part in the assessment of their pain. They can formulate what they feel. The FACES scale is easy to administer and useful in measuring the intensity of children's pain. Children should not be neglected during physical examination and pain assessment, as often occurs in pediatric practice because as we found that was no agreement in the assessments of pain intensity between the children and their parents.

*Key Words: Pain Expression; Pain Assessment; Children Pain;*

*Funding Agency: None*

*Pediatrics*

*Category: Clinical*

205

**Potter's Syndrome: Report from a tertiary NICU in the State of Kuwait**

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<sup>2</sup> Department of Surgery, Urology, Al-Farwaniya Hospital, Ministry of Health, State of Kuwait

**Introduction:**

Potter's syndrome is a rare congenital disorder diagnosed at birth and characterized by bilateral renal agenesis, lack of amniotic fluid, pulmonary hypoplasia, limb Deformities and typical facies. It is found in 0.2% to 0.4% of the autopsies performed on stillborn infants or those who die soon after birth. Currently, there is no way to prevent or treat it and patients have a poor prognosis with the respiratory insufficiency being the leading cause of death. To the best of our knowledge, the current report seems to be the first report of Potter's syndrome in Kuwait

**Methods:**

In this prospective report, we studied 21 patients with clinical and pathological characteristics of Potter's syndrome.

**Results:**

Male to female ratio was 2:1. Of the studied cases, 53% had history of oligohydramnios and 60% had intrauterine growth problems. All patients had congenital renal anomalies and two-third of them had lung hypoplasia. All of the cases died, with 70% of fatalities having occurred in the first few hours of life. Antenatal ultrasound was done in 43% of the cases, where the counseling was done prior to termination of the pregnancy. Strong family history of renal anomalies, ie. renal agenesis, polycystic kidneys, multidysplastic kidneys, were found in 67% of the cases. 1/3 of the cases were having other congenital anomalies.

**Conclusions:**

In this report we concluded that Potter's syndrome has a fatal outcome and is Incompatible with life. There is no known prevention and the mortality rate is high. Confirmation of diagnosis after birth is important for genetic counseling. this type of population where the high rate of first degree relative marriages were high need premarital counseling to prevent these type of anomalies.

*Key Words: Potter syndrome; Renal agenesis; Lung hypoplasia;*

*Funding Agency: None*

206

## **Oxidative stress and cell-mediated immunity in gestational and pre-gestational diabetes mellitus at third trimester of pregnancy**

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### **Introduction:**

Oxidative stress has been clearly linked to type 2 diabetes mellitus, however, limited data are available on the involvement of oxidative stress in GD. The association of oxidative stress with lymphocyte populations in diabetic pregnancy was not earlier investigated.

### **Methods:**

The study included 63 women with gestational diabetes (43 controlled with diet and 20 controlled with insulin) and 16 pregnant women with Type 2 diabetes (5 controlled with diet and 15 controlled with insulin). As control, 44 normal pregnant women and 48 healthy, non-pregnant women were included. Ten ml of Blood was drawn from each patient for estimation of total antioxidant activity and individual enzymatic antioxidants, malonaldehyde (MDA) and lymphocyte sub-populations. Two color flow cytometric analyses were used for measurement of lymphocyte subpopulations. Analyses of antioxidant enzymes and MDA were performed by spectrophotometric assays.

### **Results:**

There were significant changes in Naïve and memory T-cells and activated T cells (CD4+HLA-DR+, CD4+CD29+) in GD but not in Type II diabetes. The levels of total antioxidant activity were significantly increased among the healthy pregnant women ( $p < 0.05$ ) but not in the diabetic groups. Significantly lower SOD levels were observed in both Type II diabetes cohorts relative to non-pregnant ( $p < 0.005$ ) and exhibited a positive correlation with CD4+CD25+ regulatory/suppressor cells in Type II diabetic cohort on insulin;  $r = 0.904$  ( $P < 0.05$ ). Significantly higher levels of MDA were observed in both Type II cohorts relative to non pregnant cohort ( $p < 0.01$ ,  $0.05$  for diet and insulin treated respectively), correlating inversely with CD8+CD25+ T cells in the insulin treated cohort;  $r = 0.982$  ( $P < 0.05$ ).

### **Conclusions:**

Increased oxidative stress observed in pregnant women with Type II diabetes and to a lower extent in GD may influence lymphocyte activation and cause complications.

*Key Words: Oxidative stress; Diabetes; Lymphocytes;*

*Funding Agency: KU Grant: MR02/00*

### **Ursolic acid effects on cisplatin nephrotoxicity**

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<sup>2</sup> Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Kuwait University

#### **Introduction:**

The effects of ursolic acid (UA) on the impairment of the organic anion p-aminohippurate (PAH) uptake in renal cortical slices caused by cisplatin (CPL) were studied in Wistar (220 g) rats. The aim of this study was to investigate the protective effects of UA against cisplatin nephrotoxicity.

#### **Methods:**

In one series of experiments, renal cortical slices (n = 5 rats) were incubated for 60 min in a CPL containing medium (0.83 - 5.0  $\mu$ M) or a CPL free medium at 37°C under 100% O<sub>2</sub> atmosphere. In another series of experiments, renal cortical slices (n = 5 rats) were incubated in a 3.33  $\mu$ M CPL and UA (2.5 - 20 mM) containing medium or in a CPL and UA free medium. Subsequently, for each series of experiments, kidney slices were incubated at 25°C for 90 min in a media containing PAH. Results were calculated as  $\bar{x} \pm SD$ . Statistical evaluation was carried out using t- test and analysis of variance.

#### **Results:**

The results of these in vitro studies showed a CPL-induced decrease in renal PAH uptake by renal cortical slices in a time- and concentration-dependent manner. UA reversed the time- dependent decrease in PAH accumulation in a concentration-dependent fashion.

#### **Conclusions:**

The results of this study indicate that UA has a nephroprotective effect against cisplatin-induced nephrotoxicity..

*Key Words: Ursolic acid; Nephroprotective; Cisplatin;*

*Funding Agency: Funding agency: Kuwait University Research Administration.*

208

## **Determination of a mechanism of action of anticonvulsant aniline enamiNones.**

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<sup>1</sup>Departments of Applied Therapeutics, and <sup>2</sup>Pharmacy Practice, Faculty of Pharmacy, Kuwait University, Kuwait.

### **Introduction:**

EnamiNones are a novel group of compounds some of which possess anticonvulsant activity in vivo animal models of seizures. The cellular mechanism by which these compounds produce their anticonvulsant effects is not known. This study examined the effects of a Class I anticonvulsant enamiNone, Methyl 4-(4'-bromophenyl) aminocyclohex-3-en-6-methyl-2-oxo-1-oate (E139), on glutamate-mediated excitatory synaptic transmission which may be involved in the neuronal hyper-excitability that characterize seizures.

### **Methods:**

400 um slices of the forebrain containing the nucleus accumbens (NAc, chosen as the model brain region), were generated from male Sprague-Dawley rats. Evoked, pure glutamate-mediated excitatory synaptic responses were isolated pharmacologically and biophysically and studied using current and voltage clamp recording techniques.

### **Results:**

E139, depressed both NMDA and non-NMDA receptor-mediated synaptic responses. The inhibition of the non-NMDA response was concentration-dependent (1.0-100 uM) with a maximal depression of  $-31.3 \pm 3.8\%$  and a calculated EC<sub>50</sub> of 3.5 uM. The excitatory postsynaptic current (EPSC) depression caused by 10 uM E139 ( $-27.7 \pm 3.8\%$ ) was blocked by 1 uM CGP55845 ( $6.3 \pm 8.1\%$ ), a potent GABAB receptor antagonist. Pretreatment of slices with gamma-vinylGABA and 1-(2-(((diphenylmethylene)imino)oxy)ethyl)-1,2,5,6-tetrahydro-3-pyridine-carboxylic acid (NO-711), an irreversible GABA transaminase (GABA-T) inhibitor and a GABA reuptake blocker respectively, caused a depression of the evoked EPSC ( $-38.1 \pm 14.1\%$  and  $-24.1 \pm 8.9\%$ , respectively). In the presence of these compounds, E139 did not cause a further depression of the EPSC.

### **Conclusions:**

Our data suggest that E139 depresses EPSC indirectly by enhancing extracellular GABA, possibly through the inhibition of either GABA reuptake, GABA-T enzyme, or both. This may be one possible mechanism by which anticonvulsant enamiNones produce their effects in vivo.

*Key Words: Antiepileptic drugs; Electrophysiology; Excitatory synaptic transmission;*

*Funding Agency: Kuwait University Grant # PT02/02*

## **Role of Protein Kinases in Mediating Diabetes-Induced Augmented Vasoconstriction to Endothelin-1 in the Renal Arteries of Diabetic Rats**

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

### **Introduction:**

Studies have implicated endothelin-1 (ET-1) in the pathogenesis of diabetes-induced renal dysfunction. The objective of this study was to determine the signalling pathways involved in mediating responses to ET-1 in the renal artery of diabetic rats.

### **Methods:**

This study was performed on isolated renal artery segments obtained from control and streptozotocin (STZ)-diabetic Wistar rats (n=30). Diabetes was induced by a single i.p. injection with 55mg/kg body weight STZ dissolved in citrate buffer. After four weeks, renal arteries from control and diabetic rats were isolated and mounted to measure the vasoconstrictor effect to ET-1. Cumulative concentration response curve to ET-1 was established by applying ascending concentrations of ET-1. Appropriate concentrations of the antagonists were added to the organ-baths and kept for 30 minutes before establishing cumulative concentration response curve to ET-1. Mean values were compared and the difference was considered to be significant when p value was less than 0.05.

### **Results:**

ET-1-induced vasoconstriction was increased in renal artery from diabetic rats. Both the potency and maximum response of ET-1 were enhanced ( $p < 0.05$ ). Using selective ET-1 receptor antagonists, ET-1-induced vasoconstriction was shown not to be related to changes in receptor affinity or receptor subtype distribution. Nifedipine inhibited ET-1 induced contractions in both control and diabetic preparations. However, nifedipine was significantly more potent in diabetic artery segments. Genistein produced significant inhibition of ET-1 induced contraction in the renal artery from diabetic rats only. Staurosporine produced a significant inhibition of ET-1 induced vasoconstriction and the inhibition was slightly more in the diabetic renal artery.

### **Conclusions:**

The augmented vasoconstrictor response to ET-1 in the diabetic renal artery may be related to increased influx of  $Ca^{2+}$  through L-type channels and also to increased tyrosine kinase activity.

*Key Words: Renal Artery; Diabetes; Endothelin-1;*

*Funding Agency: Kuwait University Research Administration (Project number MR02/02).*

210

## **Quantification of sirolimus whole blood levels in clinical samples by high-performance liquid chromatography-tandem mass spectrometry**

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### **Introduction:**

Sirolimus is a relatively new and potent immunosuppressant drug used in organ transplantation. Monitoring of sirolimus blood levels is essential for its clinical use to maximize efficacy and minimize toxicity. The aim of this study was to modify and evaluate a liquid chromatography - tandem mass spectrometry (LC-MS/MS) assay for the determination of sirolimus concentrations in whole blood samples and compare the results to that from external laboratory using the same technique.

### **Methods:**

Whole blood samples spiked with internal standard (32-desmethoxysirolimus) were mixed with zinc sulfate solution and extracted with acetone. The supernatant was alkalized and extracted with 1-chlorobutane. The organic layer was evaporated under nitrogen and the residue was reconstituted with mobile phase (80% methanol/ 0.5 ammonium acetate solution). 20 ul was injected into a Thermo-Hypersil C18 column. The drug and internal standard ammonium adduct were monitored by multiple reaction monitoring with positive ion mode electrospray ionization (ESI). 29 whole blood samples from transplant patients were analyzed by the external laboratory and the results were compared to ours.

### **Results:**

The method was linear over the range from 2.0 to 50 ng/ml. The lower limit of detection was 2.0 ng/ml. The intra- and inter-assay coefficients of variance ranged between 3.4 to 7.9% and 3.2 to 5.4 %, respectively across the concentrations tested (2.0, 25 and 40 ng/ml). The accuracy was more than 90% at all levels tested. Linear regression analysis showed that there was good correlation ( $r = 0.91$ ;  $p < 0.0001$ ) with the external method. Bland-Altman analysis showed a mean difference between the methods of 0.31 ng/ml.

### **Conclusions:**

The method described above is linear, reproducible and sensitive and can be adapted for monitoring of sirolimus blood levels in transplant patients. The method can be used as a back up for the recently introduced immunoassay method and pharmacokinetic studies.

*Key Words: Sirolimus; HPLC-tandem mass spectrometry; Therapeutic Drug Monitoring; Funding Agency: None*

**Pharmacology and Toxicology**

Category: Graduate MSc (Basic Science)

211

**Increased expression and activity of heme oxygenase-2 in pregnant rat aorta is not involved in attenuated vasopressin-induced contraction**

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**Introduction:**

Pregnancy is associated with attenuated vascular reactivity to a variety of contractile agonists. This study examines the involvement of heme oxygenase/carbon monoxide (HO/CO) pathway in mediating the decreased vascular reactivity to vasopressin (AVP) associated with pregnancy.

**Methods:**

Adult female Wistar rats (250-300 g) were used in this investigation. Pregnant rats were used at sixteen-nineteen days of pregnancy while age matched non-pregnant littermates were used as controls. Sections of the aorta were used to study vascular reactivity, expression of heme oxygenase by Western immunoblotting and total heme oxygenase activity. AVP-induced contraction was tested in the presence and absence of a number of antagonists. Differences between mean values were evaluated for statistical significance using student's t-test. Differences were considered significant when  $p < 0.05$ .

**Results:**

Arginine vasopressin (AVP) induced concentration dependent contraction of aortic segments from non-pregnant and pregnant rats. Pregnancy did not alter the sensitivity to AVP ( $pD_2=8.5\pm 0.1$  and  $pD_2=8.4\pm 0.2$ ,  $n=8$  in non-pregnant and pregnant rats, respectively) but significantly reduced the maximum response ( $107.9\pm 12.7\%$  and  $38.6\pm 7.4\%$ ,  $n=8$  respectively, relative to noradrenaline-induced contraction). Western blot analysis revealed the expression of HO-2 but not HO-1 isoform in both groups. There was a significant increase in the expression and activity of HO-2 protein in aortic tissues from pregnant rats compared with those from age-matched non-pregnant rats ( $n=8$ ). Tin protoporphyrin IX (Snpp-IX,  $10 \mu M$ ), an inhibitor of heme oxygenase, did not significantly affect AVP-induced contraction in aorta segments from pregnant and non-pregnant rats ( $n=5$ ).

**Conclusions:**

It was concluded that, though pregnancy increased the expression and activity of HO-2 in the aorta, HO-2 was not involved in the attenuated response to AVP.

*Key Words: Pregnancy; Arginine vasopressin.*

*Funding Agency: College of Graduate Studies, Kuwait University*

212

## **Methyl parathion-an organophosphate insecticide induces biochemical and structural changes in the rat testis**

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Safat 13110, Kuwait.

### **Introduction:**

Population could be exposed to methyl parathion (MP; o, o-dimethyl o-4-nitrophenyl phosphorothioate)-an organophosphate pesticide-via domestic use, food chain, or agricultural use. The present study was designed to investigate the effects of MP on testicular functions in the rat.

### **Methods:**

Adult male Wistar rats (N=5/dose/sample time) were treated (i. p.) with 0, 1.75, 3.5, or 7 mg/kg (experiment 1) for 5 days, or 0, 0.5, or 1 mg/kg (experiments 2 and 3) for 12 days, or 0, 0.75, 1.5 mg/kg (experiment 4) for 25 days, or 0, or 3.5 mg/kg (p. o.; experiment 5) for 25 days, at intervals of 24 h between treatments. Animals were sacrificed on days 14, 130, 77, 17, and 17 respectively for experiments 1, 2, 3, 4 and 5. Biochemical and histopathological assessments of testicular damage were made as per the standard procedures.

### **Results:**

MP, increased the ACP and cholesterol (no effect in experiment 2) levels in experiments 1-3 ( $P<0.01-0.001$ ) and decreased in 4 and 5. Total protein level increased in experiments 2 and decreased in 4 and 5; and uric acid level increased in 2, 3 and 5 and decreased in 4. Vitamin C level decreased in experiments 3, 4 and 5, and the LDH level decreased in 4 and increased in 5. The testosterone level increased and leutinizing hormone level decreased in the testis. MP also induced the structural degenerative changes in the testis.

### **Conclusions:**

These results suggest that MP disrupts the functional and structural integrity in the testis. Thus, MP functions as a reproductive toxicant in the male rat.

*Key Words: Pesticides; Reproduction; Endocrine disruptors;*  
*Funding Agency: None*

213

## **Inhibition of Ca<sup>2+</sup>/calmodulin-dependent protein kinase II, Ras - GTPase and 20-hydroxyeicosatetraenoic acid attenuate the development of diabetes-induced vascular dysfunction in the rat carotid**

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### **Introduction:**

Diabetes causes accelerated vascular dysfunction through mechanisms that are poorly understood. The objective of this study was to investigate the role of Ca<sup>2+</sup>/calmodulin- dependent protein kinase II (CaMKII), Ras-GTPase and 20-hydroxyeicosatetraenoic acid (20- HETE) in the development of abnormal reactivity to vasoactive agonists in the carotid artery of streptozotocin (STZ) diabetic rats.

### **Methods:**

Diabetes was induced in Wistar rats by intraperitoneal (i.p.) injection of 55mg/kg STZ dissolved in citrate buffer. Control rats were injected with the buffer. Ten groups of rats were used in this study. Groups IV were control-vehicle-, control-FPTIII, control-KN-93-, control-ABT- and control-HET0016-treated rats, respectively. Groups VI-X were diabetic-vehicle, diabetic- FPTIII, diabetic-KN-93-, diabetic-ABT- and diabetic-HET0016-treated animals, respectively. The inhibitors of cytochrome P450 (ABT, 50 mg/kg, n=10), CaM KII (KN-93, 5mg/kg, n=10) and Ras-GTPase (FPTIII, 1.5 gm/kg, n=10) were administered i.p. every other day for four weeks starting from day one of diabetes induction. HET0016 (2.5 mg/kg, n=8), an inhibitor of w- hydroxylase, was administered i.p. every day for four weeks starting from day one of diabetes induction.

### **Results:**

Hyperglycemia persisted in the diabetic animals and was 595±12 mg/dl at four weeks. The vasoconstrictor response induced by endothelin-1 (ET-1) was significantly increased whereas vasodilator response to carbachol was significantly reduced in the carotid artery of the STZ-diabetic rats. Chronic administration of KN-93, FPTIII, ABT or HET0016 produced significant normalization of the altered agonist-induced vasoconstrictor and vasodilator responses (p<0.05).

### **Conclusions:**

Our results suggest that CaMKII, Ras-GTPase or production of 20-HETE are involved in signaling pathways that contribute to development of diabetes-induced altered vasoreactivity in the carotid artery.

*Key Words: Diabetes; Carotid artery; Vascular dysfunction;*

*Funding Agency: This work was supported by a grant from Kuwait University Research Administration*

**Pharmacology and Toxicology**

Category: Graduate MSc (Basic Science)

214

**Angiotensin (1-7) contributes to captopril-induced cardiac protection in L-NAME-treated SHR**

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**Introduction:**

Angiotensin (1-7) [Ang (1-7)], is a vasodilator peptide that has a cardioprotective effect in the rat. Inhibition of angiotensin converting enzyme (ACE) increases Ang-(1-7) levels up to 25-fold. This study was designed to test the hypothesis that ACE inhibition-mediated cardiovascular protection is partially mediated by activation of Ang-(1-7) receptors.

**Methods:**

Six groups were studied: Group 1: SHR controls; Group 2: SHR that had L-NAME in their drinking water (80 mg/L for 4 weeks; L-NAME). Group 3: L-NAME treated with Ang 1-7 (0.25 mg/300g/day, ip); Group 4: L-NAME treated with captopril (300 mg/1L); Group 5: L-NAME given A-779 (Ang 1-7 receptor blocker) (0.25 mg/300g/day, ip); Group 6: L-NAME treated with captopril and A-779. Hearts were isolated from the above groups and recovery of function after 30 minutes of global ischemia was determined.

**Results:**

<b>Grooup</b>	<b>BPmmHg</b>	<b>Pmax</b>	<b>LVEDP</b>	<b>CF</b>	<b>CVR</b>
	% recovery	% recovery	% recovery	%recovery	% recovery
SHR	172 ± 2	NR	NR	NR	NR
LNAME	229 ± 2	NR	NR	NR	NR
LNAME + Ang (1-7)	199 ± 8	50 ± 2	181 ± 6	56 ± 10	654 ± 63
LNAME + captopril	197 ± 5	16 ± 9	418 ± 46	23 ± 9	843 ± 282
LNAME + A-779	253 ± 6	NR	NR	NR	NR
LNAME + captopril +A-779	223 ± 4	NR	NR	NR	NR

BP = blood pressure; Pmax = maximum developed pressure; LVEDP = left ventricular end diastolic pressure; CF = coronary flow; CVR = coronary vascular resistance. N = 4

**Conclusions:**

Ang-(1-7) receptor blocker was able to attenuate captopril-induced lowering of blood pressure and cardioprotection. These results establish that activation of Ang-(1-7)-mediated signalling contributes to the beneficial effects of ACE inhibitors.

*Key Words:* Angitensin (1-7); Captopril; A-779;

*Funding Agency:* This work was supported by a grant from Kuwait University Research Administration (project number RM02/03).

215

## **Levosimendan protects against global ischemia-induced cardiac dysfunction in hypertensive rats with endothelial dysfunction**

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### **Introduction:**

Levosimendan (Simdax) is a novel inotropic agent indicated for patients with severe heart failure. At therapeutic levels, levosimendan is a myocardial calcium sensitizer that enhances myocardial contractility. This study was designed to determine whether levosimendan has any myocardial protective effects against global myocardial ischemia in hearts from spontaneously hypertensive rats (SHR) chronically treated with an inhibitor of nitric oxide synthesis, L-NAME.

### **Methods:**

Hearts were isolated from SHR that received L-NAME in the drinking water (80 mg/L) for 4 weeks and divided into 2 groups: In group 1, the hearts were perfused for 60 minutes, followed by 40 minutes of global ischemia and then 30 minutes of reperfusion. In group 2, the hearts were perfused for 60 minutes with levosimendan (0.1 μM), followed by 40 minutes ischemia and then 30 minutes reperfusion.

### **Results:**

Group	LVEDP % recovery	CF % recovery	CVR % recovery	% recovery
SHR + L-NAME (n=4)	6 ± 3	409 ± 22	6 ± 4	433 ± 270
SHR + LNAME + Levosimendan (n=3)	50 ± 8*	266 ± 76*	49 ± 12*	342 ± 106

Pmax = maximum developed pressure; LVEDP = left ventricular end diastolic pressure; CF = coronary flow; CVR = coronary vascular resistance. \* indicates statistically significant as compared to group 1, p<0.05

### **Conclusions:**

These results show that levosimendan can produce protection against ischemia-induced dysfunction in hearts from hypertensive animals with compromised endothelial function.

*Key Words: Levosimendan; L-NAME; Spontaneously Hypertensive Rats;*  
*Funding Agency: None*

216

## **Novel arylcarbonyl- and arylsulfonyl-piperazinyl oxazolidiNones with antibacterial activity**

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### **Introduction:**

The bio-isosteric replacement of the 5-acetamidomethyl group in linezolid with the triazolylmethyl moiety gave PH-027, a novel 5-triazolylmethyl oxazolidiNones with improved antibacterial activity against drug-resistant Gram-positive bacteria. The aims of our study were to synthesize a series of novel arylcarbonyl- and arylsulfonyl-piperazinyl 5-triazolylmethyl oxazolidiNones 5a-u, evaluate their antibacterial activity and correlate this to the calculated log of partition coefficient (ClogP) values.

### **Methods:**

A series of novel oxazolidiNones were synthesized and their antibacterial activity against Gram-positive clinical isolates evaluated in comparison to linezolid, vancomycin and PH-027. The organisms tested (n=49) included methicillin-resistant (MRSA, n=10) and -susceptible *S. aureus* (MSSA, n=11); methicillin-resistant (MR-CNS, n=3) and -susceptible coagulase-negative staphylococci (MS-CNS, n=8); *Streptococcus pneumoniae* (n=6); and vancomycin-resistant (VRE, n=4) and -susceptible enterococci (VSE, n=7). Minimum inhibitory concentrations (MIC's, ug/ml) were determined by agar dilution method on Mueller-Hinton agar, in the absence and presence of 50% human plasma, with the medium containing dilutions of antibacterial agents ranging from 0.12 to 32 or 64 ug/ml. ClogP values were computed using CS ChemDraw Ultra software.

### **Results:**

Against staphylococcal strains, the arylcarbonyl-oxazolidiNones 5a-p (ClogP: 0.046-1.66) showed strong antibacterial activity (MIC value range 0.12-2 ug/ml). The arylsulfonyl derivatives 5r-t with ClogP values >1.70 were generally less active (2->32 ug/ml); while the benzenesulfonyl 5q (0.5-2 ug/ml) and thienylsulfonyl 5u (0.5-1 ug/ml) derivatives with ClogP <1.70 were more active. The 3-methoxyphenyl- 5j, 3-nitrophenyl- 5m, 2-thienyl- 5o and 2-furyl-carbonyl 5p derivatives showed excellent activity against *S. pneumoniae* (0.25-0.5 ug/ml). The arylcarbonyl derivatives 5a-p showed strong activity against VSE and VRE strains (0.5-2 ug/ml). Some of the compounds showed significantly increased MIC's in the presence of 50% human plasma, suggesting plasma instability or binding.

### **Conclusions:**

Arylcarbonyl oxazolidiNones showed activity superior to the arylsulfonyl derivatives; and they were also superior or comparable to linezolid, vancomycin and PH027. Finally, significant structure-antibacterial activity relationships are highlighted.

*Key Words: Antibacterial activity; Gram-positive; OxazolidiNones;*

*Funding Agency: Research Administration, Kuwait University Grant #PC 01/02*

## Pharmacy

Category: Clinical

217

### Therapeutic Drug Monitoring of Gentamicin: Evaluation of five nomograms for initial dosing at AL-Amiri hospital.

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#### Introduction:

In Kuwait, the clinical practice of prescribing gentamicin to hospitalized patients is based on the traditional multiple daily dosing method, where the gentamicin is empirically dosed. Various dosing nomograms have been proposed and are available to assist the clinicians in estimating initial dosage regimen in patients having normal or compromised renal function. The study objective is to compare five published nomograms (Thomson, Mawer, Rule of Eight's, Hull-Sarubbi, and Dettli method) for calculating gentamicin dosage regimen in a Kuwaiti population.

#### Methods:

Based on measured peak and trough concentrations, the elimination rate constant (ke) and volume of distribution (Vd) of gentamicin were calculated for each patient (n = 57) using Sawchuk-Zaske method. The individual ke and Vd, and the initial dose regimen recommended by each method were used to predict the steady-state peak and trough gentamicin levels. The predicted levels were assessed on the basis of: 1) both peak plus trough are within therapeutic range, 2) only peak is within therapeutic range and 3) only trough is within therapeutic range.

#### Results:

Thomson method produced consistent results in predicting gentamicin levels within the target ranges of peak plus trough, peak only and trough only (63%, 74% and 74%, respectively). Mawer, Hull-Sarubbi and Dettli methods have achieved similar percentages (45-49%) of patients within the target ranges (5-10 mg.L-1 for peak and 0.5-2 mg.L-1 for trough), whereas, the Rule of Eight's showed the lowest percentages (36%) of patients within the peak plus trough target range. However, with respect to the under-dosing target range (predicted concentration <5 mg.L-1), Thomson method showed that 22% of patients were under-dosed.

#### Conclusions:

In all dosing methods evaluated in this study, a large number of patients were outside the target ranges. Therefore, individualization of gentamicin dose regimen based on measured drug concentration is of great need.

*Key Words: Gentamicin; Initial dosing nomograms; Pharmacokinetics;*

*Funding Agency: None*

**Pharmacy**

*Category: Clinical*

**218**

**Advertising and disclosure of funding on patient organisation websites**

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**Introduction:**

Pharmaceutical companies may seek to influence the prescribing and use of medicines through funding and interaction with patient organisations (POs). The objective of this study was to describe advertising and disclosure of sponsorship by pharmaceutical companies on the websites of POs.

**Methods:**

An assessment tool based on quality criteria for information on health-related websites and the objectives of the study was developed to identify indicators of transparency and pharmaceutical company relationships with POs. A systematic internet search strategy was devised to identify English language websites of national and international POs for ten diseases (cancer, heart, diabetes, asthma, epilepsy, depression, Parkinson's, "cystic fibrosis", osteoporosis, arthritis) in the USA, UK, Canada, Australia, South Africa. Each website was assessed using the data collection tool.

**Results:**

69 websites were identified. All scored highly on transparency but not on accountability. 6% used banner advertisements as a source of income but only 4% had an advertising policy. Only 10% of depression sites had an annual report present compared to an average of 52%. The median donations to income ratio was 0.65 with corporate sponsorship making 5% to 65% of revenue. Net assets ranged from \$100,000 to \$1.5 billion. 43% disclosed receiving pharmaceutical company sponsorship (from 1 – 21 companies) but only 17% made it clear that the funding was 'unrestricted'. 30% of sites permitted use of pharmaceutical company logos and 26% had direct links to pharmaceutical company websites.

**Conclusions:**

Websites of national POs are generally free of advertising but often do not disclose potential conflicts of interest. With POs increasingly involved in lobbying for introduction of new treatments, it is critical that they are transparent in their relationships with pharmaceutical companies. Guidelines in this area should be developed.

*Key Words: Pharmaceutical industry; Patient organisations; Ethics;*

*Funding Agency: None*

*Pharmacy*

*Category: Clinical*

219

**Determination of duphaston in plasma by tandem mass spectrometry: application to therapeutic monitoring of duphaston in pregnancy disorders**

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**Introduction:**

Duphaston is an orally active synthetic progestogen, which is medicinally used in treating a variety of pregnancy disorders including infertility and recurrent spontaneous miscarriage. Monitoring of plasma levels of duphaston is important for dose adjustment to achieve an optimal therapeutic effect. Therefore, development of analytical techniques for monitoring duphaston is highly demanding. The aim of this study was to develop a validated, sensitive and specific tandem mass spectrometric (MS-MS) assay for monitoring plasma levels of duphaston in pregnancy disorders.

**Methods:**

A patient plasma sample(1ml) was spiked with dexamethasone as an internal standard, and then extracted by solid-phase extraction (SPE) using Oasis MAX extraction cartridge. After gentle evaporation of the eluting solvent, the residue was reconstituted in the mobile phase and directly injected into the ionization probe of the tandem mass spectrometer. Validation studies were conducted to assess the precision and accuracy of the MS-MS method. The developed method was applied to monitor duphaston plasma levels in 24 patients treated with duphaston.

