



**FIFTEENTH HEALTH SCIENCES CENTRE  
POSTER CONFERENCE 2010**



Health Sciences Centre Poster Conference, Kuwait University: April 20-22, 2010

---



## Table of Contents

1. Organising Committee.....	iii
2. Photograph of Organizing Committee.....	iv
3. Preface	
Address of Dean.....	v
Address of Vice Dean for Research.....	vi
Address by Chairman of the Organising Committee.....	vii
Keynote Speaker: Biography.....	ix
4. Best Poster Award Winners 2009.....	xi
5. Past Poster Conference Keynote Speakers.....	xiii
6. Original Research Abstract List, by Subject Area.....	xv
7. Case Report Abstract List, by Subject Area.....	xxxvii
8. Abstracts	
<u>Original Research</u>	
A Research Core Facility.....	1
Allied Health.....	2
Anaesthesiology.....	14
Anatomy.....	16
Biochemistry.....	20
Community Medicine.....	26
Dentistry.....	48
Genetics and Molecular Biology.....	70
Imaging (Nuclear Medicine and Radiological Science).....	73
Medical Education.....	87
Medicine.....	89
Microbiology and Immunology.....	111
Obstetrics and Gynecology.....	150
Oncology.....	156
Pathology.....	161
Pediatrics.....	179
Pharmacology and Toxicology.....	184
Pharmacy.....	194
Physiology.....	207
Psychiatry.....	216
Surgery and Transplantation.....	221
<u>Case Reports</u> .....	234
9. Author Index.....	285
10. Keyword Index.....	301
11. Acknowledgements.....	310





## Organising Committee

- Prof. Widad Al-Nakib (Vice Dean for Research)
- Prof. Suhail Ahmad (Chairman, Coordinator; Scientific)
- Dr. Alyaa M A Mousa (Coordinator, Finance)
- Dr. Ahmed El-Hashim (Coordinator, Logistics, Social & Public Relations)
- Dr. Issa Loutfi (Coordinator, Printing)
- Dr. Wassim Chehadeh (Coordinator, CME)
- Dr. Faisal Al-Saeigh (Coordinator, IT)
- Dr. Ebaa Al-Ozairi
- Dr. Abdullah Al-Taiar
- Dr. Adel Al-Asfour
- Dr. Ghadeer Al-Balool
- Mr. Jassim Al-Khorafi
- Mr. Dheya HA Al-Hasan
- Ms. Amna Safar

### Special Acknowledgements

- Prof. Fuad A M Hasan, Dean, Faculty of Medicine
- Mr. Adel Al-Moosad, Director, Service Department
- Mrs. Teena Sadan, Technical Staff, CRC, Faculty of Medicine



## Photograph of Organising Committee



### Front row, from right to left

- Mr. Jassim Al-Khorafi, Dr. Abdullah Al-Taiar, Dr. Ahmed El-Hashim, Mr. Dheya HA Al-Hasan, Prof. Widad Al-Nakib, Prof. Suhail Ahmad, Dr. Issa Loutfi, Dr. Alyaa M A Mousa, Dr. Ghadeer Al-Balool,

### Members not shown in the picture

Prof. Fuad A M Hassan, Dr. Wassim Chehadeh, Dr. Faisal Al-Saeigh, Dr. Ebaa Al-Ozairi, Dr. Adel Al-Asfour, Ms. Amna Safar



**Message from the Dean,  
Faculty of Medicine**

Every year since 1996, the Faculty of Medicine organizes a conference for the Academic Staff and students to present a sample of their research work. This landmark activity has become a stimulus for researchers to work together in order to answer important basic science and clinical questions pertinent to Kuwait and the world. I am proud to observe that this book contains more than 280 abstracts of first class research which will be depicted in more details during the poster sessions.



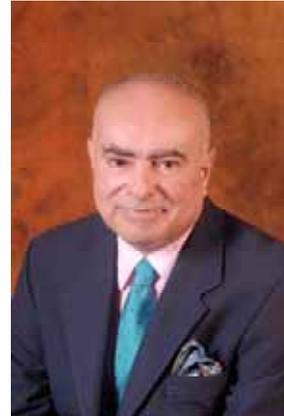
We are also honored to have the Nobel Laureate Prof. Sir Tim Hunt as the keynote speaker this year. Prof. Hunt, Cell Cycle Control Laboratory, London Research Institute, Clare Hall Laboratories, Herts, England, United Kingdom. He will be presenting a lecture entitled “The Cycle and Cancer”.

Finally, I would like to thank Prof. Suhail Ahmad the head of the organizing committee as well as the other members of the committee for their outstanding effort to make this year’s conference a success. We are also indebted to Dr. Ali Al-Shamlan, Director General, Kuwait Foundation for the Advancement of Science for his usual support. My thanks also go to the other sponsors for their generous contribution.

**Prof. Fuad Hasan  
Dean  
Faculty of Medicine  
April 2010**



**Message from the Vice Dean for  
Research,  
Faculty of Medicine**



In this 15<sup>th</sup> Annual Health Sciences Centre Poster Conference, we are delighted to welcome noble laureate Prof. Sir Tim Hunt, Cell Cycle Control Laboratory, London Research Institute, Clare Hall Laboratories, England, U.K. as our distinguished guest. I am pleased to see that our annual poster conference succeeded in continuing to invite such very distinguished Scientists as our Keynote Speaker. It is very important that we maintain this tradition.

We are grateful for our colleagues who started this excellent scientific exercise that today we call the 'Poster Conference'. Over a 3 day period it allows staff in the Health Sciences Centre to display their research and for everybody to interact and appreciate the wide range of high quality research presented in this conference.

We are most grateful to Professor Suhail Ahmad and his organizing Committee for the excellent preparation and hard work they put to make this a very successful event.

I would like to extend my gratitude to Professor Sir Richard Timothy Hunt for accepting our invitation to come to Kuwait and give his keynote lecture entitled "The Cell Cycle and Cancer". I am also grateful to Professor Fuad Hasan for his continued support of research and this important event. Finally, I would like to thank Kuwait University and Kuwait Foundation for the Advancement of Sciences (KFAS) for their support of this conference.

Prof. Widad Al-Nakib  
Vice-Dean for Research



**Message from the Chairman,  
15<sup>th</sup> HSC Poster Conference Organizing  
Committee**



It gives me great pleasure to write this brief message for the 15<sup>th</sup> Annual Health Sciences Center (HSC) Poster Conference, a seminal event in our research and academic activity every year. First of all, I, on behalf of the Central Organizing Committee, welcome all the participants who have submitted an abstract for presentation as well as others who have come to attend the Poster Conference. I would also like to thank Prof. Fuad Hasan, Dean, Faculty of Medicine, for the confidence he has placed in members of the Organizing Committee to organize the 15<sup>th</sup> Annual HSC Poster Conference and Prof. Widad Al-Nakib, Vice Dean Research for his help in organizing the conference. We are indeed honored to have Nobel Laureate Professor Sir Tim Hunt from the London Research Institute, London, United Kingdom to deliver the keynote address “The Cell Cycle and Cancer”. Prof. Sir Hunt is a pioneer in the field of Cell Cycle Research in relation to Cancer and was awarded, together with Profs. Lee Hartwell and Paul Nurse, the Nobel Prize in Physiology/Medicine in 2001 for his research on cell cycle transitions.

The Organizing Committee received >300 abstracts this year, a testimony to the continued enthusiasm of researchers at HSC. It is encouraging to note that a substantial number of abstracts were received from other faculties of Kuwait University and other hospitals and research institutions in Kuwait. The HSC Poster Conference has now become an important scientific forum to share and generate innovative ideas in applied and clinical research,



relevant to Kuwait and the region. In general, the scientific content of the abstracts was very good and in line with the current state-of-the-art in modern medical research. Hopefully, this event will also give an impetus to the authors to convert their posters into publications in reputable International Journals.

I am indebted to the members of the Central Organizing Committee who participated enthusiastically in sharing the responsibilities for various tasks. We could not have succeeded without the invaluable assistance and cooperation from all the four faculties of HSC, the Dean, Vice Dean Research, and the Administrative Support Staff, Faculty of Medicine. Financial support is a major hiccup in holding scientific conferences. We are greatly indebted to Kuwait University for their continuous and generous support for the HSC Poster Conference every year. We also acknowledge financial support from Kuwait Foundation for the Advancement of Science (KFAS). The task of choosing the award-winning abstracts is quite difficult and laborious and I would like to thank the members of the Judging Committee for their hard work in selecting posters for various awards.

Like previous years, I hope that this year's Poster Conference will also infuse enthusiasm for research among young researchers and will foster collaborative research among more senior researchers. I would also like to take this opportunity to wish every participant a fruitful and enjoyable Poster Conference 2010.

Prof. Suhail Ahmad  
Chairman, 15<sup>th</sup> HSC Poster Conference



**Keynote Speaker**  
**15<sup>th</sup> Annual HSC Poster Conference 2010**  
**Professor Sir Tim Hunt**



Professor Sir Timothy R. Hunt is a well-known authority on Cell Cycle Regulation and its relation with Cancer. In recognition of his outstanding contributions in this field, he was awarded, together with Profs. Lee Hartwell and Paul Nurse, the Nobel Prize in Physiology/Medicine in 2001. Currently, he is the Principal Scientist and an active researcher at Cancer Research UK, London Research Institute, London, United Kingdom.

Sir Hunt received his PhD in 1968 under the supervision of Profs. Arthur Kornberg and Alan Munro on the topic “The control of Hemoglobin Synthesis”. After a couple of Postdoctoral fellowships, he joined the University of Cambridge as an Academic Staff member in 1971 and in 1991 he joined the London Research Institute. He has won several awards and honours in recognition of his research contributions.



Professor Sir Hunt is a Fellow of the Royal Society, a Fellow of the Academy of Medical Sciences, a Foreign Associate of the National Academy of Sciences of the USA, a Member of EMBO, a Foreign Member of the American Academy of Arts and Sciences and a Member of Academia Europaea. He was knighted in June 2006.

Professor Sir Hunt is member of the Editorial Board of several prestigious journals including Journal of Cell Science, Molecular Biology of the Cell, Genes to Cells and The EMBO Journal and on the Reviewing Panel for several funding agencies and Scientific Advisory Committees/Boards. He has received Honorary Degrees from 8 International Universities for his outstanding contributions in cell cycle research. Professor Sir Hunt has published more than 125 publications in Peer-Reviewed International Journals and has written/edited three books. We are indeed honored and privileged to have Nobel Laureate Prof. Sir Hunt to deliver the keynote address “The Cell Cycle and Cancer” during the 15<sup>th</sup> Annual Health Sciences Center Poster Conference, 2010.



## **Best Poster Award Winners -2009**

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

- **Omar S, Al-Turki A, Malatiali S, Redzic Z:** Expression of nucleoside transporters in the rat heart: Effects of streptozotocin-induced diabetes

### **Graduate Research in Basic Sciences (Masters)**

- **Ghayda Al Hashem\*, Al-Sweih N, Wafaa Jamal, Rotimi VO:** The distribution of bla<sub>CTX</sub>-Mgenes amongst clinically significant Escherichia coli isolates in 8 major hospitals in Kuwait

### **Graduate Research for Resident Doctors**

- **\*Najjar HAM, Al-Tajalli NR, Mojiminiyi OA, Salim N, Al-Hajri K:** Assessment of Adiposity in Routine Practice – Comparison of Bioelectrical Impedance Analysis of Body Fat Composition with Body Mass Index and other Anthropometric Measurements

### **Basic Sciences**

- **\*Luqmani YA, Al Mulla F, Al Azmi A, Tawfiq E, Al Saleh S:** Loss of estrogen receptor in human breast cancer cells is associated with a gradual epithelial to mesenchymal transition
- **\*Redzic Z, Hasan F, Al-Sarraf H:** Effects of omeprazole treatment on nucleoside transporters expression and adenosine uptake in the rat gastric mucosa



### **Clinical Sciences**

- **\*Zubaid M , Rashed W, Almahmeed W, Al-Lawati J, Sulaiman K, Al-Motarreb A, Amin H, Al Suwaidi J:** Baseline characteristics, management practices and in hospital outcome of patients hospitalized with acute coronary syndromes in the gulf (Gulf Registry of Acute Coronary Events)
- **\*Abdella NA, Mojiminiyi OA, Al-Mulla F, Al-Mohammedi H, Al-Dahi W, Pinto C , Al-Rammah T:** Evaluation of Adiponectin as a potential component of the criteria for the Metabolic Syndrome
- **Al Mutairi SS, Mojiminiyi OA, Shihab-Eldeen A, Al Rammah T, Abdella NA:** Putative Roles of Circulating Resistin In Patients With Asthma, COPD and Cigarette Smokers.

### **Case Report**

- **AlTarrah M, AlAsfoor M, AbdulMalek K, Baouhaimed M:** A case of King Cobra bite in Kuwait: Ethical, Public health, and legal Issues.



## Past Poster day Keynote Speakers and Lectures

2009

- Evidence-Based Medicine and Knowledge Translation Research for Better Health Care  
Prof. Brian Haynes, Professor of Clinical Epidemiology and Medicine, Chief of the Health Information Research Unit at McMaster University, Hamilton Ontario, Canada

2008

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

2007

- From Molecular Imaging to Molecular Medicine  
Prof. Henry N. Wagner, Jr. MD  
Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA

2006

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

2005

- How Corticosteroids Work in inflammatory Diseases: New Molecular Insights Prof. Peter Barnes is of Thoracic Medicine at the National Heart and Lung Institute, Head of Respiratory Medicine at Imperial College and Honorary Consultant Physician at Royal Brompton Hospital, London, UK.

2004

- The Nitric Oxide/Cyclic GMP Pathway: Targets for Drug Development Prof. Ferid Murad, Nobel Prize recipient, Chairman, Department of Integrative Biology and Pharmacology, Director, Institute of Molecular Medicine, University of Texas Medical School, Houston, Texas, USA



## Past Poster Day Keynote Speakers and Lectures, Cont.

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

1999

- Nutrition, Immunity and Infection: Basic Considerations and Public Health Significance Dr. Ranjit Kumar Chandra, Professor & Director, Allergy, Asthma and Immunology Centre, Gurgaon, India

1998

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

1997

- The Impact of Research on the Development of an Academician Dr. Elia Ayoub, Distinguished Professor of Pediatrics, Department of Pediatrics, Pediatric Immunology and Infectious Diseases, College of Medicine, University of Florida USA.



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



Health Sciences Centre Poster Conference, Kuwait University: April 20-22, 2010

---



## **A Research Core Facility of HSC**

**1**

Behbehani AI, Al-Nakib W, Kombian SB, Dashti A, Honkala E, \*Al Mulla F: Research Core Facility at the Health Sciences Center (RCF).

## **Allied Health**

**2**

\*Alotaibi N: Cross-cultural Use of Assessment in Occupational Therapy: Process and Validation.

**3**

\*Alotaibi N, Reed K, Nadar M: A Survey of Assessment Instruments Used in Occupational Therapy Clinics.

**4**

\*Molla AM, Sharma PN, Moneir Ata MM, Abbas M, Al-Otaibi H: Vitamin D and Thyroid Function in Pregnant and Non-pregnant Women.

**5**

\*Saeed R, Al-Saeed O, Athyal R, Yadav C: Value of Additional (KUB) Radiograph in the Erect Position to Standard Intravenous Urography Examination.

**6**

\*Chibber R, Al-Saleh E, Al Fadhli R, Al Jassar W, Al Harmi J, Tasneem AM: Uterine Rupture and Subsequent Pregnancy Outcome- How Safe is it? A 25-Year Study.

**7**

\*Chibber R, El-Saleh E , Al Harmi J, Tasneem AM: Female Circumcision: Continues Unabated in the 21st Century (Obstetrical and Psychological Sequelae).

**8**

Al-Mandeel M, \*Al-Reshidi R, Al-Sharah S: Satisfaction Level Among Physical Therapists Working in the Governmental Sectors in Kuwait.

**9**

\*Jadaon MM, Dashti AA, Lewis HL: Origin of Factor V Leiden Mutation in Arabs: A molecular study.

**10**

\*Manee FS: Perspectives of Kuwaitis Living with Spinal Cord Injuries: A Mixed-Method Study.

**11**

Al-Sharrah S, Laire A, Al-Fadli H, Al-Qallaf A,\*Hassan N: Prevalence of Urinary Incontinence in Kuwait.



**12**

\*Hassan N, Salem M, Dashti F, Al-Sharrah S, Kalakh S, Al-Rashidi R: Low Back and Pelvic Girdle Pain During Pregnancy in Kuwait: Prevalence and Risk Factors.

**13**

\*Sayed A, Al-Shami NS: Low Back Pain in Nursing Staff: (Understanding and Prevention).

### **Anaesthesiology**

**14**

\*Alfoudri H, Almatouq S, Alrefaei A, Mlechkova L: Technique of Anesthesia for CS Audit in Maternity Hospital.

**15**

\*Elzeini MN, Khalid A, Eltaher EA, Bakry MHM: Comparing Entropy and the Bispectral Index in Anesthetized Gynecological Patients.

### **Anatomy**

**16**

\*Mohamed NA: Effects of Food Preservative (Sodium nitrite) on the Pancreatic Islets of Adult Male Albino Rat: A Histological and Immunohistochemical Study.

**17**

\*Singh RKA, Ammar MH, Mallick PN, Taqi S, Senthilnathan TA, Sherif WRA: Coeliac Plexus Block for Palliative Management of Advanced Abdominal Cancer.

**18**

\*Rao MS: Restoration of Hippocampal CA3 Dentritic Arborization in Chronically Stressed Rats by Rehabilitation with Predictable Chronic Mild Stress.

**19**

\*Mousa AMA, Al-Fadhli A, Narayana K: Priming and Intrauterine Exposure to Lead Nitrate Induces Multiple Congenital Anomalies in the Rat.

### **Biochemistry**

**20**

\*Al-Mass A, Benov L: Anticancer Effect of Myrrh a Hidden Gift from the Magi?

**21**

\*Mursal B, Sadeq K, Zamoon J: Construction of RAGE Recombinant Expression Vectors.

**22**

\*Mubarak M, Craik J, Benov L: Anti-bacterial Effect of Zn (II) N-Alkylpyridylporphyrins.

**23**

Thomas M, \*Benov L: Cadmium Generates Superoxide Radicals by Interfering with Cellular Respiration.



**24**

\*Thomas M, Benov L: Bacteria-based Bioassay for Detection of Prooxidant Environmental Pollutants.

**25**

\*Srikumar TS, Gholoum M, Khanafer R, Thakkar J, Sequeira F, Jayanthi E, Al-Rustom M, Al-Amin Z, Verghese L, Pariyani S, Mehdawi H, Al-Mass AB, Al-Rashidi B, Shubair M: Laboratory Investigation Learning Performance of Kuwait Health Science Students.

### **Community Medicine**

**26**

Al Haddad M, Al Jazzaf S, Al Qodmani L, \*Al Shatty D, Omar S, AL Baker O, Moussa MA: Modifiable Risk Factors of Stroke in Kuwait.

**27**

\*Al-Wazzan B, Salmeen Y, Al-Amiri E, Ala'a Abul , Al-Taiar A: Hand Hygiene Practices among Nursing Staff in Public Secondary Care Hospitals in Kuwait: Self-Report and Direct Observation.

**28**

\*Abdelalim AM, Ajaj NI, Alyousefi MK, Al-Tmimy AM, Al-Rashaidan SA: Obesity and Academic Achievement in Fifth-Grade Students in Male Public Schools in Kuwait.

**29**

\*Abbas A, Al-Rashed F, Al-Aradi T, Al-Abbasi S, Kalandar A, Akhtar S: Kuwait University Students' Knowledge about Transmission Symptoms and Prevention of Sexually Transmitted Diseases.

**30**

\*Abbas AB, Al-Johar WY, Al-Mufty SA, Al-Owaish RA: Adulteration of Saffron with Carcinogenic Color at Kuwait Market.

**31**

\*Alshatti TS: Diabetes-related Symptom Distress and its Association with Depression in Type 2 Diabetic Patients.

**32**

Ebrahim B, \*Al-Enezi H, Al-Turki A, Al-Turki M, Al-Rabah F, Al-Taiar A: Knowledge, Misconceptions, and Future Intentions Towards Breastfeeding among Female Students in Kuwait University.



**33**

\*Qassab G, Abul M, Al-Kandari N, Al-Bloushi S, Moussa M: Elevated Blood Pressure Among Kuwaiti Government Employees: Prevalence, Predictors, And Risk Score Assessment.

**34**

Al-Ajmi AH, AbdulRahem HA, Hussein HA, Al-Mahmoud SY, Al-Sabah RN, Al-Sharhan LA , \*Al-Rushaid RA , Bin-Shaibah ME: Knowledge, Attitudes and Practices in regard to the Swine Flu A(H1N1) Pandemic in Kuwait.

**35**

\*Al-Othman D , Al-Qahtani J, Husain E , Suresh A , Shukur M , Doi S, Bouhaimed M: Level of Job Satisfaction and Job Stability among Senior Medical Staff Working in Kuwait Public Hospitals.

**36**

Al-Gharib F, Al-Rifae Y, Al-Otaibi M, \*Al-Senafy A, Al-Kandery M: Anxiety and General Health Status.

**37**

\*Al-Awadi M, Al-Duaij L, Al-Enzi A, Al-Khalaf A, Buhaimed D, Shah N: Knowledge, Attitudes and Intentions Regarding Organ Donation in Kuwait.

**38**

Al-Faraj D, \*AL-Rashedi D, Wais M, Hussein N, AL-Khalifa S: The Association Between Violent Media Exposure and Aggressive Behavior Among Kuwaiti Male Adolescents.

**39**

\*Al-Turki A, Bajwa H, Dawas A, Behbehani M, Al-Mutairi A, Mahmoud S, Thalib L: Non-illicit Substance Use Among Male University Students in Kuwait.

**40**

\*Bajwa H, Al-Turki A, Dawas A, Behbehani M, Al-Mutairi A, Mahmoud S, Thalib L: Illicit drug Use Among Male University Students in Kuwait.

**41**

\*Shah NM, Badr HE, Yount K, Shah MA: Decline in Co-residence with Children Among Kuwaiti Men and Women: What is Driving the Change?

**42**

\*Ajrawi F, Omani M, Safi Y, Hadlaq O, Saeed M, Ziyab A, Akhtar S: Prevalence of and Risk Factors for Eczema Among Students of Kuwait University.

**43**

\*Al-Farhan L, Moussa MA, Gomez JE, Al-Mou"men F, Al-Quhtani N, Jawdat J, Al-Rasheedi A: Knowledge, Attitude and Practice of the Population in Kuwait Towards Blood Donation.



**44**

\*Al-Saqer F, Al-Assousi E, Al-Mutairi B, Mustafa A, Al-Adwani A, Al-Taiar A: Undetected Visual Impairment and Academic Performance Among Fifth Grade Students in Public Schools in Kuwait.

**45**

\*Al-Shati H, Al-Saqabi M, Al-Jabri R, Saleh M, Al-Arouj A, Abdullah A, Suresh A, Jakob S, Bouhaimed M: Use of Body Image Modifying Substances Among University Students in Kuwait.

**46**

\*Alnaser MZ, Wughalter EH: Effect of Chair Design on Ratings of Discomfort.

**47**

Bouhaimed M, \*Al-Janaee A, Jacob S: Patient Safety Culture in Health Care Organizations Survey: Perception of Clinical Staff at the Faculty of Medicine in Kuwait.

### **Dentistry**

**48**

\*Thomas A: Barriers in Seeking Preventive Dental Care by Dental Patients Attending the Dental Care Services of the Dental Division at Ahmadi Hospital.

**49**

\*Honkala S, Välimaa R, Tynjälä J, Kannas L, Honkala E: The Association of Family Culture with the use of Sweets and Soft Drinks in Finnish Adolescents.

**50**

\*Honkala S, Honkala E, Behbehani JM: Smoking Habits Among Schoolchildren in Kuwait.

**51**

\*Honkala E, Nummela R, Olak J, Honkala S, Saag M, Makinen K: Caries Experience by ICDAS in South-East Estonia.

**52**

\*Honkala E, Rimpelä A, Honkala S: Oral Health Habits, Dental Visits and Instructions Received by the Finnish Adolescents.

**53**

\*Salako NO, Al-Shammari K, Philip L: Effect of Various Concentration of Dates Solution on Malodor Production.

**54**

\*Salako NO, Philip L: Comparison of the Use of Halimeter and OralChroma™ in the Assessment of the Ability of Common Cultivable Oral Anaerobic Bacteria to Produce Malodor from Cysteine and Methionine.



**55**

\*Alomari QD, Barrieshi-Nusair KM, Ali MA: Effect of C-factor and LED Curing Mode on Microleakage of Class V Resin Composite Restorations.

**56**

\*Akpata ES, Behbehani MJ, Akbar J, Thalib L: Mean Daily Fluid Ingestion by Children During Summer in Kuwait.

**57**

\*Anooj R, SY Ng: Incidence of Carotid Artery Calcification seen in Digital Panoramic Radiographs of Patients in Kuwait and its Relation to Risk Factors of Stroke.

**58**

AL-Khabbaz A, Al-Shammari K, \*Al-Ansari J: Diabetes Mellitus and Periodontal Health: Patients Knowledge.

**59**

\*Shyama M, Al-Mutawa SA, Al-Duwairi Y, Soparkar P: Early Childhood Caries in 4- and 5-year-old Children in Kindergarten schools in Kuwait.

**60**

\*Qudeimat MA, Behbehani F: Dental Age Assessment for Kuwaiti children Using Demirjian's method.

**61**

\*Alsane' M, Montero-Fayad M, Abd-Alsalam M, Koerber A: Expectant Mothers Infant Oral Health Awareness and Socioeconomic Status.

**62**

\*Ashkanani F, Alsane' M: Evaluating Caregivers' Attitude Towards Preschooler's Oral Health- A Pilot Study

**63**

\*Al-Suraia A, Abdallah M, Alsane' M: Assessing the Attitude of Family Physicians in Kuwait Towards Infant Oral Health (IOH) - A Pilot Study

**64**

\*Jassim A, Froughi E, Alsane' M: Prevalence and Severity of First Permanent Molars Ectopic Eruptions.

**65**

\*Ellepola AN, Joseph B, Chandy R, Philip L: Antifungal susceptibility of oral Candida species obtained from patients attending the Kuwait University Dental Clinic.

**66**

\*Ellepola AN, Devipriya B, Jayathilake JA, Joseph B, Sharma P: International Comparison of dental students knowledge and attitudes to HIV/AIDS.



**67**

\*Al-Mutawa SA, Shyama M, Muhammad S: The Attitude of Parents Toward Behavior Management Techniques in Pediatric Dentistry in Kuwait.

**68**

\*Kullman L, Al Sane M: Accuracy in Using Demirjian's Dental Age Estimation Method in Kuwaiti Adolescents.

**69**

\*Kamber F: Smoking and Periodontal health.

### **Genetics and Molecular Biology**

**70**

\*Al-Mass A, Al-Saleh S, Benov L, Luqmani YA: The Therapeutic Potential of the Gift of the Three Wise Men on Endocrine Resistant and Sensitive Breast Cancer Cell Lines.

**71**

\*Al-Shoumer KAS, Nair VS, Ali AH, Haider MZ: Genotyping of Non-Classical Congenital Adrenal Hyperplasia (NCCAH) in a Subgroup of Kuwaiti Females.

**72**

\*AlFadhli SM, Hadi M, Al Jafar H: Influence of Bilirubin Uridine Diphosphate Glucuronosyltransferase 1A Gene Promoter TATA box on Serum Bilirubin Levels and Cholelithiasis in Hemoglobinopathy Patients.

### **Imaging (Nuclear Medicine and Radiology)**

**73**

\*Gupta R, Alkandari L, Alhazri F, Roberts OM, Bang RL: Mammographic, Sonographic and MRI Findings in Breast Augmentation with Unknown Permanent Filler Injection.

**74**

\*Al-Saeedi F, Loutfi I: <sup>99m</sup>Tc Sulfur Colloid and <sup>99m</sup>Tc Mebrofenin Hepatobiliary Functional Liver Imaging in Normal and Diabetic Rats.

**75**

\*Al-Saeed OO, Kombar OR, Almorsy M, Sheikh M: Acute Gastrointestinal Bleeding: Diagnosis by Multidetector CT.

**76**

\*Marafi F, Esmail A, Al-Said A, Al-Nafisi N, Al-Mohannadi SS: Invasive Ductal Carcinoma of the Female Breast: Referral Pattern for <sup>18</sup>F-Fluro-deoxy-glucose Positron Emission Tomography/Computed Tomography (PET/CT) Study.

**77**

\*Esmail A, Marafi F, Al-Feeli M, Ghanim M, Al-Awadi E, Al-Nafisi N, Al-Mohannadi S: Kuwait's One Year Experience of 2-deoxy-2- [<sup>18</sup>F]fluoro-D-glucose (FDG) PET/CT Study.



**78**

\*Al-Khawari HA, Badran BMF, Raees MG, Brown MV A, Madda JP, Al-Manfouhi HA: The Ability of DWI to Differentiate Between Malignant and Benign Breast Lesions: Preliminary Study in Kuwait.

**79**

\*Al-Khawari HA, Badran BMF, Habeeb M, Kovacs A, Al-Manfouhi HA, Madda JP: Proton MR Spectroscopy of the breast in the clinical setting: Preliminary Study in Kuwait.

**80**

\*Al-Humaidi G, Elgazzar AH: Myocardial Perfusion Abnormalities Among Asymptomatic Type 2 diabetic Patients- an Experience in Kuwait.

**81**

Alsammeri H, Alfarsi S, Kazem N, Omar AM, \*Elgazzar AH: Bone Scan Display Mode. Should More Than one be used for Interpretation!

**82**

\*Elgazzar AH, M Elsaid M, Shehab F: Comparison of Pinhole and High Resolution Parallel Hole Imaging for Nodular Thyroid Disease.

**83**

\*Al-Shammari A, Elgazzar AH, Al-Shammari H: Preoperative Localization of Parathyroid Glands: Local Experience.

**84**

\*Al-Shammari A, Elgazzar AH: <sup>99m</sup>Tc MIBI Whole Body Scan: A Potentially Useful Technique for Evaluating Metabolic Bone Disease.

**85**

\*Usmani S, Khan HA, Huda FA, Ahmed N, Nafisi Al N, Marafi F, Mohannadi al S, Javed A, Amanguno HG, Saleh al N: Blue Dye and Radionuclide Guided Sentinel Lymph Node Biopsy: Impact on Management & its Clinical Significance in Breast Cancer.

**86**

\*Asbeutah AM, Al-Hussaini AJ, Al-Otaibi JA, Al-Nagi MN, Al-Obaidi SM: Patient Position & Phase of Respiration Affect the Doppler Waveform in the Celiac Artery.

---

## **Medical**

## **Education**

**87**

\*Haider HH, Sadeq A, Al-Bahhar M, Al-Herz W, Al-Khayat H: Multiple Authorship in Scientific Publications: Do they all Meet Authorship Criteria?



**88**

\*Abdullah I, Isma'eeli H, AL-Ramyan A, Al-Taiar A: Therapeutic Traditional Cautery: Knowledge, Attitude, and Practice among Kuwaitis and Arabs in Kuwait.