**Results:**

MRM transitions at  $m/z$  313.1>105.5(duphaston) and  $m/z$  393>147(internal standard) were selected for quantification of duphaston in plasma by the internal standard method. Validation studies showed excellent linearity ( $r$ :  $0.99 \pm 0.01$ ) over the concentration range 5-50 ng/ml, high reproducibility (RSD%: 5.3-11.7) and accuracy (DEVs%: -11.7 to +25.4). Patients treated with 10 mg duphaston tablets showed mean plasma concentrations of  $16.1 \pm 3.5$  ng/ml at the steady state.

**Conclusions:**

The described tandem mass spectrometric method presents the first attempt for measurement of duphaston in human plasma. The method has the advantages of high sensitivity, selectivity and high sample throughput. The robustness of the technique makes it helpful in combination with SPE for monitoring a broad range of steroid hormones in human plasma.

*Key Words: Duphaston; Tandem mass spectrometry; Solid phase extraction;*

*Funding Agency: Research Grant PC02/02, Kuwait University*

220

## **Studies on the development of sustained release microcapsules of terbutaline sulphate**

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### **Introduction:**

The objective of the present study was to develop sustained release microcapsules of terbutaline sulfate using Eudragit RSPM as a release retardant polymer.

### **Methods:**

The microcapsules of terbutaline were prepared by emulsion solvent evaporation technique with varying proportion of drug and Eudragit RSPM (1:4, 1:6 or 1:8), emulsifying agent (1.0, 1.5 and 2% of Span 80) and speed of rotation (500, 700 or 900 rpm). The resultant microcapsules were subjected to drug content, size and size distribution analysis, scanning electron microscopy and in vitro drug release studies. Tap density, bulk density, Hausner Ratio, compressibility, particle number and specific surface area of the microcapsules were also determined to characterize their micrometric properties.

### **Results:**

All the microcapsules were found to be spherical or nearly spherical with a narrow size distribution and good flow properties. The mean size of the microcapsules was increasing from 330  $\mu\text{m}$  to 610  $\mu\text{m}$  with an increase in polymer concentration whereas the percent of drug release within 8 hours dissolution was decreasing from 90.7% to 61.3% with increased polymer concentration from 4 to 8%. Increased concentration of surfactant from 1 to 2% and increased speed of rotation from 500 to 900 rpm decreased the size of microcapsules to be lied between 350-330  $\mu\text{m}$ . The processing parameters were optimized by Response Surface Methodology using appropriate software.

### **Conclusions:**

Based on the results of the study, it is concluded that controlled release microcapsules of terbutaline could be prepared by emulsion solvent evaporation method when the emulsion of the polymer is prepared at 500 rpm by incorporating drug and polymer in the ratio of 1:8 and 1.5% of span 80 as emulsifying agent.

*Key Words: Sustained release microcapsules; Terbutaline sulphate; Response surface*

*Funding Agency: None*

*Pharmacy*

*Category: Clinical*

221

**Knowledge, attitudes and practices of pharmacist regarding smoking cessation in Kuwait**

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**Introduction:**

Smoking cessation interventions supported by health professionals have been shown to be effective to increase smoking cessation rates. Community pharmacists, through their frequent contact with clients can have an important role to play in advising people to quit smoking and assisting them in quit attempts. The objective of our study was to determine the knowledge, attitudes and practices of pharmacist towards smoking cessation services in private, retail pharmacies in Kuwait.

**Methods:**

A nation-wide, cross-sectional descriptive study using a self-administered questionnaire was conducted to investigate knowledge, attitude, and practice of community pharmacists toward smoking cessations. The researcher distributed questionnaires to a total of 87 pharmacist in 86 private retail pharmacies. The total number of pharmacies visited represents approximately 40% of private, retail pharmacies in Kuwait, as approx. 220 private pharmacies are operating currently in the country.

**Results:**

The majority, 84% of pharmacists included in the study had positive attitudes toward smoking cessation services. However, only 23% of pharmacist reported to follow recommended good practices in their daily practice when giving advice or information about smoking cessation. Only 30% of the pharmacists had adequate knowledge on using NRT and smoking cessation.

**Conclusions:**

The results showed that pharmacists had positive attitudes toward providing advice on smoking cessation but most of them have barriers to provision of smoking cessation services, like lack of time and lack of training. Their knowledge level was low and they need more skills to successfully counsel smokers regarding smoking cessation. Education and training of private, community pharmacists and motivating them to provide appropriate smoking cessation services to their clients can be an important step for reducing tobacco-related diseases in Kuwait.

*Key Words: Health promotion; Smoking cessation; Pharmacists;*

*Funding Agency: None*

## Pharmacy

Category: Basic Sciences

222

### Suar gum-based colon-targeted metronidazole tablets for the treatment of amoebiasis

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#### Introduction:

Metronidazole is widely used in the treatment of intestinal amoebiasis. When administered as a conventional tablet, more than 98% of the drug reaches systemic circulation and minimal amount of drug is available for local action in the colon. Hence for effective treatment of intestinal amoebiasis, metronidazole is administered in high dose, which may be responsible for precipitation of unwanted systemic side effects. It is hypothesized to overcome these problems with colon-targeted delivery of metronidazole. One of the widely used approaches for colon-specific drug delivery is the use of carriers that are degraded exclusively by colonic bacteria. Our research group established the usefulness of guar gum as a carrier for colon-specific drug delivery. Based on these reports, we developed a novel tablet dosage form for metronidazole with an objective of assessing its clinical effectiveness for the therapy of amoebiasis.

#### Methods:

Fast disintegrating metronidazole core tablets (dose 200 mg) were compression-coated with coat formulation containing varying quantities of guar gum were prepared and subjected to in vitro drug release studies. Based on the in vitro drug release studies in 0.1 N HCl (2 h), pH 7.4 phosphate buffer (3 h) and rat caecal content medium (19 h), metronidazole tablets compressed coated with a coat formulation containing 275 mg of guar gum were subjected in vivo pharmacokinetic evaluation in healthy volunteers. One group of 5 male patient volunteers were treated with guar gum-based colon-targeted tablets and another group of 5 male patient volunteers were treated with conventional immediate release formulation of metronidazole during the same period at dose of 200 mg thrice daily. The absence of amoebic cysts and trophozoites in stool samples was taken as end point for assessing the clinical efficacy of the colon-targeted tablets.

#### Results:

The in vitro drug release studies showed that compression coated metronidazole tablets with 275 mg of guar gum coat provided a minimal amount of drug release in the physiological environment of stomach and small intestine, yet released majority of the drug load in rat caecal contents medium. The in vivo evaluation in human volunteers showed delayed T<sub>max</sub> and absorption time, decreased C<sub>max</sub> and absorption rate constant, and an unaltered AUC and elimination half-life indicating that the drug was not released in stomach and small intestine, but delivered to the colon. The results in patient volunteers showed that it took 7 days for 3 of the 5 patient volunteers to be relieved of intestinal amoebiasis on treatment with conventional immediate release tablets whereas it took only 4 days for 4 of the 5 patient volunteers to be relieved of intestinal amoebiasis indicating that the colon-targeting of metronidazole cures intestinal amoebiasis more quickly thereby the possible side effects with extended treatment may be avoided.

#### Conclusions:

The results of in vitro drug release studies, in vivo pharmacokinetic evaluation in healthy volunteers and clinical efficacy study in patient volunteers suffering from amoebiasis showed that the novel guar gum tablets of metronidazole are potential in providing an effective and safe therapy of amoebiasis.

*Key Words: Metronidazole; Guar gum; Colon targeting;*

*Funding Agency: Government of India (UGC and AICTE)*

**Pharmacy**

*Category: Undergraduate*

**223**

**Interest of community pharmacists in health promotion in Kuwait**

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**Introduction:**

Community pharmacists have been reported to be successful in providing services which help to improve and promote healthy lifestyle with regard to smoking cessation, skin cancer prevention, drug misuse, immunization, diabetes, nutrition and physical activity. This study aimed to describe the current practice of community pharmacists with regard to their provision of healthy lifestyle promotion activities, identify their willingness to participate in healthy lifestyle promotion and identify the barriers that may limit their participation.

**Methods:**

The study included 70 community pharmacies that were selected using stratified and systematic random sampling. Data were collected via face-to-face structured interview of the respondents using a pre-tested questionnaire.

**Results:**

The majority of study participants (65.2%; 95% CI: 53.3 – 76.3%) were strongly involved in counseling patients on health promotion related to medications, but less involved in counseling them on the other personal health behaviors. Most of the pharmacists perceived themselves as very prepared to counsel patients on taking drugs as prescribed (70%; CI: 57.7 – 80.1%) and less prepared to counsel them on other personal health behaviors. Half of the participants (50%; CI: 37.9 – 62.1%) claimed a high level of success in helping patients to change their behavior with regard to medications, but not with regard to other personal health behaviors. The majority of the study participants (74.3%; CI: 62.2 – 83.6%) have the willingness to participate in continuing education programs so as to learn more about healthy lifestyle promotion. The barriers facing community pharmacists' participation in healthy lifestyle promotion activities as perceived by respondents were as follow: lack of pharmacists' time (60%), lack of patients' time (50%), lack of information and/or training (32.9%), and lack of privacy or pharmacy physical design (32%).

**Conclusions:**

Community pharmacists reported to achieve considerable success in helping patients to change their behaviour in relation to medications, but were less confident of their ability to change personal health behaviours. The majority of the respondents have the willingness to be a prime source of advice and support on healthy lifestyle promotion.

*Key Words: Community Pharmacists; Health Promotion; Kuwait;*

*Funding Agency: None*

**Pharmacy**

*Category: Undergraduate*

**224**

**Pharmaceutical care services in hospitals of Kuwait**

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**Introduction:**

Pharmaceutical care is defined as “the process through which a pharmacist co-operates with the patient and other professionals in designing, implementing, and monitoring a therapeutic plan that will produce specific therapeutic outcomes”. This study was conducted to 1) describe the current pharmacy practice in the general hospitals based on self-reported practice by pharmacists, 2) explore the awareness of the pharmacists of the pharmaceutical care concept, 3) identify their willingness to implement the pharmaceutical care practice and to 4) identify the barriers that may limit its implementation.

**Methods:**

Eighty hospital pharmacists working in four general governmental hospitals were approached to be included in the study. Data were collected via face-to-face structured interview of the respondents using a developed and pre-tested questionnaire.

**Results:**

The response rate was 76.3% (95% CI: 65.1 - 84.7%). Thirty five (57.4%;CI: 44.1 - 69.7%) of the respondents had always performed interventions on the prescription through interacting with the medical doctors. Eighteen (29.5%;CI: 18.9 - 42.7%) were always contacted by doctors requesting information about drugs. Thirty two (52.5%;CI: 39.4 - 65.2%) had always provided patient counselling. Forty six (75.4%;CI: 62.4 - 85.2%) of the respondents claimed that they were aware of the pharmaceutical care concept. Thirty five (76.1%;CI: 60.9 - 86.9%) and 39.1% (CI: 25.5 - 54.6%) of those claiming to be aware of the pharmaceutical care concept indicated that its main focus is the patient and the appropriate objectives of the concept, respectively. Thirty (65.2%; CI: 49.7 - 78.2%) of them claimed that they had already implemented the pharmaceutical care services in their practice. All respondents demonstrated willingness to implement the pharmaceutical care practice in their hospitals. The main barriers perceived by the participants were lack of time (78%), lack of staff (71.2%), and lack of educational programs and training (44.1%).

**Conclusions:**

The current practice of hospital pharmacists in Kuwait needs further improvement in relation to interaction with medical doctors and patient counselling. All respondents have shown high willingness towards the implementation of the pharmaceutical care services in their practice. Therefore, implementation and promotion of pharmaceutical care by the health authorities and the Pharmaceutical Association of Kuwait can significantly improve patient care.

*Key Words: Pharmaceutical care; Hospital Pharmacists; Kuwait;*

*Funding Agency: None*

## Pharmacy

Category: Basic Sciences

225

### Formulation of Nifedipine Fast-Release Tablets

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#### Introduction:

Nifedipine suffers from poor dissolution. We aim to prepare fast-release nifedipine tablets based on co-grinding the drug with some carriers.

#### Methods:

Nifedipine was ground with some carriers, including urea, hydroxypropylmethylcellulose K15M (HPMC K15M), polyvinylpyrrolidone K30 (PVP K30), polyethylene glycol 4000 (PEG 4000), poloxamer 338 NF (Pluronic F108?), partially hydrolyzed gelatin (PHG), Aerosil® 200 and sodium laurylsulfate (SDS). Six tablet formulations were prepared by direct compression. Each tablet contained 20 mg nifedipine, 60 mg co-ground carrier, 50 mg Avicel®, 90 mg lactose, 22 mg AcDiSol®, 2 mg talc, and 2 mg magnesium stearate. Tablet hardness was kept in the range of 30-35 N (n=20). USP 23 dissolution paddle apparatus was used employing 900 ml of 0.1 N HCl at 37°C and the rate of stirring kept at 100 rpm. Dissolution was carried out over 60 min with one tablet from each test formulation and 2 tablets from Adalat® T10 tablets (reference). Samples of dissolution medium (5 ml) were withdrawn after 10, 20, 30, 40, 50, and 60 min and replaced by fresh dissolution medium.

#### Results:

The carriers experienced variable effects on drug dissolution from powder. The dissolution rate decreased in the following order: PHG > PVP K30 > SDS > HPMC K15M > Pluronic F108 > Urea > PEG 4000 > Aerosil® 200 > control. Disintegration of all tested tablets was less than 5 minutes. The dissolution rate of nifedipine from the different tablets decreased in the following order: Adalat® > PHG > PVP > SDS > control drug. Adalat® tablets released 100% of nifedipine while PHG-containing tablets released 65% after 10 minutes. PVP and SDS containing tablets exhibited similar dissolution pattern to the control.

#### Conclusions:

Co-grinding of nifedipine with certain carriers enhances drug dissolution. Crodesta® had a detrimental effect on dissolution of nifedipine and HPMC even retarded drug release. The effect of co-grinding on drug release from tablets was not parallel to that observed with powder formulations.

*Key Words: Nifedipine; Fast-release; Co-grinding;*

*Funding Agency: None*

226

## **Response surface methodology to obtain beta-estradiol biodegradable microspheres for long-term therapy of osteoporosis**

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### **Introduction:**

The low encapsulation efficiency and high pulsatile drug release are problems facing biodegradable microsphere drug delivery systems. The purpose of this work was to evaluate the main and interaction effects of formulation factors on drug encapsulation efficiency of beta-estradiol biodegradable microspheres applying response surface methodology. A secondary purpose was to obtain an optimized formula for long-term therapy of osteoporosis.

### **Methods:**

A 3-factor, 3-level Box-Behnken experimental design was used to get 15 experimental runs. The independent variables were drug /polymer ratio (X1), dispersing agent concentration (X2) and deaggregating agent concentration (X3). The dependent variables were percentage encapsulation efficiency (Y1), cumulative percent drug released (Y2) and percentage yield of the microspheres (Y3). The formulations were prepared by emulsion solvent evaporation technique using ethyl acetate as organic solvent. The optimized formulation was maximized for encapsulation efficiency and further characterized for the particle size distribution, SEM, XRD and FT-IR.

### **Results:**

The mathematical relationship obtained between X1, X2, X3 and Y1 was:  $Y1 = -129.85 + 29.35X1 + 122.99X2 + 64.82X3 - 3.2X1X2 - 0.29X1X3 - 35.83X2X3 - 2.05X1^2 - 13.23X2^2 - 5.92X3^2$  ( $R^2 = 0.99$ ). The equation showed that X1, X2 and X3 affect Y1 positively but interaction between any two of these factors affects Y1 negatively. The most significant interaction was between X2 and X3.

### **Conclusions:**

The finding indicated that controlled releases beta-estradiol biodegradable microspheres with high encapsulation efficiency and low pulsatile release can be prepared and the quantitative response surface methodology applied helped in understanding the effects and the interaction effects between the three factors applied.

*Key Words: Controlled drug release; Beta-estradiol; Biodegradable drug delivery system;*

*Funding Agency: None*

*Pharmacy*

*Category: Clinical*

227

**Smoker's attitude towards provision of smoking cessation services in pharmacies**

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**Introduction:**

Smokers may have several quit attempts before successfully stopping smoking. Some of them may need professional and pharmacological support, that can be provided in private pharmacies, the primary access point to nicotine replacement therapy in Kuwait. The objective of this research was to determine the attitudes of patients towards pharmacists providing smoking cessation services in Kuwait.

**Methods:**

This was cross-sectional descriptive study using a self-administered questionnaire in Arabic and English distributed to 200 smokers in a public sector and a private sector pharmacies. The questionnaire was designed to collect information about attitudes of smokers towards smoking cessation and their preference for the place and type of health professionals for provision of smoking cessation.

**Results:**

Most of the respondents were male (93%), Kuwaiti (80%) and nearly half of them had previous, failed quit attempts (46%). The majority of respondents (73.5%) agreed on and believes that pharmacists can provide smoking cessation services. However, they reported that less than half (48.5%) of pharmacists provide them with advice about smoking cessation and available pharmacological therapy. Smokers preferred physicians and friends before pharmacists to get information about smoking cessation. The most preferred place and provider for enrolling into smoking cessation program was a polyclinic and a doctor.

**Conclusions:**

Tough patients showed some acceptance and positive attitudes about pharmacists providing smoking cessation services, they would prefer to receive advice from a doctor. Introduction of any smoking cessation services provided by pharmacists must be accompanied with relevant patient education program to increase patient's acceptability and trust in this type of service in Kuwait.

*Key Words: Smoking cessation; Patient's preferences; Pharmacists;*

*Funding Agency: None*

**Pharmacy**

*Category: Clinical*

**228**

**Kuwait pharmacies blood pressure devices survey**

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**Introduction:**

This study set out to determine 1] what information is given to patients by pharmacists when they sell self-monitoring blood pressure (BP) devices, and 2] pharmacists' knowledge regarding the devices and BP measurement.

**Methods:**

This study was designed to include all community and private clinic pharmacies in Kuwait (~230). A developed and pre-tested questionnaire comprising closed- and open-ended questions was administered to 180 community pharmacists at the pharmacies that were reached. The questions solicited background information on pharmacists' demographics, knowledge of blood pressure and blood pressure measuring devices, and the provision of patient education when selling the devices.

**Results:**

Six pharmacies did not carry any BP measuring devices and were excluded from further participation in the survey. The response rate in the remaining 174 was 96.7%. The majority were male (75%) and the median age was 33.5 years (range 25 – 74). Respondents had basic pharmacy qualifications ranging from 3 to 5 years in length and had a median of 9 years' experience practicing pharmacy. All pharmacists claimed to explain the use of devices to their patients. Although the majority (85%) correctly identified the mercury sphygmomanometer as the most reliable device for measuring BP, only about half (52%), claimed to know how to check the accuracy of the devices. Slightly less than half (47%) claimed to know of any guidelines for managing hypertension. Surprisingly, only 24 (15%) could correctly identify paired systolic/diastolic readings that would be classified as hypertension according to most current practice guidelines.

**Conclusions:**

Kuwait community pharmacists' knowledge regarding BP and BP measuring devices is poor and does not correlate positively with their self-perception of that knowledge. This needs to be addressed through continuing education and maintenance of professional competence programs in order for pharmacists to be more effective in delivering care to patients.

*Key Words: Device; Self-monitoring; Hypertension;*

*Funding Agency: None*

**Pharmacy**

*Category: Undergraduate*

**229**

**Public trust in and attitudes towards retail pharmacists in Kuwait**

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**Introduction:**

The function that private community pharmacies play in society is dependent on a number of factors including the health system structure and the public's perceived role of and trust in the pharmacist. The objective was to investigate the perceived role of the pharmacist and private retail pharmacies among members of the public in Kuwait.

**Methods:**

A self-administered questionnaire was developed in Arabic to elicit sociodemographic information as well as respondents' perceived role of the pharmacist, reasons for visiting private retail pharmacies. Respondents were asked to rate a list of professions on a scale from 1 (complete trust) through 5 (no trust at all). After pretesting, 121 questionnaires were distributed to members of the family and social networks of pharmacy students at Kuwait University.

**Results:**

Respondents were mostly female (60%) and Kuwaiti (60%) and over 90% had been to a private pharmacy. Pharmacists were considered more as a medicines expert and health advisor than a medicines storekeeper. 70% of respondents would go to a private pharmacy first for mild symptoms rather than a doctor or polyclinic. Kuwaiti patients were less likely to obtain chronic medication from private pharmacies than non-Kuwaitis ( $p=0.023$ ) but more likely to go for advice on severe symptoms ( $p=0.042$ ). Proximity and trust in the pharmacist were important factors in choosing a regular pharmacy. 45% of respondents would insist on seeing the pharmacist before purchasing medicines, 34% would always discuss their situation with him/her and 10% would not purchase medicines unless the regular pharmacist was present. Pharmacists and doctors were the most trusted professions (mean score 2.2 and 2.3 respectively) and politicians the least trusted (4.0).

**Conclusions:**

Pharmacists are trusted professionals in Kuwaiti society and private pharmacies are often used. The quality of care provided by pharmacists when approached for medical advice needs to be examined.

*Key Words: Pharmacists; Retail pharmacy; Trust;*

*Funding Agency: None*

## **Cell Free Expression of Cloned Cyanovirin-N Gene**

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### **Introduction:**

Cyanovirin-N (CV-N), originally obtained from the aqueous extract of the cyanobacterium *Nostoc ellipsosporum*, is a potent HIV-inhibitory protein with 101 aminoacids. It was shown that CV-N exerts broad virucidal activity at nanomolar concentrations, against T-lymphocyte-tropic, macrophage-tropic, and dual tropic laboratory-adapted and primary clinical isolates of HIV-1, as well as HIV-2, and simian immunodeficiency virus (SIV). It has been well established that the potent anti-HIV activity of CV-N stems from its high-affinity and high-avidity interactions with the HIV surface envelope glycoprotein gp120 and, thus, acts at the level of HIV envelope-mediated fusion.

### **Methods:**

We here report the production of CV-N using Rapid Translation System (RTS), an example of Cell-Free Protein Synthesis Systems and a different strategy than those previously adapted. CV-N gene was designed and synthesized in a modified form that is compatible with RTS. Other required regulatory sequences were also considered, constructed and added. The final sequence was cloned into pUC18 cloning vector. This step enhances the processing of the gene and assists its transformation into cells to make stock of CV-N gene. Additionally, the gene could be easily propagated to get larger quantities. To get a compatible CV-N gene with the expression vector in an enough amount, Xi-Clone™ PCR cloning process was employed, followed by homologous recombination of the PCR product with the expression gene pIVEX2.3MCS. Purification and verification of the purified r-DNA was done. Towards our final aim, the purified r-DNA was expressed using RTS.

### **Results:**

CV-N encoding sequence was obtained from a previously published data. The gene was designed so that it contains the nucleotide sequence which encodes for CV-N protein as well as other regulatory and required sequences, i.e., Bam HI restriction site, Ribosomal Binding Site (RBS), start codon, pelB, stop codon, poly A tail and Eco RI restriction site. All oligonucleotides were designed manually. GC contents and melting temperatures were calculated using Promega's technical services available on the web ([www.promega.com/biomath](http://www.promega.com/biomath)). In preparation for cloning, CV-N gene was subjected to different modification processes using PCR techniques. The expression plasmid, pIVEX2.3MCS was also prepared for cloning. Finally, histidine-labeled protein was successfully produced, purified and detected.

### **Conclusions:**

Production of CV-N using RTS technology has shown several advantages over the conventional recombinant DNA methods. RTS facilitates the expression procedure by going beyond a number of steps included in the conventional recombinant DNA methods, i.e., transforming the clones into cells, induction of transformed cells, extraction and purification of the produced protein. This would save more time and efforts.

*Key Words: Cyanovirin-N; Rapid Translation System; Cell Free Expression;*

*Funding Agency: None*

*Pharmacy*

*Category: Clinical*

**231**

**Medication Error Program at Ahmadi Hospital**

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**Introduction:**

Healthcare facilities have an obligation to closely examine their current medication systems. Medication is involved in almost every patient encounter as a prescription, as an order or as an administration. Our objective to use this tool “Analyze Err”, in document -ing, analyzing all potential medication errors and put forward an effective vehicle for communicating crucial error reduction strategies, within Pharmacy and other interdisciplinary HealthCare teams to improve on the outcome.

**Methods:**

A total of 70,000 items are dispensed each month from three sites of Pharmacy, concentration was on Family Medicine Clinics which counts for 57% of total prescriptions. total of 310 potential medication errors were documented by all pharmacists using the Analyze Err Software Program starting Jan 2005 for 6 months..All three pharmacies sites were involved in documentation, were Details of all various screens such as error description, communication with healthcare providers were made, the Root Cause Analysis and recommendations put forward to prevent such an incident.

**Results:**

Out of 310 potential reported medication error, the highest encountered was the improper dose of 44%, wrong dispensed medication 14.5%, incomplete Rx (monitoring error) 9% wrong strength concentration 5.8% and others counted for such as wrong route of administration, wrong duration etc....

**Conclusions:**

This process contributes to the development of a culture of safety by providing a method to engage organizational leadership and front line staff in real time problem solving to address safety issues. Various actions taken to reduce and minimize potential medication error, such as education of health care team to improve prescribing habits and ensure completeness, create a Health, Safety Task Force Team, initiate guidelines and protocols to improve medication safe use and others. Medication Errors that scored very high occurrence have decreased with a certain period and improved processes.

*Key Words: Patient Medication Error; Safe Medication Use; Root Cause Analysis;  
Funding Agency: None*

232

## **Behavioral changes after complete traumatic spinal cord injury in adult female rats**

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### **Introduction:**

Spinal Cord Injury (SCI) is common among young people in the age's range of 16 to 30 year-old (Carrano, 2003). SCI is classified as complete and incomplete injury. Complete injury results in complete loss in sensory and motor functions. Methylprednisolone (MP) is used to treat acute SCI. The purpose is to study the short and long term effect of MP on injured spinal cord and the behavioural changes after complete traumatic SCI in a rat model.

### **Methods:**

Twenty-three adult female rats were used to determine the long term effect of MP on behavioural changes after SCI. The rats were divided into three groups; control, placebo and treated. Under anaesthesia, complete SCI induced surgically and MP administered for 24 hr. A scale of 4 points was used to measure the behavioural changes (stationary posture, locomotor response, grid, sensation test and swim) were carried out once a week for one month after injury.

### **Results:**

One-way ANOVA was used to determine the difference in behavioural changes following spinal cord injury ( $p = 0.05$ ). Post hoc Bonferroni was used to compare groups and weeks (the  $p$  values were adjusted accordingly). Treated group (MP) results showed a significant increase in behavioural scores only at week 4 ( $p = 0.03$ ) when compared to week 1. There was a significant increase in behavioural scores at weeks 2 ( $p = 0.021$ ), 3 ( $p = 0.012$ ) and 4 ( $p = 0.002$ ) in the control group when compared to week 1. There were no significant differences between groups when they were compared to each other at same week points.

### **Conclusions:**

The short term effect of MP can be noticed but not significant when compared to control and placebo groups. Control rats showed significant improvement in behaviour among the 4 weeks. MP may delay the behavioural improvement in the chronic stage. We are still in the process of testing the long term effect of MP.

*Key Words: Spinal cord injury; Methylprednisolone; Behavior;*

*Funding Agency: None*

*Physiology*

*Category: Clinical*

233

**FPTIII improves cardiac recovery by inhibiting farnesylation of Ras - GTPase and activation of mitochondrial ATP-sensitive potassium channels**

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**Introduction:**

Chronic inhibition of Ras-GTPase before ischemia and reperfusion (I/R) improves recovery of cardiac function similar to preconditioning (PC). This study was designed to see if acute inhibition of Ras-GTPase with FPTIII after global ischemia would also produce cardioprotection. The effect of glibenclamide, an inhibitor of cardiac mitochondrial ATP-sensitive potassium (mitoKATP) channels, on Ras-GTPase-mediated cardioprotection was also studied.

**Methods:**

Hearts were removed and perfused from 7 groups of Wistar rats (N=7/group). Group 1: Ischemia, Group 2: PC + Ischemia, Group 3: FPTIII (pre) + Ischemia; Group 4: FPTIII (pre) + PC + Ischemia; Group 5: FPTIII (post)+ Ischemia; Group 6: FPTIII (post) + PC + Ischemia; Group 7: Glibenclamide + FPT III (pre) + Ischemia. Left ventricular developed pressure (Pmax) and left ventricular end-diastolic pressure (LVEDP) were recorded.

**Results:**

40 minutes of global ischemia followed by a 30 minutes of reperfusion produced significantly impaired cardiac function, measured Pmax and LVEDP. Pre-treatment with FPT III significantly enhanced cardiac recovery in terms of left ventricular contractility similar to what is seen with preconditioning. Treatment with FPTIII after ischemia was less effective. Combination treatment with FPT III and glibenclamide before I/R resulted in significant reduction of FPT III-mediated cardioprotection.

**Conclusions:**

These data suggest that activation of Ras-GTPase signaling pathways during ischemia are critical in the development of left ventricular dysfunction. Reduction of FPT III- mediated improvement by glibenclamide indicates that opening of mitoKATP channels contributes to cardioprotection produced by Ras-GTPase inhibition.

*Key Words: Heart; Ischemia; Signalling;*

*Funding Agency: Kuwait University Research Administration, RM 02/03*

*Physiology*

*Category: Basic Sciences*

234

**Low carbohydrate ketogenic diet enhances cardiac tolerance to global ischemia**

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**Introduction:**

The structural and functional consequences of restoring coronary arterial flow following myocardial ischemic reperfusion injury are well characterized. Previously, we have shown that low carbohydrate ketogenic diet reduces the risk factors for heart disease in obese patients. This study is aimed at understanding the cardio protective effects of low carbohydrate ketogenic diet (LCKD) following global ischemic injury in rats.

**Methods:**

Eighteen male Wistar rats weighing 190-250 g were used in this study. The animals were divided into Normal Diet (ND), LCKD and High carbohydrate diet (HCD) groups. Specific diets were given to each group for a period of 19 weeks. The cardio protective effects of LCKD group as compared to ND and HCD groups were investigated in rats following global ischemic injury. Changes in the body weight were monitored for all the groups during the experimental period.

**Results:**

Rats on LCKD had remarkable tolerance to ischemia and faster recovery of cardiac function following reperfusion. The initial reperfusion recovery of the pressure developed in the left ventricle, Pmax was similar in all groups. However, after 15 minutes, the momentum for faster recovery was significantly maintained in low carbohydrate ketogenic diet group ( $p < 0.05$ ) when compared with the high carbohydrate group. The increase in left ventricle end diastolic pressure (LVEDP) and coronary vascular resistance (CVR) was not significant between the experimental groups. The reperfusion recovery of coronary flow (CF) was highly significant ( $p < 0.05$ ) in the low carbohydrate ketogenic diet regime as compared to the rats fed on a high carbohydrate diet. However, there were no significant changes in the body weight between the groups at any time period of measurement of body weight.

**Conclusions:**

This study, therefore, suggests that low carbohydrate ketogenic diet is cardio-protective functionally.

*Key Words: Low carbohydrate ketogenic diet; Ischemia and reperfusion; Cardiac tolerance; Funding Agency: None*

### **Energy Cost of Islamic Prayer**

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**Introduction:**

Five standard prayers are mandatory for every male and female Muslim above puberty. Each prayer has a multiple Rakkas(Rkk).Each Rkk is a sequence of body movements consisting of standing, bowing, kneeling and sitting. Since prayers consist continuous body movements they may be considered as a form of physical activity. The aim of this study was to measure the energy cost of Islamic prayer.