## **Medicine**

**89**

\*Al-Adsani AMS , Abdullah KA: Reasons for Hospitalizations in Adults with Diabetes in Kuwait.

**90**

\*Al-Adsani AMS: Risk Factors of Albuminuria in Adults with Type 2 Diabetes in Kuwait.

**91**

\*Ghani AA, Hussain N, Al Helal B: Prophylactic Continuous Venovenous Hemofiltration can Prevent Worsening of the Kidney Functions after Percutaneous Coronary Intervention in Patients with Advanced Chronic Kidney Disease.

**92**

\*Shehab D, Al-Jarallah K, Al-Awadhi A ,Haider MZ, Mini Abraham: A Prospective Clinical Study on the Relation of Serum Levels of Vitamin D to Knee Osteoarthritis.

**93**

\*Alazmi WM, Siddique I, Alateeqi N: Prevalence of Helicobacter pylori Infection Among New Outpatients with Dyspepsia in Kuwait.

**94**

\*Alazmi WM, Buhaimed W, Al-Mekhaizeem K, Siddique I: Efficacy of Standard Triple Therapy in the Treatment of Helicobacter pylori Infection: Experience from Kuwait.

**95**

\*Abdella NA, Mojiminiyi OA, Al Mulla F, Al-Mohammedi H, Al-Dahi W, Pinto C, Al-Rammah T: Comparative Evaluation of Retinol-Binding Protein 4 (RBP4), Adiponectin and RBP4 -to-Adiponectin Ratio as Adipokine Markers of the Metabolic Syndrome.

**96**

Gheith O, Al Otaibi T, Biju , \*Awadeen W, Zakareya Z, Said T, Nair MP, Nampoory MRN, Cerna M, Sawy M, Muzairai I: Hot Season of Bronchopneumonia in Renal Transplant Patients in Kuwait 2009.

**97**

\*Asiri F, Al-Sumaie M, Safar F, Al-Saigh F, Kalifa: Prevalence and Associated Factors of Iron Deficiency Anaemia Among Kuwaiti Children.

**98**

\*Al-Shammri S, Bhattacharya A, Al Sayed Amr, Girgis M, Chadha G, Akanji AO: Clinical Characteristics of Multiple Sclerosis in Kuwait.



**99**

\* Bhattacharya A , Al-Shammri S, Doi SAR, Chadha G, Akanji AO: Predicting Stroke Severity from Traditional Risk Factors: A Hospital Based Acute Stroke Study.

**100**

\*Al-Shammri S, Chadha G, Lasheen I, Zaki M, Al Muttari M, Bhattacharya A, Al Sayed Amr, Girgis M, Akanji AO: A Stroke Registry for Kuwait: Preliminary Observations.

**101**

\*Alansari BM: Differences in Diabetes Knowledge Among Diagnosed and Undiagnosed Diabetes in Kuwait.

**102**

\*AL-Mutairi SS, Mojiminiyi OA, Abdella NA, Al-Alawi A: Circulating Adiponectin is Associated with Severity of Obstructive Sleep Apnea in Obese Subjects.

**103**

\*Balaha MA, Al-Otaibi T, El-Sayed A, Nair MP, Gheith O, Nawas KM, Tawab KA, Nampoory MRN: Management of Acute Antibody Mediated Rejection in Renal Transplant Recipients-Kuwait Experience.

**104**

\*Alawadi SA, Ohaeri JU: Health Related Quality of Life of Kuwaiti Women with Breast Cancer: A Comparative Study Using the European Organization for Research and Treatment Quality of Life Questionnaire (EORTC QLQ –C30).

**105**

\*Al-Baker O, Zubaid M, Rashed W, Ridha M, Alenezi F , Bulbanat B, Alhamdan R, Akbar M, Zubair S: Risk Factors for In-Hospital Stroke after Myocardial Infarction in the GULF RACE Registry.

**106**

\*Mahmood M, Al-Adsani A, Abraham PK, Hamoud E: Clinical Pattern of Hospitalized H1N1 Cases in Department of Medicine at Al-sabah Hospital.

**107**

\*Al-Awadhi AM, AlFadhli SM, Al-Khalidi DA, Borhama M, Borusly M: Investigation of the Distribution of Lymphocyte Subsets in Multitransfused Beta-Thalassemia Major Patients.

**108**

\*Khajah M, Kaiyu Wu , McCafferty DM: The Role of Group IV Protein Tyrosine Kinase in the TNBS Colitis Model.

**109**

Ghani AA, \*Hussain N: Role of Continuous Venovenous Hemofiltration in Treating Acute Renal Failure in Cancer Patients.



**110**

Ghani AA, Al Waheeb S, Al Homoud E, \*Al Helal B, Hussain N: Clinical and Histopathological spectrum of IgA nephropathy in Kuwait.

### **Microbiology and Immunology**

**111**

\*Al-Mutairi NM, Ahmad S: Rapid Molecular Detection of Multidrug-Resistant *Mycobacterium tuberculosis* Isolates Directly from AFB-positive Liquid Cultures for Proper Management of MDR-TB.

**112**

\*Mustafa AS, Shaban F: Propred Analysis for Prediction of HLA-DR-Promiscuous Regions and Epitopes of *Mycobacterium tuberculosis* Protein Rv1980c, and their Recognition by Human T Cell Lines.

**113**

\*Khan ZU: *Lodderomyces elongisporus*: First Report on its Isolation and Characterization from Clinical Specimens in Kuwait.

**114**

\*Khan ZU, Al-Obaid I, Chandy R, Joseph L, Farhat D, Al-Hajri S: Etiological Agents of Fungal Rhinosinusitis in Kuwait.

**115**

\*Draghijeva E, Egbase P, Mathai S: Vaginal Infection in Women of Reproductive Age: A Five Year Survey.

**116**

\*Saad Eldeen H, Hanif SNM, Mokaddas E: Evaluation of Gene Xpert® MTB/RIF System for the Direct Detection of Rifampicin-Resistant *Mycobacterium tuberculosis*.

**117**

\*Al-Hashem GM, Shetty SA, Abdullah AA, Mokaddas E: Comparison of 3 Methods for the Detection of Extended-Spectrum  $\beta$ -Lactamases and AmpC among *Enterobacteriaceae* in a Tertiary Hospital Center in Kuwait.

**118**

\*Abdullah AA, Shetty SA, Mokaddas E: MRSA Septicemia in the Burns Unit: A 5 Year Study.

**119**

\*Al-Shaikh A, Ahmad S, Khan ZU: Development of an Inhalation Murine Model of Invasive Pulmonary Aspergillosis for Comparative Assessment of Four Biomarkers as Surrogates of Infection: A Novel Diagnostic Approach.



**120**

\*Ahmad S: Genotype-Specific PCR and DNA Sequencing of Internally Transcribed Spacer Regions of rDNA Identify Major Genotypes Among Clinical *Candida dubliniensis* Isolates in Kuwait.

**121**

\*Al-Sweigh N, Al-Hubail M, Rotimi VO: Analysis of Carbapenem Resistance Genes in *Acinetobacter baumannii* Isolates from Kuwait Hospitals.

**122**

\*Dhar R, Al-Haddad A, Al-Fouzan W, Mathew B, Udo EE: Frequency and Clinical Association of Panton-Valentine Leukocidin Positive *Staphylococcus aureus* in a Kuwait Hospital.

**123**

\*Husain M, Al-Otaibi S, Qabazard Z: Selective IgM Deficiency with Recurrent Infections.

**124**

\*Mokaddas E, Burhamah MHA: Candida Colonization Among Pediatric Cancer Patients does not Lead to Elevated Levels of (1-3)- $\beta$ -D-glucan, *Candida* Mannan and *Candida* DNA Detection in Serum Samples.

**125**

\*Mokaddas E, Ahmad S: Large Scale Evaluation of Multiplex PCR and DNA Sequencing of Internal Transcribed Spacer Region for Rapid Differentiation and Identification of *Mycobacterium* Species Isolates in Kuwait.

**126**

Hira PR, Al-Ali FM, Khalid N, Shelahi F, Al-Enezy NA, Asfoor F, \*Iqbal J, Al-Saffar A, Montazeri SM, Sheikh M: Cysticercosis in Kuwait: Making the Connection in a Global Environment.

**127**

\*Chehadeh W, Ben-Nakhi A, Al-Arouj M, Almuaili T, Al-Mutairi O, Abdella NA, Al-Nakib W: The Impact of Hepatitis C virus Infection on the Development of Diabetes Complications.

**128**

\*Albert MJ, Haridas S: Lack of Integron-Mediated Drug Resistance in *Campylobacter jejuni* Isolated from Kuwait.

**129**

\*Islam A, Raghupathy R, Albert MJ: A Recombinant PorA Vaccine Elicits Homologous and Heterologous Protection in an Adult Mouse Intestinal Colonization Model of *Campylobacter jejuni* Infection.



**130**

\*Jamal W, Rotimi VO, Duerden BI: Analysis of Prevalence, Risk Factors and Molecular Epidemiology of *Clostridium difficile* Infection in Kuwait over 3 Years Period.

**131**

\*Shaban K, Amoudy H, John S, Shaban F, Mustafa AS: Studies Towards Expression and Immunological Evaluation of BCG Transformed with a Shuttle Vector Containing *esat6*.

**132**

\*Ebrahimi B, Amoudy H, Shaban F, Mustafa AS: Construction of Recombinant Mycobacterial Shuttle Plasmids to Transform Fast Growing *Mycobacterium Vaccae*.

**133**

\*Sarkhoo EM, Udo EE: The Expansion of ST80-SCCmec-IV Clone of Community-Acquired Methicillin Resistant *Staphylococcus aureus* in Kuwait Hospitals.

**134**

\*Rawdhan H, Shamsah M, Joshi R: Nosocomial Bacteria on Doctors Mobile Phones.

**135**

\*Joshi RM, El-Desouky M, Nair S, Oommen M, Subramanian S: In-vitro Susceptibility of Gram negative Bacilli Against Tigecycline.

**136**

\*Hanif SNM, Al-Attayah R, Mustafa AS: Recombinant Rv3619c, Rv3872, Rv3873, Rv3874 and Rv3875 Proteins of *Mycobacterium tuberculosis* Induce Delayed Type Hypersensitivity Responses in Guinea Pigs.

**137**

\*Ali Sher, Al-Owaish RA, Latif SA, Mandkar Y, Al-Mufti S: Microscopy and Rapid Diagnostic Tests for the Detection of Malaria: Performance and Limit of Detection.

**138**

\*Udo EE, Abdelkhalek A, Noronha B, Mathews B, Abdul Salem F: Absence of Glycopeptide Resistance in *Enterococcus* species isolated from Cow's milk in Kuwait.

**139**

Al-Sweih N, \*Al-Hajri S, Farhat D, Chandy R, Joseph L: Nosocomial Candidemia in Kuwait: Species Spectrum and their Antifungal Susceptibility Profile.

**140**

\*Said T, Al-Otaibi T, Nair MP, Halim MA, Biju MV, Awadain WH, Khan ZU: Diabetes Mellitus is a Risk Factor for Zygomycosis in Renal Transplant Recipients.

**141**

\*Said T, Pacsa AS, Khalik D, Halim MA, Balaha MA, Nawas KM, Samhan M: Retransplantation After Renal Allograft Loss to Polyoma Virus-Associated Nephropathy (PVAN).



**142**

\*Qasem JA, Al-Ali I, Al-Mouqati S: Application of Molecular and Serological Methods for Rapid Detection of *Mycoplasma gallisepticum* infection (Avian Mycoplasmosis).

**143**

Jamal W, Shaheen M, \*Rotimi VO: Evaluation of Gene Xpert *Clostridium difficile* Assay, Ridascreen *C. difficile* Toxin A/B Assay, Tox A/B II Assay, Tissue Culture and Stool Culture in the Diagnosis of *C. difficile* Infection (CDI).

**144**

Jamal W, Shaheen M, \*Rotimi VO: Detection of Extended-Spectrum  $\beta$ -Lactamases (ESBL), Metallo- $\beta$ -Lactamases (MBL) and AmpC in *Enterobacteriaceae* and *Acinetobacter* spp. Using Cica Beta<sup>TM</sup> tests.

**145**

\*Al-Hashem G, Al-Sweigh N, Jamal W, Shaheen M, Rotimi VO: Sequence Analysis of Extended-Spectrum Beta-Lactamase (ESBL) Genes Harboured by Invasive Isolates of *Escherichia coli* in Kuwait.

**146**

\*Iqbal J, Houria N, Raghupathy R: Acute Toxoplasmosis Leads to Lethal Overproduction of Th1 Cytokines.

**147**

\*Eissa A: Prevalence of Cephalosporin Resistant blaSHV, PER-2 Salmonella Isolated from Poultry in Kuwait.

**148**

\*Majdalawieh AF, Carr RI: In vitro Characterization of the Potential Immunostimulatory and Anti-Cancer Activities of Black Pepper (*Piper nigrum*) and Cardamom (*Elettaria cardamomum*).

**149**

\*Khajah M, Andonegui G, McCafferty DM: Stimulus Specific Role for Fer Kinase in Neutrophil Chemotaxis: Role of p38 MAPK and PI3K Signalling Pathways.

## **Obstetrics and Gynecology**

**150**

\*Diejomaoh FME, Abo Diba F, Hassan L, Al-Khars R, Shamali I Mohd A: Adolescent Pregnancies not Associated with Adverse Outcome.

**151**

\*Omu AE, Al-Azemi MK, Kehinde EO, Omu FE, Mathew TC, Anim JT: Antioxidants Modulate the Effects of Diabetes Mellitus on the Ontogeny of Human Sperm.



**152**

\*Omu AE, Al-Azemi MK, Mathew TC, Omu FE, Kehinde EO, Anim JT, Oriowo MA: The Effects of Zinc Deficiency on Spermatogenesis: An Experimental Study in the Rat Model.

**153**

\*Al-Azemi MK, Omu FE, Al-Kandari F, Saad ZS, Omu AE: Randomised Cross-over Evaluation of Hyperprolactinaemia Treated with Bromocriptine Versus Cabergoline: Resistance Carves a Role for Ovarian Drill.

**154**

Al-Azemi MK, Omu FE, Kehinde EO, Fatinikun T, Anim JT, Oriowo MA, \*Omu AE: Lithium Protects Against Toxic Effects of Cadmium in the Rat Testes.

**155**

\*Nandakumaran M, Al-Shammari M, Al-Harmi J, Susan G, Al-Saleh E: Effect of Reduced Maternal Perfusate Flow on Maternal-Fetal Transport Kinetics of Palmitic Acid in Human Placenta In Vitro.

**Oncology**

**156**

\*Khalifa S, Mittal R, Khalifa N, Basmy A: Outcome of children with Neuroblastoma: An 11 years analysis from Kuwait Cancer Control Centre (KCCC).

**157**

\*Al Saleh S, Luqmani YA, Al Mulla F: Effect of Tyrosine Kinase Inhibitors is Enhanced in Endocrine Resistant Breast Cancer Cells Displaying Increased Metastatic Potential.

**158**

\*Orabi KY, Abaza MS, ElSayed KA, Elnagar AY, Guleri R: In Silico Molecular Modeling Assisted-Design and Synthesis of Syringic Acid Analogues: Inhibition of Proteasome Activity and Cancer Cell Growth.

**159**

\*Al-Jassar W, Saleh R, Al-Owayesh R, De Sanjose, Bosch X: Prevalence of Human Papilloma Virus and its Subtypes among Cervical Carcinoma in Maternity Hospital, Kuwait.

**160**

\*El-Barky EM, Hussein S: The value of Second TUR for Superficial Bladder Cancer.