**Methods:**

Thirty two male and female adults were participated in this study. Each subject signed a consent form before they commence the test. The energy cost of a two,three and four Rkk prayers were measured by indirect method of using the VO<sub>2</sub> and RQ equivalent of O<sub>2</sub>.

**Results:**

Average age, weight, and height were 26±1.9,79±4.0 and 168±1.56 respectively. Table 1&2 shows the results of DOP,VO<sub>2</sub>,RQ and the energy cost of all subjects did not perform prayer and perform prayer respectively

variables	Rest sleep	Rest Awake	No prayer	Total
Duration(min)	480:0±0.0	960:0±0.0	0:0±0.0	1440±0.0
VO <sub>2</sub> (ml/min/kg)	1.680±0.0	4.291±0.0	0.0±0.0	5.971±0.0
RQ	0.90±0.01	0.90±0.01	0.0±0.0	0.90±0.01
Energy(kcal/kg/day)	8.265±0.0 2	1.11±0.0	0.0±0.0	29.38±0.0

Table2:

variables	Rest sleep	Rest Awake	Prayer	Total
Duration(min)	480:0±0.0	934:25±0.0	25:35±0.0	1440±0.0
VO <sub>2</sub> (ml/min/kg)	1.680±0.0	4.177±0.0	0.201.0±0.0	6.16±0.0
RQ	0.90±0.01	0.90±0.01	0.90±0.01	0.90±0.01
Energy(kcal/kg/day)	8.265±0.0	20.55±0.0	0.988±0.0	29.80±0.0

**Conclusions:**

Islamic prayers (Salats) have a positive effect on the metabolic function of the individuals.Oxygen uptake and energy cost of prayers were higher than resting state. For an 80 kg individual energy cost of daily prayers equals to approximately 80 kcal/day. Salat therefore, may be considered as a form of physical activity that may induce exercise adaptation and enhances the fitness level and body weight shape of the individual.

*Key Words: Duration; Salat; Metabolic function;*

*Funding Agency: None*

*Psychiatry*

*Category: Clinical*

**236**

**Deliberate self harm cases referred for psychiatric assessment**

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**Introduction:**

Deliberate self harm is a major health problem in the world. The objective of this prospective study is to examine the socio-demographic features, the methods used, diagnoses, and motives of deliberate self harm (DSH) in Kuwait.

**Methods:**

All consultation referrals to Kuwait Psychological Medicine Hospital due to DSH over 6 month period from September 2002 to February 2003 were included. Patients admitted to any of the main six general hospitals in Kuwait due to DSH and for whom requests for psychiatric assessment were sent to the Psychological Medicine Hospital, during the period of study, were assessed. The assessment involved semi-structured interview conducted by one of the research team.

**Results:**

A total of 104 cases of DSH were examined during the period of study. They represent 25% of all referrals for psychiatric consultations. 46.2% of the subjects were Kuwaiti. Two third of the sample were female. The age range of the sample was 13-66 years, mean age (24.7±10 years). The peak age group was 15-24 years of age; females are significantly more than males in this age group (p=0.001). The most frequent method (74%) of DSH was drug over dose followed by the use of organo-phosphorus compounds (9.6%), self injury (8.7%), and strangulation (2.9%). 25% of the sample had made previous DSH. Twenty percent of the cases had a diagnosis of depression, 38.5% of adjustment disorder, 6.7% of schizophrenia, 6.7% due to personality disorders and 22.1% had no psychiatric disorder. Twenty three percent reported motives of death, while attention seeking was the main motive in 50% of cases. 18.3% of the cases required admission to psychiatric hospital.

**Conclusions:**

DSH presents an important health problem and a cost burden on health care system. Management of psychiatrically treatable cases of DSH would help in reducing frequency of suicide.

*Key Words: Deliberate self harm; Parasuicide; Pschiatric Consultaion;*

*Funding Agency: None*

*Psychiatry*

*Category: Clinical*

237

## **BODY MASS INDEX of children with autism in KUWAIT:**

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### **Introduction:**

Autism is characterized by the presence of qualitative impairments in communication, reciprocal social interaction and stereotyped behaviour. Physical growth and accompanying factors such as nutrition are increasingly being recognized as an important part of many learning and developmental disorders in addition to aberrant neuro development. Morphometry, the measurement of forms, is an ancient practice. Progress has been made in the determination of one of the key features of body stature. The body mass index(BMI) ( $\text{kg}/\text{m}^2$ ) is an empirically derived index which combines a strong correlation with body weight but not with height. The aim of this study was to evaluate BMI of children with autism with reference to age and sex matched healthy reference population(CDC growth chart-USA, NHANES 2000).

### **Methods:**

The sample consists of 63 male children mean age 11.3 years (SD  $\pm 5.9$ ) and 19 females mean age 10.2 years (SD  $\pm 4.2$ ) who were attending Kuwait autism center. The child's weight and height were taken on admission to school. The BMI values were transformed to percentiles with reference to the age sex specific BMI values of the reference population. Chi square tests was used to find the significance between observed and expected frequencies of BMI distribution.

### **Results:**

Frequency distribution of BMI Percentiles suggests that both 63.5% of autistic male and 73.7% of autistic female Kuwaiti children had BMI above 50th percentile. The chi square tests shows that there is a significant difference in the observed and expected frequencies of the percentiles. ( $p < 0.001$ ,  $df = 2$ , Chi square = 33.16 for male and  $p < 0.001$ ,  $df = 2$ , chi square = 24.90 for females)

### **Conclusions:**

There is a significant difference in the observed and expected frequencies of the BMI percentiles of autistic children. This finding contrast with the results of similar studies reported in Western countries, underlying nutritional and socio economic factors are discussed.

*Key Words: Autism; Body Mass Index; Kuwait.;*

*Funding Agency: None*

**Psychiatry**

*Category: Clinical*

**238**

**Inpatient psychiatric consultation in Kuwait – a descriptive study**

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**Introduction:**

Recent years have seen a widespread interest in the field of consultation-liaison psychiatry. The objectives of this study were to examine different elements of the consultation process in Kuwait and to compare our findings to those of similar studies.

**Methods:**

Psychiatric consultation requests were studied retrospectively over a year (263 requests) and prospectively (50 consecutive requests) regarding referring service, reason for consultation, age and sex of referred patients, psychiatric diagnosis, recommended psychiatric interventions, timing of referral, medical/surgical diagnosis, psychosocial stressors in last year, and past psychiatric history.

**Results:**

In the retrospective study, males and females were almost equally represented (49.8% and 52.2% respectively) and 70% of the requests were received from medical specialties. In the prospective study, 16 patients (32%) were males and 34 (68%) were females, 46 requests (92%) were received from medical specialties, most patients (60%) were referred during the first 3 days of admission with a statistically significant positive correlation between timing of referral and length of hospital stay, 29 patients (58%) had history of psychosocial stressors, and 13 patients (26%) had positive past psychiatric history. In both retrospective and prospective studies, patients with ages between 21 and 40 years were more commonly referred for psychiatric consultation than those of other age groups ( $p=0.000$ ), suicidal behavior was the most common reason for consultation (24.6% and 42% respectively), adjustment disorder was the most common psychiatric diagnosis (22.3% and 22%), and pharmacotherapy was the most frequently recommended psychiatric intervention (45.9% and 84%).

**Conclusions:**

Suicidal behavior is the most common reason for psychiatric consultation in Kuwait. Patients who are referred early for psychiatric consultation have shorter hospital stay than those who are referred later. Kuwait consultation psychiatrists do not tend to record the diagnosis of "personality disorder" and they are less likely to recommend psychotherapy for their

*Key Words: Psychiatric; Consultation; Kuwait;*

*Funding Agency: None*

*Psychiatry*

*Category: Clinical*

239

### **Correlates of subjective quality of life in diabetes care: family caregiver impressions predicted quality of life of patient and caregiver**

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#### **Introduction:**

There is paucity of studies comparing the subjective quality of life (QOL) of type 1 and type 2 diabetes patients and their family caregivers, with the general population. We used the WHO 26-item QOL Instrument to assess samples of these population groups in Sudan, and highlighted the variables that impact on patient and caregiver QOL.

#### **Methods:**

Responses of stable outpatients with type 1 diabetes (105 subjects), and type 2 diabetes(135) and their caregivers, were compared with those of the general population (139).

#### **Results:**

Patients were predominantly dissatisfied with their life circumstances. Caregivers were satisfied with their general social supports. Patients had significantly lower general facet QOL scores (6.6,SD 1.6; 6.9,SD 1.8, respectively), than the caregivers(7.7, SD 1.7), and controls(7.7,SD 1.6)( $P<0.001$ ).For patients, having additional medical problems, diminished sexual desire, being young, unemployed and single, were associated with poor QOL. Caregivers who were sick, younger, single, less educated and caring for patients with more recent illness, had lower scores. In step-wise regression analysis, caregiver impression of patient's QOL was the main predictor of patient QOL(Beta =0.51, variance =25.8%,  $P =0.0001$ )and caregiver QOL(Beta =0.42, variance =27.4%,  $P =0.0001$ )

#### **Conclusions:**

The factors associated with QOL indicate a group in steady state that needs focused attention. Caregiver education is important, to enhance their role, quality of care and QOL of patients and caregivers.

*Key Words: Quality assessment; Life; Diabetes;*

*Funding Agency: None*

## **APOE gene polymorphism and blood lipoproteins in Arab schizophrenic patients.**

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### **Introduction:**

A pathogenetic relationship between Apolipoprotein E (APOE) polymorphism and susceptibility to schizophrenia is controversial. Previous work has been predominantly in Caucasians. In this study, we aimed, in Kuwaiti Arabs, to compare frequencies of APOE genotypes and alleles between schizophrenic patients (SZ) and healthy controls (HC) and relate the APOE polymorphisms with circulating blood lipoprotein levels.

### **Methods:**

The two groups of subjects, matched for age, were (i) SZ: n=146 (100M, 46F) patients diagnosed according to the DSM IV criteria; (ii) HC: n=120 (119M, 1F) healthy blood donors. The SZ patients had detailed clinical and laboratory evaluation and, in all, APOE genotypes were determined by PCR amplification and PAGE RFLP methods. Fasting serum lipoproteins (cholesterol (TC), triglyceride (TG), HDL, LDL, apoB) and uric acid levels were also measured in each subject by routine Autoanalyzer techniques. We then explored the differences in frequencies of APOE alleles/genotypes and their respective associations with lipoprotein levels.

### **Results:**

The respective allele frequencies (%) were: SZ v. HC: E2, 3.8 v 5.8; E3, 87.6 v 85.8; E4, 8.6 v 8.4; the genotype frequencies were: SZ v HC: E3E2, 7.5 v 11.5; E3E3, 73.5 v 71.7; E3E4, 17.1 v 16.6 (all p ns). There was a statistically insignificant trend towards lower E2 and E4 frequencies in SZ. Furthermore, SZ had a less atherogenic blood lipoprotein profile (lower TC, TG, LDL, apo B, uric acid levels than HC), and this was apparently influenced by APOE allelic patterns.

### **Conclusions:**

The study suggests that APOE allelic and genotypic distribution are essentially similar between SZ and HC. The former however had a less atherogenic lipoprotein profile for the same APOE allele/genotype as the latter.

*Key Words: Apolipoprotein E; APOE Polymorphism; Schizophrenia;*

*Funding Agency: Kuwait University Research Administration Grant MG 02/02*

*Surgery and Transplantation*

*Category: Clinical*

241

**Ureteric stricture in kidney grafts**

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**Introduction:**

A retrospective study to explore the incidence, management options and outcomes of ureteric stricture in kidney recipients

**Methods:**

Between January 2001 and December 2004, 355 kidney transplantation procedures were performed at Hamed Al-Essa Transplantation, centre from 254 living and 101 cadaveric donors. Recipients were 180 males, 175 females and 40 of them were children. Ureteric stricture presented clinically with impaired kidney function and diagnosis was confirmed by U/S, isotope renal scan, and antegrade pyelography. It was managed either by percutaneous antegrade ureteric dilatation and stenting, or by surgical reconstruction.

**Results:**

Ureteric stricture of kidney graft was diagnosed in 12 recipients (3.4%) at 2 months to 21 months post-transplantation. 8 recipients were adults, 9 recipients were males, and 6 recipients received kidneys from living donors. Percutaneous ureteric stenting (+ dilatation) was attempted in all cases and it showed long term success in 6 cases (50%). In the remaining 6 cases (50%) surgical reconstruction of the ureter was successfully performed. There was no graft loss in the present series secondary to ureteric stricture.

**Conclusions:**

In the present series, the incidence of post-transplantation ureteric stricture was low (3.4%) and it presented after a mean time of 4.8 months after transplantation. It was observed to be more common in children (10%), in male recipients (5%) and after cadaveric transplantation (5.9%). It was successfully managed with no graft loss.

*Key Words: Ureter; Renal graft; Stricture;*

*Funding Agency: Hamed Al-Essa OTC*

*Surgery and Transplantation*  
*Category: Clinical*

242

## **Comparison of Urine Nuclear Matrix Protein 22 (NMP22) Qualitative Test and Urine Cytology in the Detection of Bladder Cancer at First Presentation and During Surveillance**

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### **Introduction:**

New cases of bladder cancer or its recurrences are customarily detected by urine cytology and cystoscopy. To avoid complications associated with cystoscopy various non-invasive tests are currently under investigation. This study assesses the sensitivity and specificity of urine NMP22 qualitative assay in the detection of bladder cancer.

### **Methods:**

Urine samples collected before cystoscopy, from 93 patients in Mubarak Hospital with suspected bladder cancer and those with known bladder cancer undergoing surveillance were examined cytologically as well as by NMP22 qualitative (+ve or -ve) assay. Diagnosis of bladder cancer was confirmed histologically (gold standard) on bladder biopsy. Cytological detection of bladder cancer was compared with NMP22 detection in patients with: A) newly diagnosed bladder cancer, B) bladder cancer recurrence and C) bladder cancer in remission. All analyses were performed blind.

### **Results:**

Bladder cancer was diagnosed histologically in 42 patients (group A = 19, group B = 23) and excluded in 51 patients in group C. The sensitivity of urine cytology in group A patients was 17.7% compared to 100% using NMP22 ( $p < 0.001$ ); and in group B patients 35.3% compared to 57.1% for NMP22 ( $p < 0.04$ ). For all patients, the specificity of urine cytology was 93.3% compared to 67.9% for NMP22 ( $p < 0.02$ ). The mean turn around time for the 2 tests was 0.75 hour (range 0.5 -1.0) and 44 hours (range 36 - 72) for NMP22 and urine cytology respectively ( $p < 0.0001$ ).

### **Conclusions:**

The NMP22 qualitative test has a higher sensitivity compared to urine cytology in the detection of bladder cancer, being higher in patients with newly diagnosed bladder cancer compared to those with recurrence. Because of the ease of testing and the rapid availability of reliable results, we recommend the incorporation of urine NMP22 assay into the overall management of patients with bladder cancer.

*Key Words: Bladder Cancer; Urine cytology; Nuclear matrix protein 22;*  
*Funding Agency: Kuwait University Research Grant MS02/03*

*Surgery and Transplantation*

*Category: Clinical*

243

**Comparison of open and laparoscopic donor nephrectomy (LDN):  
The initial one year experience.**

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<sup>1</sup> Hammad Al-Essa Organ Transplant Centre, Ibn Sina Hospital, Kuwait

**Introduction:**

Laparoscopic donor nephrectomy (LDN) is now adopted by many transplant centres around the world. It offers lesser postoperative pain, early recovery and better cosmetic results, compared with the open approach. Objectives: This prospective study compares two groups of patients of laparoscopic live donor nephrectomy to an open donor nephrectomy group, comparing: 1-intra- and post-operative morbidities and patient recovery. 2-effect of type of donor nephrectomy on outcome of graft function.

**Methods:**

This review was to evaluate donor morbidity and graft outcome of 21 open and 35 LDN nephrectomies, between February 2005 and January 2006.

**Results:**

LDN was attempted in 35 patients and completed in 29 cases, 6 were converted to open at beginning of learning curve. Open donor nephrectomy was done successfully in 21 cases. Graft survival was 100% in the LDN group and 90.47% in open group. Mean operating times in open and LDN groups were 154.76 and 187.9 min, respectively. Mean hospital stay in both groups was 5.2 days, but ranged less in the LDN group than the open. Two patients from the LDN group were re-operated upon for bleeding, which is an expected complication of any surgery. At six months follow-up, renal function tests of all donors were satisfactory. No effect of type of donation on remaining kidney function was found. Two recipients from open group displayed delayed graft function, requiring haemo-dialysis (HD) for 4 and 5 sessions respectively, with graft recovering after 60 and 70 days respectively. One patient from the LDN group only had a delayed graft function and 10 HD sessions were needed, recovering after 120 days.

**Conclusions:**

LDN can be performed with comparable morbidity to the open procedure. There is a learning curve with LDN. Early recovery of graft function and long term functional outcome are similar. Longer follow-up is needed to confirm these observations.

*Key Words: Open donor nephrectomy; Laparoscopic donor nephrectomy; Comparison;*

*Funding Agency: None*

*Surgery and Transplantation*

*Category: Clinical*

244

**Renal trauma in Adan hospital.**

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**Introduction:**

This is a retrospective study done in Adan hospital, Kuwait to compare the incidence and management of different renal trauma stages in our hospital to the published world-wide figures.

**Methods:**

The study included eighteen patients with different stages of renal trauma from January 2004 until the end of December 2005. Thirteen of them were males and five females with a mean age of 24.6 years (range from 2.5-45 years). Four patients were under the age of fifteen years. All cases resulted from blunt trauma mostly due to road traffic accidents.

**Results:**

Of the eighteen cases, fifty percent were diagnosed as major renal trauma (stage 4 and 5) after meticulous radiographic imaging following the classification system of the American association for the surgery of trauma. Ten of our cases had associated injuries due to the trauma. The exploration rate was 27.7 percent and ureteric stent insertion was used solely in one patient only. Mortality rate was twenty two percent and deaths were caused by severe associated injuries. Hemodynamically stable patients were treated conservatively. All surviving patients made uneventful recovery.

**Conclusions:**

In Adan hospital, the percentage of major renal trauma is very high (50%) in comparison to world-wide figures (only 5-15 %). This can be explained by the location of the hospital being situated between two highways and the high speed mechanism of injuries. From our results we highly recommend conservative management of renal trauma as long as the patient is hemodynamically stable.

*Key Words: Renal trauma; Incidence; Management;*

*Funding Agency: None*

*Surgery and Transplantation*

*Category: Clinical*

245

**Outcome of percutaneous nephrolithotomy (PCNL) in the management of upper urinary stones: Single Center experience in Kuwait.**

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<sup>1</sup> Department of Surgery( Division of Urology), Kuwait University Faculty of Medicine; <sup>2</sup> Urology Unit, Adan Hospital, Kuwait.

**Introduction:**

This study was done to evaluate the outcome of percutaneous nephrolithotomy (PCNL) in 112 cases with pelvicaliceal or upper ureteric stones treated in Urology Department in Adan Hospital between the years 2000 and 2005.

**Methods:**

This is a retrospective analyses of the files of 112 patients who had PCNL between 2000 and 2005 with a mean age of 40.2years (range 7-74years). All procedure were done under fluoroscopy by urologist. Rigid and flexible nephroscopes were used and stones were crushed using pneumatic, ultrasonic lithotripor or holmium laser.

**Results:**

112 patients 88 men and 24 women between 7 and 74 years were included in this study.89 percent became free of stones or had clinically insignificant residuals at 6 weeks follow up. 2 patients had Pneumothorax and one had septic shock. The transfusion rate was 11 percent. There were no fatalities.

**Conclusions:**

PCNL success and complication rate achieved in our cases is comparable to the world wide figures. PCNL replaced open surgery for treatment of upper urinary calculi in Adan Hospital.

*Key Words: Percutaneous nephrolithotomy (PCNL); Upper urinary stones.*

*Funding Agency: None*

246

## **Determinants and Consequences of elevated Homocysteine levels in Renal Transplant Recipients-A Cross-Sectional study.**

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<sup>1</sup>Hamad Al Essa Organ Transplant Centre, <sup>2</sup>Department of Medicine, <sup>3</sup>Department of Pathology and <sup>4</sup>Department of Community Medicine, FOM, Kuwait University.

### **Introduction:**

Hyperhomocysteinemia (HHCy) is considered as a risk factor for thrombosis and cardiovascular diseases. Its role in the prognosis of renal transplantation is unclear. In this cross-sectional (retrospective and prospective) study we evaluated <sup>1</sup> the prevalence of HHCy in renal transplant recipients (RTR), <sup>2</sup> its influence on thrombotic events and renal transplantation outcome, and <sup>3</sup> the determinants of HHCy.

### **Methods:**

382 Adult RTR on regular follow up (from June 2001 to June 2005) were selected irrespective of age, sex, donor, immunosuppression or duration after transplantation. Fasting blood samples were collected for estimation of HCY level and for various biochemical and hematological parameters. In addition, demographic details, important post-transplant events and outcome were collected retrospectively from hospital files and prospectively on follow up.

### **Results:**

HHCy was defined as HCY level > 15 micromol/L. Of 379 RTR with complete data, 253(65.5%) had HHCy. Age (p=0.001), cadaver donor (p=0.01), native kidney glomerulonephritis (p=0.002), low serum albumin (p=0.01), B12 (p=0.06), FA (p=0.05), and high serum creatinine (p=0.01) were associated with HHCy. Incidents of graft thrombosis (p=0.01), new episodes of CV events (p=0.02) and deep vein thrombosis (p=0.04) were significantly higher in RTR with HHCy. Subjects with HHCy also had lower five year patient survival (96% vs. 91%; p=0.10) and significantly poorer graft survival (94% vs. 78%; p=0.0004). When thrombotic events were included in a Cox proportional multivariate hazard ratio, the risk of death censored graft loss (HR 4.0, CI 1.8-9.0) and patient mortality (HR 4.1, CI 1.8-9.5) were significantly greater (p=0.001 and 0.001 respectively) in patients with HHCy.

### **Conclusions:**

Prevalence of HHCy among RTR is 65%. HHCy is significantly associated with thrombotic events and poor outcome. High serum creatinine, low serum albumin, low B12 and folate levels were major determinants of HHCy.

*Key Words: Kidney transplantation; Hyperhomocysteinemia; Risk factors; Funding Agency: None*

*Surgery and Transplantation*

*Category: Clinical*

247

**A study of the bacterial flora of the perineum in adult male urological patients**

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**Introduction:**

The perineal route is increasingly being used in male urological patients for diagnostic and therapeutic maneuvers. The objective of this study is to determine the spectrum of bacterial flora in the perineum of such patients in our unit.

**Methods:**

Adult male in-patients undergoing cystoscopic procedures were studied. Three sets of swabs (A,B,C) were taken from the perineum in the theatre, A before cleaning and disinfection using SavlonR, B after disinfection and draping and C after the completion of the operative procedure. The swabs were sent to the Anaerobe Reference Laboratory for quantitative cultures of aerobic and anaerobic bacteria. Significant bacterial colonization of the perineum was defined as positive culture of > 102 fu/ml. All patients received the same prophylactic antibiotic. Results were analysed between 3 groups of patients; those with no systemic diseases, those with systemic diseases and those with urethral catheter.

**Results:**

A total of 114 patients were studied, of which 43 (37.7%), 7% and 11.4% had positive cultures from swabs A, B and C respectively (p: A vs B = 0.001, A vs C =0.001, B vs C = 0.01). Sixty three different bacteria were isolated in the 43 patients in group A. The commonest isolates were Staphylococcus spp, 79.4%, Eschericia coli 7.9%, Proteus mirabilis 4.8%. Patients with end stage renal failure (ESRF) had a positive culture rate of 71.4%, compared with 53.8% in patients on urethral catheter, 36.6% in patients with no systemic diseases and 28.1% in diabetic patients.

**Conclusions:**

About 38% of male patients presenting to our unit for urological procedures have a significant positive perineal culture, with Staphylococcus spp constituting a major part of their perineal skin flora. The use of savlon to disinfect the perineum results in significant but not total elimination of perineal bacteria.

*Key Words: Bacterial flora; Male perineum; Antibiotic prophylaxis;*

*Funding Agency: Departmental Resources*

## ***Surgery and Transplantation***

*Category: Clinical*

**248**

### **Holmium laser enucleation of the prostate: Initial experience in Kuwait**

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#### **Introduction:**

To evaluate the efficiency of holmium laser for enucleation of the benign prostatic adenoma (HOLEP) and present our initial experience in Kuwait as the only Center so far using this technique.

#### **Methods:**

Twenty four patients with lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH) with a mean age of 61 years (range 52-71years) were included in this study. The mean volume of the prostatic adenoma was 46 gm (range 38-115). All patients were treated with HOLEP. The treatment outcome was evaluated at 3 and 6 months post operatively by "American Urological Association (AUA) symptom score, Q max, post void residual urine estimation".

#### **Results:**

All 24 patients demonstrated immediate improvement within the first week after HOLEP. There was minimal intra operative bleeding and None of the patients required blood transfusion. Mean catheterization time and postoperative hospital stay were 1.5 day and 1.8 day respectively. Mean AUA symptom score urine flow rate and post void residual urine showed significant improvement at one month post operatively. This improvement was maintained at 3 and 6 months. There was one intra operative complication including minor capsular perforation managed with catheter for three days. The only long term complication included one patient who developed bulbar urethral stricture at one month follow up.

#### **Conclusions:**

The initial good result for HOLEP and " low complication rate indicates that HOLEP is a viable option for the treatment of BPH and can be readily adapted with a reasonable learning curve".

*Key Words: Holmium Laser; Prostate; Initial experience;*

*Funding Agency: None*

249

## **Hyperhomocysteinemia is an independent risk factor for unfavorable outcome in Kidney Transplant Recipients- A Prospective Study**

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<sup>1</sup>Hamad Al Essa Organ Transplant Centre, <sup>2</sup>Department of Medicine, <sup>3</sup>Department of Pathology and <sup>4</sup>Department of Community Medicine, FOM, Kuwait University.

### **Introduction:**

Hyperhomocysteinemia (HHCy) is considered as a risk factor for cardiovascular diseases. The prevalence of HHCy among our renal transplant recipients (RTR) is 65%. Its impact on outcome of renal transplantation is yet unclear. The present study was designed to evaluate prospectively <sup>1</sup> the influence of kidney transplantation on pre-transplant HCy levels <sup>2</sup> the impact of HCy levels on patient and graft outcome, and <sup>3</sup> the relationship of HHCy with post transplant vascular events.

### **Methods:**

We performed a prospective longitudinal evaluation of 82 adult RTR transplanted between July 2001 and Sept 2004. They were randomly selected irrespective of age, sex, type of donor or type of immunosuppression. After consent, clinical and demographic details were collected. Fasting blood samples were collected pre-transplant and every three months post-transplant for 12 months. In addition to total plasma HCy, serum creatinine, eGFR, Hb, albumin, lipids, serum B12 and folate levels were estimated in all subjects, at all sampling times.

### **Results:**

76 RTR completed the study. HHCy was defined as HCy level > 15 micromol/L. HHCy was detected in 48.7% RTR, one year post-transplant. The prevalence of anemia (p=0.04) and hypoalbuminemia (p=0.006) were significantly high in RTR with HHCy. Pre-transplant HCy levels decreased from a median of 24.3 to 14.6, one year after transplantation, p<0.0001. HCy levels correlated with serum creatinine (p=0.004), but not with B12 or folate levels. RTR with HHCy had significantly higher episodes of graft infarction (p=0.02) and thrombotic episodes (p=0.02). Five year patient (100% vs. 91.4%; p= 0.06) and graft (94.9% vs. 83.3%; p=0.03) survival states were poorer in RTR with HHCy levels.

### **Conclusions:**

Kidney transplantation lowered HCy concentrations significantly. HHCy is an important independent risk factor for poor patient and graft survival. It is likely that measures to lower HHCy levels will improve kidney transplant outcome.

*Key Words: Kidney transplantation; Hyperhomocysteinemia.*

*Funding Agency: None*

*Surgery and Transplantation*  
*Category: Graduate (Resident)*

**250**

### **Bilateral testicular torsion in an adult**

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#### **Introduction:**

Acute testicular torsion is a common surgical emergency, particularly in pediatrics and adolescents. However, it is rare that acute testicular torsion would present bilaterally, especially in adults. Few cases have been reported<sup>1,2</sup>.

#### **Methods:**

We report a case of bilateral synchronous testicular torsion that occurs spontaneously with no evidence of scrotal trauma.

#### **Results:**

Immediate surgical exploration of the right hemiscrotum revealed 360 degrees torsion of the right testis. During routine exploration of the left hemiscrotum, 270 degrees torsion of the left was discovered.

#### **Conclusions:**

Bilateral torsion may appear unilateral on the basis of symptoms, as in this patient. The asymptomatic side may be obscured, as the patient is symptomatic on only one side. Therefore, it is important to evaluate both testicles in order to diagnose both the unilateral and bilateral torsions.

*Key Words: Testicular torsion; Scrotal trauma; Doppler ultrasound;*

*Funding Agency: None*

251

### **Cytomegalovirus in kidney transplant recipients; single center**

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Nair MP<sup>1</sup>, Halim MA<sup>1</sup>, Johny KV<sup>3</sup>, Samhan M<sup>1</sup> and Al-Mousawi M<sup>1</sup>.

<sup>1</sup> Hamed Al-Essa Organ Transplant Center; <sup>2</sup> Department of Microbiology, Kuwait university faculty of Medicine; <sup>3</sup> Department of Medicine, Kuwait university faculty of Medicine.

#### **Introduction:**

Cytomegalovirus (CMV) is the most important single pathogen that affects transplant recipients. Early diagnosis and management is crucial in controlling the infection

#### **Methods:**

We prospectively studied CMV infection among our kidney transplant recipients (KTR) in three phases (1996-2005). First we included 102 consecutive KTR for early detection and monitoring of CMV disease by CMV pp65 antigenemia assay (AA) test. Second we studied the impact of two weeks intravenous ganciclovir on the incidence and outcome of CMV disease in 46 consecutive high risk KTR. Third we compared two weeks oral valganciclovir (OVAL) versus intravenous ganciclovir (IVGAN) for CMV prophylaxis in 67 high risk KTR. CMV pp65 AA and polymerase chain reaction (PCR) were the main laboratory tests for viral detection. The SPSS software was used for statistical analysis

#### **Results:**

CMV was detected as early as 20 days post transplantation. The number of positive cells detected by the AA test was positively correlating with the severity of CMV disease (mean: 147 cells/field in systemic involvement) and disappeared by 2-4 weeks of treatment with ganciclovir. 50% of patients with CMV infection were cadaver donors. IVGAN prophylaxis versus no prophylaxis in high risk KTR not only delayed the onset of CMV disease (mean: 92 versus 32 days) and reduced the number of patients with positive AA test (30.4 versus 43.2%) but also decreased the severity of the disease (systemic involvement in 4.3 versus 21.6%). In the third phase, two weeks OVAL prophylaxis showed a higher incidence (29.4%) of CMV disease than IVGAN (15.5%) given for the same period.