**Pathology**

**161**

\*Kapila K, Francis IM, George SS, Al-Awadhi S, Al Mulla F: Chromogenic and Fluorescent in situ Hybridization Analysis of HER-2/neu (Cerb-B2) Expression in Fine Needle Aspiration Samples of Breast Carcinoma. A pilot Study Comparing FISH, CISH and Immunocytochemistry.



**162**

\*Al-Shemmery BS, Francis I, Junaid TA: Epstein-Barr Virus (EBV) Associated Gastric Carcinoma in Kuwait.

**163**

\*Alath P, Kapila K, Jassar A, Francis IM: Fine Needle Aspiration Cytology of Liver - A Study of 90 Cases.

**164**

\*Pathan SK, Haji BE, Das DK, Al-Ansari TA, George SS, Kapila K: Fine Needle Aspiration Cytology: Role in Diagnosis of Paediatric Lymph Nodes Mubarak Al-Kabeer Hospital Experience.

**165**

\*Al-Kandary MN, Elfawal MA, Varghese R: Investigation of Un-natural Death in Kuwait During 2007.

**166**

\*Mojiminiyi OA, Safar FH, Al Rumaih H, Al Rammah T, Diejomaoh FME: Alanine Aminotransferase Levels Within the Normal Range Predict Metabolic and Androgenic Phenotypes in Women of Reproductive Age.

**167**

\*Varghese SJ, Kumar R, Sreejith M: Platelet Functional Disorders in Kuwait - A Profile.

**168**

\*Akanji AO, Thalib L, Al-Isa AN: Folate, Vitamin B12 and Homocysteine Levels in Kuwait Adolescent Subjects: Potential Implications for Cardiovascular Disease Risk in Later Life.

**169**

\*Akanji AO, Thalib L, Al-Isa AN: Determinants of Blood Levels of Putative Thrombogenic Factors in Healthy Kuwaiti Adolescent Subjects.

**170**

\*Mathew R, Akanji AO: How Successful are we at Achieving Target Treatment Goals in Kuwaiti Dyslipidemic Patients?

**171**

\*Safar FH, Mojiminiyi OA, Al Rumaih H, Al Rammah T, Diejomaoh FME: Associations of Leptin, Leptin Receptor and Free Leptin Index with Metabolic Phenotypes of PCOS.

**172**

\*Rifat Mannan AAS, Kahvic M, Rifaat AA, Singh NG, Vurgheese T: Kikuchi-Fujimoto disease: A Clinicopathologic Study.



**173**

\*Elfawal MA, Al-Qattan SI: Significance of Teeth Lead Accumulation in Age Estimation.

**174**

\*Abdeen SM, Olusi SO: Peptidyl Arginine Deiminase: A Novel Immunohistochemical Marker for Liver Fibrosis in Patients with Chronic Hepatitis.

**175**

\*Jaragh M, Haji BE, Roberts OM, Mothafar F, Abdulla AlMousawi F, Gupta R, Abdulla F, Kapila K: A Comparison of Fine Needle Aspiration Cytology [FNAC], Histopathological and Radiological Findings in Breast Lesions at Mubarak Al-Kabeer Hospital – A Pilot Study.

**176**

\*Das DK, Al-Juwaiser A, Sathar SA, Bharadwaj S, Pathan SK: Diagnosis of Tuberculosis in Serous Cavity Effusions: Poor Performance by Cytology due to Absence of Useful Diagnostic Features.

**177**

\*Das DK, Al-Waheed SKM, George SS, Haji BI, Mallik MK: Fine Needle Aspiration (FNA) Cytology Diagnosis of Papillary Thyroid Carcinoma (PTC): Contribution of Immunocytochemical Stainings for Galectin-3, CD-44 and HBME-1 in FNA Smears.

**178**

\*Haji BE, Jaragh M, AliAlansary T, Pathan SK, Sheikh ZA, Al-Waheeb S, Mallik MK, Das DK, George SS, Kapila K: Correlation of Mycobacterial Culture and Acid Fast Bacilli with the Cytologic Spectrum of Tuberculosis in Fine Needle Aspirates Mubarak Al-Kabeer Hospital Experience.

## **Pediatrics**

**179**

\*Al-Souri H, Al-Zinnati N, Al-Ruwaiyh A, Molla AM, Molla Abdul M: Quantitative Food Intake in Children During Acute Stage of Diarrhoea and After Recovery.

**180**

\*Kabad R, Uthaman B, Al-Qbandi M, Selvan JP, Alanbaei M, Abushaban L, Al-Hay A, Al-Hassan A: Transcatheter Closure of Ventricular Septal Defect Using Amplatzer Devices: Local Experience.

**181**

\*Husain EH, Mullah-Ali AM, Elsayed AF, Adekile A: Infectious Causes of Transient Neutropenia in Otherwise Healthy Children.

**182**

\*Abdel-Hamid ME, Sharaf LH, Phillips OA: Application of the Stable Isotope Dilution LC-MS/MS Method for the Diagnosis of Inherited Metabolic Disorders.



**183**

\*Wani VB, Uboweja AK, Muzafar Gani AW, Mahmood K, Al-Naqeeb N, Cherian T: Results of ROP Screening According to ETROP Guidelines - Are We Treating More Babies?

### **Pharmacology and Toxicology**

**184**

\*Al-Farsi OA, Yousif MHM, Benter IF, Akhtar S: Does Angiotensin-(1-7) Inhibit the Development of Diabetes-Induced Vascular Dysfunction by Inhibiting Epidermal Growth Factor Receptor Signaling?

**185**

\*Al-Sabah S, Kara E, Ellis E, Moulton CM, Archer CR, Rodriguez-Martin I, Krasel C: Investigating Activation of Human G Protein-Coupled Receptor Kinase 2 by c-Src, Using Site-Directed Mutagenesis and Real-Time FRET Measurements.

**186**

\*Bihzad S, Cherian A, Yousif MHM: 11,12-Epoxyeicosatrienoic Acid is a Vasodilator in the Rat Perfused Mesenteric Vascular Bed.

**187**

\*Rahman A, Jacob SS, Attur S, Khan I, Khan KM: Effect of Lead Exposure on the Activity and Expression of Serine/Threonine Protein Phosphatases in the Brain of Young Rats.

**188**

\*Al-Otaibi HJ, Akhtar S, Varughese S, Benter IF: Angiotensin-(1-7) Treatment can Attenuate Diabetes-induced Cardiac Dysfunction Through Inhibition of ERK1/2 and p38 MAPK.

**189**

\*Khan KM, Al-Shamary T, Jacob SS, Attur S, Khan I, Rahman A: Expression of Serine/threonine Phosphatases in Rrat Hippocampus After Exposure to lLead: An Immunohistochemical Study.

**190**

\*Yousif MHM, Akhtar S, Benter IF: Inhibition of Phosphatidylinositol 3-kinase Produces Cardiovascular Protection in a Model of Diabetes and Hypertension.

**191**

\*Nashawi H, Oriowo MA, Kombian SB: The potential of TH-9, a Theophylline Derivative, as a Memory Enhancer in Dementia.

**192**

\*Narayana K: L-ascorbic Acid Significantly Protects Two Cycles of Cisplatin Induced DNA Double-Strand Breaks Exhibiting 3' Overhangs and 5' Blunt Ends in a p53-Independent Manner but not the Structural Changes in the Liver.



**193**

\*Kombian SB, Phillips OA: Central Nervous System Effects of Linezolid and Novel Oxazolidinone Analogs in vitro.

### **Pharmacy**

**194**

\*Matar K, Al-lanqawi Y, Abdul-Malek K, Jelliffe R: Amikacin Population Pharmacokinetics in Critically-ill Patients in Kuwaiti Hospitals.

**195**

Aboqrais NA, Abahussain EA, Qaddoumi MG\*: Role of Pharmacists as Health Educators in Early Detection and Prevention of Breast Cancer in Kuwait.

**196**

\*Edafiogho IO, Zamil HA, Soja, Ezeamuzie CI: Synthesis and Anti-inflammatory Effects of Enhydrazones.

**197**

\*Bandarkar FS, Khattab IS: Enhancement of In-Vitro Dissolution and Oral Bioavailability of Gliclazide by Lyophilized Solid Dispersion Technique.

**198**

Phillips OA, Abdel-Hamid ME, Kehinde EO, \*Sharaf LH, Babua A: Preliminary Pharmacokinetic and Metabolic Studies of Novel Triazolyl-oxazolidinones (TOZs) in NZW Rabbits.

**199**

Phillips OA, Udo EE, Abdel-Hamid ME, \*Varghese R, Abraham RE, El-Said E: The Influence of Varied Substitutions on the Antibacterial Activity of N-piperazinyl 5-(4-methyl-1,2,3-triazole) Oxazolidinones.

**200**

Abd-Allah FI, Dawaba HM, Samy A, \*Zaghloul A: Piroxicam-Loaded Microemulsion: Preparation, Characterization and Stability Studies.

**201**

\*Etman MA, Mallah A, Nada A: Bioequivalence Study of Calcium Dobesilate Capsules in Healthy Subjects.

**202**

Etman MA, Farid RM, Ebian AR, \*Nada AH: Salbutamol in situ Gelling Nasal Inserts.

**203**

\*Sary HG, Ayoub NA, Singab AB, Orabi KY: Isolation of Bioactive Compounds from *Centaurea alexandrina* Alcoholic Extract.



**204**

\*Abahussain EA, Waheedi M, Koshy S: Unwanted Medications: Practices and Attitudes of Pharmacists Towards Disposal in Kuwait.

**205**

\*Shehab A, Al-lanqawi Y, Abudlmalak K, Awade A, Thusu A: Population Pharmacokinetics of Digoxin: Prediction of Blood Concentration in Patients with Congestive Heart Failure at Al-Amiri hospital - Kuwait.

**206**

\*Hedaya MA, El-Kasaby Z, Mabrouk M: Stereoselective Pharmacokinetic Interaction between Carvedilol and Fluoxetine in Humans.

### **Physiology**

**207**

\*Ramadan J, Mohammad S: Effect of the Fasting Month of Ramadan on Selected Physiological Profiles of Fencing Athletes.

**208**

\*Al-khalidi AT, Al-Bader MD: Expression of p53 Gene and Protein in Fetal Rat Brain during Development.

**209**

\*Al-Zaibe WH, Al-Bader MD, El-Abdallah AA: Regulation of Placental p21 and p27 proteins by Estrogens and their Receptors during pregnancy.

**210**

\*Al-Bader MD, Redzic ZB, Malatiali SA: Expression of Estrogen Receptor Alpha and Beta in Rat Astrocytes in Primary Culture: Effects of Hypoxia and Glucose Deprivation.

**211**

\*Mouihate A, Pittman QJ: Prenatal Exposure to Pathogens Reprograms Neuroimmune Responses.

**212**

\*Babiker FA, Lorenzen-Schmidt I, Mokolke, Vanagt WY, Delhaas T, Waltenberger J, Cleutjens JP, Prinzen FW: Long Term Protection and Mechanism of Pacing-induced Postconditioning in the Heart.

**213**

\*Mohammed N, Ramadan J, Hamdy H, Barac-Nieto M: Physical Activity Assessment in Kuwaiti Adult Population using IPAQ: Pilot Study.

**214**

\*Renno WM, Al-Maghrebi M, George P, Mathur A: (-)-epigallocatechin-3-gallate (EGCG) Promotes Functional and Sensory Recovery in Crushed Rat Sciatic Nerve.



**215**

\*Pavlik A, Mohammadi S, Alexander G: Prevention of Kainate-Induced Hippocampal Neuronal Damage by Magnesium.

### **Psychiatry**

**216**

\*Al-Hammadi A, McFarlane A, Behbehani J, Ohaeri JU: Relationship of Posttraumatic Stress Disorder (PTSD) with Thyroid Functions Among Injured Kuwaiti First Gulf War Veterans.

**217**

\*Ohaeri JU, Awadalla AW, Farah AA: Quality of Life in People with Epilepsy and their Family Caregivers: An Arab Experience Using the Short Version of WHO Quality of Life Instrument.

**218**

\*Al-Turkait FA, Ohaeri JU, Naguy A, El-Abasi AM: The Tripartite Model of Anxiety and Depression in a Sample of Arab College Students Using the Hopkins Symptoms Checklist - 25

**219**

\*Zahid MA, Ohaeri JU: Schizophrenia Psychopathology in a Kuwaiti Arab Sample.

**220**

\*Zahid MA, Ohaeri JU, Alzayed AA: Factors Associated with Hospital Service Satisfaction in a Sample of Arab Subjects with Schizophrenia.

### **Surgery and Transplantation**

**221**

\*Nawas KM, Al-Otaibi T, Nampoory MRN, Nair MP, Biju MV, Balaha MA, Gheith O, Awadain WH, Zakaria, El-Sayed A: Renal Transplantation in Lupus Nephritis- Kuwait Experience.

**222**

\*Brook A, Rifat M, Al Qattan F, Alwael A, Ahmed A, Rifat M, Hamid T, Ibrahim H: Hematolymphoid Tumours of the Nose and Sinuses: Signs in the Sinus and Sinus in the Signs.

**223**

\*Brook A, Al Qattan F, Varkki Z, Alwael A, Hatim, Ashraf M : Endoscopy-Assisted Adenoidectomy: From Adenoid Curette to Endoscopes and Surgical Powered Instruments.

**224**

\*Burezq H, Zakariya Y: Modification of Mustache Technique: Gluteal Auto-augmentation in Post Massive Weight Loss Patients.



**225**

Burezq H, \*Alterkait A: Treating Difficult Proliferative Hemangiomas with Propranolol. First report from Middle East.

**226**

\*Ibrahim HM, Abdel Wahab MA, Nagwa WM, Abdel Rahman T, Hasnien O, Shaaban HA, El Shebini YH: Correlation Between the Hounsfield Density and the Chemical Composition of Urinary Stones.

**227**

\*Sharma PN, Bang RL, Al-Fadhli AN, Sharma P, Bang S: Burns Among Children, Adults and Aged in Kuwait: Do they Differ?

**228**

\*Abdeen SM, Mathew TC, Dashti H, Asfar S: Green Tea Protects the Intestinal Mucosa from Ischemia Reperfusion Injury via Inducing Cellular Proliferation and Modulating Oxidative Stress.

**229**

\*Halim MA, Al-Otaibi T, Johny KV, Hamid MH, Gheith O, Hasaneen H, Nawas KM: Conversion to Sirolimus as Rescue Therapy after Acute Rejection in Renal Transplant Recipients Longterm Follow up.

**230**

\*Sakr MF, Moussa MM: Ligasure Hemorrhoidectomy Versus Stapled Hemorrhoidopexy: A Prospective Randomized Clinical Trial.

**231**

\*Sakr MF: Ligasure Versus Milligan-Morgan Hemorrhoidectomy: A Prospective Randomized Clinical Trial.

**232**

\*Zakaria Y, Burezq H: Reconstruction of Soft Tissue Defects of the Foot Dorsum in Children by Latissimus Dorsi Muscle Flap: 4 Year Experience.

**233**

Burizq H, Al Fadhli A, Al Bader A, \*Khashaba HA: Does Daflon® (Diosomin/Flavonoids) have an Effect on the Amount of Drained Fluid After Abdominoplasty?



**Case Report Abstracts List**  
**By Subject Area**



Health Sciences Centre Poster Conference, Kuwait University: April 20-22, 2010

---



### **Allied Health**

234

\*Mahomed S, Al-Bader N, Wall JC: Physical Therapy Rehabilitation for a Patient with Injury of the Left Femoral Nerve Associated with Total Hip Replacement.

### **Anaesthesiology**

235

\*Senthilnathan TA, Singh RKA, Ammar MH, Anwar SAE, Philip G, Aziz AA: Pneumothorax Following Emergency Caesarean Delivery.