#### **Conclusions:**

CMV antigenemia assay is a useful test for diagnosis and monitoring of CMV disease. Two weeks intravenous ganciclovir prophylaxis is shown to be effective in reducing the incidence and improving the outcome of CMV disease in high risk KTR. Oral valganciclovir did not show the same efficacy when given for the same period to a similar group

*Key Words: Kidney transplantation; Cytomegalovirus; Valganciclovir;*  
*Funding Agency: None*

*Surgery and Transplantation*  
*Category: Graduate (Resident)*

252

## **Preoperative Bone Scan, Liver ultrasonography and Chest radiography For Breast Cancer. Is It Mandatory?**

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### **Introduction:**

Chest radiography, liver ultrasonography and bone scan are frequently used routine preoperative staging investigation for breast cancer. The aim of this study is to find the result of these these investigations.

### **Methods:**

Retrospective study for 81 women with breast cancer that were managed in Mubarak Alkabeer hospital from 1995 until 2005. All had routine preoperative chest radiography, liver ultrasonography and bone scan, in addition to laboratory investigation (CBC, U/E, LFT, and tumor markers). We reviewed the clinical and pathological tumor staging.

### **Results:**

The mean age was 53.3 (32-75 years). There was 57 (70.3%) Kuwaiti and 24 other nationalities. There were 21 women (25.9%) with stage I, 45 women (55.5%) with stage II, 9 women (11.1%) with stage III, and 6 women ( 7.4%) with stage IV. The most common pathological type was Invasive ductal carcinoma that was found in 61 women (75.3%). Chest radiography was positive in 2 patient (4.46%) with stage IV. Liver ultrasonography was done for total of 73 women, it revealed a metastatic lesion in 2 women (2.73%) with stage IV, and a haemangioma in 3 women (4.1%) 2 in stage I and 1 in stage II. Bone scan was done for 71 women that was negative in 66 women (92.95%) and positive for metastasis in 3 women (4.22%) with stage IV; there were 2 women (2.8%) that revealed a suspicious metastatic lesions one in the left 10th ribs and the other in the mandible, but were excluded by CT scan.

### **Conclusions:**

The current routine work up of doing a lot of investigations (chest radiography, liver ultrasonography and bone scan) for the preoperative assessment of breast cancer revealed positive finding in stage IV only. Therefore we propose doing these investigation in advanced breast cancer rather than doing it for all stages.

*Key Words: Breast Cancer; Rutine pre & post-operative investigation; Selective investigation; Funding Agency: None*

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**253**

Abstract Withdrawn

*Surgery and Transplantation*

*Category: Clinical*

254

**Deep neck space infections: diagnosis and management**

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**Introduction:**

Despite considerable advances in medicine, deep neck space infections (DNSI) are still potentially life-threatening. If left untreated, they could lead to mediastinitis, aspiration pneumonia, internal jugular vein thrombosis or carotid artery aneurysm. DNSI are mostly bacterial infections. Large doses of broad spectrum IV antibiotics and surgery remain the mainstay of treatment. A weak immunity increases the severity of the infection. The objective of this study is to review the diagnosis and management of DNSI.

**Methods:**

All patients treated for DNSI at Al-Jahra Hospital, between August 1995 and January 2006 were included. Demographic data, aetiology, endoscopic and surgical findings were noted. All patients were subjected to contrast-enhanced C-T scan of the neck.

**Results:**

Total patients=17 (M=10, F=7). The age distribution was between 1 and 62 years. All the patients presented with a neck mass and fever. C-T scan was sufficiently sensitive and specific. All patients received IV antibiotics. 12 cases required an immediate surgical drainage to avert a possible respiratory compromise. The remainder were treated non-surgically as they were clinically stable. Four patients had parapharyngeal abscess, five parapharyngeal cellulitis, three retropharyngeal abscesses (all children) and five Ludwig's angina. Bacteriology revealed a polymicrobial infection in eleven cases (aerobic-anaerobic), single bacteria in one and no organism in the remainder. Eight patients were diabetic. Two patients had hypopharyngeal perforations due to foreign bodies. Two patients developed sepsis. Six cases required intensive care. There were no postoperative complications.

**Conclusions:**

Securing an airway is a priority. Early recognition and immediate surgery are highly recommended. In every DNSI, the possibility of mediastinitis should be entertained. The importance of multidisciplinary approach is underscored. The effectiveness of non-surgical treatment in a selected number of clinically stable patients is noteworthy.

*Key Words: Deep Neck Infections; Antibiotics; Drainage;*

*Funding Agency: None*

## **Head injury in Ahmadi Health Area**

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### **Introduction:**

Head injury is a serious type of injury with high mortality and morbidity. The object was to find out the type of head injury in Ahmadi Health Area.

### **Methods:**

This is retrospective analysis of 219 cases of head injury admitted to Adan Hospital, for two years from January 2001. Patients with severe to moderate brain injury were admitted to ICU, others were admitted to surgical ward.

### **Results:**

Age distribution was 1 to 75 years, median age of 24 years, male represents about 74%. Majority of head trauma were seen in RTA where Kuwaiti were predominant in RTA [72%]. About 52% knock by vehicle (pedestrian / cyclist) 13%, fall from height and miscellaneous (quarrel, fall of object) C T revealed fracture of skull bone and traumatic brain injury in 20%, traumatic brain injury in 20% and fracture skull alone in 15% while 37% had normal CT findings. The comparison of CT findings among the groups revealed that focal injury (haematoma) was 10.3% among RTA and 6.5% among FFH, while brain edema was common among FFH 15.8% than RTA 6%. Other associated significant injuries were chest injuries 14.6%, abdominal injuries 11.8%. The rate of admission in ICU and ward was 53.8% and 37.4% respectively;

### **Conclusions:**

Head injury causes significant mortality and morbidity, preventive measures should be directed by enforcing strict traffic rules and regulations and education measures are required to reduce mortality and morbidity associated to head injury.

*Key Words: Head injury; Ahmadi Health Area; Kuwait;*

*Funding Agency: None*

256

## **Tracheal resection with end-to-end anastomosis for benign tracheal stenosis**

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### **Introduction:**

Benign tracheal stenosis in most of the cases is the result of prolonged intubation and/or tracheostomy. Tracheal stenosis would result in upper airway obstruction and difficulty in decanulation of the patients. Different options are available in the treatment of benign tracheal stenosis including endoscopic dilatation, laser endoscopy, tracheal stent, and tracheal resection. This study is to review our experience with tracheal resection and end-to-end anastomosis for benign tracheal stenosis.

### **Methods:**

Retrospective study at the Department of Otolaryngology -Head & Neck surgery reviewing all the patient undergone tracheal resection with end-to-end anastomosis from 2001 to 2005.

### **Results:**

Eleven patients underwent circumferential tracheal resection with end-to-end anastomosis by the senior author from 2001 to 2005. The indications for tracheal resection were postintubation and posttracheostomy stenosis (n = 8), postintubation (n = 1), and Trauma (n = 2). Releasing maneuvers were used in some cases. Resected tracheal segments ranged in length from 2 to 5.5 cm (4 to 11 tracheal rings). The success rate of the anastomosis was 91% (n = 10).

### **Conclusions:**

Tracheal resection with end-to-end anastomosis is a relatively safe and reliable procedure for the treatment of tracheal stenosis in a properly selected patient.

*Key Words: Tracheal stenosis; Tracheal resection; Anastomosis;*

*Funding Agency: None*

257

## **Can we predict the failure of chest tube thoracostomy in the treatment of pediatric parapneumonic effusions?**

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<sup>1</sup> Department of Surgery, Kuwait University Faculty of Medicine; <sup>2</sup> Division of pediatric general surgery, Vancouver, Canada.

### **Introduction:**

Tube thoracostomy is a standard method of treating pediatric parapneumonic collections. Despite recent work denoting thoracoscopy as a superior method of treatment, few studies have looked at factors predictive of tube thoracostomy failure. We reviewed parapneumonic collections initially treated with tube thoracostomy to identify such factors.

### **Methods:**

Nontuberculous parapneumonic collections treated initially with tube thoracostomy over a 10- year period were reviewed. A “failed primary tube thoracostomy” was defined as the presence of worsening clinicoradiological signs requiring a further chest procedure (ie, thoracoscopy, thoracotomy, or second thoracostomy).

### **Results:**

Fifty-eight patients were identified. Forty-three percent failed primary tube thoracostomy. Within group F (failure group), 32% of patients had a concomitant medical condition (P <.001). Sixty percent of group F patients had duration of symptoms for more than 1 week compared with only 24% of group S (successful group) (P <.001).

### **Conclusions:**

Our results suggest that primary treatment of parapneumonic collections with tube thoracostomy is likely to be unsuccessful in patients who are symptomatic for more than a week or who have a concomitant medical condition. A more aggressive primary surgical intervention is suggested for this group.

*Key Words: Parapneumonic effusions; Chest tube; Thoracoscopy;*

*Funding Agency: None*

258

## **Aspiration versus tube drainage in primary spontaneous pneumothorax: A randomized study**

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### **Introduction:**

The initial treatment of a primary spontaneous pneumothorax is controversial. Simple aspiration of air has been proposed by some over chest tube, but lack of efficiency and safety data has limited its use. The study was designed to compare the clinical outcomes for simple aspiration versus tube thoracostomy in the treatment of the first attack primary spontaneous pneumothorax.

### **Methods:**

A randomized trial, comparing simple aspiration with tube thoracostomy, in 137 patients with a first episode of primary spontaneous pneumothorax at Chest Diseases Hospital was carried out. The true primary end point of the trial was immediate success. The secondary end points included 1-week success, recurrence at 3 months, 1-year and 2-year follow-up, complications, and analgesia requirements.

### **Results:**

Immediate success was obtained in 40 out of 65(62%) patients randomly assigned to undergo simple aspiration and in 49 out of 72(68%) patients randomly assigned to undergo tube thoracostomy ( $p=0.4$ ). One-week success rates were 58/65(89%) in the intention-to-treat simple aspiration group and 63/73(88%) in tube thoracostomy group ( $p=0.7$ ). In the aspiration group, there were more recurrences during 3 months follow-up (15% versus 8%), though the difference was not significant. Recurrence rates at one and two years were 16/65(22%) and 20/65(31%) for patients who had undergone simple aspiration, respectively, and 17/72(24%) and 18/72(25%) for patients who had undergone a tube thoracostomies, respectively,  $p>0.05$ . Complications occurred in 5 (7%) of patients who had undergone a tube thoracostomy and 1 (2%) patient who had undergone simple aspiration ( $p=0.1$ ). Analgesia was required in 22 (34%) patients of the simple aspiration group versus 40 (56%) patients of the tube thoracostomy group ( $p=0.01$ ).

### **Conclusions:**

These findings suggest that simple aspiration could be an acceptable alternative to tube thoracostomy in the treatment of primary spontaneous pneumothorax.

*Key Words: Aspiration; Spontaneous pneumothorax; Tube thoracostomy;*  
*Funding Agency: None*

259

## **The association between plasma homocysteine levels and erectile dysfunction: Study on diabetic patients**

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<sup>1</sup>Department of Surgery, Kuwait University

<sup>2</sup>Ministry of Health

### **Introduction:**

Hyperhomocysteinemia has been identified as an independent risk factor for arteriosclerosis with increasing evidence that it is also associated with the development of many other conditions, including coronary artery disease, stroke and thromboembolism. Endothelial dysfunction and atherosclerosis of blood vessels that supply the penis are associated with the same cardiovascular risk factors that affect the coronary arteries and hence they might share the same etiology which includes high serum homocysteine level. The aim of this study was to determine if the mean tHcy levels in diabetic patients with vasculogenic ED are higher than matched controls.

### **Methods:**

Plasma fasting tHcy levels were measured in 100 diabetic patients with papaverine-test documented vasculogenic ED and compared to 100 diabetic age-, sex-, BMI- and smoking habit-matched control subjects. Conventional risk factors for vasculogenic ED were also measured.

### **Results:**

In a univariate analysis, tHcy (micromol/l) level was higher in patients compared to controls reaching statistical significance (11.55 compared to 9.19;  $p < 0.01$ ). Multivariate analysis of conventional risk factors showed that tHcy level was an independent risk factor for vasculogenic ED.

### **Conclusions:**

In diabetic patients, plasma tHcy level is an independent risk factor for vasculogenic ED.

*Key Words: Homocysteine; Erectile dysfunction; Diabetes;*

*Funding Agency: None*

*Surgery and Transplantation*  
*Category: Clinical*

260

## **Prevalence and predictors of erectile dysfunction in newly diagnosed Type 2 Diabetic patients**

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### **Introduction:**

To determine the prevalence of and risk factors for erectile dysfunction in men with newly diagnosed type 2 diabetes.

### **Methods:**

From June 2004 until June 2005, consecutive samples of men with newly diagnosed with type 2 diabetes attending the diabetes center in the capital of Kuwait were included in the study. Face to face interviews with the subjects using the international index of erectile function (IIEF)-5 questionnaire were conducted. A cutoff value of a score of less than 21 in was used to identify men with impotence. Pertinent clinical and laboratory characteristics were collected from all the subjects.

### **Results:**

Among 323 men with newly diagnosed diabetes, 31% had erectile dysfunction. Compared to potent patients, impotent subjects showed statistically significant difference with respect to smoking, duration of smoking, nationality, hypertension, education level, body mass index and serum HbA1c level. Among these, age was the most important risk factor identified by the multivariate logistic model.

### **Conclusions:**

Direct interview of men with newly diagnosed type 2 diabetes resulted in the identification of considerable prevalence of erectile dysfunction. This was associated with many variables but most notably the age of the subject at presentation.

*Key Words: Erectile dysfunction; Diabetes; Prevalence;*

*Funding Agency: None*

*Surgery and Transplantation*

*Category: Clinical*

261

**Optimization of sevoflurane administration in morbidly obese patients: a comparison with isoflurane using an 'inhalation bolus' technique.**

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**Introduction:**

The concept of an 'inhalation bolus' can be used to optimize inhaled drug administration. We investigated the depth of anaesthesia, haemodynamic stability, and recovery time in morbidly obese patients resulting from bispectral index (BIS)-guided sevoflurane or isoflurane administration and BIS-triggered inhalation boluses of sevoflurane or isoflurane combined with titration of remifentanyl.

**Methods:**

Fifty morbidly obese patients undergoing laparoscopic cholecystectomy received either BIS-guided sevoflurane or desflurane anaesthesia in combination with a remifentanyl target-controlled infusion. Intraoperative haemodynamic stability and BIS control were measured. Immediate recovery was recorded.

**Results:**

Intraoperatively, the BIS was between 40 and 50 for a greater percentage of time in the sevoflurane (88 (10)% of case time) than in the isoflurane patients (64 (14)% of case time), owing to too profound anaesthesia in the isoflurane patients at the start of the procedure. However, fewer episodes of hypotension were found in the isoflurane group, without the occurrence of more hypertensive episodes. During immediate recovery, eye opening, extubation, airway maintenance, and orientation occurred sooner in the sevoflurane group.

**Conclusions:**

Immediate recovery was significantly faster in the sevoflurane group. Overall hypnotic controllability measured by BIS was less accurate with isoflurane. Overall haemodynamic controllability was better when using sevoflurane. Fewer episodes of hypotension were found in the isoflurane group. The use of the inhalation bolus was found to be appropriate in both groups without causing severe haemodynamic side effects. Minimal BIS values were significantly lower after a isoflurane bolus.

*Key Words: Obesity patients; Sevoflurane and isoflurane anaesthesia; BIS monitoring;*

*Funding Agency: ABBOTT, USA AND KUWAIT*

## ***Surgery and Transplantation***

*Category: Clinical*

**262**

### **Surgical treatment of the rheumatic heart diseases**

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#### **Introduction:**

In this study, we present a single center experience with surgical valve reconstructions in 5692 patients with rheumatic heart disease.

#### **Methods:**

Between August 1998 and September 2005, 5692 patients underwent surgical heart valve reconstructions and replacement with an average age of 47 +/-12 years (range 14 to 66 years), consisting of 2898 males and 2794 females. 4825 patients have had close mitral valve reconstruction surgeries. Aortic valve replacement (AVR) was performed in 76 patients, mitral valve replacement (MVR) in 544 patients; mitral valve preserved surgery in 143 patients and double valve replacement (DVR) in 46 patients.

#### **Results:**

The early mortality rate was 9.8 % and there was no late mortality. The actuarial survival rate, including hospital mortality, was 96.74+/-1.01% for the whole group, 96.5+/-1.5% for the MVR group, 97.4+/-1.8% for the AVR group and 97.3+/-1.9% for the DVR group at 35 months. One patient had obstructive valve thrombosis with MVR. The 35 months actuarial freedom from valve thrombosis was 99.58+/-0.4% for the whole group. Four patients were reoperated and the 35 months actuarial freedom from reoperation was 98.53+/-0.7% for the whole group, 98.65+/-0.9% for the MVR group, 96.73+/-0.2% for the DVR group and 100% for the AVR group. No instances of perivalvular leak, hemolysis, endocarditis or embolism were observed during the entire follow-up period. Mean follow-up duration was 16.5+/-7.9 months (ranged 4 to 35 months).

#### **Conclusions:**

We have presented our immediate results with the surgical valve corrections in patients with rheumatic heart disease, which provided good clinical performance combined with meticulous patient care and advanced surgical techniques.

*Key Words: Rheumatic heart diseases patients; Cardiac surgery; Cardiac surgery with bypass;*

*Funding Agency: None*

## **The first trial of tricuspid incompetence surgical correction in extracorporeal conditions without aortal occlusion.**

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### **Introduction:**

Surgical treatment of rheumatic valvular disease still constitutes a significant number of cardiac operations in developing countries. Despite improvements in myocardial protection and cardiopulmonary bypass techniques, triple valve operations (aortic, mitral and tricuspid valves) are still challenging because of longer duration of cardiopulmonary bypass and higher degree of myocardial decompensation. This study was instituted in order to assess results of triple valve surgery.

### **Methods:**

Between 1998 and 2005, 34 patients underwent triple valve surgery in our Center by the same surgeon. Twenty four patients underwent triple valve replacement (68 %) and 10 underwent tricuspid valve annuloplasty with aortic and mitral valve replacements (32%).

### **Results:**

There was no significant difference between the two groups of patients who underwent triple valve replacement and aortic and mitral valve replacement with tricuspid valve annuloplasty. There were 4 hospital deaths (11.8%) occurring within 30 days. The duration of follow-up for 30 survivors ranged from 6 to 202 months (mean 97 months). The actuarial survival rates were 85%, 72%, and 48% at 5, 10, and 15 years respectively. Actuarial freedom from reoperation rates at 5, 10, and 15 years was 86.3%, 71.9%, and 51.2%, respectively. Freedom from cerebral thromboembolism and anticoagulation-related hemorrhage rates, expressed in actuarial terms was 75.9% and 62.9% at 5 and 10 years. Major cerebral complications occurred in 4 of the 30 patients.

### **Conclusions:**

We prefer replacing, if repairing is not possible, the tricuspid valve, with a bileaflet mechanical prosthesis in a patient with valve replacement of the left heart who will be anticoagulated in order to avoid unfavorable properties of bioprosthesis like degeneration and of old generation mechanical prosthesis like thrombosis and poor hemodynamic function. In recent years, results of triple valve surgery either with tricuspid valve conservation or valve replacement in suitable cases have become encouraging with improvements in surgical techniques and myocardial preservation methods.

*Key Words: Tricuspid valve (TV) affection; Cardiac surgery; Biological prosthesis;*  
*Funding Agency: None*

### **Immediate results of valvulopreserved cardiac surgeries in patients with mitral valve rheumatic diseases.**

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#### **Introduction:**

Although the results of surgical treatment in cardiac valve disease continue to improve, the postoperative mortality rate and the rate of complications in patients with advanced valvular heart disease (AVHD) are still very high. We did this retrospective study to summarize the surgical experience of heart valve reconstructions and replacement for patients with AVHD and discuss effective ways to improve the surgical outcome. The surgical treatment options above pathology including mitral valve reconstruction with mitral annuloplasty, quadratic segmental resection, shortening of the elongated chordae, or posterior leaflet resection; Mitral valve replacement with either a mechanical valve (requiring lifelong anticoagulation) or a bioprosthetic porcine valve.

#### **Methods:**

The surgical procedures of the mitral valve replacement with reconstructions were performed on 246 patients mean ages 38 +/- 9, 173 (71 %) females and 73 (29%) males with AVHD. The Class IV symptoms have had 236 patients and Class III symptoms were in 10 (4.1%). All patients have had mitral valves fibrosis and 63 (25.6%) patients with mitral valve calcinosis. The clinical data of all patients were collected and analyzed. In preoperative cardiac function grading, 176 cases were NYHA III and 70 cases NYHA IV. The ultrasonic echocardiographs showed that 173 patients suffered from moderate or severe pulmonary hypertension and 73 had combined giant left ventricle. Mitral valve reconstructions (MVR) was performed in 56 cases, MVR with thromboectomy in 32; MVR with annuloplasty in 54; aortic valve replacement in 26, tricuspid valve reconstruction & replacement in 24, combined mitral and aortic replacement in 50 and combined mitral and tricuspid reconstructions & replacement in 36 patients. A logistic model was established to evaluate the influence of perioperative factors on the mortality rate.

#### **Results:**

Early postoperative mortality was 6.9% (9 patients). The risk of early death was associated with the following factors: low cardiac output, cardiac arrest and non-rheumatic aetiology of acquired valvular disease. The main causes of death included multiple organ dysfunction syndrome (MODS), low cardiac output syndrome and ventricular fibrillation. According to NYHA, statistically significant improvement was noted average values: 3.02 before and 2.01 after surgery ( $P < 0.00001$ ). Probability of survival after 5, 7, 10, and 14 years was 77, 69, 61, and 57%, respectively. Probability of survival was <sup>1</sup> without hemorrhagic complications 90, 77, 62, 20%, respectively; <sup>2</sup> without thromboembolic episodes 93, 88, 83, 73%, respectively; <sup>3</sup> without infectious endocarditis 98, 97, 97, 97%, respectively; and <sup>4</sup> without perivalvular leak 97, 96, 96, 90%, respectively. Poor long-term prognosis was associated with nonrheumatic aetiology of valvular disease, III and IV degrees of NYHA before surgery, persistent atrial fibrillation before operation and low cardiac output during the postoperative period. In the group where repair of damaged valve was done, good long-term results were achieved in 75% of patients with mitral valve and 80% with tricuspid valve pathology.

#### **Conclusions:**

The valvulopreserved surgical techniques and active perioperative management care will play a very important role in reducing the operative risk and improving the short term outcome of surgical treatment for the patients with AVHD.

*Key Words: Mitral Valve; Surgery; Outcome of the surgery;*

*Funding Agency: None*

*Surgery and Transplantation*

*Category: Clinical*

265

**A clinical utility of the effect of AEP monitoring on the anesthetic drug Sevoflurane requirements and recovery profile after Laparoscopic Surgery.**

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**Introduction:**

The auditory evoked potential (AEP) monitor provides an electroencephalogram-derived index (AAI) that has been reported to correlate with the central nervous system depressant effects of anesthetic drugs. This clinical utility study was designed to test the hypothesis that AAI-guided administration of the maintenance anesthetics and analgesics would improve their titration and thereby provide a faster recovery from anesthesia.

**Methods:**

102 patients undergoing elective surgery were randomly assigned to a control or AEP-monitored group. In the AEP-monitored group, the inspired sevoflurane concentration was titrated to maintain an AAI value of 15-20. In the control group, the inspired sevoflurane concentration was varied based on standard clinical signs. The AAI values and hemodynamic variables, as well as end-tidal sevoflurane concentrations, were recorded. The recovery times to achieve a White fast-track score and an Aldrete score, as well as the actual duration of the PACU stay, were evaluated. Patient satisfaction with recovery from anesthesia was assessed.

**Results:**

The average intraoperative AAI value in the AEP-monitored group was significantly higher than in the control group ( $16 \pm 5$  vs.  $11 \pm 8$ ,  $P < 0.05$ ). Use of the AEP monitor reduced the sevoflurane requirement by 26% compared to the control group ( $P < 0.01$ ). In addition, the AEP-monitored group received less intraoperative remifentanyl ( $270 \pm 120$  vs.  $390 \pm 203$  mcg,  $P < 0.05$ ) and more fast recovery ( $29 \pm 19$  vs.  $56 \pm 41$  min,  $P < 0.05$ ). The time required to achieve an Aldrete score of 10 ( $60 \pm 31$  vs.  $98 \pm 55$  min) and the duration of stay in the recovery room ( $78 \pm 32$  vs.  $106 \pm 54$  min) were also significantly reduced in the AEP-monitored (vs. control) group ( $P < 0.05$ ).

**Conclusions:**

Use of AEP monitoring as an adjunct to standard clinical monitors improved titration of anesthetic drugs, thereby facilitating the early recovery process after laparoscopic surgery.

*Key Words: AEP Monitoring; Sevoflurane; Titration of the drugs;*

*Funding Agency: None*

## *Surgery and Transplantation*

*Category: Clinical*

266

### **Role of Zinc supplementation in Burn management**

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<sup>4</sup>Health Sciences Computer Centre, Kuwait

#### **Introduction:**

Burn injury causes tissue catabolism and increased nutrients requirements; therefore; this study was carried out to assess the role of serum zinc level on wound healing.

#### **Methods:**

The study included 80 animals (New Zealand white male rabbits), either on normal zinc diet (n- 20, Group-A), or supplemented zinc diet (n-20, Group-B), or depleted zinc diet (n-20, Group- C) following burn, and control group on normal zinc content without burn (n-20, Group-D). The serum values of zinc, copper and zinc/copper ratio were analyzed for pre-burn, control and up to 56 days post burn period.

#### **Results:**

The pre-burn zinc level of  $1471 \pm 107 \mu\text{g/L}$  in Group-B decreased ( $1345 \pm 88$  to  $1384 \pm 64 \mu\text{g/L}$ ) up to 3 weeks post burn but from 4th week onward it ( $1489 \pm 56$  to  $1558 \pm 67 \mu\text{g/L}$ ) significantly increased ( $p < 0.05$ ). The pre burn zinc level of Group-A ( $1374 \pm 68 \mu\text{g/L}$ ) was persistently low during post burn period ( $1048 \pm 88$  to  $1325 \pm 104 \mu\text{g/L}$ ). The pre-burn zinc values of Group-C ( $1334 \pm 76 \mu\text{g/L}$ ) remained significantly low ( $p < 0.05$ ) ( $990 \pm 65$  to  $1215 \pm 95 \mu\text{g/L}$ ) in post burn period. The zinc level amongst control Group-D remained more or less unaltered. The serum copper remained significantly ( $p < 0.05$ ) elevated throughout the study period in Group-B & C, whereas it was significantly ( $p < 0.05$ ) elevated for up to 4 weeks post-burn in Group-A animals. It seems that zinc and copper levels compete with each other and show inverse proportions for up to 4 weeks post burn, but then they recover. The Cu/Zn ratio was significantly high ( $p < 0.05$ ) in all the Groups when compared to pre and post burn periods. The rate of wound healing assessed by photographs and wound size showed that healing was significantly faster  $p < 0.05$  in Group-B (51 days) as compared to Group-A (55 days) and Group-C (64 days).

#### **Conclusions:**

The study revealed that zinc supplementation is beneficial for early wound healing hence; supplemented zinc diet is recommended in burn management

*Key Words: Burn Wound Healing; Zinc Supplemented Diet; Zinc Depleted Diet;*

*Funding Agency: Kuwait University Grant No. MS01/00*

## ***Surgery and Transplantation***

*Category: Clinical*

**267**

### **Bone Marrow Registry in Kuwait**

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#### **Introduction:**

Bone marrow transplantation (BMT) has become the treatment of choice for patients with many hematological and immunodeficiency diseases. Human leukocyte antigen (HLA) matching for donors and recipients is crucial for success of BMT. HLA matched sibling (related) donors are available for only 20-30% of prospective patients. The introduction of newer molecular tissue typing techniques has contributed significantly in search for unrelated volunteers as safe potential donors. This has advanced the cause of development of BMT registry and enhanced the probability of findings fully HLA matched unrelated donors.

#### **Methods:**

The present study is based on the technique that uses PCR sequence specific primers (SSP) and presents a retrospective analysis of the data of tissue typing performed in our immunology department for 640 prospective BMT patients between 1993-2005.

#### **Results:**

Matched donors were found for 42% of patients in our study. The reported international ratio is 30%. Thus no matching related donor could be found for 58% patients.

#### **Conclusions:**

Availability of higher than the international proportion of matched sibling donors in our study is possibly related to the widely practiced custom of consanguineous marriages among Arab (Kuwaiti) population and larger average number of children in extended families. However, since for quite a significant number of patients a matched sibling donor could not be found, the need for establishing a BMT registry in Kuwait is highly recommendable to help in search for matching unrelated donors for the prospective recipients for whom a matched sibling donor is not available.

*Key Words: Bone Marrow Transplantation; Human Leukocyte Antigen; Bone marrow registry;*

*Funding Agency: None*

*Surgery and Transplantation*

*Category: Undergraduate*

**268**

**Attitudes towards organ donation among Kuwait University students**

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**Introduction:**

The purpose of this study is to assess the attitude, willingness and knowledge about organ donation as well as the reasons for unwillingness to donate among Kuwait University students.

**Methods:**

The study targeted first year and fourth year students of the Health Sciences Center (HSC) and Faculty of Shari'a. Several classes in the two faculties were chosen in both faculties to ensure coverage of all the population. All attendees in those classes approached and the total number of respondents was 404 students. A self-administered questionnaire was used to assess the willingness and reasons for unwillingness to donate organs. A score system was devised to assess the attitude of the respondents towards organ donation.

**Results:**

Among HSC students, only 34% were willing to donate their organs and only 0.5% reported having a donor card. The proportion was much less among Shari'a students at 10% willing to donate and 2% having a donor card. The two main reasons for unwillingness to donate were rejection of the idea of mutilation and religious reasons. However, there was a significant difference between the proportions of students reporting religious reasons in the two faculties. In Shari'a, religious reasons were reported by 58% of the students unwilling to donate, compared to 35% among those in the HSC. Among socio-demographic factors, only being a female was significantly associated with a slightly higher attitude score among Shari'a students. The family attitude was also found to be significantly associated with the attitude score in both faculties. A higher attitude score was also associated with agreeing on harvesting organs from brain dead people.

**Conclusions:**

The attitude towards organ donation among HSC and Shari'a students is alarmingly negative and campaigns about the benefits, procedures and implications of organ donation need to be considered.

*Key Words: Organ donation; kuwait university students; Willingness to donate organs;*

*Funding Agency: None*

***Transfusion Medicine***

*Category: Basic Sciences*

**269**

**Implementation of Internal Assessment in Kuwait Central Blood Bank**

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**Introduction:**

Since the establishment of Quality Program in Kuwait Central Blood Bank (KCBB) in January,1994, It developed its own self assessment manual as part of the QSE using a defined system checks for each key elements and critical control points. From 1997 annual Internal assessments has been started for all systems.