### **Dentistry**

236

Andersson L, Joseph BK, Kullman L, \*Devipriya B: Ameloblastoma of the Mandible- Report of a Rare Variant.

### **Dermatology**

237

\*Ahmed A, Kadyan RS, Razzaq AHA, Zadeh VB, Joneja M: A Case Report: Unilesional Nodular Mycosis.

238

\*Ahmed A, Kadyan RS, Abdul Razzaq A H, Joneja M: A Case Report: Kimura Disease.

### **Imaging (Nuclear Medicine and Radiology)**

239

\*Al-Sarraf L, Keluth Chavan VG, Gupta R: Appendicitis Caused by Accidentally Ingested Metallic Pin: A Case Report.

240

\*Atyani SMA, Hamed IMA, Al-Adwani M, Al-Saad S: Incidental Finding of Congenital Lobar Emphysema in Premature Infant: Current State of Imaging: Conventional Radiographs and MD-CT.

241

\*Al-Adwani M, Hamed IMA, Fathy AH, Al-Saad S: Persistent Hyperplastic Primary Vitreous (PHPV) in Premature Infant: Current state of imaging: MRI and MD-CT.

242

\*Al-Adwani M, Hamed IMA, Atyani SMA, Al-Sharnoby J: Vertebral Osteomyelitis Without Disc Involvement.

243

\*Hamed IMA, Al-Adwani M, Gab-Alla MH: CT Angiography for Brain Death Diagnosis.



**244**

\*Hamed IMA, Ryiad MN, Al-Adwani M, Negem Hamed S: Case Report: Paroxysmal Nocturnal Haemoglobinuria (PNH) presented as an Acute Abdomen.

**245**

\*Marafi F, Esmail A, Al-Awadi E, Al-Mohannadi S: Large Vessel Vasculitis: Case of Fever of Unknown Origin diagnosed with whole body 18F-FDG PET/CT.

**246**

\*Al-Awadi E, Marafi F, Esmail A, Al-Mohannadi S: Dermatomyositis: A Case of Specific Pattern of F-18 FDG Muscle Uptake on PET/CT Study.

**247**

\*Usmani S, Alshammari A: False-positive In-111 pentetreotide uptake in Helicobacter pylori Associated Gastritis.

**248**

\*Khan MU, Abdullah ZS, Kumar KS, Javaid A, Habib E, Dafalla AB: Pyomyositis Mimicking Osteomyelitis on Bone Scan: Clinical Usefulness of Single Photon Emission Computerized Tomography-Computed Tomography (SPECT-CT).

**249**

\*Ashkanani R, Loutfi I, Mehdi SA: Detection of Extra-Intestinal Manifestation of Ulcerative Colitis Using Technetium-99m-Dimercaptosuccinic Acid (Tc-99m DMSA-V) Imaging: A Case Report.

**250**

\*Esmail A, Marafi F, Nemej J, Al-Ali A, Al-Nafisi N, Al-Mohannadi S: Introducing Selective Internal Radiation Therapy (SIRT) for Metastatic Colorectal Cancer to Kuwait: New Therapeutic Option.

**251**

\*Bouhaimed M, Alalai A: Management of Radiation Retinopathy Exacerbated by Pregnancy in a Young Patient with Choroidal Melanoma.

## **Medicine**

**252**

\*Al Ali J, Mohammad A, Alsumait B: Endoscopic Removal of Intra-gastric Penetrated Adjustable Gastric Band Post-Bariatric Surgery: The Kuwait Experience.

**253**

\*Al Ali J, Aldahham A, Soliman MO, Asfar S: Gastrointestinal lipomatosis from Anemia to Intussusception.

**254**

\*AL Tarrah MY, AL Shalfan FH, Abdulsalam SM: A Case of Dengue Fever.



**255**

\*Al-Tarrah MY, Al-Jamaan EH: Moyamoya in Adult Down Syndrome.

**256**

\*Gheith O, Al Otaibi T, Abd-el-tawab K, Balaha MA, Abdelhalim M, Nampoory MRN: Erythema-Nodosum in Renal Transplant Recipients: Multiple Cases and Review of Literature.

### **Microbiology and Immunology**

**257**

\*Burhamah MHA, Mokaddas E, Khan ZU, Ahmad S: Invasive Pulmonary Aspergillosis due to Amphotericin B-resistant Aspergillus Terreus Diagnosed by Detection of Galactomannan, (1-3)-B-D-Glucan, and DNA in Serum Samples.

### **Obstetrics and Gynecology**

**258**

\*Al-Jassar W, Al-Safi R: Cavernal Hemangioma of the Uterine Cervix, A Case Report Complicating LEEP Surgery.

### **Pathology**

**259**

\*Al-Safi R, Al-Jassar W, Anvarsadath S, Raina A: Ovarian Dermoid Cyst Associated with Pelvi-abdominal Tuberculosis: A Rare Case Report Mimicking Ovarian Cancer.

**260**

\*Al-Brahim N, Zaki AH, El-Merhi K, Ahmad MS: Tonsillar Kaposi's Sarcoma in a Patient with Membranous Glomerulonephritis on Immunosuppressive Therapy.

**261**

\*Arora R, Abou Bakr A: Cutaneous Angiolymphoid Hyperplasia with Eosinophilia-Case Report.

**262**

\*Arora R, Abou Bakr A, Sayed M: Angiomyofibroblastoma of Vulva-A Rare Distinct Entity.

**263**

\*Sheikh ZA, Mohammad J, Ibrahim B, Ramadan BAA, Das DK: Follicular Thyroid Carcinoma with Clear Cell Change: Diagnostic Dilemma in Fine Needle Aspiration Cytology.

**264**

\*Singh NG, Rifat Mannan AAS, Kahvic M, Rifaat AA, Alanzi FMN: Jejunal Perforation Caused by Schistosomiasis.



### **Pediatrics**

**265**

\*Makhseed N, \*Dhaunsi GS, Jaeken J: Distinct Features of a Carbohydrate-deficient Glycoprotein Syndrome Type 2 Patient in Kuwait.

**266**

\*Atyani SM, Al-Khabbaz AM, Al-Hajeri MH: Non-resolving Pneumonia in a Female Child: Rare Presentation.

**267**

Alsaad AS, \*Aleem AA: Congenital Cystic Adenomatoid Malformations.

### **Physical therapy**

**268**

\*Soliman AS, Youssef AH, Alshami NS: CT Guided Physical Therapy Program in Arthrogenic Muscle Inhibition.

### **Surgery and Transplantation**

**269**

\*Muneera BN, Ahmad AM, Fahad AA: Complete Laparoscopic Excision of Giant Mesenteric Cyst: A Case Report and Review of the Literature.

**270**

\*Bouhaimed M: Angoid Streaks: A Very Rare Ocular Problem with Very Serious Clinical and Ethical Challenges.

**271**

\*Bouhaimed M, Dhiab F: Avastin Use in Ophthalmology: Clinical and Ethical Considerations.

**272**

\*AlHarbi O, AlOsaimi S, AlKandari I: Scoliosis as a Rare Risk Factor for Colon Perforation During Colonoscopy: A Case Report.

**273**

\*AlDawood A, Labib HA, Asfar S: Laparoscopic Excision of Pedunculated Hepatic Haemangioma.

**274**

\*Dawood AL, Ahmed A: A Case Report: Primary Subcutaneous Hydatid Cysts of the Thigh.

**275**

\*AlOsaimi S, AlHarbi O, Saad E: A Solitary Hamartomatous Polyp of the Ileum Causing Adult Intussusception: A Case Report.



**276**

\*Singh RKA, Senthilnathan TA, Ammar MH, Ayman FE, Tammam TF, Jagia M: Double Layer Repair for Huge Irreducible Incisional Hernia Under Ultrasound-Guided Bilateral Transversus Abdominis Plane (TAP) Block.

**277**

\*Balaha MA, Said T, Hasanen H, Biju MV, Awadain WH, Zakaria Z, Nampoory MRN: Liver Mucormycosis in Renal Transplant Recipient.

**278**

\*Nair MP, Said T, Halim MA, Vareed B, Moneim MA, Nawas KM, Elsayed A: Renal Transplantation in Nephropathic Cystinosis.

**279**

\*Nair MP, Al-Otaibi T, Said T, Halim MA, Moneim MA, Vareed B, Gheith O, Elsayed A, Nawas KM, Nampoory MRN: Combined Liver and Kidney Transplantation in Primary Hyperoxaluria.

**280**

\*Ibrahim HM: Ureteroscopic Laser Lithotripsy for Treatment of Stones in Crossed Ectopic Kidney.

**281**

\*Halim MA, Al-Otaibi T, Al-Waheeb S, Tawab KA, El-Kholy O, Nampoory MRN: Late Acute Antibody Mediated Rejection on Top of Denovo Membranoproliferative Glomerulonephritis After 9 years of Renal Transplantation.

**282**

\*Schütz P, Hamed HH, Joshi RM: Odontogenic Necrotizing Fasciitis of Neck and Upper Chest.

**283**

\*Mousa A, Burezq H: Abdominoplasty Without the Use of Suction Drain; Our Experience in Kuwait.



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



Health Sciences Centre Poster Conference, Kuwait University: April 20-22, 2010

---



***A Research Core Facility of HSC***

*Category: Basic Sciences*

**1**

**Research Core Facility at the Health Sciences Center (RCF)**

Behbehani AI<sup>1</sup>, Al-Nakib W<sup>2</sup>, Kombian SB<sup>3</sup>, Dashti A<sup>4</sup>, Honkala E<sup>5</sup>, \*Al Mulla F<sup>6</sup>

<sup>1</sup>Vice President Health Science Center; <sup>2</sup>Vice Dean Research, Faculty of Medicine; <sup>3</sup>Vice Dean Research, Faculty of Pharmacy; <sup>4</sup>Vice Dean Research, Faculty of Allied Health; <sup>5</sup>Vice Dean Research, Faculty of Dentistry; <sup>6</sup>Director of Research Core Facility.

**Introduction:** RCF is an integrated laboratory that provides state-of-the-art resources to serve multiple needs of faculties and researchers in conducting specialized tests, and in the process advancing institutional scientific capabilities in the sphere of advanced experimentation leading to research discovery. RCF lays critical groundwork for precision testing in the realm of advanced genomics, proteomics, and cell-biology at Kuwait University.

**Infrastructure:** RCF has four major divisions including advanced Genomics, Proteomics, Sample preparation laboratories, Cell imaging and tissue culture facilities.

**Achievements:** Standardization of tests and training has been a major achievement of the center. More than 11000 samples have been processed and analysed this year alone. In addition, 32 papers have been published in international journals and some with high impact factor ranging from 2 to 18. Moreover, we witnessed utilization of the facility by more staff at the Health Science Center, Faculty of Science, Ministry of Health, Ministry of Interior & other institutes from GCC.

**Future Goals:** RCF encompasses the vision of the HSC to strengthen the infrastructure (through Phase III) provided for researchers in an attempt to compete with top-ranked international universities. In addition, RCF plans to initiate several workshops to train researchers on these advanced technologies.

**Acknowledgement:** We record our sincere appreciation for the Office of Vice President for Research for allocating requisite grants and resources under the umbrella of General Facilities Projects, and look forward to a continuous support from this channel for the sustenance of this vital resource support for the benefit of the researchers.

*Key Words: Genomics research; Cellular and molecular studies*

*Funding Agency: GM 01/01, GM 01/05*



**Allied Health**

Category: Undergraduate

2

**Cross-cultural Use of Assessment in Occupational Therapy: Process and Validation**

\*Alotaibi N

Occupational Therapy Department, Faculty of Allied Health Sciences, Kuwait University

**Introduction:**

Cross-cultural use of assessments is widely recognized and used by many international educators, clinicians, and researchers. The purpose of this study was to pilot test the Arabic version of the Disability of the Arm, Shoulder, and Hand (DASH-Arabic), a self-administered upper extremity outcome measure questionnaire. The DASH-Arabic is designed for Arabic clients who suffer from upper extremity conditions.

**Methods:**

The DASH-Arabic was self-administered by forty Arabic clients. Face validity, content validity, and internal consistency were examined. Each client was then interviewed face-to-face to indicate the relevance of items to the Arabic language and culture.

**Results:**

Following administration of the DASH-Arabic to participants, changes of wording to several items have been made. Misunderstanding of wordings by specific participants was resolved prior to their ratings. Thus, participants' ratings were not affected. The study findings supported the validity and internal consistency of the DASH-Arabic. Following the content analysis of the clients' feedback, the recommended changes addressed issues related to clarity and understanding of DASH-Arabic, language barriers, cultural differences, and construction of items.

**Conclusions:**

The study demonstrated the validity and internal consistency of the DASH-Arabic. However, due to modifications of several items in the DASH-Arabic, further testing of internal consistency and test-retest reliability are warranted. Implications to occupational therapy practice and research will be presented.

*Key Words: Outcome measure; Cross-cultural adaptation; Cross-cultural occupational therapy*

*Funding Agency: None*



**Allied Health**

*Category: Clinical*

**3**

**A Survey of Assessment Instruments Used in Occupational Therapy Clinics**

\*Alotaibi N, Reed K, Nadar M

<sup>1</sup>Kuwait University, Faculty of Allied Health Sciences, Occupational Therapy Department; <sup>2</sup>Texas Woman's University, Occupational Therapy Department;

<sup>3</sup>Kuwait University, Faculty of Allied Health Sciences, Occupational Therapy Department.

**Introduction:**

Assessment is the first phase in rehabilitation by which health care professionals collect baseline data from clients to determine their particular strengths and needs. The objectives of this study were to identify what assessments occupational therapy practitioners use in their clinics, determine the rationale behind using these assessments in occupational therapy clinics and determine implications to occupational therapy education, practice and research.

**Methods:**

A convenience sample of 274 occupational therapy practitioners practicing at different occupational therapy settings completed the survey. The participants were recruited from the American Occupational Therapy Association (AOTA) 86th Annual Conference & Expo. The data were analyzed using descriptive statistics.

**Results:**

Respondents identified the most common assessments used in different occupational therapy areas of practice. The highest percentages of respondents were in the areas of Pediatrics (36.9%); Geriatrics (30.7%); Physical Disability (27%), and Hand Therapy (9.5%). The criteria for choosing the assessments were because of its availability in the clinical setting (65.7%), easily administered (46.4%), time efficient (42.3%), easily scored (36.5%), standardized (35%), used in school/fieldwork (16.1%), developed by occupational therapists (13.9%), and because they followed a specific frame of reference (12.8%).

**Conclusions:**

The study findings suggest that assessments used in occupational therapy clinics should mainly address the core belief of occupational therapy profession. These findings underscore the great need of collaboration between occupational therapy educators and clinicians thus contributing to better management of patients seeking occupational therapy.

*Key Words: Assessment; Occupation-based practice*

*Funding Agency: None*



**Allied Health**

Category: Clinical

4

**Vitamin D and Thyroid Function in Pregnant and Non-pregnant Women**

\*Molla AM<sup>1</sup>, Sharma PN<sup>2</sup>, Moneir Ata MM<sup>3</sup>, Abbas M<sup>3</sup>, Al-Otaibi H<sup>3</sup>

<sup>1</sup>Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, Kuwait University;

<sup>2</sup>Health Science Centre, Kuwait University; <sup>3</sup>Biochemistry Laboratory, Maternity Hospital, Kuwait

**Introduction:**

Vitamin D is known to play a critical role in maintenance of bone health. Hypovitaminosis D have been associated with hypothyroidism, preeclampsia, gestational diabetes and neonatal hypocalcemia. To understand the relationship between Vitamin D status and thyroid function in pregnancy, serum 25-hydroxyvitamin D<sub>3</sub> (Vitamin D<sub>3</sub>), Ca, Mg, Phosphorus, free T<sub>4</sub> (FT<sub>4</sub>) and TSH were compared between a group of pregnant and non-pregnant women.