**Methods:**

Quality Management Coordinators (QMC) provide a scheduled program focuses on the ongoing assessment of all activities, functions and standards. Quality Assessments data elements are collected in cooperation with laboratory supervisors and are analyzed against predetermined indicators with identified thresholds. Q.A. are conducted periodically in a specific time of the year in organization with lab supervisors.

**Results:**

The results of the assessment are collected and submitted to responsible management personnel for review then documented and the % of error is calculated and compared with the threshold. A process to analyze the problem is defined and a process improvement include immediate action plan for errors that can be solved immediately or by corrective action by changing either policy or procedure or implementing a new form or circulars send to hospital or transfusion centers. Then this process improvement is reviewed and approved by the Q.M. Manager,Medical Director and Executive Manager. Tools are frequently used for displaying quality indicators data like charts or organogram.

**Conclusions:**

Determining the status of current Quality Assessment activity is a major step in planning a program. Therefore, all blood banks, transfusion services and donor centers must define a process for Internal Assessment on a defined scheduled by a quality oversight personnel to assess in a defined time.

*Key Words: Internal Assessment; Quality Management Coordinators (QMC); Self assessment  
Funding Agency: None*

# Case Reports, By Subject Area

*Anesthesiology*  
Category: Clinical

270

## **Detection of misplaced subclavian vein catheter by internal jugular vein occlusion test**

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### **CASE REPORT**

#### **Background:**

Subclavian vein is used for central venous catheterization and its catheter tip can be misplaced. Internal jugular occlusion test is recently described for rapid detection of misplaced subclavian central venous catheter (CVC) tip into internal jugular vein. We describe three cases in which this test was successfully used for diagnosis of misplaced central venous catheter and subsequent correct placement of same.

#### **Case summary:**

Three patients underwent subclavian vein catheterization as emergency procedure in intensive care unit. The central venous catheterization was performed in supine position after proper positioning and aseptic precautions. After successful insertion of CVC, free flow of blood was confirmed. CVC was connected to pressure transducer system to measure central venous pressure (CVP). But, CVP trace was conspicuous by the absence of a typical waveform. Chest radiography was performed. Meanwhile, IJV occlusion test was performed by applying firm pressure over ipsilateral IJV in the supraclavicular region for approximately 10 seconds. Quick change in CVP by 5 mm Hg and flattening of waveforms indicated jugular misplacement of catheter tip. Later on, chest x ray also confirmed presence of central venous catheter in ipsilateral IJV. The central venous catheter was withdrawn to 4cm and reinserted after applying pressure over ipsilateral IJV to correct position of catheter. The position of catheter was checked by connecting transducer to central venous line and IJV occlusion test was performed. CVP trace was good and neither flattening of waveforms nor any change in CVP reading following pressure over the ipsilateral IJV. Repeat chest x – ray confirmed correct placement of central venous catheter at junction of superior vena cava and right atrium.

#### **Conclusion:**

IJV occlusion test can be used bedside for rapid diagnosis and correction of misplaced CVC through the subclavian route.

**Key Words:** Misplaced; Central venous catheter; Internal jugular vein occlusion test;

*Anesthesiology*  
*Category: Clinical*

271

**Intraoperative myocardial infarction cardiac arrest survival history.**

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**CASE REPORT**

**Background:**

The manifestation of intraoperative MI include sudden onset of hypotension, arrhythmias, desaturation, sudden increase in PCWP/CVP and cardiac arrest. Anaesthetising patients with risk for MI are challenging task for anaesthesiologist and if occurs then it became much more challenging to keep the patient safe. We are presenting such a challenging case.

**Case Summary:**

A 60yr male patient admitted with history of haematuria and diagnosed urinary bladder tumor. He had long term hypertension and diabetes. His ECG showed ST/T changes in all leads. Preoperative echocardiography reflected posterior wall hypokinesia and ejection fraction of 53%. General anaesthesia was given because of poor patient compliance. During the surgery patient had acute onset of hypotension, fall in SpO<sub>2</sub>, end-tidal CO<sub>2</sub> with STsegment depression in ECG. Suspecting MI patient was ventilated with 100% oxygen, inotropic support started and surgery was stopped. Subsequently patient had repeated attacks of ventricular fibrillation and ventricular tachycardia which was resistant to multiple DC shock, antiarrhythmics and cardiac compression. Finally thrombolytic therapy and heparin was given in spite of risk of bleeding. Resuscitation was continued for 60min. Finally patient's vital signs stabilized with infusion of inotropes, vasopressor and antiarrhythmic. Gradually patient was weaned off from inotropes, vasopressor, antiarrhythmics and ventilator and discharged without any sequelae.

**Conclusions:**

Mainstay of therapy of MI is thrombolysis and anticoagulation. In postoperative patient thrombolytic therapy is contraindicated for risk of bleeding. We used thrombolysis in spite of risk and patient survived. Patient was pulseless for 60min and survived without any neurological sequelae. Finally we suggest that if the benefit outweighs risk in spite of contraindication one can use thrombolysis based on the fact that our patient revived without any neurological damage.

**Key Words:** Myocardial Infarction; Cardiac arrest; Thrombolysis;

## **Massive hepatic trauma: conservative managements with recombinant activated Factor VII: An experience.**

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### **CASE REPORT**

#### **Background:**

Liver injury is the most common cause of death following abdominal trauma. In past the primary mode of treatment was surgical repair of the injured liver. The trends have been changing towards conservative management because of high mortality. We are presenting a case of Grade-IV liver injury managed with recombinant factor VII and abdominal drains to prevent bleeding and development of abdominal compartment syndrome.

#### **Case Summary:**

An 8yr.old male child admitted to ICU following an accident. The child was conscious but restless with GCS 10/15 and hemodynamically stable. He was intubated and investigated for injuries. The CTscan was revealing mild subdural haematoma in the left parietal region, left side haemothorax in the chest and massive free fluid in the abdomen with Grade IV liver injury (completely shattered right lobe of liver). The left side chest tube was inserted and decided to manage conservatively for liver and head injury. Activated factor VII 1.2mg (50ug/kg) bolus was given within 6hrs of admission to stop bleeding from the injured liver. After 6hr same dose was repeated. On 4th day patient's intra abdominal pressure exceed to 30cm H<sub>2</sub>O and urine output decreased. To prevent abdominal compartment syndrome pigtail catheter was inserted to decompress the abdomen. The pressure came down to 21-22cmH<sub>2</sub>O after drainage of altered blood from the abdomen. The patient's bilirubin and liver enzymes started raising on 3rd day peaked on 8th day subsequently started decreasing and normalized on 22nd day. The patient was discharged from ICU on that day.

#### **Conclusions:**

The use of activated factor VII is important in managing patient with massive liver trauma which helps in controlling bleeding. Early administration should be considered to prevent intraabdominal compartment syndrome. Monitoring of intraabdominal pressure via Pigtail catheter and early intervention improves the outcome.

**Key Words:** Hepatic trauma; Activated factor VII; Abdominal Compartment Syndrome;

273

### **Complicated acute pancreatitis: Role of interventional Radiologist**

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#### **CASE REPORT**

##### **Background:**

Acute pancreatitis may be complicated by pseudocyst, abscess, hemorrhage, pseudoaneurysm or venous thrombosis. These complications are effectively treated by minimally invasive radiological interventional procedures that are either curative or temporize the patients for surgery. The high success rate of percutaneous catheter drainage (PCD) of pseudocyst or abscess, depends on selection of patient, size and placement of catheters and careful follow up.

##### **Case summary:**

Two patients, one was 31yrs old male and the other 60yrs old female were admitted in the surgical department with a diagnosis of acute pancreatitis. While on treatment for pancreatitis, the first case was complicated by infected pseudocyst and the second by an abscess after 3 wks. Since both patients were critically ill with immature wall in the lesions, immediate surgery was discouraged and Radiologist was consulted for interventions. After routine patient preparation, both pseudocyst and abscess were drained percutaneously with pigtail catheters. Both patients had improved clinically in 48hrs with disappearance of constitutional symptoms. Check cavitogram at the end of 2months showed fistulous communication with pancreatic duct in the first patient. Subsequently endoscopic gastrocystostomy was done and patient was discharged uneventful. In the second case, check CT scan showed resolved abscess and the catheter was removed after 4wks. Later, laparoscopic cholecystectomy was done and the patient was discharged.

##### **Conclusions:**

Percutaneous External Drainage of pancreatic pseudocyst or abscess is often curative as in our second case or may help in stabilising the patient for surgery as in our first case. Unlike surgery, external drainage doesn't require waiting period for the maturity of wall or improved general condition of the patient. PCD is now the accepted technique for draining pseudocysts or abscesses because of precise imaging localization and improved methods of percutaneous drainage.

**Key Words:** Pancreatic pseudocyst; Abscess; Percutaneous drainage;

274

## **PNET (Primitive Neuroectodermal tumor) of the axilla: A Case Report**

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### **CASE REPORT**

#### **Background:**

PNET defines a group of malignant tumors presumed to arise from primitive or undifferentiated neuroepithelial cells of the neural crest, typically in the pediatric or the adolescent population. PNETs are classified as central and peripheral. A central PNET arises in the brain or spinal cord; the prototype is the medulloblastoma. PNETs arising outside the CNS, are very rare and usually found in the deep soft tissues of the trunk, pelvis, retroperitoneum and lower limbs. They pursue an aggressive clinical course with a poor prognosis.

#### **Case summary:**

An 18 year old Arab girl, presented with 2 months history of a left axillary soft tissue mass. On examination, a firm, soft tissue mass was identified in the left axilla. The overlying skin was normal. Neurological and vascular examination of the left upper limb was normal. All blood investigations were normal. Plain chest radiography showed the soft tissue mass in the left axilla without any evidence of bony destruction. Ultrasound imaging revealed a large 7x5x4 cm, well-encapsulated, vascular, heterogeneous, soft tissue mass in the subcutaneous tissues of the left axilla. The mass had a peculiar whorled appearance of its solid component. There were no calcifications. Axillary vessels were deviated, but not involved. There were cystic or anechoic areas, suggestive of necrosis. CT (computed tomography) confirmed the sonographic findings along with profound contrast enhancement. All other investigations including bone scan were normal. With the presumption of a mesenchymal tumor, fine needle aspiration was carried out. Diagnosis was a malignant round cell tumor, most likely a PNET. Trans-axillary excision of the mass was done. Histological analysis confirmed the diagnosis of PNET.

#### **Conclusion:**

Peripheral PNETS which have lately evolved as a distinct entity, should be included in the differential diagnosis of soft tissue tumors in the pediatric and adolescent age group.

**Key Words:** primitive; Neuroectodermal; Imaging;

275

## **The role of three dimensional computed tomography imaging in Eagle's syndrome -A case report**

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### **CASE REPORT**

#### **Background:**

Eagle's syndrome is an aggregate of symptoms caused by an elongated ossified styloid process and / or calcified stylohyoid ligament. This is a rare finding that often goes undetected in absence of radiographic evaluation. Eagle's syndrome can occur unilaterally or bilaterally with the most common symptoms of dysphasia, headache, craniofacial or cervical pain, foreign body sensation in the pharynx, change in voice and a sensation of hyper salivation. To the best of our knowledge only few cases have been reported in the radiology literature.

#### **Case Summary:**

In this study, we present a single case report of a 40 year old woman who presented with symptoms of dysphagia with intermittent right sided headache and facial pain for more than one year. Patient was referred to radiology department as a case of suspected Eagle's syndrome for three dimensional Computed tomography (3D-CT) imaging. 3D-CT images reformatted from the raw data obtained from coronal images with a spiral scanner, confirmed the diagnosis of Eagle's syndrome by showing elongated right styloid process which measures 41.4 mm in its maximum length.

#### **Conclusion:**

3D-CT imaging provides valuable information about the styloid process in regard to its length and direction, and is a valuable diagnostic tool in the diagnosis of Eagle's syndrome.

**Key Words:**Eagle's syndrome; 3D-CT imaging; Styloid process;

276

### **Cerebral Venous Thrombosis - A report of three cases.**

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#### **CASE REPORT**

##### **Background:**

Cerebral venous thrombosis (CVT) is an uncommon disorder, but has been more frequently diagnosed in recent years due to availability of better imaging techniques. CVT is an elusive diagnosis, due to its nonspecific presentation and multiple predisposing factors. MRI and MRV are the currently preferred techniques for making a diagnosis.

##### **Case Summary:**

Case-1: A twenty-year old female patient, presented with severe headache four days post-partum. The patient had two episodes of syncope. On admission she was aphasic with right hemiparesis. LP showed a high protein content with pleocytosis. CT showed a large left temporo-parietal hemorrhagic infarction with edema and midline shift. MR-venography showed thrombosis of sup-sagittal sinus and straight sinus. She improved with no residual neurological deficit.

Case-2: A 24-year old female patient presented with persistent headache of one month. The patient had no obvious predisposing factors for the development of CVT. Clinical examination did not reveal any neurological deficits and fundal examination revealed papilledema. An MRI with MRV showed a normal brain parenchyma with thrombosis of the left transverse, sigmoid sinus and IJV. The patient improved following thrombolytic therapy. Case-3: A 45-year old lady was admitted with severe headache of three days duration, with vomiting and altered sensorium for a day. Clinical findings revealed a stuporous patient, with bilateral sixth nerve palsy. Fundal examination revealed bilateral papilledema. CT showed hypodensity involving both basal ganglia and thalami with a hyperdense linear signal in the internal cerebral veins. MRV confirmed the above findings.

##### **Conclusion:**

CVT has a variable presentations and the diagnosis of this entity needs a high index of suspicion. MRI with MRV has made the diagnosis of this entity easier.

**Key Words:** Cerebral venous thrombosis; MRI; Computed Tomography Scan;

277

## **Primary aneurysmal bone cyst at C5 and C6 presenting as an extradural mass**

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### **CASE REPORT**

#### **Background:**

Aneurysmal bone cysts (ABCs) are benign bone lesions that account for approximately 1-6% of all bone tumours. They typically occur in the second decade of life with greater than 50% occurring in long bones and 3-20% in the spine. ABCs in the spine typically involve the posterior elements, but are not uncommon in the vertebral body and may eventually extend to more than one vertebra, leaving the disc space intact.

#### **Case Summary:**

A fourteen year old girl presented with a four month history of progressive left shoulder and upper limb pain with left sided neck swelling. There was no neurological deficit. CT and MRI revealed lytic destruction of the left aspect of C5 vertebral body and left transverse process; expansile lytic lesion of C6 vertebral body extending into the left posterior elements causing enlargement of C5 and C6 foramen transversarium. There was an associated 4.3cmx3.6cm lobulated multicystic mass displacing the left posterior paraspinal muscles, with fluid-fluid levels of different signal intensities, representing different stages of blood by products. There was anterior displacement of the left vertebral artery and intraspinal canal extension of the mass, causing extradural cord compression and displacement of the cord to the right. There was no signal alteration within the cord. A diagnosis of ABC was made.

#### **Conclusions:**

Cervical spine ABCs are rare and because of their location, they are more likely to cause neurological symptoms from spinal cord compression, therefore having a high index of suspicion with a view to making an early diagnosis is essential.

**Key Words:**Spine; Mass; Imaging;

278

## **Uterus didelphys --- presenting as an abdominal mass in a menstruating female**

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### **CASE REPORT**

#### **Background:**

Mullerian duct anomalies occur in 0.1-3% of women. The mullerian ducts develop at five to six weeks gestation from coelomic epithelium and form the uterovaginal canal by lateral fusion at seven to nine weeks gestation. Failure of lateral fusion of the mullerian ducts results in uterus didelphys. It has the highest association with transverse vaginal septum with ipsilateral renal agenesis.

#### **Case Summary:**

An eighteen year old female virgin presented on her third day of menstruation with a history of lower abdominal pain exacerbated during her regular menstrual cycles and dysuria for one year. Abdominal examination revealed a sixteen week size tender central abdominal mass arising from the pelvis. MRI abdomen and pelvis showed two divergent uterine fundi, two cervixes and two vaginas. The distended left uterus, cervical canal and vagina measured 13.5cmx8cm and the accumulated fluid within was isointense on T1WI, T2WI and GR series, denoting haemorrhagic content. There was a 6cmx5cm left ovarian cyst which was isointense on T1WI and showed high signal intensity on T2WI. There was also left renal agenesis. Surgery confirmed uterus didelphys with left haematometrocolpos and a left transverse vaginal septum and left endometriotic cyst.

#### **Conclusions:**

MRI is the standard imaging modality in detecting, diagnosing and determining surgically correctable forms of mullerian duct anomalies, as there is no irradiation to the young female patient and it provides high resolution images of the female reproductive structures in addition to evaluating concomitant urinary tract anomalies.

**Key Words:**Mullerian; Anomalies; MRI;

279

## **Boerhaave Syndrome: A devastating lower esophageal rupture, How common?**

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### **CASE REPORT**

#### **Background:**

Boerhaave syndrome, a potentially devastating condition characterized by spontaneous esophageal rupture after a forceful vomiting, was described by Hermann Boerhaave in 1724. The classic triad of clinical presentation is vomiting, chest pain and subcutaneous emphysema in middle aged men. Radiological findings include pneumo mediastinum, left pleural effusion or hydropneumothorax with transmural tear in left posterolateral wall of distal esophagus. This syndrome accounts for 15% of all esophageal perforations with 300 reported cases in literature, carries highest mortality of 35% among all gastrointestinal perforations.

#### **Case Summary:**

A 37yrs old man was presented to casualty with chest pain radiating to back and left shoulder. History of vomiting in the previous 2days was noted. X ray chest showed hydropneumothorax on the left side. Intercostal tube was placed in left pleural space and approximately 1350ml of complex fluid with purulent debris was drained. CT scan thorax was then done with oral gastrografin for esophagus, which revealed wide perforation in lower 1/3rd esophagus in left posterolateral aspect with leak of oral contrast into left hemithorax. Soon exploratory thoracotomy was done on left side and 2cm long esophageal perforation was repaired. Post operative care was complicated by esophageal leak at the site of repair with mediastinitis. Hence emergency esophagectomy with cervical esophagostomy and feeding gastrostomy were done and patient improved well.

#### **Conclusions:**

Atypical clinical symptoms and delay in presentation often cause diagnosis of Boerhaave syndrome difficult, as in our case. High index of clinical awareness and prompt radiographic investigations are essential for early diagnosis. The best outcomes are associated with early diagnosis and definitive surgical management within 12 hours of rupture. If intervention is delayed longer than 24 hours, the mortality rises to higher than 50% and to nearly 90% after 48 hours.

**Key Words:**Esophagus; Transmural rupture; Vomiting;

280

## **CT findings in a case of hepatic focal nodular hyperplasia in a child**

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### **CASE REPORT**

#### **Background:**

Focal nodular hyperplasia is a benign liver tumor, most common in the 20-50 year age group in females. It is rare in children constituting only 4% of primary childhood hepatic tumours.

#### **Case Summary:**

A 6 year old girl presented in December 2004 with fever of short duration. Clinically she had hepatomegaly. Ultrasound revealed a well defined rounded non-calcific 7x6 cm isoechoic mass in the right lobe of liver. The triple phase CT scan showed this to be hypodense to the rest of the liver on plain scan. There was intense enhancement of the lesion seen in the arterial phase with isodensity in the venous phase. On delayed images, it was hypodense to the rest of the liver. The notable finding was the presence of a central stellate scar. This was hypodense on the arterial and venous phase images but showed hyperdensity relative to the lesion and the liver on the delayed phase images. An ultrasound guided biopsy of the lesion was performed. The histopathological diagnosis was Focal nodular hyperplasia (FNH).

#### **Discussion:**

FNH is an unusual childhood tumour. It can have variable echogenicity on ultrasound. Imaging in the arterial phase of CT scan classically shows intense tumour enhancement. The lesion becomes iso to hypodense on venous and delayed phase imaging. The central scar is a characteristic finding. This is classically hypodense on early post contrast images and shows hyperdensity on delayed imaging. T2W hyperintensity of the scar on MRI is also a typical feature. In children, an association has been noted with cutaneous vascular abnormalities.

#### **Conclusion:**

Focal nodular hyperplasia is a rare tumour in childhood. The CT features are characteristic. Although seen in less than 50% of cases, the presence of a central stellate scar that is hypodense on early images with delayed enhancement is a diagnostic feature of this benign tumour. Thus delayed scanning would establish the diagnosis, precluding invasive testing and altering the management.

**Key Words:** Focal nodular hyperplasia; Central scar; Computed Tomography Scan;

**Medicine**

Category: *Clinical*

**281**

**Photo-Superimposition technique for Identification of Unknown Person**

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**CASE REPORT**

**Background:**

Photo-Superimposition can be a convincing method for identification when all else lacking. It is accomplished by photographically superimposing a carefully positioned skull on a facial photograph. Numerous points of reference should be visible on both the photograph and the skull: Bridge of the nose, Length of nose, Width of nose, Distance between eyes, Lip line, Any visible teeth, Chin lowest point, Use the technique of superimposition for identification of unknown body

**Case Summary:**

Three unidentified skeletons found in the desert. Age, sex, race analysis was done. BY DNA profile their father and mother will be known. Photo-superimposition was used for identification of each human skeleton according to DNA profile.

**Conclusions:**

Photo-superimposition has been shown to be the most successful for identification.

**Key Words:** Identification; Facial Reconstruction; Bone Remnants;

**Medicine**

*Category: Clinical*

**282**

**Adult respiratory distress syndrome during Basiliximab treatment in renal transplantation.**

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**CASE REPORT**

**Background:**

Basiliximab (Simulect), is a chimeric interleukin-2 receptor antibody (IL-2Rab), used as an induction immunosuppressive (IS) agent in renal transplant recipients (RTR), proven to be highly effective in preventing acute rejection (AR) episodes. It has an excellent safety profile and hypersensitivity reactions due to cytokine release syndrome following therapy have been rarely reported. We report a case of adult respiratory distress syndrome (ARDS) following Simulect administration.

**Case summary:**

A 48-year-old lady with end stage renal failure and normal cardio respiratory status underwent renal transplantation with Basiliximab induction (2 doses on day 0 and day 4) followed by steroids, mycophenolate and tacrolimus as immunosuppression. There was immediate postoperative diuresis with excellent graft function and the patient received standard fluid management during and after surgery. She developed acute respiratory distress with clinical and radiological evidence of pulmonary edema on day 2 and day 4 post operatively, not responding to fluid restriction and diuresis. Cardiac and respiratory workup was normal and she was successfully treated with assisted ventilation and ultra filtration.

**Conclusions:**

Basiliximab induced cytokine release and increased capillary permeability leading to ARDS is a serious adverse event and improved awareness and prudent management can be life saving.

**Key Words:**Basiliximab; Adult respiratory distress syndrome; Renal transplantation;

**Medicine**

Category: Graduate (Resident)

283

**Acute myocardial infarction following sildenafil intake in a nitrate-free patient without previously documented coronary artery disease**

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**CASE REPORT**

**Background:**

To report occurrence of acute myocardial infarction (MI) associated with intake of oral sildenafil in a nitrate-free patient.

**Case summary:**

A 50-year-old manual laborer was admitted to the hospital with acute inferior wall myocardial infarction occurring approximately 30 minutes after taking oral sildenafil 50 mg. This occurred before any attempted sexual activity. Subsequent angiography showed a 70% stenotic lesion in the midsegment of the circumflex artery.

**Conclusion:**

Sildenafil-associated MI is rarely seen in patients without documented coronary artery disease. Physicians should be aware of this potentially life-threatening adverse reaction to sildenafil and counsel patients not to take this drug without undergoing a complete clinical evaluation.

**Key Words:**Sildenafil; Acute myocardial infarction; Coronary artery disease;

**Medicine**

*Category: Clinical*

**284**

**Facial Reconstruction**

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**CASE REPORT**

**Background:**

Facial reconstruction is a technique used as an aid in the identification of skeletal remains when all other identifying resources have failed.

**Case Summary:**

In this case the mother of the victim called the forensic medical examiner's department after seeing the drawing. She said it appeared to be that of her missing daughter. Above is the drawing made from the skull beside a photograph of the murder victim. This photograph was taken within the last month of her life. Various measurements are taken directly from the skull. With the tissue depth markers in place the reconstruction process begins.

**Conclusions:**

Facial reconstruction has been shown to be the most successful for identification.

**Key Words:**Identification; Fascial reconstruction; Bone remenants;

*Medicine*

*Category: Clinical*

285

**Libman Sack Endocarditis is not an uncommon presentation of SLE.**

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**CASE REPORT**

**Background:**

Libman-Sacks endocarditis is the most characteristic cardiac manifestation of the autoimmune disease systemic lupus erythematosus. Postmortem studies describe mulberrylike clusters of verrucae on the ventricular surface of the posterior mitral leaflet, often with adherence of the mitral leaflet and chordae to the mural endocardium. The condition is not always recognized on echocardiographic images. With the introduction of steroid therapy for systemic lupus erythematosus, improved longevity of patients appears to have changed the spectrum of valvular disease.

**Case Report:**

28 years old Kuwaiti lady was diagnosed as rheumatic endocarditis 1993, 2 years later she developed seizures, EEG and C.T.brain diagnosed her as epilepsy, she was on high dose of carbamazepine, and she developed 2 attacks of fever, her Echo. Showed vegetations on the mitral valve, blood cultures was negative and she was treated as infective endocarditis. She was presented to us for the third time with the same pictures, her examination, investigation proved that she had SLE with secondary antiphospholipid syndrome.

**Conclusion:**

For any female presented with epilepsy resistant to control or repeated attacks of fever, cardiac vegetation and negative blood culture SLE should be considered

**Key Words:** Systemic Lupus Erythematosus; Libman-sack endocarditis; Epilepsy;

**Medicine**

Category: *Clinical*

286

**Klinefelter Syndrome**

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**CASE REPORT**

**Background:**

It is associated with male hypogonadism and infertility. Classically it is 47, XXY karyotype & characterized by hypogonadism, gynecomastia, psychosocial problems, low IQ. It is a form of primary testicular failure, with elevated gonadotropin levels. Androgen deficiency causes eunuchoid body proportions. Infertility and gynecomastia are the 2 most common complaints leading to diagnosis. Patients may lack secondary sexual characteristics. By puberty, 50% get gynecomastia. The risk of developing breast carcinoma is 20 times higher than normal. Infertility is seen in all individuals with 47, XXY karyotype. Mosaic one (46, XY/47, XXY) can be fertile. Patients may have increased frequency of extragonadal germ cell tumors. Lab Studies: high FSH, LH, estradiol levels and low testosterone. The increase in testosterone in response to (hCG) is subnormal. Urinary gonadotropins are increased. Cytogenetic show 80% of patients have 47, XXY.

**Case History:**

Male patient 40 ys old, with h/o Hypothyroidism and psychiatric illness. Clinically, pt was mentally subnormal, sparse body hair, feminin pubic hair, hypogonadism with small sized, firm testis, bilateral gynecomastia, eunuchoid feature with arm span 188 cm and height 173 cm, vitals were normal, heart showed MVP proven by Echo, routine lab investigations were normal. X-ray LS spine showed osteoporotic changes. Hormonal assay showed testosterone level zero, high LH, FSH and estradiol (180pmol/L). Chromosomal study showed 47, XXY pattern. Hormonal therapy as regular testosterone injections were started with much improvement.

**Conclusion:**

It is the most common chromosomal disorder associated with male hypogonadism and infertility. Because of an additional X chromosome on an XY background, this condition is seen in males only. The syndrome rarely is diagnosed in prepubertal males. Early identification are extremely helpful. Treatment should manage hypogonadism, gynecomastia, and psychosocial problems.

**Key Words:** Gynecomastia; Hypogonadism; Klinefelters;

**Medicine**

Category: *Clinical*

287

**Von Recklinghausen Disease and Acute Leukemia: A Case Report**

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**CASE REPORT**

**Background:**

Neurofibromatosis (NF) is a multisystem autosomal dominant disorder. Von Recklinghausen disease or NF type 1 (NF1) has a better prognosis with lower incidence of CNS tumors than NF type 2 (NF2). However, life time risks for both benign and malignant tumors in NF1 are increased which may reduce life expectancy. In opposition to childhood, the association between NF1 and malignant blood diseases is not demonstrated in adult life.

**Case Summary:**

We report here a case of an adult female with NF1 since childhood who presented with peripheral pancytopenia. Although bone marrow aspiration revealed a dry tap, the trephine biopsy showed the presence of many blast cells. The cytochemical and immunologic studies confirmed the development of acute leukemia.

**Conclusions:**

Adults with NF1 are susceptible to the development of malignant myeloid disorders either as a primary event or as a second malignant neoplasm. This may reduce life expectancy. However, early diagnosis and treatment can reduce mortality rates. This deserves attention in clinical settings long term follow up.

**Key Words:** Neurofibromatosis; Acute Leukemia; Pancytopenia;

**Medicine**

Category: *Clinical*

288

**Pseudomyxoma Peritonei and Amyloidosis**

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**CASE REPORT**

**Background**

A 55-year-old man with Pseudomyxoma Peritonei.

**Case Summary**

A 55-year-old Egyptian man presented on 18 July 2004 with abdominal distension of one month duration, general malaise and normal bowel motions, but no vomiting. He reported significant weight loss (8 kg over three months). There was no history of recent traveling, skin, eye or joint problem. His past medical history includes hypertension and diabetes mellitus. He is ex-smoker, refinery operator and father of three children. On examination the patient was anaemic, mildly dyspneic with protruded abdomen; his vital signs were normal as well as the chest and heart examination. The abdomen was distended with mild tenderness over both hypochondriums. He had mild leg oedema. His ECG and Chest x-ray were normal. His laboratory tests showed microcytic hypochromic anaemia, high ESR (90mm/1h), with normal liver functions, renal functions and lipid profiles. Hepatitis B and C virology were negative. Diagnostic laparoscopy was done on 4/8/2004 and the histopathological examination of the biopsies proved to be Pseudomyxoma Peritonei.

On 29th August 2004 surgery was done followed by chemotherapy. On 24th September 2005 presented with symptoms and signs which suggested the recurrence of his problem. CT scan of the abdomen confirmed that. Liver biopsy revealed a myloidosis (November 2005).

**Conclusions:**

The interesting point is whether this is a primary amyloidosis of the liver or secondary to chronic inflammatory stimulation from his Pseudomyxoma.

**Key Words:** Amyloidosis; Ascitis; Pseudomyxoma Peritonei;

**Medicine**

Category: *Clinical*

289

**Coronary Dissection**

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**CASE REPORT**

**Background:**

Coronary artery dissection is a rare and often fatal cause of ischaemic heart disease occurring predominantly in young or middle aged otherwise healthy patients. Clinical presentation varies in severity, generally relating to degree of dissection, development rate, and the vessel involved. More than 70% of the reported cases occurred in women. This condition is more common in pregnancy. The aetiology remains uncertain.