**Methods:**

The study was conducted at Maternity Hospital in Kuwait. Serum Vitamin D<sub>3</sub> was estimated by using an immunochemiluminometric assay utilizing an autoanalyzer system COBAS e 601.

**Results:**

Mean(±SD) Vitamin D<sub>3</sub> levels(nmol/l) in the pregnant group was 25.0(±9.51) as compared to 32.85(±24.98) in the non-pregnant group (p<0.06) and the values in both the groups were lower than the reference ranges (50-107 nmol/l). The values for Ca, Mg and FT<sub>4</sub> were also lower in pregnant compared to the non-pregnant group (p<0.001), while it was reverse in the case of TSH (p<0.022). A positive correlation was found between Ca and FT<sub>4</sub> (r=0.378, p<0.001), while a negative correlation was observed between FT<sub>4</sub> and TSH.

**Conclusions:**

Serum Vitamin D<sub>3</sub> levels were abnormally lower than the reference ranges in both the groups of pregnant and non-pregnant women, though FT<sub>4</sub> and TSH were within normal limits. More attention need to be focused on the women population with reference to the adverse affect of existing hypovitaminosis D. A long term follow up study is warranted to establish any relationship between Vitamin D status and thyroid function in pregnant women specially because maternal and childhood Vitamin D deficiency continues to be a significant clinical concern.

*Key Words: Vitamin D<sub>3</sub>; FT<sub>4</sub>; TSH*

*Funding Agency: None*



**Allied Health**

Category: Clinical

5

**Value of Additional (KUB) Radiograph in the Erect Position to Standard Intravenous Urography Examination**

\*Saeed R<sup>1</sup>, Al-Saeed O<sup>2</sup>, Athyal R<sup>3</sup>, Yadav C<sup>3</sup>

<sup>1</sup>Department of Radiological Science, Faculty of Allied Health, Kuwait University; <sup>2</sup>Department of Radiology, Faculty of Medicine, Kuwait University; <sup>3</sup>Al-Amiri Hospital, Ministry of Health, State of Kuwait.

**Introduction:**

Intravenous urography (IVU), which allows visualization of the renal collecting system and urinary tract region, is a commonly performed radiological investigation since the 1930s. The common indications for performing IVU include hematuria and malformations of the urinary tract. The upright (erect) films, although occasionally obtained to compare its findings with the supine kidney-ureter-bladder (KUB) image(s), are not routinely performed in a standard IVU examination.

**Methods:**

This prospective study was conducted on 108 consecutive patients; 65 males and 43 females who were referred to the Department of Radiology, Amiri hospital, Kuwait for IVU examinations. A 15 minute film in erect position was done in addition to the routine IVU protocol. Using a Picture Archiving and Communication System; two qualified radiologists independently evaluated the images. One radiologist (RA) viewed the routine IVU study and the other (CY) viewed the study with the additional 15 minute erect radiograph. The results were recorded in evaluation forms with attention given to the following points: presence of nephroptosis; (defined as an abnormal movement of the kidney more than 5 cm or two vertebral bodies between the two radiographs); improvement in the visualization of the calyces and the ureters; and the ability to differentiate pheleboliths from ureteric calculi.

**Results:**

Our analysis revealed that the erect radiograph was useful in detecting nephrostosis in 18 (17%) patients ( $p < 0.05$ ), improved visualization of the calyces and the ureters in 65 patients. Of these, 58 (54%) showed improved visualization of ureters and 7 (6%) calyces. Differentiation between pheleboliths and ureteric stone was possible in 12 (11%) patients ( $p > 0.05$ ).

**Conclusions:**

Our study recommend that every routine IVU examination should include 15 minutes erect images in order to minimize the possibility of missing important findings like; nephrostosis, or improved visualization.

*Key Words: Intravenous Urography; Erect (Kidney-ureter-bladder radiograph); Nephroptosis*

*Funding Agency: None*



**Allied Health**

Category: Clinical

6

**Uterine Rupture and Subsequent Pregnancy Outcome- How Safe is it? A 25-Year Study**

\*Chibber R<sup>1,2</sup>, Al-Saleh E<sup>1</sup>, Al Fadhli R<sup>1</sup>, Al Jassar W<sup>1</sup>, Al Harmi J<sup>1</sup>, Tasneem AM<sup>1</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, Faculty of Medicine, Kuwait University; <sup>2</sup> King Faisal University, Dammam

**Introduction:**

(1) To review the cases of ruptured uterus over the last 25 years with the aim to 1] analyze the causative factors of uterine rupture (2) to analyze subsequent pregnancy outcome after uterine rupture.

**Methods:**

Case notes were reviewed for all patients with ruptured uterus over a period of 25 years from January 1982 to January 2007 at King Fahd University hospital, Saudi Arabia. Data relating to clinical features, characteristics of labor, operative procedures, maternal and perinatal outcome were assessed.

**Results:**

The incidence of ruptured uteri was 0.030%. Total deliveries included in the study = 152, 426. There were 46 cases of ruptured uteri and 44 were available for study. Twenty two (50%) ruptured uteri occurred in patients with previous caesarean scars. In 12 cases (27%), uterine rupture occurred due to oxytocin, PGE2 and oxytocin was used in 3 of these 12 cases. Two (4.5%) ruptures occurred during labor due to non-removal of cervical cerclage Two (4.5%) primigravid patients ruptured their uterus following road traffic accident, resulting in maternal and fetal deaths in both cases. Malpresentation in labor resulted in 8 (18%) of ruptures. Abdominal hysterectomy was performed in 20 cases (45%). Of the remaining 24 (55%) patients, 10 had suture repair and in addition 14 patients underwent hypogastric artery ligation. Later 22/24 (92%) women got pregnant. Twenty (91%) delivered by elective caesarean section. The remaining 2 women ruptured their uteri spontaneously at 32 and 35 weeks and died intra-operatively.

**Conclusions:**

Previous caesarean section, indiscriminate use of oxytocin and malpresentation are risk factors for uterine rupture.

*Key Words: Uterine rupture; Hypogastric artery ligation; Risk factors*

*Funding Agency: None*



**Allied Health**

*Category: Clinical*

7

**Female Circumcision: Continues Unabated in the 21st Century (Obstetrical and Psychological Sequelae)**

\*Chibber R<sup>1,2</sup>, El-Saleh E<sup>1</sup>, Al Harmi J<sup>1</sup>, Tasneem AM<sup>1</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, Faculty of Medicine, Kuwait University; <sup>2</sup>King Faisal University, Dammam

**Introduction:**

To assess the incidence of female circumcision/female genital cutting [FGC] among pregnant women and describe the obstetrical and psychological sequelae of female circumcision.

**Methods:**

Four thousand eight hundred pregnant women over a 4-year period were assessed for female circumcision. Odd ratio (OR) and 95% confidence interval (CI) were calculated to measure association between female circumcision, maternal morbidity, and birth outcome. Variables included prolonged maternal hospitalization, low birth weight, prolonged labor, obstructed labor, cesarean section, and fetal outcome. Assessment measures to determine cognitive and emotional effects included the Mini international Neuro-psychiatric interview and Rey memory test

**Results:**

The prevalence of female circumcision was 38%; women who were circumcised were more likely have extended hospital stay. There was a positive association between such women and prolonged labor, cesarean section, post-partum hemorrhage, early neonatal death, and hepatitis C infection. Psychiatric sequelae included: 80% continued to have flashbacks to the FGC event; 58% had a psychiatric disorder (affective disorder); 38% had other anxiety disorders and 30% had post-traumatic stress disorder.

**Conclusions:**

Female circumcision is associated with adverse materno-fetal outcome and psychiatric sequelae. Many will need psychiatric as well as gynecological care.

*Key Words: Female circumcision; Pregnancy complications; Psychiatric sequelae*

*Funding Agency: None*



**Allied Health**

Category: Basic Sciences

8

**Satisfaction Level Among Physical Therapists Working in the Governmental Sectors in Kuwait**

Al-Mandeeel M<sup>1</sup>, \*Al-Reshidi R<sup>2</sup>, Al-Sharah S<sup>3</sup>

<sup>1</sup> Assistant Professor, Kuwait University; <sup>2</sup> Beginner Practitioner, PM&R Hospital;

<sup>3</sup> Beginner practitioner

**Introduction:**

Job satisfaction is an important factor for developing and improving high-quality society services. It gains special importance in the clinical field as it enhances health professionals productivity and patients fulfillment. Job dissatisfaction on the other hand, is known to decrease job performance, resulting in negative influences on the quality of care and professionals productivity. In general; emigration, turnover, and recruitment of physical therapists caused an increase in the levels of stress among workers.

Aim: To evaluate the job satisfaction of physical therapist working in the governmental hospitals in the State of Kuwait.

**Methods:**

A pilot study including 10 subjects, were randomly chosen from different governmental, physical therapy departments in the State of Kuwait.

**Results:**

The participants' mean age was 22.5 years, and were all holding a bachelor degree. The overall satisfaction level was found to be 58.2%. Around 55% of participants were proud of their job, 53.7% were motivated and passionate for working as physiotherapists, 45.5% felt that physical therapy is challenging but in a positive sense, however 36.4% of the participants believed that their job is mentally stressful.

**Conclusions:**

Nearly half of the sample were dissatisfied, such findings warrants further investigations to clarify the main factors responsible for this dissatisfaction and to help explore the possible methods that may improve the overall satisfaction levels.

*Key Words: Physical therapy; Kuwait; Satisfaction*

*Funding Agency: None*



**Allied Health**

Category: Basic Sciences

9

**Origin of Factor V Leiden Mutation in Arabs: A molecular study.**

\*Jadaon MM, Dashti AA, Lewis HL

Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, Kuwait University.

**Introduction:**

Factor V Leiden mutation (FVL: G1691A), the most common risk factor for venous thrombosis, was found with high prevalence in Caucasians populations (15%), while it was absent in non-Caucasians like Africans and Asians. This suggested that FVL might have occurred as a single event in the past in one Caucasian ancestor and the current carriers of FVL have descended from that grandparent. This was further supported by studies showing FVL to be always associated with one haplotype consisting of 9 SNPs in the Factor V gene, proving a single origin of the mutation. Yet, FVL was later identified in many non-Caucasian Arabs, questioning the origin of FVL in these cases. This study tried to answer that, being the first of its kind.

**Methods:**

DNA from 200 healthy Arab volunteers and 50 known Arab cases of FVL from previous studies were included. Real-time PCR was performed to detect FVL (wild-type G or mutant A alleles) as well as 9 SNPs in the Factor V gene: 327A/G, 495G/A, 1470C/T, 1806G/A, 2298T/C, 2325C/T, 2391G/A, 2833A/T and 5380A/G.

**Results:**

17 volunteers had FVL (8.5%), bringing the total number of FVL cases to 67 cases (53 Heterozygous and 14 Homozygous). All 14 homozygous cases and 11 heterozygous cases had the haplotype [G, A, C, G, C, T, A, A, A] for the above mentioned SNPs, which was the exact haplotype in Caucasian carriers of FVL.

**Conclusions:**

All Arab homozygous carriers of FVL in this study had the same haplotype as Caucasian carriers, suggesting they all had come from the same ancestor proposed for Caucasian carriers of FVL. Therefore, the results of this study strengthen previous observations and provide the first molecular evidence that FVL must have occurred only once in the past in an ancestor common for Caucasians and Arabs.

*Key Words: Factor V Leiden; Arab; Real-time PCR*

*Funding Agency: Kuwait University Grant number NM01/06*



**Allied Health**

Category: Graduate PhD (Basic Science)

10

**Perspectives of Kuwaitis Living with Spinal Cord Injuries: A Mixed-Method Study**

\*Manee FS

Occupational Therapy Department, Kuwait University, Health Sciences Center

**Introduction:**

A spinal cord injury (SCI) is a nationwide issue. The annual incidence of SCI worldwide has been reported to be between 11.5 and 57.8 cases per million population. In Kuwait, SCI most commonly affects young adult males and results in significant and permanent life changes. This brings about the emergence of quality of life (QOL) as a major concern in the healthcare field. The purpose of this study was to explore the QOL from the perspectives of Kuwaiti individuals.

**Methods:**

This study used a mixed methods design to describe the QOL of individuals following SCI. The researcher used the phenomenological approach for the qualitative aspects of the study. Audiotaped data were transcribed verbatim and transcripts were subjected to open coding analysis. To determine the mean and SD of the overall QOL score and 4 subscale scores, the SPSS software, version 15, was used. The researcher followed the scoring calculations of the QLI provided on the website of the developer ([www.uic.edu/org/qli](http://www.uic.edu/org/qli)). After obtaining approval from the Kuwaiti Disabled Club, 8 Kuwaiti adult participants with SCI participated in this study.

**Results:**

Results from quantitative data revealed that Kuwaiti survivors with SCI had low scores in QOL measurement. The overall QLI score was 12.69 out of 30. The four QOL subscales also resulted in low scores, ranging from 10.46 to 15.56 out of 30. Qualitative data led to the emergence of seven themes: 1) role change; 2) participation restrictions; 3) social unacceptance; 4) psychosocial issues; 5) ways of overcoming injury; 6) dissatisfaction with support systems; 7) faith.

**Conclusions:**

This study showed that Kuwaitis with SCI had poor QOL. Possible components of QOL could include social support, accessibility, government support, and cultural values. To allow Kuwaitis with chronic conditions to experience good QOL, long term-rehabilitation, and psychosocial follow-up services are recommended.

*Key Words: SCI; QOL; Adaptation*

*Funding Agency: None*



**Allied Health**

*Category: Undergraduate*

**11**

**Prevalence of Urinary Incontinence in Kuwait**

Al-Sharrah S, Laire A, Al-Fadli H, Al-Qallaf A, \*Hassan N

Department of Physical Therapy, Faculty of Allied Health Sciences, Kuwait University

**Introduction:**

Urinary incontinence (UI) is a condition which significantly affects the social and economic aspects of a population. Approximately 40-60% of the world's population suffer from this condition impacting the quality of life of the individual. The extent of the problem is not known in Kuwait. Objective: to determine the prevalence rate of UI among the population in Kuwait.

**Methods:**

1, 300 self-administered questionnaires were distributed at selected locations around Kuwait including poly clinics, hospitals, public locations such as malls, health clubs, and different faculties at Kuwait University amongst others.

**Results:**

536 females and 241 males participated in the study (response rate 59.3%). Average age for females was 31.7 years and 33 years for males. Mean BMI was 26.64 for females and 27.12 for males. 53.7% of females reported symptoms of incontinence with 37.5% being stress incontinence, 31% urge incontinence and 19% mixed incontinence. 24.9% of males reported symptoms of incontinence with 17% urge incontinence, 13.3% stress incontinence and 7.5% mixed incontinence.

**Conclusions:**

Results from this study correspond with results from international studies indicating that UI impacts the lives of many people in Kuwait. There are many methods in dealing with this issue that need to be addressed to the public including education and prevention.

*Key Words: Urinary Incontinence; Prevalence; Stress Incontinence*

*Funding Agency: None*



**Allied Health**

Category: Undergraduate

12

**Low Back and Pelvic Girdle Pain During Pregnancy in Kuwait: Prevalence and Risk Factors**

\*Hassan N, Salem M, Dashti F, Al-Sharrah S, Kalakh S, Al-Rashidi R

Department of Physical Therapy, Faculty of Allied Health Sciences, Kuwait University

**Introduction:**

Pregnancy is a time of wonder, happiness and joy. However, it may also be a time of pain and suffering. Pregnant women undergo numerous physiological and structural changes that may result in low back pain (LBP) and/or pelvic girdle pain (PGP). Approximately 50%-70% of women will experience LBP/PGP which may persist for more than 3-10 years after delivery impacting their everyday lives. The extent of this problem has not been studied in Kuwait. Objectives. To determine the prevalence and risk factors of LBP/PGP during pregnancy in Kuwait.

**Methods:**

In a cross-sectional study, 400 self-administered questionnaires were distributed to pregnant women at OBGYN clinics and hospitals.

**Results:**

280 pregnant women completed and returned the questionnaire giving a response rate of 70%. Mean age was 29.5 years, mean BMI was 29.69. Of the respondents, 90% reported experiencing LBP/PGP with their current pregnancy, 78.8% reported having a history of menstrual pain, and 58.7% reported having previous episodes of LBP/PGP. Fifty nine percent of respondents reported experiencing LBP/PGP during previous pregnancies, 42.8% reported that their activities of daily living were disrupted due to pain. Risk factors included previous history of back pain ( $p=0.00$ ), LBP/PGP in a previous pregnancy ( $p=0.01$ ), and pregnancy in the third trimester ( $p=0.02$ ).

**Conclusions:**

The high prevalence rate found in this study may be due to the sedentary lifestyle of women in Kuwait while having pain in the third trimester may be due to the large size of the abdomen allowing for stresses on the lower back and pelvis. Findings from this study emphasizes the importance of educating pregnant women about the risk factors and methods for controlling pain during the pregnancy period, as well as the importance of maintaining an active and healthy lifestyle. Further research is needed to identify methods of preventing or reducing the intensity of LBP/PGP during pregnancy.

*Key Words: Pregnancy related; Low back pain; Pelvic girdle pain*

*Funding Agency: None*



**Allied Health**

*Category: Clinical*

13

**Low Back Pain in Nursing Staff: (Understanding and Prevention)**

\*Sayed A, Al-Shami NS

Physical Therapy Department, Jahra hospital

**Introduction:**

The aim of this study was to investigate the incidence of Low Back Pain (LBP), associated with skeletal pain, to understand possible risk factors for LBP and to investigate the actual implementation of LBP prevention among nursing staff in Jahra hospital with a questionnaire.

**Methods:**

500 Nurses took part in the survey with distribution in all the departments of the hospital in appropriate gender ratio. They received the questionnaire directly from the Staff Development Unit (SDU). 400 nurses (80%) completed the questionnaire, 65(13%) did not return and 35(7%) were incomplete.

**Results:**

72% of the subjects had experienced LBP and 28% had not. 85% of those who had LBP acquired it after employment in Kuwait and 15% had before employment. The major risk factors given for LBP in nurses were prolonged standing, lifting heavy objects, bending, and patients care. The degree of LBP in visual analog scale (VAS) was moderate degree of pain. The associated skeletal pain was more common in shoulder, neck, knee and elbow regions. The rate of those taking preventive measures is higher among subjects with LBP (60%) than in those without (40%). The most common preventive methods used were use of proper body mechanics, proper ways of caring, giving patient care in pairs, doing exercises to prevent LBP, improving general fitness and use of back supports.

**Conclusions:**

The prevalence of LBP is high in nursing staff in Jahra hospital, Most of the subjects began using preventive measures after LBP had already started. It is important for nurses to learn the best way to prevent LBP and relieve pain. Physical therapists play an important role in teaching and promoting the prevention of LBP.

*Key Words: Low Back Pain; Nursing Staff; Physical therapists*

*Funding Agency: None*



**Anaesthesiology**

Category: Graduate (Resident)

14

**Technique of Anesthesia for CS Audit in Maternity Hospital**

\*Alfoudri H, Almatouq S, Alrefaei A, Mlechkova L

Department of Anesthesia and Intensive care, Maternity Hospital, Kuwait

**Introduction:**

The steady increases in the cesarean section (CS) rates are a global concern. This alongside the higher risk of maternal morbidity and mortality of CS carried by General Anaesthesia (GA) highlights the importance of performing Regional Anaesthesia (RA) for this procedure. In view of the above we decided to carry out an audit of our current practice regarding the type of anaesthetic performed for CS in the Maternity Hospital in Kuwait. The standard of our audit is obtained from Raising the Standard document published by the Royal College of Anaesthetists website in the United Kingdom. The current recommendation is to achieve an overall target of >90% of CS performed under RA. The aim of our audit is to identify our current practice and compare it to the international standard and implement change if necessary.

**Methods:**

The data was collected retrospectively. The Audit covered a 12months period from December 2008 to November 2009. The data collected included the total number of deliveries, the total number of CSs, and the type of anaesthetic performed.

**Results:**

The total number of deliveries in the Maternity Hospital in Kuwait during the one year Audit is 10832 deliveries. The rate of CS is 28.08%. The rate of CS done under GA is 22.72% and the rate of CS done under RA is 77.28%.

**Conclusions:**

The current rate of 77.28% shows a dramatic improvement compared to few years ago. However we are still beyond the set recommendation. Common reasons for failure to reach the standards include failure of regional block, poor communication between staff and maternal requests for GA. The latter is likely due to poor patient awareness of the risks of GA and misconception regarding the risks with RA. More effort should be made to improve patient education and staff training and communication.

*Key Words: Cesarean; Anesthesia; Regional*

*Funding Agency: None*



**Anaesthesiology**

*Category: Clinical*

**15**

**Comparing Entropy and the Bispectral Index in Anesthetized Gynecological Patients.**

\*Elzeini MN, Khalid A, Eltaher EA, Bakry MHM  
Maternity Hospital, Sabah Area, MOH Kuwait

**Introduction:**

Objective. ENTROPY™ is a new anesthetic depth monitor based on the analysis of the EEG signal. Our aim has been to evaluate surgical anesthesia depth of intubated surgical gynecological patients by the Bispectral index and ENTROPY™, and to analyse the correlation between these variables.

**Methods:**

Depth of anesthesia was evaluated during induction then every 10 min for a 1 h period in 20 paralysed intraoperative gynecology, intubated patients. A 5 min steady-state period was allowed before each assessment. Both the Bispectral index and the Entropy parameters Response Entropy (RE) and State Entropy (SE), were collected.

**Results:**

Mean values for SE, RE and BIS were  $49 \pm 31$ ,  $61 \pm 18$ , and  $63 \pm 17$  respectively. Significant correlation was found between the three variables .

**Conclusions:**

ENTROPY™ (SE-RE)and BIS values correlate significantly in anesthetized intraoperative gynecological. ENTROPY™ appears to be more sensitive than BIS for the assessment of depth of anesthesia in this context.

*Key Words: Entropy; Bis; Depth of anesthesia*

*Funding Agency: Maternity hospital*



**Anatomy**

*Category: Basic Sciences*

**16**

**Effects of Food Preservative (Sodium nitrite) on the Pancreatic Islets of Adult Male Albino Rat: A Histological and Immunohistochemical Study.**

\*Mohamed NA

Department of Histology, Faculty of Medicine, Assiut University, Assiut, Egypt.

**Introduction:**

Food preservatives are considered to be one of the difficult problems in food industry. Sodium nitrite is a food color fixative and preservative for meats and fish. In this study, the aim of work is to evaluate the histological effects of this substance on the pancreatic islet of adult male albino rat after long- term exposure.

**Methods:**

A total number of 60 male albino rats were used. They were divided into two group. First group:include 20 rats and served as a control. Second group: include 40 rats and served as an experimental group, they were given sodium nitrite in a dose of 2 mg/kg/bwt for 3 months. Animals were sacrificed by decapitation after. Specimens were obtained from the pancreas and processed for light and electron microscopy.

**Results:**

Long term exposure to sodium nitrite disrupted the normal histology of the pancreatic islets. Areas of degeneration with dilatation of the blood sinusoids were observed. The islets showed a weakly positive immunoperoxidase reaction for insulin. There was a significant decrease in the number of pancreatic islets B-cells than the control, as evidenced by statistical analysis. Data are presented as the mean $\pm$ SD, and groups of data were compared using student's t test. B-cell had condensed nucleus. The cytoplasm showed destructed rough endoplasmic reticulum and mitochondria. B-cell secretory granules revealed empty cores.

**Conclusions:**

Exposure to sodium nitrite has got many toxic effects on the pancreas of adult albino rats. So all food preservatives, should be subjected to appropriate toxicological testing and evaluation.

*Key Words: Histology; Immunohistochemistry; B-cells*

*Funding Agency: None*



**Anatomy**

*Category: Clinical*

17

**Coeliac Plexus Block for Palliative Management of Advanced Abdominal Cancer.**

\*Singh RKA, Ammar MH, Mallick PN, Taqi S, Senthilnathan TA, Sherif WRA  
Department of Anaesthesia & ICU, Al Jahra Hospital. Kuwait.

**Introduction:**

The coeliac plexus block (CPB) is performed to relieve intractable abdominal cancer pain. The authors express how much intractable pain can be relieved by this CPB.

**Methods:**

After obtaining consent 6 adults with advanced abdominal viscera cancer were undergone coeliac plexus block. After getting I/V access and monitoring of vital signs the patients lied prone on table with head and abdomen resting under pillows. The directional guide for bilateral placed needles for coeliac block are the equal sides of flat isosceles triangle formed by connecting the inferior margins of the spines of T12 and L1 with points 7cm lateral from the midline at the lower aspects of 12th ribs. A weal was raised aseptically with 2ml 1% lignocaine at 7cm from midline at lower edge of left 12th rib. Under fluoroscopic guidance a 15cm 22G needle was inserted through this weal at 45° from coronal plane toward the body of L1 till bone is met. Once the body was contacted by needle at a depth of 8 to 10cm it was redirected to walk off lateral part of L1 until it could reach anterolateral part of L1 vertebra as confirmed by the fluoroscopy. It was advanced slowly 1-2cm until sensitive fingertips felt aortic pulsation through needle. Keeping left needle in situ, right-sided needle was inserted in the same manner as in left side and readily advanced to the similar depth. 3ml contrast was injected through needles one after another and fluoroscopy showed the spread of dye along the anterolateral borders of L1. 10ml of 0.25% bupivacaine and 15ml absolute alcohol were injected slowly first through the left-sided needle and then same concentration and amount of bupivacaine and absolute alcohol through right-sided needle.

**Results:**

Patient's age was 44-75yrs, male 3 and female 3. One patient got relieved pain for about 5 months. The rest got relieved pain for 5-65 days without any complication.

**Conclusions:**

Coeliac plexus block is an efficacious procedure for alleviating intractable abdominal cancer pain immediately.

*Key Words: Abdominal cancer pain; Neurolytic technique-bupivacaine; Alcohol*

*Funding Agency: None*



**Anatomy**

Category: Basic Sciences

18

**Restoration of Hippocampal CA3 Dendritic Arborization in Chronically Stressed Rats by Rehabilitation with Predictable Chronic Mild Stress**

\*Rao MS

Department of Anatomy, Faculty of Medicine, Kuwait University, Kuwait.

**Introduction:**

It is well known that chronic restraint stress decrease dentate neurogenesis, induces neuronal dendritic remodeling in rats. These structural changes result in altered intra-hippocampal connectivity. "Predictable chronic mild stress"(PCMS) has been shown to have beneficial effects unlike "unpredictable chronic stress"(UCS). Present study aimed to investigate whether rehabilitation with PCMS after UCS has any beneficial role in restoring neurogenesis and dendritic remodeling.

**Methods:**

Adult Wistar rats were divided into i) Normal control(NC, n=6) group - remained undisturbed in their home cage except for daily gentle handling for five minutes for four weeks, and rehabilitated for four weeks without handling, ii) Unpredictable chronic stress with normal rehabilitation (UCS+Normal rehab, n=6) group - subjected to different types of stress on different days at variable hour for four weeks followed by normal rehabilitation, iii) Unpredictable chronic stress with PCMS during rehabilitation (UCS+PCMS rehab, n=6)group - subjected to stress as in the UCS+ normal rehab group for four weeks. During rehabilitation, they were subjected to daily PCMS, (mild restraint stress, at 10.00AM on all days). After stress and rehabilitation period rats in all groups were anesthetized and killed. Brain removed, processed for Doublecortin immunostaining and Golgi staining. The doublecortin positive neurons in dentate gyrus, dendritic spines and dendritic arborization of hippocampal CA3 neurons were quantified.

**Results:**

There was a significant reduction in neurogenesis, spines, dendritic length, and branching points in UCS+normal rehabilitation group compared to NC group( $P<0.001$  in all parameters). The above parameters were restored in UCS+ PCMS rehabilitation group as there was no statistical difference between this group and NC group( $P>0.05$ ).

**Conclusions:**

These data suggest beneficial effects of PCMS in enhancing neurogenesis and the dendritic arborization, in chronically stressed rats. PCMS may be used as therapeutic measure in treatment of stress related disorders such as depression, post traumatic stress disorder.

*Key Words: Hippocampus; Dentate gyrus; Neurogenesis*

*Funding Agency: None*



**Anatomy**

*Category: Basic Sciences*

19

**Priming and Intrauterine Exposure to Lead Nitrate Induces Multiple Congenital Anomalies in the Rat**

\*Mousa AMA, Al-Fadhli A, Narayana K

Kuwait University

**Introduction:**

Lead is a ubiquitous environmental toxicant known to interact with almost all biological systems. The present study was designed to investigate the embryotoxic effects of lead in the rat.

**Methods:**

Female Sprague–Dawley rats (N=3) were treated with 0, 0.5% and 1.5% of lead nitrate three-week before and during pregnancy, and sacrificed on day 21 followed by intracardiac perfusion with 4% paraformaldehyde, and the fetuses were collected by laparotomy. All the fetuses were observed for morphological defects and different parameters such as fetal weight, the tail length, crown-rump length (CRL) and number of fetuses/mother were documented. Data were expressed as mean + SD for each group and subjected to statistical analysis by the Mann-Whitney ‘U’ test, followed by the Kruskal-Wallis test.

**Results:**

Lead affected the reproductive potential of female rats leading to decrease in number of conception or successful pregnancies. Developmental defects were observed in the fetuses and the abnormalities were of eyes, ear (appeared as smaller than that in the control group or absent on one side), intrauterine growth retardation, webbing of the neck, anterior abdominal wall defects, non-development of the lower part of the body and resorption of fetuses only at 1.5% dose-level, and rare hemorrhagic spots on the body surface were observed. Rarely, phocomelia was also observed in 0.5% dose-level. The body weight of fetuses and number of fetuses/mother were decreased in a dose-dependent manner; whereas, the CRL and the tail length were decreased (P=0.000) in both groups without any intergroup differences.

**Conclusions:**

Lead exposure before as well as during pregnancy results in severe embryotoxicity. Lead exposure also results in decrease in number of fetuses. The major effect on fetuses is the intrauterine growth retardation, and under-development of external features.

*Key Words: Embryotoxicity; Heavy metal; Intrauterine growth retardation*

*Funding Agency: None*



**Biochemistry**

Category: Graduate MSc (Basic Science)

20

**Anticancer Effect of Myrrh a Hidden Gift from the Magi?**

\*Al-Mass A, Benov L

Department of Biochemistry, Kuwait University, Faculty of Medicine.

**Introduction:**

Myrrh (*Commiphora myrrha*) was one of the three gifts offered to Baby Jesus by the Three Wise Men, and has been used as a traditional medication since ancient times. It is believed that Myrrh exerts anticancer activity without harming the healthy tissues, and can kill cancer cells resistant to anticancer drugs. In vitro, antiproliferative activity of *C. myrrha* has been demonstrated on a few cancer cell lines, but the mechanism of its action is unknown. We studied the effects of Myrrh gum on human colon adenocarcinoma LS174T cells, in an attempt to shed light on the mechanism of *C. myrrha* anticancer activity.