**Case Summary:**

A 28 year old lady who was 2 months post normal vaginal delivery was admitted in hospital for recurrent chest pain radiating to both arms and forearms. She denied any other symptoms. The patient had no history of cardiovascular disease, collagen tissue disease, or trauma. She is a known case of hypertension for 5 years, with strong family history of ischemic heart disease. O/E she was in distress, her blood pressure was 140/110, heart rate 64/min regular and was afebrile. Systemic examination was normal. She was found to have dynamic ECG abnormalities with ST segment depression and T wave inversion across all the chest lead and high creatinine phosphokinase and troponin-T. She was diagnosed as a case of NSTEMI and commenced on nitrate infusion and low molecular wt. heparin. Due to her ongoing chest pain, she was referred for urgent coronary angiogram which showed spontaneous dissection of left circumflex vessel and diffuse mid segment disease of LAD. Ejection fraction was 45.8%. Coronary artery bypass grafting was performed for ongoing myocardial ischaemia refractory to medical treatment.

**Conclusion:**

Spontaneous coronary artery dissection is an important cause of myocardial ischaemia and infarction preferentially in young women without overt risk for coronary artery disease. Prompt diagnosis with coronary angiography and treatment with coronary artery revascularisation in patients with ongoing myocardial ischaemia that is refractory to medical management provides the only means of improving survival in this serious disease.

**Key Words:** Pregnant; Coronary; Dissection;

*Medicine*

*Category: Clinical*

290

## **Isolated Left Ventricular Noncompaction (LVNC), A Form of Adult Congenital Heart Disease.**

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### **CASE REPORT**

#### **Background:**

During Routine Echocardiography awareness of certain rare conditions helps in diagnosing cases. We detected one such case, which was of left ventricle noncompaction.

#### **Case Summary:**

A 52 years old man presented to the hospital with sudden onset of shortness of breath and was on clinical and radiological basis the patient was diagnosed as acute left ventricular failure. He had no history of hypertension and had normal blood pressure on presentation. There was no history of diabetes, ischaemic or rheumatic heart disease. On a routine transthoracic echocardiography, the findings were of a dilated left ventricle with mildly hypertrophied left ventricular wall, which showed two distinct layers, one epicardial which was compacted and the other endocardial which showed deep intratrabecular recesses, with multiple intracavitary myocardial trabeculations. The right ventricle was normal. The patient was diagnosed as Isolated Left ventricular noncompaction.

#### **Conclusions:**

Noncompaction of the ventricles is a rare disorder of endomyocardial morphogenesis characterized by echocardiographic findings consisting of multiple, prominent myocardial trabeculations and deep intertrabecular recesses communicating with the ventricular cavity. The disease affects the left ventricle with or without the right ventricular involvement, and may result in both diastolic and systolic dysfunction with frequent progression to clinical heart failure, with arrhythmias and thromboembolic events. Noncompaction was initially described in children, however recent studies have characterized this disease in adult populations, in whom this process may be underestimated in prevalence. Therefore the conclusion is that an awareness of such a condition will be useful in reporting such cases. We will depict in the poster the presentation of the case, the echopictures, and the literature giving the importance of the new modality of echo called Live three dimensional transthoracic echocardiography in further defining the anatomy of these cases.

**Key Words:** Ventricular noncompaction; Heart Failure; Adult congenital heart disease;

*Medicine*

*Category: Clinical*

291

## **Unusual Case of Bronchiectasis due to IgA Deficiency Associated with Coeliac Disease**

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### **CASE REPORT**

#### **Background:**

IgA deficiency is a rare occurrence. It usually presents as chronic cough with bronchiectasis. IgA deficiency is occasionally associated with a number of different diseases. Association of IgA deficiencies with Coeliac disease is a very rare phenomenon. Here we present such a rare case.

#### **Case summary:**

A 15 yrs old frail built boy presented with chronic productive cough for 7 months and loss of weight. On examination he looked pale and had clubbing. There was no lymphadenopathy. His lab investigation showed hypochromic microcytic anemia with Hb 9.7 g/dl. Anti-gliadin and Anti-endomysial antibodies were positive. His X-Ray chest showed Lt lower lobe collapse. CT-chest confirmed changes of bronchiectasis.

#### **Conclusion:**

A young non smoker boy presenting with chronic cough should raise the possibility of IgA deficiency. When such a patient presents with iron deficiency anemia an association with Coeliac disease should be entertained.

**Key Words:** IgA deficiency; Bronchiectasis; Coeliac disease;

*Medicine*

*Category: Clinical*

292

## **Olmsted Syndrome: report of a new case with unusual features**

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### **CASE REPORT**

#### **Background**

Olmsted syndrome is a very rare disorder and hallmarks for its diagnosis include a combination of bilateral mutilating palmoplantar keratoderma and periorificial hyperkeratotic plaques. Only 32 cases have been reported before. We report another case with this disorder showing some new features.

#### **Case summary**

A 2-year-old girl was brought with skin, hair and nail deformities since birth. Examination revealed bilateral palmoplantar keratoderma, perineal and perianal hyperkeratotic plaques, scanty scalp and eyebrow hair, nail dystrophy, joint laxity at the metacarpo-phalangeal joints. In addition she had a hemangioma over the abdomen.

#### **Conclusion**

In conclusion we report another case of Olmsted syndrome, a rare disorder, showing in addition to the classical features of palmoplantar keratoderma and periorificial keratotic plaques, a hitherto unreported association with a vascular malformation and this case is a female and to the best of our knowledge only 2 female patients have been reported before with this disorder.

**Key Words:**Olmsted; Syndrome; Vascular malformation;

*Medicine*

*Category: Clinical*

293

## **Shrinking lung syndrome as a presenting manifestation of systemic lupus erythematosus in a Kuwaiti female**

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### **CASE REPORT**

#### **Background:**

The shrinking lung syndrome (SLS) is a rare manifestation in patients with established systemic lupus erythematosus (SLE). Only two cases have been reported in which this syndrome was the presenting manifestation of SLE. We describe a 21-year-old female Kuwaiti who presented with SLS. In addition to clinical and serological features of lupus, she had dyspnea, respiratory muscle dysfunction, characteristic chest radiographic findings of small lung volumes, elevated right hemidiaphragm, and basilar atelectasis. There was no pulmonary parenchymal or pulmonary vascular involvement. Nerve conduction study showed right phrenic nerve palsy. She responded well to treatment with corticosteroids.

**Key Words:** Systemic lupus erythematosus; Shrinking lung syndrome; Complications;

**Medicine**

Category: *Clinical*

294

**Thyrotoxic hypokalaemic periodic paralysis**

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**CASE REPORT**

**Background:**

We report a case of a 21 yrs old kuwaiti male admitted with acute onset flaccid paraparesis with hyper-reflexia. He had a soft diffuse goiter with signs of thyrotoxicosis. He was also hypokalaemic. MRI spine was done in view of hyper-reflexia and was normal. Power normalized after correcting potassium. TFT was consistent with primary hyperthyroidism. Thyroid scan showed diffuse thyrotoxic goiter. Antibodies were requested. Patient was started on propranolol, neomercazole but unfortunately relapsed soon, spironolactone was added but patient continued to relapse, therefore he was referred for urgent radioactive iodine treatment. Patient had one more relapse soon after treatment then recovered fully, all medications were stopped, he is euthyroid and had no further attacks for the last 6 months. His thyroid antibodies were consistent with Hashimoto's thyroiditis.

**Key Words:**Hypokalaemic Periodic Paralysis; Thyrotoxicosis; Hashimoto's  
Thyroiditis;

**HIB Vaccine Failure: a case report from KUWAIT.**

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**CASE REPORT**

**Background:**

Haemophilus influenzae type b (Hib) vaccine failure has been well reported. The definition—“Onset of culture-confirmed, invasive (that is, involving a normally sterile body-fluid) Haemophilus influenzae type b-infection more than 28 days following completion of age-appropriate immunization for the specific Haemophilus influenzae type b vaccine used.” The presented case depicts Hib-meningitis in a child vaccinated with H. influenzae type b polysaccharide conjugated to diphtheria toxoid component of diphtheria toxoid/whole cell pertussis/tetanus toxoid vaccine.

**Case summary:**

1.5 year old Kuwaiti boy was admitted on September 1st 2005 to Sabah Hospital with 2 days' history of upper respiratory tract infection, difficulty in breathing, refusal to feed and 1 day's history of drowsiness. On examination he was febrile, but had no signs of meningeal irritation. A product of a preterm (32 weeks) caesarian delivery, he was developmentally normal and was vaccinated upto the age. He was put on ventilator in the paediatric ICU and cefotaxime started empirically. Blood culture supernatant, urine and CSF tested positive for H. influenzae type b antigen. Cultures of these samples were found to be sterile repeatedly. Total serum IgG, IgM and IgA were normal. Anti Hib IgG level was high (as on the day 11). In the ward he became drowsy and had convulsions and meningeal signs. Fever was still there on day 13. CT and MRI showed meningitis and subdural effusion. Rifampicin, acetazolamide and dexamethasone were added to cefotaxime. CSF was negative for bacterial antigen on the day 20. He improved neurologically, haemodynamically and became afebrile, so was sent home on day 41.

**Conclusions:**

1) This case was of Hib vaccine failure leading to H. influenzae type b meningitis complicated by subdural effusion. 2) Vaccine failure in this boy may be due to prematurity at birth and/or unexpected waning effect of the primary doses of the vaccine. The booster was due after 23 days of admission to Sabah Hospital.

**Key Words:** Haemophilus influenzae type b; Vaccine failure; Meningitis;

**Intractable *Bacillus cereus* bacteremia in a preterm neonate**

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**CASE REPORT**

**Background:**

Organisms belonging to *Bacillus* spp. are arbitrarily designated as contaminants even when isolated from sterile sites such as blood or CSF. In a small number of cases *B.cereus* has been reported to cause systemic infections in infants, many of which were fatal. We report a case of *B.cereus* bacteremia in a neonate who was successfully treated with vancomycin.

**Case summary:**

A 1514-g male infant was delivered by emergency cesarian section. The infant had respiratory distress during perinatal period. & was treated with exogenous surfactant & mechanical ventilation. He received empirical ampicillin & cefotaxime for 72 h. On day 4 the baby developed leukopenia ( $3.2 \times 10^9/L$ ) & CRP level of 11 mg/dl. Treatment with pip/tazo plus amikacin was initiated after taking blood sample for culture, which grew Gram-positive bacilli. Considering the isolate to be a contaminant same antibiotics were continued. Blood cultures repeated on day 5, 8, & 11 all grew the same organism. By now it became apparent that it was a clinically significant isolate causing invasive infection. The isolate was identified as *B.cereus*, which was susceptible to amikacin, pip/tazo, imipenem, erythromycin, clindamycin, vancomycin & resistant to penicillin, ampicillin, piperacillin, cephalothin, cefuroxime, cefotaxime & cotrimoxazole. In view of intractable bacteremia despite relevant antibiotics, all IV lines were changed, echocardiogram was done to rule out endocarditis & antibiotics were changed to monotherapy with vancomycin. Blood culture repeated after 2 weeks was negative & the baby showed clinical improvement.

**Conclusions:**

*B.cereus* is an uncommon but potentially serious bacterial pathogen causing invasive infection in preterm neonates. Isolation of *Bacillus* spp. from sterile sites in a critically ill patient should be viewed seriously until proved otherwise

**Key Words:**Bacteremia; *Bacillus cereus*; Neonate;

***Microbiology and Immunology***

*Category: Basic Sciences*

**297**

**Zoonotic Onchocerciasis with bilateral ocular Toxoplasmosis: A concurrent infection?**

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**CASE REPORT**

**Background:**

We discuss a 12-year old Kuwaiti girl who presented with a nodular swelling in the suprapubic area. The child previously complained of an ophthalmic problem for which she was “treated”.

**Key Words:** Onchocerciasis; Toxoplasmosis; Zoonosis;

**Oncology**

Category: *Clinical*

298

**Primary PNET/Ewing's Sarcoma of the Dura: a case report**

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Department of Medical Oncology, Husain Makki Al-Juma center for specialized Surgery.

**CASE REPORT**

**Background:**

The occurrence of primary peripheral PNET/Ewing sarcoma of the Dura has only rarely been reported in the literature. We describe a case of extra osseous Ewing's sarcoma arising intracranially in the leptomeninges.

**Case Summary:**

In 1995, Mr. HH a 10-year-old boy was investigated for complains of seizures. CT revealed an extradural mass in the left mid cranial fossa. Underwent excision of the mass in December 1995. Following this he received adjuvant chemotherapy. The disease was in remission for more than 6 years. In July 2002, he developed generalized seizures. CT scan revealed 6.5 x 5 x 5 cm mass in the left frontal region at the site of original Tumor bed. After achieving a good partial response to 3 cycles of chemotherapy, he underwent subtotal excision of the tumor in November 2002. Following this he was lost for follow up for 1 year. In November 2003, he came back with massive recurrence. He was initially treated with palliative cranial radiotherapy followed by chemotherapy. Evaluation after 2 cycles showed marked regression of the tumor. He required removal of the infected cranioplasty in February 2004. Chemotherapy was resumed in April 2004. In June 2004, he underwent partial tumor resection and Orbitalis decompression on the left side of frontal lobe by microsurgical approach. In October 2004, he had progression of the disease, which failed to respond to palliative chemotherapy. He succumbed to the disease in January 2005.

**Conclusion:**

Unlike the usual behaviour of Ewing's Sarcoma, this rare case of extra osseous Ewing's Sarcoma had local recurrence only after a long disease free interval. The patient finally succumbed to local disease with any metastasis.

**Key Words:** Extraosseous; Ewing's; Dura;

*Ophthalmology*  
*Category: Clinical*

299

**Postoperative Orbital Cellulitis Following Retrobulbar Anaesthesia –  
Report Of Two Cases**

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Al-Bahar Eye center

**CASE REPORT**

**Background:**

Postoperative orbital cellulitis following local perocular anesthetic injection is a known but rare complication of ocular surgery. According to our knowledge only 5 cases have been reported in the English literature. We report two cases of acute orbital cellulitis following standard cataract surgery. Both cases responded well to systemic antibacterial therapy.

**Key Words:**Postoperative; Retrobulbar; Orbital Cellulitis;

*Ophthalmology*  
*Category: Clinical*

300

**Herpes Zoster Orbital Myositis In A Healthy Young Patient –  
A Case Report**

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Al-Bahar Eye center

**CASE REPORT**

**Background:**

Herpes zoster orbital myositis is a rare clinical entity. The condition typically occurs in immunocompromized patients. Only six cases have been reported in the literature. We present a case of rapidly progressive orbital myositis due to herpes zoster infection in a young healthy patient. The condition responded to standard intravenous antiviral therapy.

**Key Words:**Orbit; Herpez Zoster; Myositis;

**Pathology**

Category: *Clinical*

301

**Proliferating trichilemmal tumor in the chest wall**

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**CASE REPORT**

**Background:**

Uncommon lesions presenting at unusual locations often pose big diagnostic challenge to the histopathologists. This becomes more pertinent for lesions, which are close simulators of common diseases at such sites. Here we report a case of a proliferating trichilemmal tumor (PTT) occurring in the chest wall, an uncommon location for this entity. PTT is a relatively rare cutaneous lesion predominantly confined to the scalp. Occurrence at other sites are reported infrequently. PTT often masquerades as a squamous cell carcinoma with extensive epithelial proliferation, variable cytologic atypia and mitotic activity, making its correct diagnosis further important.

**Case summary:**

This 75-year old male presented with history of a painless gradually enlarging nodule on the anterior chest wall for the last six months. Local examination revealed a 1x1 cm soft, freely mobile, lobulated skin covered mass on the left anterior chest wall. The overlying skin was unremarkable. The clinical diagnosis was skin papilloma. The lesion was completely excised. Grossly it revealed a skin covered globular mass measuring 1x1cm. Cut surface showed a grayish brown firm tumor with cystic spaces filled with gelatinous material. Microscopically, the lesion was well demarcated from the epidermis and demonstrated coalescing masses of squamous epithelium showing abrupt trichilemmal type of keratinization with formation of horn pearls focally. There was no atypical mitosis or cellular atypia. Based on the presence of proliferating lobules of squamous epithelium showing trichilemmal type keratinization and absence of cellular atypia the diagnosis of proliferating trichilemmal tumor was entertained.

**Conclusion:**

The present case emphasizes the importance of morphologic recognition of proliferating trichilemmal tumor at an unusual site considering its close resemblance to squamous cell carcinoma.

**Key Words:** Proliferating trichilemmal tumor; Proliferating trichilemmal cyst; Pilar tumor;

**Pathology**

Category: *Clinical*

302

**Small cell carcinoma of the urinary bladder: report of a rare case**

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Kuwait

**CASE REPORT**

**Background:**

Primary neuroendocrine carcinomas of the urinary bladder are rare accounting for 0.35-0.70% of all bladder tumors. A correct histologic diagnosis assumes paramount importance because of its more aggressive clinical course than conventional urothelial carcinomas. Immunohistochemistry serves as a very useful ancillary aid in this regard. Here we report a case of small carcinoma of the urinary bladder along with its morphologic and immunophenotypic profile.

**Case Summary:**

This 47-year-old male was admitted with complaints of painless hematuria of recent onset. Systemic examinations did not reveal any abnormality. CT scan of the abdomen demonstrated a soft tissue intraluminal mass in the right poster lateral wall of the urinary bladder. There were multiple calculi in the right kidney with mild hydronephrotic changes and a staghorn calculus in the left kidney. The tumor was biopsied. On gross examination the specimen consisted of multiple soft tissue fragments measuring together 3x2x1cm. Microscopy showed tumor cells arranged in solid cords being composed of small cells with dense hyperchromatic nuclei and extremely scanty cytoplasm. Mitoses were frequent along with foci of coagulative tumor cell necrosis. There was no evidence of lymphovascular invasion. Muscularis propria was not included to comment on invasion. Overlying urothelium was preserved in many areas and did not show any dysplastic change. Immunohistochemical analysis revealed diffuse expression of synaptophysin and neuron specific enolase and focal expression of chromogranin. There was perinuclear dotlike expression pattern for cytokeratin in the tumor cells while the overlying urothelium demonstrated diffuse membranous expression.

**Conclusion:**

The present case highlights the role of ancillary aides such as immunohistochemistry in the correct diagnosis of uncommon lesions which has significant bearing on patient management.

**Key Words:** Neuroendocrine carcinoma; Small cell carcinoma; Urothelial carcinoma;

**Pathology**

Category: *Clinical*

303

**Aortic dissection, Marfan Syndrome, as a cause of sudden death  
(2 case reports)**

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**CASE REPORT**

**Background:**

Marfan syndrome is a disorder of the body connective tissue, an inherited defect in an extra-cellular glycoprotein called fibrillin, which is a major component of microfibrils necessary for elastic fibers formation. Typical cases usually manifested by changes in skeleton, eyes and cardiovascular system. Its prevalence range from 1 in 10,000 to 1 in 20,000. 70 to 85% of the cases are familial, autosomal dominant inheritance, the remainder are sporadic new mutations. Aortic dissection is a catastrophic illness characterized by separation of the layers within the aortic wall. The circulating blood escape outside, in aortic wall. Cardiogenic or oligemic shock, usually causes acute circulatory failure then death.

**Case summary:**

Two cases had been referred to Forensic department Case 1: 17 years old, Athlete, Egyptian, male, suddenly collapsed, while participating a heavy exercise (weight-lifting). On examination revealed 185cm long, with long tapering fingers (arachnodactyly) and pectus excavatum. On autopsy, hemo-pericardium (cardiac tamponade), An intimal tear 3cm long and located at 2cm distal to aortic cusps, the escaped blood cleave and dissect the aortic wall up to 12cm distal. Case 2: A 45cm, Philpianian female, with a sudden onset of acute chest pain, in cardio intensive care unit they discovered aortic dissection. An urgent replacement of ascending aorta, coronary bypass and pace maker insertion was done. However cardiac arrest had occurred 5 weeks later. Gross and microscopic study as well as histochemical and immunohistochemical study has been done.

**Conclusion:**

Connective tissue fibrillary protein defect (Marfan syndrome), may be firstly presented as a cause of sudden death.

**Key Words:** Aortic dissection; Marfan syndrome; Sudden death;

**Pathology**

*Category: Clinical*

**304**

**Primary diagnosis of Pulmonary Echinococcosis by cytological techniques, a Case Report.**

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**CASE REPORT**

**Background:**

Hydatid disease is a parasitic infection caused by *Echinococcus granulosus*, characterized by cystic lesions in the liver, lungs, and, rarely, in other parts of the body. Fine needle aspiration is not advised in the diagnosis of Hydatid Disease as the leakage of cyst contents can lead to anaphylaxis or wide dissemination of the infection

**Case Summary:**

49 year old Bangladeshi male, non-smoker, working as a driver for 20 years in Kuwait was referred for evaluation of an abnormality detected in Chest X-Ray during an annual medical check up. He was totally asymptomatic. Chest radiograph showed a left lower zone rounded shadow. CT chest confirmed a well defined mass lesion 23x26mm of soft tissue density in the posterior segment of left lower lobe in sub pleural location. Routine blood tests were normal. Sputum for AFB was negative. PPD was positive. He was investigated further with a working diagnosis of solitary pulmonary nodule. CT guided FNA was done. 8ml of clear fluid was aspirated. Centrifuged cytospin smears stained with H & E revealed several scolices with hooklets confirming a diagnosis of Hydatid Cyst (*Echinococcosis*). The diagnosis was not suspected clinically as the CT picture and densitometry was suggestive of a mass lesion. Patient was put on Albendazole 400 mg twice daily and was referred for a surgical resection

**Conclusion:**

Hydatid cyst should be considered when evaluating a solitary pulmonary nodule. Carefully performed image guided percutaneous aspiration cytology study is a safe procedure and is helpful in the diagnosis of Hydatid cyst

**Key Words:**Echinococcosis; Cytology; Pulmonary;

*Pediatrics*

*Category: Graduate (Resident)*

305

## **Congenital Heart Disease, Cerebral Palsy, Developmental Delay, & GI Abnormalities: A New Syndrome? Case Report & Literature Review**

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### **CASE REPORT**

#### **Background:**

We observed the unusual association of congenital heart defects, cerebral palsy, developmental delay, epilepsy and gastrointestinal abnormalities with a unique chromosomal abnormality.

#### **Case Summary:**

A girl was born after an uneventful pregnancy and term delivery to related healthy parents of Kuwaiti origin. She was normal until two months of age when she presented to our hospital with shortness of breath, cyanosis and vomiting. Physical examination was significant for microcephaly (HC<5th percentile), large ears, and ejection systolic and diastolic murmurs. Abnormalities of the nervous system include: mixed type cerebral palsy, epilepsy (developed later), developmental delay, and no response to visual or auditory stimuli. Echocardiography showed very large ASD, large VSD, moderately large PDA, and dilatation of both left atrium and ventricle. She was in severe heart failure and pulmonary hypertension requiring prolonged ventilation. CT brain demonstrated diffuse cerebral atrophy and multiple areas of infarction. MRI findings were compatible with hypoxic ischemic encephalopathy, calcifications of cortex, and severe global atrophy. GI abnormalities were limited to GERD, gastroparesis and impaired gag reflex. Fundus examination was normal with decreased blood vessels. Chromosomal analysis showed 46XX der8 (10qter-10q21:: 8p21- 8qter) in the patient, while in the mother 46XX t(8p;10q)(10qter - 10q22:: 8p21 - 8qter, 10pter - 10q22:: 8p21- 8pter). The father had normal 46XY and both parents were phenotypically normal.

#### **Conclusion:**

This is a new syndrome in terms of both constellation of symptoms and the genetic abnormality. Presented is a literature review of the symptoms and the genetic abnormality.

**Key Words:**New syndrome; Cerebral Palsy; t(8;10);

*Pediatrics*

*Category: Clinical*

**306**

## **A rare etiology for neonatal Respiratory Distress Syndrome: Neonatal interstitial glycogenosis**

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### **CASE REPORT**

#### **Background:**

Interstitial lung disease (ILD) is an uncommon cause of respiratory distress during the perinatal period. The various types of interstitial pneumonitis occurring in infancy and childhood have been reviewed the classification schemes used in these studies are based mostly on adult ILD

#### **Case summary:**

We present the clinical, radiologic, and pathologic findings in lung biopsy from a neonate with atypical neonatal lung disease. The neonate presented with tachypnea, hypoxemia, and diffuse interstitial infiltrates with overinflated lungs on chest radiographs in the first days of life. His HRCT of the chest showed interstitial pneumonitis. Lung biopsy showed expansion of the interstitium by spindle-shaped cells containing periodic acid–Schiff positive diastase labile material consistent with glycogen. Immunohistochemical staining showed these cells to be vimentin positive but negative for leucocyte common antigen, lysozyme, and other macrophage markers. The infant treated with pulse corticosteroids; a recent report of seven cases have the same presentation, where the authors postulated that this entity be differentiated from other forms of interstitial lung disease. Because abundant glycogen is not normally found in pulmonary interstitial cells, they postulate an abnormality in lung cytodifferentiation involving interstitial mesenchymal cells.

#### **Conclusion:**

This case of neonatal ILD is rare and carry a favorable prognosis in contrary to the other forms of ILD.

**Key Words:** Interstitial pneumonitis; Glycogen; Neonate;

*Pediatrics*

*Category: Clinical*

307

### **Short Rib-Polydactyly Syndrome, Type IV: A very rare case from Kuwait**

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#### **CASE REPORT**

##### **Background:**

Short rib polydactyly syndrome(SRPS) is a rare group of skeletal dysplasias, characterized by a hypoplastic thorax, short ribs and limbs, polydactyly and visceral anomalies.

##### **Case summary:**

Four variants have been described in this condition, SRPS I (Saldino-Noonan Syndrome), SRPS II (Majewski Syndrome), SRPSIII (Verma-Naumoff Syndrome) and SRPS IV (Beemer-Langer syndrome) all of which are lethal in the neonatal period. All the four types are presumed to be inherited in an autosomal recessive fashion. Type I and III share common clinical and radiological features as do the type II and IV. Type II and IV can be differentiated from type I and III by the absence of metaphyseal irregularity and spiking of femer and humerous. Type II differs from type I by the presence of cleft lip/palate, genital abnormalities like ambiguous genitalia and radiologically by disproportionate shortening of the tibia. Type III SRPS differed from type I mainly in the skull configuration. There is a higher frequency of brain defects in type IV.

##### **Conclusion:**

There have been no case report of SRPS till date from Kuwait. We present a case of SRPS type IV in a girl baby born at fullterm to consagunous Syrian parents. The baby had very narrow chest, pre & post axial polydactyly, occipital encephalocele, Dandy walker malformation and dysmorphic face. On basis of clinical picture SRPS type II was diagnosed; but after detailed analysis of skeletal survey it suggested the rarest type IV of SRPS. The detailed differentiating features of all 4 types as well from other lethal skeletal dysplasia is discussed.

**Key Words:** Neonatal; Lethal skeletal dysplasia; Short ribs;

308

### **MgSO<sub>4</sub> induced anaphylactic shock: A case report**

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#### **CASE REPORT**

##### **Background:**

Magnesium is the fourth most common cation in the body where it serves as a co-factor for a large number of enzymatic reactions that involve adenosine triphosphate. It plays a role in electrical gradient generated across cell membrane, in maintaining cardiac contractile strength and peripheral vascular tone. For these reasons magnesium is a vital part of our patients daily monitoring and is replaced accordingly. About 10–20% of patients' in general medical ward and 60–65% of ICU patients are estimated to be hypomagnesaemic.

##### **Case summary:**

A haemodynamically stable, fully conscious 19-year-old gentleman presented to casualty post road traffic accident. He sustained multiple left lung contusions, and a right kidney contusion with no significant collection. He was transferred to ICU for observation. Routine investigation revealed hypomagnesaemia that has persisted for three days of admission. The low magnesium was replaced with a magnesium sulphate in five percent dextrose infusion. During the second infusion, patient started to complain of severe flushing and itchiness. Generalized urticaria with severe hypotension, tachycardia, tachypnea and hypoxia occurred. Anaphylactic shock was diagnosed and the patient was successfully resuscitated.

##### **Conclusions:**

Literature review for case-reports of Magnesium sulphate induced anaphylaxis revealed no reported cases. The only reported cases of toxicity are associated with its use as a tocolytic agent in premature labor. Rapid administration resulting in flushing, hypotension, bradycardia, cardiac arrhythmia, or cardiac arrest has been reported. In our case, the patient was possibly sensitised when he received the first infusion in day one with mild reaction, but upon a second insult, developed anaphylactic shock. It would be very important to stress to ICU staff, both doctors and nurses, to be alert and vigilant to the early signs of anaphylaxis and anaphylactic shock and deliver the appropriate resuscitation accordingly.

**Key Words:** Magnesium sulphate [MgSO<sub>4</sub>]; Shock; Anaphylaxis;

**309**

## **Toxic tacrolimus blood levels with rifampicin administration in a renal transplant recipient**

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### **CASE REPORT**

#### **Background:**

Induction of the hepatic cytochrome P450-3A4 system and intestinal P-glycoprotein by rifampicin is difficult to be overcome by other drugs and require substantial increase in tacrolimus dose when given concurrently. Chronic diarrhea is known to precipitate tacrolimus toxicity irrespective of its cause in renal transplant recipients.

#### **Case summary:**

A 24 years old lady had twice renal transplantaton in 1988 and 1993. She was maintained on prednisolone, azathioprine and tacrolimus. She has close relatives infected with tuberculosis. She was started on isoniazide prophylaxis in April 2002 and tacrolimus was maintained on therapeutic levels. She had chronic anemia, fever, night sweating, nausea, vomiting, chronic diarrhea, and loss of weight. Detailed investigations didn't conclude definite diagnoses. She was started on standard antituberculous treatment in November 2002. She continued to have significant symptoms requiring multiple drugs to be controlled. She was getting omeprazole 20 mg twice daily which increases tacrolimus levels via hepatic enzyme inhibitor effect. She was taking also frequent doses of antacids (which decreases rifampicin absorption) and metoclopramide (which inhibits tacrolimus metabolism and increases its absorption). She was taking other drugs such as loperamide, acetaminophen and ondasetron hydrochloride as symptomatic treatment when required. She had very high tacrolimus blood levels requiring successive dose reduction from 7mg/day up to 0.5mg every other day with rise of serum creatinine from 100 to 140umol/l. Tacrolimus was changed to low dose sirolimus in April 2003 and renal function improved to its baseline while still on rifampicin.

#### **Conclusion:**

Gastrointestinal disturbances and multiple drug administration may cause significant toxic tacrolimus blood levels even in presence of rifampicin. Combination of enzyme P450 inhibitors and low absorption of rifampicin may overcome its strong enzyme induction effect.

**Key Words:** Transplant; Tacrolimus; Rifampicin;

310

**Post-tonsillectomy death due to irreversible hemorrhagic shock: fortunately a rare calamity**

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**CASE REPORT**

**Background:**

The mortality rate for tonsillectomy is about 1 per 10-40000 cases, 0.02%. The principal causes of death include anesthesia related complications, bleeding and dilutional hyponatremia. Post-tonsillectomy bleeding (PTB) is the most fatal complication. The incidence of primary PTB (<24 hours) and secondary PTB (>24 hours) is 2.7% and 2.4% respectively. The cause of secondary PTB is unknown. Infection is considered to be a contributory factor.

**Case Summary:**

A 3-and-1/2year old boy underwent adenotonsillectomy for recurrent infections in Aug. 2005. The preoperative assessment was normal. Informed consent was obtained. Cold adenotonsillectomy was performed. Haemostasis was secured by ligation and diathermy. After an uneventful 24 hours, the child was discharged with antibiotics and analgesics. Three days later he was reviewed in the casualty for postoperative pain. Examination was normal. Five days later, the patient developed a cataclysmic mouth-nose bleeding. Both the child and the father were literally covered in blood when he was rushed to the casualty. Airway was secured; resuscitation started. Exploration of the pharynx showed no active bleeding. However, both tonsillar fossae were sutured with surgicel. CXR showed marked aspiration and infiltration of both lungs. The patient was then shifted to the I.C.U. Despite all measures, the shock could not be reversed. This led to a sustained cardiac arrest and death.

**Conclusion:**

Whilst tonsillectomy techniques have evolved rapidly in recent years, the once-simple act of removing tonsils with impunity has become a complex decision-making process. To this end, it is worth considering the operative risks, physiologic parameters, alternatives and patient preferences. The trend is day case surgery. However, a proper selection of patients, a rigorous preoperative assessment, and perioperative care are sine-qua-non. It's also rational to accept the fact that severe PTB is sometimes unpreventable!

**Key Words:** Post-tonsillectomy Bleeding; Shock; Mortality;

## **Major airway injuries following blunt thoracic trauma in children: Review of two cases**

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### **CASE REPORT**

#### **Background:**

The incidence of tracheobronchial ruptures in children is about 0.7% to 28%. More than 80% occur within 1.5cms of the carina. Injuries to the left main bronchus occur less frequently and take a longer time to get diagnosed and treated than right sided injuries.

#### **Case summaries:**

##### Case 1:

A five year old girl, known asthmatic, was involved in a road traffic accident and had bilateral pneumothorax with pneumomediastinum which was managed by chest tube drainage. She was discharged on the 5th day. One week later she developed atelectasis of left upper lobe which was treated conservatively. After two weeks she had complete atelectasis of left lung and total obstruction of left main bronchus with fibrogranulation tissue on bronchoscopy. Attempts to pass a wire across were unsuccessful and the patient developed surgical emphysema. An immediate Left thoracotomy was performed and ruptured left main bronchus was identified at about 1.5 cms distal to carina so anastomosis of both ends was done. She was discharged on 7th postoperative day with normal chest radiograph.

##### Case 2:

A two and a half year old boy was hit by a car and had right sided pneumothorax without any fractured ribs. Two right sided Chest tubes were inserted but the patient continued to have air leak and pneumothorax. Bronchoscopy showed a tear in the bronchus intermedius so immediate right thoracotomy and sleeve right upper lobectomy was performed. There was a large air leak during manipulation and oxygenation was possible with intermittent manual occlusion of the leak. Hence a Fogarty catheter was positioned proximally into the main bronchus and inflated. He was discharged on day 7 and seen after 6 months with a normal chest radiograph.

#### **Conclusion:**

Major airway injuries from blunt chest trauma in children are rare and needs immediate recognition and bronchoscopy. Early surgical repair is mandatory to avoid unnecessary morbidity and mortality.

**Key Words:**Major airway injuries-Children; Tracheobronchial rupture; Blunt chest trauma;

312

### **Retained Gall Bladder Pouch after Laproscopic Cholecystectomy**

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#### **CASE REPORT**

##### **Back ground:**

Retained gall bladder pouch after laproscopic cholecystectomy is interesting entity for both clinician & radiologist.

##### **Case summary:**

A 49-years old house wife presented to surgical emergency room with featura suggestive of PCS, her problem started 5 years back after L.C. On clinical examination: vital signs were normal, abdominal examination was unremarkable, leucocytosis of 14 noted in lab. tests, and hyperamylesemia of 1339U/L. U/S showed absence of part of G.B., normal caliber CBD. ERCP showed normal CBD & remenant of G.B., surgical clips were around mid G.B. Endoscopic sphinctrotomy done, and patient improved & was discharged from hospital.

##### **Conclusion:**

Retained G.B. pouch can be a factor to PCS, in this context high index of suspesion may be required to tailor investigative tool to demonstrate pathology. It can be prevented by accurate & careful identification of cystic duct-CBD junction during surgery if feasible.

**Key Words:** PCS = Post Cholecystectomy Syndrome; CBD= Common Bile Duct; GB= Gall Bladder;

*Surgery and Transplantation*  
*Category: Clinical*

313

### **Management of the Tetanus in ICU.**

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#### **CASE REPORT**

##### **Back ground:**

Tetanus is a rare disease with high rate of mortality. Early recognition and treatment of the disease are critical factors in determining the prognosis. Two patients with tetanus have received treatment in Intensive Care Unit of Al-Sabah Hospital, Kuwait.

##### **Case summary:**

Clinical presentation of the two cases of tetanus. We have had a successful intensive care management of the two patients with Tetanus. Both cases have had a typical tetanus syndrome: risus sardonius, opisthotonus rapidly progressing in to severe reflex spasms and difficulty in breathing within 6 - 12 hours. The cause of the Tetanus were P. Tetani, which have been confirm by microbiology test. Intervention or Technique: Prevention of tetanospasmin absorption by administration of antibiotics and proper wound care, neutralization of tetanospasmin by administration of Human Tetanus Immunoglobulin. Airway protection and control is needed together with ventilators support whenever severe reflex spasm develops.

##### **Conclusion:**

The patients survived because of prompt utilizations of intensive care facilities. Active immunizations is the clear solution of this problem.

**Key Words:**Autonomic disturbances; Immunisation; Ventilatory support;

314

**A rare case of primary extragonadal non seminomatous germ cell tumour**

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mubarak alkabeer hospital - surgery - unit C

**CASE REPORT**

**Background:**

Extragonadal non-seminomatous germ cell tumours are extremely rare neoplasms. They account for approximately 1% to 4% of all germ cells tumours. They typically arise in the medline and may present as pineal, mediastinal or retroperitoneal tumours. Those originating in the retroperitoneum are challenging in terms of localizing the lesion, determining the invasiveness of the tumour and characterizing the pathological type. In this report we present a case of primary retroperitoneal extragonadal germ cell tumour synchronizing with a primary testicular neoplasm.

**Case summary:**

Mr.H.A, a 24 years old Egyptian presented with 1 month history of postprandial projectile vomiting with a 10 Kg weight loss due to that. On examination he had a huge solid mass in the left side of the abdomen measuring 12cm X 10cm. No organomegalies present and testicular examination was essentially normal. Blood investigations revealed a low hemoglobin of 12.4 and an elevated AFP of 1210. CT abdomen showed a retroperitoneal mass arising from the left psoas and quadratus lumborum muscles with mixed echogenicity. FNA revealed malignant mesenchymal cells suggestive of sarcoma. A laparotomy done and tumour removed. Histopathology came back as a yolk sac tumour. Testicular ultrasound was done, thence which revealed a focal well defined cystic mass lesion in the left testis. Left orchidectomy done and pathological examination confirmed the diagnosis as a primary malignant teratoma. The patient was discharged to be followed up at the KCC.

**Conclusion:**

We presented this rare case of primary extragonadal germ cell tumour coinciding with a primary testicular teratoma. however, whether the extragonadal germ cell tumour is primary or secondary is controversial in view of recent reports and more studies are required in that subject. Due to the devastating consequences of ignoring a testicular primary, we recommend a testicular ultrasound in the work up of retroperitoneal tumours.

**Key Words:**Extragonadal germ cell tumours; Retroperitoneal tumours; Primary teratoma;

*Surgery and Transplantation*  
*Category: Graduate (Resident)*

315

### **Primary torsion of the omentum: Laparoscopic diagnosis and resection**

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#### **CASE REPORT**

##### **Background:**

Primary torsion of the omentum is a rare cause of acute abdomen, clinically mimics appendicitis, cholecystitis, diverticulitis or gynaecological problems.

##### **Case summary:**

A 54 years old lady, presented with 4days history of abdominal pain without other symptoms. Physically revealed tender mass in the RUQ. Laboratory investigation were normal. Ultrasound and CT scan abdomen revealed a 14X8cm hyperechoic lesion in subhepatic with omental oedema. Diagnostic laparoscopy revealed torsion of the omentum that was resected extraperitoneal. The postoperative period was uneventful.

##### **Conclusion:**

Eitel first described omental torsion in 1899. It usually occurs in the fourth and fifth decade. Men are affected twice than women. Primary (idiopathic) torsion is rare. Secondary omental torsion associated with abdominal tumours, cyst, adhesion and hernia. The pathogenesis is obscure, but there are predisposing factors such as anatomical variation of the omentum ( Malformation of the omentum pedicle, tongue like projection along its free edge, bifid omentum, accessory omentum and omental adiposis in obesity), trauma, exercise, straining and over eating. Because of the rareness and absence of typical symptoms, the diagnosis is neither made nor considered preoperatively. The main complaint usually sudden onset of acute abdominal and peritonitis with a palpable mass in half of the cases; and these may be mistaken for acute appendicitis, acute cholecystitis or torsion ovarian cyst. Ultrasound and CT scan abdomen can be helpful to establish the diagnosis, that reveals a solid, hyperechoic, inflamed fatty masses with hyperattenuating streaks. The advent of laparoscopy for acute abdominal allows correct diagnosis and management. Chung et al in 1992 and Gassner in 1999, described laparoscopic extra- and intra-peritoneal ligation and resection of omental torsion. Both of these methods are simple, fast and avoiding contaminating abdominal cavity.

**Key Words:**Omental torsion; Acute abdomen; Laparoscopy;



## **AUTHOR INDEX**



# Author Index

- A Hamouda 235  
Abahussain EA 228  
Abahussain EA 223, 224, 229  
Abalkhail SI 93  
Abd-Alwahed E 199  
Abdeen S 76  
Abdeen SM 185  
Abdel-Hamid ME 217, 219  
Abdella NA 92, 140, 195  
Abdelmoaty S 182  
Abdelmoneim AS 229  
Abdou T 74  
Abdul Khalik D 139  
Abdul Raheem J 148  
AbdulAzziz HA 210  
Abdulkader BA 108, 109, 111, 112  
Abdulla ZS 82, 83  
Abdullah A 119, 197  
Abdullah MA 53  
Abdullah RAN 194  
Abdulmalek K 217, 308  
Abdulmlak S 288  
Abdulrahman M 33  
Abdulrasoul M 140  
Abdulredha AA 80  
Abdulsamad M 315  
Abdulwahab R 294  
Abdumadjidov KhA 262  
Abou Dheir L 231  
Abraham G 62  
Abraham M 75, 121  
Abraham S 166, 213  
Abraham V 242  
Abul HT 158, 206  
Abul-Huda F 79  
Abushaban L 86, 103  
Abuzallouf S 170, 177  
Adekile AD 77  
Adesina AO 65  
Adler B 128  
Afifi M 267  
Aftab Ahmed 8  
Aghahowa EJ 254, 276, 277, 278  
Agzamov AI 180, 203, 265  
Ahmad A Alaqee 250  
Ahmad E 30  
Ahmad K 30  
Ahmad S 56, 126, 137, 144, 148, 151, 152, 153  
Ahmed A 255  
Akanji AO 104, 188, 190, 191, 240, 249  
Akbar M 107, 110  
Akbar MA 109  
Akeel R 52  
Akhtar S 37, 115  
Al Adwani M 254, 273, 279  
Al Awadi S 171  
Al Bader M 62, 114  
Al Dowaisan A 114  
Al Ghadban B 193  
Al Hadhoud SA 31  
Al Hunaidi H 193  
Al Mohammedi H 92  
Al Mousawi M 81, 246, 249, 282  
Al Muhanadi S 74, 81  
Al Mutairi A 74, 81  
Al Otaibi 246, 249  
Al Qaoud N 162  
Al Qattan AM 180, 203, 261, 265, 313  
Al Qattan F 254, 310  
Al Rabeiah HS 31  
Al Saad S 237  
Al Saidi F 114, 304  
Al Saleh K 169  
Al Sayegh A 107  
Al Shemmari S 98  
Al Tarrah MY 31  
Al Zayed A 236  
Al- Zoibi, E 231  
Al.Saad SA 205  
Alaa B. Abbas 25  
Al-Adsani AMS 94, 95

Al-Adwani BM 27  
 Al-Adwani M 274, 276, 278  
 Alajmi M 101  
 Al-Ajmi M 28  
 Al-Ali A 30  
 Al-Ali F 144  
 Al-Ali FM 156  
 Alam FF 124  
 Al-Amiri N 36  
 Al-Anbuee E 32  
 Al-Anezi F 197  
 Al-Ansari HKh 26  
 Al-Ansari JM 38  
 Alansari S 19, 21  
 Al-Ansari TA 183  
 Al-Anzi AA 290  
 Alaqeel A 101, 200  
 Al-Aradi D 36  
 AL-Aradi F 50  
 Al-Arouj HA 27  
 Al-Arouj M 38, 140  
 Al-Asfoor MM 26  
 Al-Asfour A 60  
 AL-Asfour AA 267  
 Al-Askar H 144  
 Al-Assousi A 121  
 Al-Assoussy A 120, 285, 290  
 Al-Atar A 68  
 Al-Attayah R 150, 154  
 Al-Awadhi A 119  
 Al-Awadhi AM 189  
 Al-Awadhi S 298  
 Al-Awadi A 61  
 Al-Awadi KA 185  
 Al-Awadi.NZ 255  
 Al-Awadi S 172  
 Al-Ayadhy B 176  
 Al-Azemi MK 167, 168  
 Al-Azmi AA 62  
 Al-Azmi F 181  
 Al-Azza D 289  
 Al-Bader AL 266  
 Al-Bader I 76  
 Al-Bader M 24, 117  
 Al-Banna A 314  
 Al-Banna NA 127  
 Albert MJ 127, 128, 141  
 Al-Buloushi A 299, 300  
 Al-Dahham AK 314  
 Al-Dahi W 92, 140  
 Al-Danderi ZA 82, 83  
 Al-Daoud S 268  
 Al-Dashti M 37  
 Al-Din S 79  
 Al-Doukhi F 36  
 Al-Duaij JY 102  
 Al-Duwairi Y 40, 49  
 Al-Duwaisan AR 90, 117  
 Al-Ebrahim S 224  
 Al-Enezi F 79, 172, 298  
 AL-Enezi HK 244, 245, 248  
 Al-Enezi M 268  
 Alex G 235  
 Al-Fadhli AN 29  
 Al-Fadhli B 32  
 Al-Fadhli M 100  
 AlFadhli SM 61, 64, 66  
 Alfadli A 101  
 Al-Fahad TB 305  
 Al-Fares A 308  
 Al-Fayad H 289  
 Al-Fayed H 288  
 Al-Felakawi M 30  
 Al-Frhan K 281, 284  
 Alfuzan W 101  
 Al-Ghamdi WM 230  
 Al-Ghanem F 117  
 Al-Ghorory M 259, 260  
 Al-Gudaibi MM 93  
 Al-Haddad A 47, 48  
 Alhadlaq AA 35  
 Al-Haifi M 315  
 Al-Hajji BY 55  
 Alhajri F 250  
 Al-Hamdan S 147  
 Al-Harbi A 32

Al-Harmi J 163, 165  
 Al-Hashemi A 36, 268  
 Al-Hashim N 34  
 Alhassawi A 232  
 AL-Hawida AS 267  
 Al-Hay A 86, 103  
 Al-Herz A 61  
 Al-Hilali N 122  
 Al-Humood S 22  
 Al-Humoud H 122  
 Al-Hunayan A 185, 259, 260  
 Alhussaini F 57  
 Ali AAM 216  
 Ali AY 63  
 Ali I mohammad 315  
 Ali M.M 144  
 Ali Sher 155  
 Ali Y 185, 247  
 Alisher AI 7, 261, 313  
 Al-Jaber M 164  
 Al-Jarallah KF 84  
 Al-Jassar Sh 94  
 Al-Jasser A 41  
 Al-jihma N 95  
 Al-Kandari AM 244, 245, 248  
 Al-Kandari H 37  
 AlKandari M 250  
 Al-Kandari M.A. 204  
 Al-Kandary MH 108, 111  
 Al-Kandary NA 281, 284, 303  
 Al-Kanderi G 85  
 Al-Kanderi SA 26  
 Alkhalaf M 63  
 Alkhaldi G 232  
 Alkhaldi SH 35  
 Al-Khawari H 280  
 Al-Khudhair M 181  
 Al-lanqawi Y 217  
 Al-Maghrebi M 65, 214, 233  
 Al-Majed H 68  
 Al-Masaeid AL 22  
 Al-Mazeedi H 28  
 Al-Mekhaizeem K 116  
 Al-Merjan J 149  
 Al-Mezel N 94  
 Al-Mofty S 130  
 Al-Mohamady H 140  
 Al-Mohannadi S 79  
 Al-mosawi A 314  
 Al-Mousawi M 241, 243, 251  
 Al-Mufti S 155  
 Al-Mulla F 242  
 Al-Muta M 260  
 Al-Mutairi DA 14, 15  
 Al-Mutairi N 118, 292  
 Al-Mutairi W 41  
 Al-Mutairy M 293  
 Al-Mutar M 259  
 Al-Mutawa QI 78  
 Al-Mutawa SA 40, 49  
 Al-Muzaini FA 113  
 Al-Muzaini H 194  
 Al-Muzairai I 267  
 Al-Nakib W 137, 138, 140, 144, 145,  
 148  
 Al-Naqeeb N 198, 296  
 Al-Obaid IA 130, 295  
 Al-Obeid FA 27  
 Al-Omar DH 42  
 Alomar o 35  
 Al-Omari QD 43, 59  
 Al-Omari WM 43  
 Al-Otaibi H 34  
 Al-Otaibi T 256, 282  
 Alotaibi S 54  
 Al-Othman AN 89  
 Al-Othman MB 26  
 Al-Ottibi MS 178  
 Al-Owaish RA 155  
 Al-Qabandi WA 280  
 Alqallaf A 101  
 Al-qallaf K 314  
 AL-Qattan SI 281, 284  
 Al-Qattan A 181  
 Alqattan S 57  
 Alqhenaei H 123

Al-Radwan R 188, 190, 191  
 Al-Ragum N.S 163  
 Al-Ramthan A 34  
 Al-Raqum HA 121, 293  
 Al-Rashed A 28  
 Al-Refaai AA 9  
 Al-Refai D 70, 275  
 Al-Refaie N 32  
 Al-Rifaify AI 149  
 AL-Roumi F. A 204  
 Al-Saad SA 306  
 Alsaady A 120  
 Al-Saban F 199  
 Al-Saeedi F 179  
 Al-Saeid K 121  
 Alsaeid M 20  
 Alsaid AN 205  
 Al-Saleh E 165, 166  
 Al-Saleh FM 214, 215  
 Al-Saleh H 28  
 Alsaleh M 54  
 Al-Sane M 58  
 Al-Sanea D 269  
 Al-Saqabi S 123  
 Al-Sawan RMZ 307  
 Al-Sayegh A 110  
 Al-Sayer H 266  
 Al-Sebeih K 256  
 Al-Shaheen A 178  
 Alshaiji AM 232  
 Al-Shammari I 79  
 Al-Shammari J 297  
 Al-Shammari KF 38, 58  
 Al-Shammari M 165, 166  
 Al-Shammari S 88, 144, 240  
 Al-Shammeri I 175  
 Al-Shammeri J 175  
 Al-Sharhan FA 53  
 Al-Shatti M 37  
 Alshatti TA 232  
 Al-Shawaf E 91, 215  
 Al-Shawaf F 140  
 AL-Shebeiny YH 244  
 Al-sheikh K 85  
 Al-Shelahi FA 156  
 Al-Shemmari S 174  
 Al-Shoumer KAS 93, 96  
 Al-Shrayfee Ahmed 68  
 Al-Sultan F 94  
 Al-Suraikh M 286, 291  
 Al-Swailem AM 230  
 Al-Sweih N 125, 135  
 Al-Thauwaini M 223  
 Al-Thuwaikh M 181  
 Al-Timimy BM 61, 64, 66  
 Altuwala H 101  
 Al-Wazzan HJ 22  
 AL-Wugyan D. A 204  
 Alzafiri A 294  
 Al-Zaid N.S 234  
 Ameen R 174  
 Amer M 297  
 Amir T 304  
 Ammar MH 2  
 Ananthalakshmi KVV 208  
 Andersson L 47, 60  
 Anim JT 13, 65, 167, 168, 176, 242  
 Anwar AA 210  
 Anwar MA 33  
 Arifhodzic N 117, 158  
 Årtun J 46  
 Asbeutah AM 113  
 Asfar S 314  
 Asfar SK 113  
 Asfour L 129  
 Ashraf M 310  
 Asif PA 246, 282  
 Asiya M 164  
 Assefa B 5  
 Athyal RP 280  
 Austin ML 274  
 Awad AI 223, 224, 228  
 Awadalla AW 239  
 Awadi YA 69  
 Ayad G 236  
 Ayed A 91, 311

Ayed AK 258  
 Ayyash EH 314  
 Azab A 198  
 Bahl SR 97, 99, 291  
 Bahzad M 7, 313  
 Baidas G 110  
 Balamurugan R 300  
 Ball DE 218, 229  
 Bang RL 29, 266  
 Bang S 29  
 Barakat N 199  
 Barrieshi-Nusair KM 44, 59  
 Bayoumy H 89  
 Behbahani AM 182  
 Behbahani A 294  
 Behbahani E 41, 42, 47, 51, 53, 54, 57  
 Behbahani EMH 48  
 Behbahani J 299, 300  
 Behbahani N 114, 117  
 Behbahani NA 145  
 Belgrami F 274  
 Ben Nakhi 140  
 Ben Nakhi AM 71  
 Ben Naky A 68  
 Ben Thani A 227  
 Ben-Nakhi A 38, 123  
 Ben-Nakhi M 311  
 Benov L 14, 15, 16  
 Benter IF 20, 213, 214, 233  
 Bharati CM 279  
 Bhaskar Reddy PR 222  
 Bhattacharya A 104, 187, 240  
 Biswas G 72, 105  
 Bitar MS 233  
 Blair GK 257  
 Blanka G 7  
 Bodmeier R 225  
 Boodai D 50  
 Bouhaimed MM 27, 36  
 Bourfesen AMA 13  
 Brook A 254, 310  
 Buhamrah AK 35  
 Bu-Nashi F 27  
 Buresley S 241, 243  
 Cameron DJ 113  
 Canatan H 213, 233  
 Capps PAG 217, 228  
 Catabay, A 1  
 Chandramouli B 276  
 Chandrasekaran C 258, 311  
 Chandy R 125, 157  
 Chattopadhyay A 89  
 Chehadeh W 139, 140, 146  
 Cheng B 11, 24  
 Cherian A 213  
 Chow R 98  
 Christus ST 104, 106  
 Codaj J 241  
 Cojocel C 207  
 Collier D 76  
 Craik JD 14, 15, 17, 22  
 Cuizon J 85  
 Dabbous H 297  
 Dalwai A 137, 141, 148  
 Das DK 176, 178, 183, 184  
 Das KC 22  
 Dashti AA 194  
 Dashti H 234  
 Dashti K 69  
 Dashti R 110  
 Dashti Z 221  
 David Gjertson 98  
 Dehrab N 91  
 Delvadiya MD 172, 298  
 Denola, N 1  
 Devarajan LV 199  
 Dhar R 296  
 Dhaunsi GS 20, 128  
 Diejomaoh FME 164, 219  
 Divia M 129  
 Doi SAR 93, 96  
 Dopple D 46  
 Draghijeva E 159  
 Dubikaitis AY 203, 261, 265, 313  
 Duerden BI 132  
 Eapen T 105

Edafiogho IO 208  
 Edison G 246, 249  
 Egbase P 159  
 Eid S 236, 238  
 El- Badry H 231  
 El Gabar Ayad A.A 275  
 El Gebely S 92  
 El Hattab O 173, 177  
 El Shiekh ME 303  
 Eldin M 310  
 El-Feky M 94  
 Elgazzar AH 73, 76, 77, 80  
 Elhilali M 248  
 Eliwa MS 198  
 El-Khodary A 298  
 Elshebiny YH 245, 248  
 El-Shorbagy H 198  
 ElSORI D 199  
 Eltomi H 199  
 El-Zeini MNT 9  
 Essa S 138, 145, 251  
 Estrera C 267  
 Fakeir A 97, 99, 287  
 Fakim N 90  
 Farhat D 125  
 Farhat R 164  
 Farres B 231  
 Fatania HR 188, 190, 191, 240  
 Fatinikun T 167  
 Fawzy AR 238  
 Fayaz S 175, 177  
 Fedora L 202  
 Fetouh MI 220  
 Fido A 237  
 Fielding H 75, 78  
 Ford CHJ 62  
 Francis I 297  
 Francis IM 176, 178  
 Friedrich H 225  
 Gani AM 198  
 George S 92, 165, 186, 187, 194, 195  
 George SS 176, 178  
 Ghader I 11  
 Ghoneim IE 29  
 Ghuloom HM 155  
 Gopinath S 75  
 Graham M 98  
 Grover SB 102  
 Guermanov A 2, 5, 6, 270, 271, 272  
 Gulati RR 197  
 Gupta M 164, 206  
 Gupta R 76  
 Habib EA 82, 83  
 Hafez MF 93  
 Haiba N 202  
 Haidar HA 136  
 Haider MZ 61  
 Haines DD 158, 206  
 Haji BE 178, 184  
 Haji BI 176  
 Hajia M 37  
 Halim M 282  
 Halim MA 249, 251, 309  
 Hamdan HM 136  
 Hamdan R 290  
 Hamed HH 4  
 Hammadi HA 56  
 Hammoud MS 199  
 Hanafy M 10, 272, 310  
 Hanif SNM 154  
 Hanouf AR 7  
 Haridas S 128  
 Hasan AA 58  
 Hasan E 119  
 Hasan F 18, 115, 116  
 Hassan A 249  
 Hatem M 7, 180, 203  
 Hatow M 288  
 Hayat SJ 283  
 Hebbar S 275  
 Hegazy AM 108, 109, 111, 112  
 Heikal M 139  
 Helal R 88, 120  
 Hendaway YS 267  
 Herxheimer A 218  
 Higazi Z 77, 145

Hira PR 155, 156, 297  
 Hoisala VR 277  
 Hoteit L 215  
 Husain E 201  
 Hussain A 190, 240  
 Hussain E 34  
 Hussain J 252, 253  
 Hussain MAS 121  
 Ibraheem G 314  
 Ibrahim AR 106  
 Ibrahim K 289  
 Iqbal J 155, 156, 297  
 Ivanova MP 313  
 Ja'afar NM 31  
 Jacob S 162  
 Jadaon MM 194  
 Jaffal S 63  
 Jagia M 2, 6, 270, 272  
 Jagia Manish 271  
 Jaing T 98  
 Jamal MH 257, 314  
 Jamal WY 132, 133, 247  
 Jamal-Eddine H 311  
 Jassar A 304  
 Javaid A 79  
 Javid M 107  
 Jayakrishnan B 114, 117, 304  
 Jeraq H 268  
 Jinno K 1  
 Jirous J 164  
 John AB 198, 296  
 Johnny KV 122, 246, 249, 251, 282, 309  
 Joseph B 42, 44  
 Joseph L 157  
 Joseph RA 122  
 Joseph S 233  
 Juggi JS 233, 234  
 Junaid TA 127, 184, 193  
 Kabbara H 288  
 Kahvic M 287, 301, 302  
 Kamel N 236  
 Kapadi SN 193  
 Kapila K 178, 183, 184, 242  
 Karanes C5 98  
 Katoue MG 211  
 Kazem M 299, 300  
 Kehinde EO 75, 168, 242, 247, 259  
 Kettaneh S 24  
 Khadadah ME 77, 145  
 Khader A 18  
 Khalid Al-Saeid 61  
 Khalid N 156, 297  
 Khalik D 145, 146  
 Khalil MM 73  
 Khalil N 97  
 Khan HA 79, 290  
 Khan I 13, 18, 211  
 Khan M 226  
 Khan MS 255  
 Khan N 105  
 Khan ZU 124, 125, 126, 157  
 Khashty MJ 5  
 Khattab IS 220  
 Khodakhast F 247  
 Klepajcek I 4  
 Kodali SK 82, 83  
 Kombian SB 208, 219  
 KoNonen E 44, 129  
 Koshy T 106  
 Koursheed M 252, 253  
 Krajci D 3  
 Krishnaiah YSR 222  
 Krishnareddy G 271, 272  
 Kuijpers-Jagtman AM 46  
 Kullman L 44  
 Kumar A 131, 134  
 Kunjumoidu NP 152, 153  
 Latif SA 155  
 Lewis HL 194  
 Lila EA 220  
 Lisa V 3  
 Longenecker JC 27, 30, 31  
 Loutfy S 145, 146  
 Lukman T 181  
 Luqmani YA 62  
 M Saeed Khan 8

M. Samir A Najam 8  
M.R. Dayer 12  
Madi N 142, 143, 146, 251  
Maghraby M 236  
Mahmood S ED 175  
Mahmoud FF 158, 206  
Mahmoud H 79  
Makboul G 100  
Maligsay F 267  
Mallick PN 5, 10, 271, 272  
Mallik MK 176, 178  
Mannan A A S Rifat 302  
Mannan AAS Rifat 301  
Mannazhath N 166, 206  
Mansour M 267  
Mapkar OA 87, 88  
Marafi FA 78  
Mares V 3  
Marmash RW 141  
Marouf R 77, 194, 195  
Matar K 217  
Mathai S 159  
Mathew B 135  
Mathew C 167, 168  
Mathew M 75  
Mathew R 92, 188, 195  
Mathew TC 234  
Mathews AT 84  
Matowe WC 228  
Mattappallil AB 266  
Maya IP 203  
Maya PI 261  
McGrath PB 113  
Mechklova L 163  
Memon A 115  
Mina MN 122  
Mini A 246, 249  
Mini Abraham P 251  
Mittal AK 104  
Mittal R 86, 103, 171  
MM El-Zawahri 62  
MMA Halim 246  
Mohamed M Al-Desoky 25  
Mohammad AI 252, 253  
Mohammadi S 160  
Mohan S 24  
Mohanadi.S 72  
Mohannadi S 105  
Moharib N 89  
Mohsen N 287  
Mojiminiyi OA 92, 194, 195, 197, 210, 242  
Mokaddas E 125, 131, 136, 151, 153  
Mokaddas EM 134  
Molla AM 141  
Mona KI 180, 203, 261, 265, 313  
Moniri S 241  
Motawy M 170, 177  
Mousawi M 138, 309  
Moussa M 28  
Moussa NM 38, 58  
Mukaimi AA 69  
Muller HP 44, 45, 47  
Muralidharan KC 298  
Mustafa A 123  
Mustafa AS 124, 142, 143, 150, 154  
Mustafa D 312  
Mustafa F 226  
Mustafa M 285  
Mustafa MA 238  
Mutairi A 105  
Mutairi.A 72  
Nada AH 225  
Nademanee A 98  
Naik AK 2, 5, 6, 270, 271, 272  
Nair MK 77  
Nair MP 246, 249, 251, 282  
Nair P 309  
Nampoory J 143  
Nampoory MRN 122, 138, 210, 246, 249, 251  
Nampoory N 121  
Nanda A 66  
Nandakumaran M 165, 166  
Narayana K 212  
Nasr M 88, 120, 285  
Nath SDS 74, 81

Nazir AK 106  
 Nazirova LA 263  
 Nazmi N 89  
 Neafie R 297  
 Negi VC 273  
 Negi Vidya 254  
 Nemec J 171, 172  
 Nemec JN 298  
 Noronha B 135  
 Novotny L 207  
 Ohaeri JU 187, 239, 240  
 Olusi SO 119, 189  
 Omar AM 77  
 Omar NJ 295  
 Omar R 43, 52, 55  
 Omu AE 163, 167, 168, 206  
 Omu FE 167  
 Onendeko BO 77  
 Oommen E 213  
 Orabi KY 230  
 Oriowo MA 167, 168, 211  
 Owunwanne A 75  
 Pacsa A 138, 141, 142, 143, 149, 251  
 Panicker R 90  
 Parpiev RS 262, 263, 264  
 Parwer S 114  
 Pathan SK 176, 178, 183  
 Pavlik A 160, 161  
 Pazhoor A 133  
 Petrovski P 110  
 Petz L 98  
 Philip L 136  
 Phillips D 217  
 Phillips OA 216  
 Pinto C 92, 195  
 Prakash P 162  
 Prasad KYM 87  
 Premadasa IG 84  
 Puliyclil MA 122  
 Pulumathethu S 145  
 Purohit P 295  
 Qabandi M 86, 103  
 Qaseer M 145  
 Qasem J 68  
 Qudeimat MA 56  
 Quiming,N 1  
 Qurtom M 77  
 Rachid O 63  
 Radomir B 91  
 Radovanovic I 32  
 Radovanovic Z 268  
 Rafique M 48  
 Ragheb A 173  
 Raghupathy R 127, 199  
 Raimundo Pinto 8  
 Raju KT 267  
 Rakesh M 79  
 Ramadan J 235  
 Rathinasamy J 86, 103  
 Razak EA 296  
 Razak EED 296  
 Reda A 89  
 Redha E 200  
 Reebye SC 257  
 Ridha M 200  
 Risk RA 267  
 Roberts OM 76  
 Rosenthal J 98  
 Rotimi VO 129, 132, 133, 136, 247  
 Saba W 94  
 Sadan T 165, 166  
 Sadeq AM 17  
 Saeed T 143  
 Saeed.M 196  
 Safer A M 48  
 Said KN 59  
 Said T 138, 246, 249, 251, 282, 309  
 Saito,Y 1  
 Salako NO 129, 136  
 Saleh M. Al-Saidan 222  
 Salem R 133  
 Salman H 105  
 Salman.H 72  
 Samhan M 241, 246, 249, 251, 282, 309  
 Samir S 2  
 Samuel S 216

Samy A 220  
 Sanders S 19  
 Saqur R 285  
 Sarkhouh H 139, 140  
 Sathar SA 176  
 Satyanarayana V 222  
 Sawi MS 114  
 Sayed A F 163  
 Sayeda A 197  
 Scheutz F 42  
 Schütz P 4  
 Sebastian S 21  
 Seham A. Al-Muftly 25  
 Selvan JP 86, 103  
 Sequeira F 11, 16  
 Serour M 123  
 Sethuraman TKR 173  
 Shaheen A 176  
 ShalbiSA 303  
 Sharaf LH 219  
 Sharma P 29  
 Sharma PN 29, 178, 217, 266  
 Shatty S 131, 134  
 Shawa JN 113  
 Shehab D 84  
 Shehab El-Din MR 102  
 Shehata A 294  
 Sheikh M 69, 71  
 Sheikh ZA 176, 178, 183  
 Sherif S 10  
 Shihab PK 186, 188, 190, 191  
 Shihab-Eldeen AA 210  
 Shoaib A 253  
 Shuaib A 252  
 Shukkuur A.M 107  
 Shukur M 36, 105, 106  
 Shukur.A 72  
 Shyama M 40, 49  
 Siddique I 18, 115, 116  
 Siddiqui A 226  
 Sinan T 69  
 Singh RKA 2, 5, 10, 270, 271, 272  
 Sinha N.R 70  
 Skarsgard ED 257  
 Soni AL 307  
 Sontenam VSM 273, 279  
 Soparkar P 40, 49  
 Srikumar TS 23  
 Stadermann S 45  
 Subrahmanya NB 193  
 Sukumar M 258  
 Sulaiman F 148  
 Surana S.K 70, 275  
 Surana SK 307  
 Suresh CG 186, 188, 190, 191, 283  
 Susan M 7  
 Suzcs G 132  
 Swede M 288  
 Syed GM 78  
 Syed Shujat Ali 313  
 Syed.K.M.A 196  
 Szucs G 141  
 Taha S 294  
 Talib J 315  
 Tamer A 81  
 Tan P 98  
 Tarazi R 91  
 Thakar J 24  
 Thalib T 260  
 Theyyathel A 126  
 Thomas G 177  
 Thomas K 107  
 Thomson MS 207  
 Thotathil Z 170  
 Thusu A 217  
 Tisocki K 218, 221, 227  
 Tripat PK 202  
 Turcani M 161  
 Turcani P 161  
 Turkomani A 193  
 Ubuweja A 299  
 Udo EE 135, 216  
 Uppal SS 121, 293  
 Uthaman B 86, 103  
 Van 't Hullenaar R 46  
 Varghese A 173

Varghese R 237  
Varkki Z 254, 310  
Vasanthi BA 93, 96  
Vasishta S 169, 173  
Vedi H 9  
Vedi HL 163  
Veer Raju P 222  
Verma LK 104  
Vislocky 91  
Vordermier HM 150  
Vurgese TA 87, 99, 286, 291  
Vyas V 172, 298  
Wafaa Khalil 73  
Wafaa Y Al-Johar 25  
Williams J 206  
Wilson M 297  
Wise J 158  
Yassin A 64  
Yazdi AR 67  
Yousef N 131  
Yousif MH 20, 213  
Yousif MHM 209  
Youssef B 105  
Youssef NL 286  
Yousuf Abdul A Issa 8  
Zaghloul A 226  
Zahir MD 302  
Zahra'a I 312  
Zaki N 231  
Zamakhshary M 257  
Ziada G 73  
Zubaid D 51  
Zubaid M 71, 190, 191, 283  
Zubair S 289  
Zureiqi MK 204



## **KEYWORD INDEX**



## Keyword Index

- (1-3)-beta-D-glucan 126
- 3D-CT imaging 275
- A-779 214
- Abdominal Compartment Syndrome 272
- Abscess 273
- Abuse 56
- Academic Performance 23
- ACC/ESC committee 19
- Activated factor VII 272
- Acute 197
- Acute abdomen 315
- Acute Coronary Syndromes 190
- Acute Leukemia 287
- Acute myocardial infarction 109, 112, 283
- Acute respiratory Disease 145
- Adenocarcinoma 115
- Adenoviruses 149
- Adiponectin 96
- Adjuvant treatment 177
- Adolescents 37
- Adult congenital heart disease 290
- Adult respiratory distress syndrome 282
- AEP Monitoring 265
- Ahmadi Health Area 255
- Albumin Variants 197
- Alfacalcidol 122
- Alopecia areata 66
- Amalgam 43
- Amplatzer septal occluder 86, 103
- Amyloidosis 288
- Anaerobes 136
- Anaphylaxis 308
- Anastomosis 256
- Anatomy of the scalp 4
- Anemia 97
- Anesthetic needles 48
- Anesthetics 47
- Angiographic features 106
- Angiography 104
- Angiotensin (1-7) 214
- Anomalies 278
- Anti Retroviral Drugs 102
- Antibacterial activity 216
- Antibiotic prophylaxis 247
- Antibiotic resistance 133, 136
- Antibiotics 58, 132, 134, 254
- Antibodies 18
- Antiepileptic drugs 208
- Antifungal susceptibility 125
- Anti-inflammatory cytokines 199
- Antimicrobial resistance 159
- Anti-platelet antibodies 99
- Anxiety 28
- Aortic dissection 303
- Apical root resorption 46
- APOE Polymorphism 188, 190, 240
- Apolipoprotein E 68, 240
- Arabs 93
- Ardiopulmonary bypass (CPB) 91
- Arginine vasopressin 211
- Ascitis 288
- Aspergillus fumigatus 126
- Aspiration 258
- Aspiration cytology 183
- Association 175
- Asthenozoospermia 168
- Asthma 117, 158
- Astigmatism 181
- Attractiveness 55
- Autism 237
- Autoimmune disease 61
- Autoimmune disorders 118
- Autoimmunity 66
- Autonomic disturbances 313
- Bacillus cereus 296
- Bacteremia 296
- Bacterial flora 247
- Bacterial isolates 133
- Band 3 22
- Basiliximab 282
- Behavior 232
- Behavioral Science 41, 51
- Benign 98
- Beta Thalassemia 67
- Beta-cyclodextrin 1
- Beta-estradiol 226
- BetaThalassemia 22
- Biochemistry Practical 23
- Biodegradable drug delivery system 226
- Bird Flu 146
- BIS monitoring 261
- Bispectral index 6
- Bladder Cancer 242
- Bleeding on probing 50
- Blunt chest trauma 311
- Body Mass Index 27, 237
- Body packers 70

Biological prosthesis 263  
 Bone loss 189  
 Bone marrow examination 99  
 Bone marrow registry 267  
 Bone Marrow Transplantation 267  
 Bone Mineral Density 189  
 Bone Remenants 281, 284  
 Bone Scintigraphy 80  
 Bracheal plexus block 2  
 Brain Tumors 171  
 Breast 176  
 Breast cancer 62, 63, 65, 170, 175, 252, 253  
 Breast diseases 76  
 Breast feeding 162  
 Bronchiectasis 291  
 Bronchoscopy 114  
 Brucellosis 100  
 Burn Wound Healing 266  
 Burns 29, 134  
 Campylobacter jejuni 127, 128  
 Cancer 15, 64  
 Cancer Proliferation 179  
 Cancer uterine cervix 173  
 Candida 124, 125  
 Candidemia 125  
 Candidiasis 198  
 Capillary electrophoresis 1  
 Captopril 214  
 Cardiac arrest 271  
 Cardiac CT 71  
 Cardiac markers 19  
 Cardiac Memory 108  
 Cardiac Mortality 112  
 Cardiac Resynchronization Therapy 110  
 Cardiac SPECT Imaging 73  
 Cardiac surgery 262, 263  
 Cardiac surgery with bypass 262  
 Cardiac tolerance 234  
 Cardiac troponin-I 119  
 Carotid artery 213  
 Cavidolol 200  
 CBD= Common Bile Duct 312  
 Ceftriaxone 130  
 Cell culture 42  
 Cell Free Expression 230  
 Central scar 280  
 Central vascular line 198  
 Central venous catheter 270  
 Cerebral Palsy 305  
 Cerebral venous thrombosis 276  
 Cetirizine 158  
 Changes 82  
 Chemiluminescence 147  
 Chest tube 257  
 Childhood 56, 118, 129, 136, 201  
 Childhood Cancers 171  
 Children 8, 197  
 Children Pain 204  
 Children with diarrhoea 156  
 Cholera toxin 128  
 Cholesterol 24  
 Choline 179  
 Chronic hepatitis B virus infection 144  
 Chronic Obstructive Airways Disease 105  
 Chronic venous insufficiency 113  
 Ciprofloxacin 130  
 Circumcision 8  
 Cisplatin 3, 166, 207  
 Clearance index 74  
 Clinical skills 84  
 Clinical study 121  
 Clinicopathological 185  
 Clostridia Perfringens 120  
 Clostridium difficile 132  
 CNS disease 148  
 Coblation 69  
 Coeliac disease 291  
 Co-grinding 225  
 Cold kits 83  
 Colitis 13, 18  
 Collapsed intervertebral disc 69  
 Colon targeting 222  
 Colorectal cancer 177  
 Community Pharmacists 223  
 Comparison 243  
 Complications 293  
 Computed Tomography Scan 70, 276, 280  
 Computerized image analysis 160  
 Congestive heart failure 200  
 Consent 54  
 Consistency 44  
 Consultation 238  
 Controlled drug release 226  
 Cord blood 98  
 Coronal incision 4  
 Coronary 289  
 Coronary Angiography 71  
 Coronary artery disease 104, 105, 106, 283  
 Coronary Heart Disease 186, 188, 191  
 Correlation 107

Cosmetic procedures 36  
 Coxsackie virus A7 137  
 Cranio-maxillo-facial trauma 4  
 Critically ill patients 7  
 Cryptococcus neoformans 157  
 Cryptosporidiosis 156  
 Cyanovirin-N 230  
 Cytokines 93, 127  
 Cytology 184, 304  
 Cytomegalovirus 251  
 Cytomegalovirus-peptides 138  
 Cytomegalovirus 142, 143  
 Cytotoxin 132  
 Decision Making 52, 57  
 Deep Neck Infections 254  
 Deep vein thrombosis 113  
 Dehydration 87  
 Deliberate self harm 236  
 Dental caries 40, 49  
 Dental emergencies 58  
 Dental health attitudes 59  
 Dental materials 47  
 Dentistry 56, 59  
 Depression 28  
 Device 228  
 Diabetes 12, 20, 53, 92, 93, 94, 95, 140, 164, 195, 206, 209, 213, 239, 259, 260  
 Diabetes Insipidus. 87  
 Diabetes Mellitus 31, 38  
 Diagnosis 139, 154  
 Dilated cardiomyopathy 200  
 Direct detection 131  
 Dissection 289  
 Dobutamine SPECT 105  
 Doctors' attitude toward smoking 34  
 Doppler ultrasound 250  
 Drainage 254  
 Drug residues 25  
 Drug resistance 143  
 Duphaston 219  
 Dura 298  
 Duration 235  
 Eagle's syndrome 275  
 Echinococcosis 304  
 Echovirus 9 148  
 EGFR inhibitor 172  
 Electrophysiology 208  
 Elemental composition 48  
 Elongation Factor-1 65  
 E-mail messages 31  
 Emergency Cesarean section 202  
 Enantioseparation 1  
 Endocrine disruptors 212  
 Endocrine Resistance 62  
 Endothelial nitric oxide synthase, eNOS 61  
 Endothelin-1 209  
 Enteroviral diseases 137  
 Enterovirus 148  
 Enzyme Linked Immunosorbent Assay [ELISA] 147, 186, 187  
 Epidemiology 174  
 Epilepsy 285  
 Erectile dysfunction 259, 260  
 Erythrocytes 17  
 Esophagus 115, 279  
 Essential Trace Elements 165  
 Ethics 54, 57, 218  
 Ewing's 298  
 Excitatory synaptic transmission 208  
 Excitotoxicity 161  
 Extragonadal germ cell tumours 314  
 Extraosseous 298  
 Eye infections 149  
 Facial Symmetry 55  
 Factors 26, 43  
 Fascial Reconstruction 281, 284  
 Fast-release 225  
 Fenestration of Fontan operation 86  
 Fetal adrenals 24  
 Filariasis endemic 155  
 Filtered Back Projection 73  
 Fine needle aspiration cytology 176  
 Focal nodular hyperplasia 280  
 Fontan operation 86  
 Football 35  
 Fos and Hsp70 160  
 Free Leptin Index 92  
 fT4 21  
 Galactomannan 126  
 Gallium-67 79  
 Ganciclovir 143  
 Gastic biopsies 116  
 GB= Gall Bladder 312  
 Gefitinib 172  
 Genotype 141, 142, 156  
 Gentamicin 217  
 Giant Astrocytes 3  
 Gingival inflammation 44, 45  
 Glutamate receptor agonists 160  
 Glycogen 306

Gram-positive 216  
 Guar gum 222  
 Gynecomastia 286  
 Haemophilus influenzae type b 295  
 Hashimoto's Thyroiditis 294  
 Head injury 255  
 Health History Information 41  
 Health problems 37  
 Health promotion 221, 223  
 Health Services Research 41, 51  
 Heart 233  
 Heart Failure 290  
 Heart Rate Variability 111  
 Helicobacter pylori 116  
 Hemodialysis 122  
 Henoch-Schönlein's purpura 121  
 Hepatic trauma 272  
 Hepatitis C virus 101, 140  
 Herpes Zoster 300  
 High dose vitamin D 88  
 HIV 102  
 Hodgkin's disease 174  
 Holmium Laser 248  
 Holter monitoring 107  
 Homocysteine 194, 259  
 Hospital Pharmacists 224  
 HPA Genetic Polymorphism 191  
 HPLC-tandem mass spectrometry 210  
 HPV 193  
 Human Leukocyte Antigen 267  
 Humoral immunity 138  
 Hyperhomocysteinemia 246, 249  
 Hypernatraemia 87  
 Hyperopia 181  
 Hypertension 20, 27, 108, 123, 228  
 Hyperthyroidism 111  
 Hypoglycemia 53  
 Hypogonadism 286  
 Hypokalaemic Periodic Paralysis 294  
 Hypotension 9  
 Identification 153, 157, 281  
 Identification284  
 Idiopathic thrombocytopenic purpura 99  
 IgA deficiency 291  
 IGF-1,IGF-2 & IGFBP-3 186  
 Imaging 75, 274, 277  
 Immunisation 313  
 Immunochromatographic techniques 155  
 Immunohistochemistry 193  
 Immunoreactive Albumin 197  
 In situ hybridisation 193  
 Incidence 29, 244  
 Infarction 81  
 Infectious Diseases 100  
 Infertility 183  
 Influenza 146  
 Information seeking behavior 33  
 Inhaled steroids 90  
 Inhibition 12  
 Initial dosing nomograms 217  
 Initial experience 248  
 Injury 35  
 Insulin resistance 96  
 Insulin-like growth factors 187  
 Intact proinsulin 96  
 Internal Assessment 269  
 Internal jugular vein occlusion test 270  
 Interstitial pneumonitis 306  
 Intubation 5, 10  
 Invasive procedure 180  
 Iran 67  
 Iron Deficiency 97  
 Irritable Bowel Syndrome (IBS) 26  
 Ischemia 233  
 Ischemia and reperfusion 234  
 Iterative Reconstruction 73  
 kidney transplantation 138, 246, 249, 251  
 Klinefelters 286  
 Kuwait 27, 36, 40, 64, 84, 114, 178, 185,  
 201, 223, 224, 238, 255  
 kuwait university students 268  
 Kuwait. 237  
 Kuwaiti Preschoolers 162  
 Laparoscopic donor nephrectomy 243  
 Laparoscopy 315  
 laryngoscopy 10  
 LDL Subfraction 188  
 Left ventricular dysfunction 72  
 Lemon juice 78  
 Leptin 95  
 Lethal skeletal dysplasia 307  
 Levosimendan 91, 215  
 Libman-sack endocarditis 285  
 Life 239  
 Lifestyle measures 123  
 Lilocal anaesthetics-bupiv 2  
 Lipid profile 104  
 Lithium 167  
 Liver Cirrhosis 101  
 Liver Disease 140

L-NAME 215  
 Local anaesthetic technique-Infraclavicular para c 2  
 Low carbohydrate ketogenic diet 234  
 Low-output syndrome 91  
 Lung cancer 114  
 Lung clearance 77  
 Lung hypoplasia 205  
 Lung model 127  
 Lymphocytes 158, 206  
 Lymphomas 184  
 MAG3 Scan 81  
 Magnesium sulphate [MgSO<sub>4</sub>] 308  
 Magnetic Resonance Imaging 203  
 Major airway injuries-Children 311  
 Male perineum 247  
 Mammalian cell entry protein 152  
 Mammography & Ultrasound breast 76  
 Management 182, 244  
 Marfan syndrome 303  
 Mass 277  
 Maternal and Perinatal morbidity 163  
 Maternal-fetal exchange 165  
 Maternal--fetal exchange 166  
 Mce1C 152  
 Medical Histories 51  
 Medullary Carcinoma 176  
 Medulloblastoma 171  
 Melting-curve analysis 124  
 Membrane 17  
 Membrane proteins 22  
 Meningitis 295  
 Mercapto-acetyltriglycine 74  
 Metabolic function 235  
 Methicillin- Resistant Staphylococcus Aureus 131  
 Methylenetetrahydrofolate reductase C677T mutation 194  
 Methylprednisolone 232  
 Metronidazole 222  
 Microalbuminuria 189  
 Microarrays 63  
 Microglia 161  
 Mild Toxicity 163  
 Misdiagnosis 67  
 Misplaced 270  
 Mitochondria 13  
 Mitral Regurgitation 110  
 Mitral Valve 264  
 Mortality 29, 117, 310  
 MRI 276, 278  
 mRNA expression 65  
 MRT-PCR 145  
 Mullerian 278  
 Multidetector CT 71  
 Mycobacterium Tuberculosis 151, 152, 153, 154  
 Myocardial gated spect 72  
 Myocardial Infarction 271  
 Myocardial ischaemia 72  
 Myopia 181  
 Myositis 300  
 Na-H exchanger 13, 18  
 Nasal 131  
 Needle 47  
 Neonatal 307  
 Neonate 296, 306  
 Nephroprotective 207  
 Neuroectodermal 274  
 Neuroendocrine carcinoma 302  
 Neurofibromatosis 287  
 Neuromuscular blockade 7  
 New syndrome 305  
 Newborn 202  
 Nifedipine 225  
 Non small cell lung cancer 172  
 Non-surgical closure 103  
 Non-tuberculous mycobacteria 153  
 Notch4 66  
 Nuclear matrix protein 22 242  
 Nuclear Medicine 82  
 Nucleoplasty 69  
 Obesity 33, 165  
 Obesity patients 261  
 Olmsted 292  
 Omental torsion 315  
 Onchocerciasis 297  
 Open donor nephrectomy 243  
 Oral carriage 129  
 Oral health 38  
 Oral health behavior 59  
 Oral medicine 42  
 Oral surgery 54, 57  
 Orbit 300  
 Orbital Cellulitis 299  
 Organ donation 268  
 Orphan receptor 11  
 Osteomalacia 88  
 Outcome 164  
 Outcome of the surgery 264  
 Overweight 162

Oxazolidinones 216  
 Oxidative stress 14, 206  
 Paediatric oncology 180  
 Pain Assessment 204  
 Pain Expression 204  
 Palpitation 107  
 Pancreatic pseudocyst 273  
 Pancytopenia 287  
 Panoramic radiographs 44  
 Pap smears 178  
 Parapneumonic effusions 257  
 Parasuicide 236  
 Parathyroid hormone 122  
 Parvovirus B19 139  
 Pathology 42  
 Patient adherence 123  
 Patient Medication Error 231  
 Patient organisations 218  
 Patient's preferences 227  
 Patient's satisfaction 30  
 PCR 194  
 PCR/restriction digestion. 190  
 PCR-allele specific restriction digestion 191  
 PCR-based sequencing 149  
 PCS = Post Cholecystectomy Syndrome 312  
 Peak expiratory flow rate (PEFR) 90  
 Pediatric Dentistry 58  
 Pediatric Hodgkin's lymphoma 79  
 Pelvic control 173  
 Perception 55  
 Percutaneous drainage 273  
 Percutaneous nephrolithotomy (PCNL) 245  
 Percutaneous Dilator 5  
 Perimenstrual Asthma 90  
 Periodontal disease 38  
 Periodontal pathogens 129  
 Periodontal probing depth 50  
 Peroxisomes 20  
 Pesticides 212  
 PET 179  
 Pharmaceutical care 224  
 Pharmaceutical industry 218  
 Pharmacists 221, 227, 229  
 Pharmacokinetics 217  
 Phenylephrine added to ephedrine 9  
 Phosphoenolpyruvate carboxykinase 12  
 Photodynamic therapy 15  
 Photosensitizer 14, 15  
 Pilar tumor 301  
 Placental Perfusion 166  
 Plain radiographs 70  
 Platelet apheresis 85  
 Poisoning 197  
 Polymerase Chain Reaction (PCR) 68  
 Pooling 83  
 PorA 128  
 Post cesarean pregnancy 202  
 Postoperative 299  
 Postoperative sensitivity 43  
 Post-tonsillectomy Bleeding 310  
 Potter syndrome 205  
 Pre- & post- operative investigation 253  
 Prediction 46  
 Preeclampsia 163  
 Pregnancy 164, 211  
 Pregnant 289  
 Pre-registration House Officers [PRHO] training 84  
 Preterm 198  
 Prevalence 139  
 Prevalence 260  
 Primary hyperparathyroidism 89  
 Primary teratoma 314  
 Primitive 274  
 Profile 169  
 Pro-inflammatory cytokines 199  
 Proliferating trichilemmal cyst 301  
 Proliferating trichilemmal tumor 301  
 Propentofylline 161  
 Propofol 6  
 Prostate 248  
 Prosthodontics 52  
 Psychiatric Consultation 236  
 Pseudomyxoma Peritonei 288  
 Psychiatric 238  
 Pulmonary 304  
 Pulmonary arterio-venous fistula 103  
 Pyrexia of Unknown Origin 100  
 Quality assessment 44, 239  
 Quality Management Coordinators (QMC) 269  
 Quality of care 94, 112  
 Quality of health services 30  
 Radical radiotherapy 173  
 Radio-chemotherapy 177  
 Radioimmunoassay 25  
 Radiologic investigations 170  
 Radionuclide 75  
 Radionuclide imaging 78  
 Radiotherapy 169  
 Rafts 17

Rapid Translation System 230  
 Rapid urease test 116  
 Real time PCR 146  
 Recombinant antigens 150  
 Recombination 137  
 Recreational 35  
 Referral pattern 82  
 Reliability 44, 50  
 Renal agenesis 205  
 Renal Artery 209  
 Renal cell carcinoma 185  
 Renal graft 241  
 Renal transplantation 282  
 Renal trauma 244  
 Replantation 60  
 Reproduction 212  
 Residual mass 79  
 Respiratory distress syndrome, 199  
 Respiratory viruses 145  
 Response surface methodology 220  
 Restriction Fragment Length Polymorphism  
     technique 142  
 Resveratrol 63  
 Retail pharmacy 229  
 Retention index 74  
 Re-treatment 52  
 Retrobulbar 299  
 Retrospective 21  
 Rheumatic heart diseases patients 262  
 RFLP 68  
 Rheumatoid arthritis 119, 120  
 Rifampicin 309  
 Rifampin 151  
 Risk factors 46, 49, 246  
 Rocuronium infusion 7  
 Root Cause Analysis 231  
 Rotavirus diarrhea 141  
 rpoB mutations 151  
 Retroperitoneal tumours 314  
 Routine pre & post-operative investigation 252  
 RXR 11  
 Safe Medication Use 231  
 Salat 235  
 Salmonellosis 130  
 Schizophrenia 187, 240  
 School children 40, 49  
 Scintimammography 76  
 Scortal trauma 250  
 Sedation 203  
 Selective investigation 252, 253  
 Self assessment manual 269  
 Self-monitoring 228  
 Septicaemia 134  
 Severe hepatic damage 144  
 Sevoflurane 203, 265  
 Sevoflurane anaesthesia 180  
 Sevoflurane and isoflurane anaesthesia 261  
 Shock 308, 310  
 Short ribs 307  
 Shrinking lung syndrome 293  
 Sickle cell disease 77  
 Signalling 233  
 Sildenafil 283  
 Single donor platelet 85  
 siRNA 62  
 Sirolimus 210  
 Small cell carcinoma 302  
 Smoking 34, 45  
 Smoking cessation 221, 227  
 SMS text messaging 31  
 Solid phase extraction 219  
 Soluble Leptin Receptor 92  
 Soluble Transferrin Receptor 195  
 Species identification 124  
 Species-specificity 154  
 Sperm DNA 168  
 Spermatogenesis 167  
 Spinal anesthesia 9  
 Spinal cord injury 232  
 Spine 277  
 Spontaneous pneumothorax 258  
 Spontaneously Hypertensive Rats 215  
 Squamous Cell Abnormalities 178  
 Squamous cell carcinoma 115  
 Staging 170  
 Standards 94  
 Steady-state plaque 44  
 Steroidogenesis 11, 24  
 Stress response 10  
 Stricture 241  
 Student Performance 23  
 Students 36  
 Styloid process 275  
 Subcutaneous ring block 8  
 Sudden death 303  
 Sugar Blood 53  
 Sulfonated tetrazolium 16  
 Sulphasalazine 120  
 Sunny climate 88  
 Superoxide 16

Supragingival plaque 45  
 Surgery 264  
 Surgical outpatients department 30  
 Sustained release microcapsules 220  
 Syndrome 292  
 Systemic Lupus Erythematosus 61, 285, 293  
 t(8;10) 305  
 Tacrolimus 309  
 Tandem mass spectrometry 219  
 Tc-99m DTPA Aerosol 77  
 Teachers 26  
 Terbutaline sulphate 220  
 Testes 183  
 Testicular 75  
 Testicular torsion 250  
 Tetracycline 25  
 Therapeutic Drug Monitoring 210  
 Thiopentone 6  
 Thoracoscopy 257  
 Thrombolysis 271  
 Thrombolytic therapy 109  
 Thunderstorm 117  
 Thyroid 78, 184  
 Thyroid diseases 175  
 Thyroid Hormones 97  
 Thyrotoxicosis 294  
 Titration of the drugs 265  
 Tobacco 34  
 Tobacco agar 157  
 Tooth avulsion 60  
 Topical steroids 182  
 Total platelet yield 85  
 Toxoplasmosis 297  
 Tracheal resection 256  
 Tracheal stenosis 256  
 Tracheobronchial rupture 311  
 Transferrin Receptor-Ferritin Index 195  
 Transmural rupture 279  
 Transplant 98  
 Transplant 309  
 Traumatic hyphema 182  
 Treatment 174  
 Tricuspid valve (TV) affection 263  
 Trust 229  
 TSH 21  
 Tube thoracostomy 258  
 Tuberculosis 150  
 Ultrastructure 3  
 Upper urinary stones 245  
 Ureter 241  
 Urinary tract infections 159  
 Urine cytology 242  
 Urine Electrophoresis 197  
 Uropathogens 159  
 Urothelial carcinoma 302  
 Ursolic acid 207  
 Vaccination 141  
 Vaccine failure 295  
 Vaccines 150  
 Valganciclovir 251  
 Value 80  
 Varicella 201  
 Vas Deferens Contractility 167  
 Vascular dysfunction 213  
 Vascular malformation 292  
 Vascular thrombosis 81  
 Venous reflux 113  
 Ventilatory support 313  
 Ventricular Arrhythmias 111  
 Ventricular noncompaction 290  
 Ventricular Repolarization 108, 109  
 Ventriculo-Ventricular Optimization 110  
 Very young Arabs 106  
 Viral Marker Screening System 147  
 Vitamin D deficiency 89  
 Vitiligo 118  
 VLBW-Very Low Birth Weight 196  
 Vomiting 279  
 von Hippel Lindau 64  
 Water consumption 37  
 WHO criteria 19  
 Whole Body blood pool 80  
 Willingness to donate organs 268  
 Women 33  
 Wuchereria bancrofti 155  
 XTT 16  
 YMDD locus 144  
 Zinc Depleted Diet 266  
 Zinc Supplemented Diet 266  
 Zinc therapy, Modulation 168  
 Zn (II) N-methylpyridyl-porphyrin 14  
 Zoonosis 297

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