**Methods:**

Dry-weight standardized Myrrh gum water extract was used in all experiments. The antiproliferative action of the gum was determined by sulforhodamine B staining assay. Cell viability was assessed by MTT reduction assay. ATP leakage was used as a measure for cell membrane permeability. Morphological changes were followed using Time-Lapse Live Cell Imaging. Apoptosis was determined by flow cytometry after staining with Annexin V-FITC. All experiments were repeated at least three times with 3 - 5 replicates. Results are expressed as means  $\pm$  S. E.

**Results:**

Treatment of LS174T cells with Myrrh gum caused concentration-dependent inhibition of MTT reduction (LD50 5.6 mg/ml), and at 1.08 mg/ml inhibited cell proliferation. These events were preceded by increased membrane permeability and morphological changes. Flow cytometry revealed cell death due to apoptosis.

**Conclusions:**

Myrrh gum exerts strong antiproliferative effect and triggers apoptosis in LS174T cells. These effects appear to be a consequence of the rapid loss of cell membrane barrier functions.

*Key Words: Commiphora myrrha (Myrrh); Anticancer activity; Apoptosis*

*Funding Agency: KU Grant YM13/09; HSC Research Core Facility grant GM 01/01.*



**Biochemistry**

Category: Undergraduate

21

**Construction of RAGE Recombinant Expression Vectors**

\*Mursal B, Sadeq K, Zamoon J

Department of Biological Sciences, Faculty of Science, Kuwait University

**Introduction:**

RAGE (Receptor for Advanced Glycation End products) is a transmembrane protein belonging to the Ig superfamily. It plays a central role in inflammatory diseases, and its malfunction has been directly linked to vascular injury in diabetes. Our long-term objective is to decipher the three dimensional structure of RAGE at atomic resolution using nuclear magnetic resonance spectroscopy (NMR). This should facilitate understanding its biological action.

**Methods:**

To achieve our long-term goal, the first step was to construct plasmid vectors suitable for recombinant protein expression in *E. coli*. Therefore, primers were designed to amplify a RAGE clone from a human cDNA library. Additionally, codon-optimized RAGE primers were also designed for optimum expression in *E. coli*. Various PCR reactions were conducted with these primers. The final amplified products were further digested and inserted into protein expression vectors (pMCSG 7 and pMCSG 9) using LIC (Ligation Independent Cloning) technology.

**Results:**

Both pMCSG 7 and pMCSG 9 expression vectors each containing one of the two RAGE sequences (either human codons or *E. coli*-optimized codons) were constructed and verified by restriction digestion and gel electrophoresis.

**Conclusions:**

The DNA constructs for four expression vectors of RAGE were completed. We shall proceed to use these constructs for trials of test expressions in *E. coli*. The next objective would be to obtain our desired RAGE recombinant protein for further characterization by NMR.

*Key Words: RAGE; Protein Expression; NMR*

*Funding Agency: None*



## **Biochemistry**

Category: Graduate MSc (Basic Science)

22

### **Anti-bacterial Effect of Zn (II) N-Alkylpyridylporphyrins**

\*Mubarak M, Craik J, Benov L

Department of Biochemistry, Faculty of Medicine, Kuwait University

#### **Introduction:**

Photodynamic therapy, an efficient way to destroy tumors and bacterial cells, is based on the use of a photosensitizer and light irradiation. In the presence of molecular oxygen, light activation of the photosensitizer leads to the local production of singlet oxygen and other ROS that damage and kill the target cells. We reported that Zn(II) N-alkylpyridylporphyrins (ZnPs) can act as photosensitizers and can kill antibiotic-resistant pathogenic bacteria. The aim of this study was to compare the efficiency of isomeric ZnPs (ortho, meta, and para) with different peripheral substituents on photodynamic inactivation of a Gram (-) bacterium and to clarify the mechanism of ZnPs' antibacterial action.

#### **Methods:**

Wild type GC4468 strain of E. coli grown overnight at 37°C in LB medium was diluted 200-fold into M9CA medium. ZnPs-induced photo-damage was determined by monitoring cell growth after illumination with visible light. Metabolic activity/viability was assessed by the MTT assay. The efficiency of isomeric ZnPs at different concentrations was evaluated by plating and counting colonies. Light and dark controls were carried out in parallel. Experiments were repeated at least three times in triplicates. Results are presented as mean  $\pm$  S. E. M.

#### **Results:**

Illumination of bacterial cells in the presence of ortho, meta, or para ZnTMPyP demonstrated that 0.5  $\mu$ M ZnTM-4-PyP caused complete inhibition of bacterial growth after 30 min of illumination. The antibacterial efficacy of isomeric ZnPs followed the order: para>meta>ortho and this was in parallel with their accumulation in the cells. The MTT assay showed that compared with para and meta ZnPs, ortho ZnP was the least efficient in inhibiting cell metabolism. None of the ZnPs manifested dark toxicity.

#### **Conclusions:**

Isomeric ZnPs demonstrate high photosensitizing capability and efficiently kill Gram (-) bacteria. The para isomers proved to be the most efficient, presumably due to their high uptake by the bacterial cells.

*Key Words: Photodynamic therapy; Photosensitizer; Antibacterial*

*Funding Agency: Grant YM18/09 from Kuwait University*



**Biochemistry**

Category: Basic Sciences

23

**Cadmium Generates Superoxide Radicals by Interfering with Cellular Respiration**

Thomas M, \*Benov L

Department of Biochemistry, Faculty of Medicine, Kuwait University

**Introduction:**

Cadmium (Cd) is a toxic heavy metal and a common environmental pollutant. Exposure to Cd damages kidney, liver, lungs, brain, testes, heart, and central nervous system. Reactive oxygen species (ROS) are often implicated in Cd toxicology. Cd, however, is redox inactive; therefore, ROS should be produced by an indirect mechanism. Unambiguous evidence for ROS production by Cd is scarce, and the mechanism of Cd-induced ROS production is unclear. Here we show that Cd affects the electron transport chain (ETC), compromising cell respiration and ATP production, and stimulating one-electron reduction of oxygen to superoxide.

**Methods:**

Wild-type E. coli and mutants carrying deletions of cytoplasmic superoxide dismutases (SOD), and of the soxRS regulon were used. Effect of Cd on ETC was tested on respiring inverted inner membrane vesicles. Respiration was monitored by oxygen consumption using a Clark-type electrode, and superoxide production was assayed by cytochrome C reduction. ATP was determined with an ATP Bioluminescent Kit. All experiments were repeated at least three times with 3 - 5 replicates. Results are expressed as means  $\pm$  S. E.

**Results:**

Compared to the wild-type, cells lacking protection against superoxide radical (SOD-deficient and soxRS-deficient) were more sensitive to Cd. Cadmium restrained the aerobic growth of such cells, and suppressed cellular respiration and ATP production. Experiments with membrane vesicles showed that Cd inhibits electron transfer in the ETC. This leads to accumulation of reduced precursors, which in turn deliver an electron directly to molecular oxygen, converting it to superoxide anion radical.

**Conclusions:**

Irrespective of its redox inactivity, Cd is capable of producing superoxide radicals indirectly, by suppressing the electron transport in the ETC, and diverting the electron flow towards monovalent reduction of oxygen. This hampers energy production and causes oxidative cell damage.

*Key Words: Cadmium; Oxidative stress; Superoxide*

*Funding Agency: Grant MB03/07 from Kuwait University*



**Biochemistry**

Category: Basic Sciences

24

**Bacteria-based Bioassay for Detection of Prooxidant Environmental Pollutants**

\*Thomas M, Benov L

Department of Biochemistry, Faculty of Medicine, Kuwait University

**Introduction:**

There is substantial evidence from epidemiological studies that the pathology of many 'modern' diseases is linked in part to environmental pollution. Several studies suggest that an imbalance in cellular oxidant/antioxidant status is a critical underlying factor. Many environmental pollutants including heavy metals and various organic contaminants, without being prooxidants in vitro, are capable of shifting the oxidant/antioxidant balance of the cells, thus triggering pathological responses. It is difficult to assess the biological impact of mixtures of environmental pollutants because of their complexity. We here propose a bacteria-based bioassay, able to detect toxic chemicals with potential prooxidant activity.

**Methods:**

The strains of *E. coli* used were as follows: GC4468 = parent; QC1799, *sodA sodB*-deficient; and QC1817, *sodA sodB*-deficient, *soxRS*-deficient. Diluted overnight cell cultures were grown in 96-well microtiter plates at 37°C, shaken at 200 RPM. Growth was monitored by measuring A<sub>600nm</sub> and viability was determined by plating and enumerating colonies. Experiments were repeated at least three times with 3 replicates. Results are expressed as means ± S. E.

**Results:**

Compared to the parental strain, the superoxide dismutase (SOD)-deficient, and the SOD- and *soxRS*-deficient mutants were more sensitive to the presence of prooxidants in the growth medium. Growth inhibition of the mutants and the parent was compared to determine prooxidants. The assay was tested with known prooxidant toxins (heavy metals, redox-cycling compounds, metabolites) and was used to determine pollutants in seawater collected from different parts of Kuwait's coastal zone.

**Conclusions:**

Bacterial mutants with deleted genes coding for antioxidant defense systems can serve as a sensitive and specific bioassay system for the detection of environmental pollutants and chemicals inducing oxidative stress.

*Key Words: Environmental pollutant; Oxidative stress; Prooxidant*

*Funding Agency: Grant MB03/07 from Kuwait University*



**Biochemistry**

Category: Basic Sciences

25

**Laboratory Investigation Learning Performance of Kuwait Health Science Students**

\*Srikumar TS, Gholoum M, Khanafer R, Thakkar J, Sequeira F, Jayanthi E, Al-Rustom M, Al-Amin Z, Verghese L, Pariyani S, Mehdawi H, Al-Mass AB, Al-Rashidi B, Shubair M.  
Department of Biochemistry, Kuwait University, Faculty of Medicine

**Introduction:**

This study is based on the results of 'Cholesterol Measurement and Lipoprotein Analysis' - a practical teaching of the Foundation Biochemistry Block, Phase – II Medical Curriculum.

Aim: Understand the aptitude of students to correlate the theories learned from lectures with laboratory analysis of small amount of samples using scientific principles.

**Methods:**

As a part of laboratory investigation learning procedure, second year health science students (44 males; 84 females) collected non-fasting blood samples from their finger tips in the morning in heparinized capillary tubes. Plasma cholesterol concentration was analyzed enzymatically and lipoproteins were separated by electrophoresis of plasma on a cellulose-acetate membrane under standard conditions. Accuracy achieved by the students for plasma cholesterol analysis was checked by inclusion of a normal sample and the analytical data deviated by only  $\pm 7\%$  from the reference value.

**Results:**

Students feedback indicated that 70 – 85% students learned a) some important principles and diagnostic techniques that are helpful for understanding clinical laboratories, b) how essential is understanding the structures and properties of bio-molecules for development of strategy and approach for laboratory diagnostic tests, c) to work confidently in the laboratory, d) how to build better understanding of medical biochemistry, and e) how to stimulate interest in experimental medical science.

**Conclusions:**

The outliers were discussed regarding possible causes during practicing laboratory investigations. Students were able to learn how and why to apply three enzymes for cholesterol analysis, with respect to the molecular structures and properties of lipid. Feedback of students indicated their positive approach towards good laboratory investigation practice. This experiment would serve as a scientific foundation for students to understand the clinical disciplines taught in the next Phase-II curriculum.

*Key Words: Laboratory investigation; Learning performance; Kuwait Health Science Students*

*Funding Agency: None*



**Community Medicine**

Category: Undergraduate

26

**Modifiable Risk Factors of Stroke in Kuwait**

Al Haddad M, Al Jazzaf S, Al Qodmani L, \*Al Shatty D, Omar S, AL Baker O, Moussa MA  
Department of Community Medicine, Kuwait University, Faculty of Medicine

**Introduction:**

Objectives: To evaluate the association of stroke with sociodemographic characteristics, behavioural factors and co-morbid conditions.

**Methods:**

A pair-matched case-control study was conducted during October 2009. Seventy-five stroke cases and 75 controls, which were pair-matched on gender and age, were recruited from inpatient and outpatient departments of nine hospitals in Kuwait. The inclusion criteria for cases comprised patients aged 18 years and above, who had a stroke within the past one year and patients with heart diseases were excluded. Data were collected by interview using a questionnaire. The McNemar chi-square and Bowker tests were used to assess the significance of the difference in case of binary and polychotomous variables, respectively. The multiple conditional logistic regression analysis was used to adjust for confounding between variables.

**Results:**

Stroke patients were more likely to be diabetics and with history of cardiovascular diseases, atherosclerosis and dyslipidemia. There was significant difference in the proportion of reported hypertension (78.7% in cases compared to 38.7% in controls, OR=5.28,  $p < 0.0001$ ). There was no significant difference in smoking status between cases and controls (Bowker's test,  $p = 0.630$ ). Cases reported consuming less fresh fruits and more fatty foods than controls. Using the multiple conditional logistic regression, the identified significant modifiable risk factors, ranked from most to least, were hypertension (adjusted odds ratio, OR=9.31,  $p < 0.001$ ), not consuming fresh fruits (OR=6.58,  $p = 0.004$ ) and lack of physical exercise (OR= 4.58,  $p = 0.035$ ).

**Conclusions:**

Hypertension, less consumption of fresh fruits and lack of physical exercise were significant modifiable risk factors for stroke. Based on these results, it is recommended that health authorities may adopt strategies to promote awareness toward stroke prevention. Also, a longitudinal prospective study is recommended to identify other risk factors.

*Key Words: Stroke; Risk factors; Kuwait*

*Funding Agency: None*



**Community Medicine**

Category: Undergraduate

27

**Hand Hygiene Practices among Nursing Staff in Public Secondary Care Hospitals in Kuwait: Self-Report and Direct Observation**

\*Al-Wazzan B<sup>1</sup>, Salmeen Y<sup>1</sup>, Al-Amiri E<sup>1</sup>, Ala'a Abul<sup>1</sup>, Al-Taiar A<sup>1</sup>

<sup>1</sup> Department of Community Medicine, Faculty of Medicine, Health Science Center, Kuwait University; <sup>2</sup> Department of Surgery, Faculty of Medicine, Health Science Center, Kuwait University

**Introduction:**

Objective: to assess the compliance with hand hygiene guidelines among nursing staff in secondary care hospitals in Kuwait.

**Methods:**

A cross-sectional study was conducted through direct observation using Lewisham observation tool and self-administered questionnaire six major public secondary care hospitals in Kuwait. Only patients' care activities that are described as dirty contacts by Fulkerson scale were considered as indications for hand hygiene while any attempt for hand hygiene was considered as compliance. Questionnaire was distributed to nursing staff at each ward immediately after conducting the inspection.

**Results:**

Over 204 observation sessions, a total of 935 opportunities and 312 hand hygiene practices were observed, with overall compliance of 33.4%. Observed compliance showed significant variation between different ward categories from 55% in medical wards to 14.7% in emergency wards. In self-reported compliance, out of 550 questionnaire distributed, 454(82.5%) were completed and returned. More than 90% of nursing staff reported they always wash their hands upon practicing patients' care activities. Nurses consistently reported higher compliance after conducting patients' care activities rather than before practicing care activities.

**Conclusions:**

Observed hand hygiene compliance among nursing staff in secondary care hospitals in Kuwait is poor. High self-reported compliance may reflect high level of awareness about hand hygiene but may also suggest that improving compliance through increasing awareness has probably reached saturation.

*Key Words: Hand hygiene; Nurses; Hospital*

*Funding Agency: None*



**Community Medicine**

Category: Undergraduate

28

**Obesity and Academic Achievement in Fifth-Grade Students in Male Public Schools in Kuwait**

\*Abdelalim AM, Ajaj NI, Alyousefi MK, Al-Tmimy AM, Al-Rashaidan SA  
Kuwait University, Faculty of Medicine

**Introduction:**

Studies that have investigated the impact of childhood obesity on students academic performance showed controversial findings. In particular, the association between childhood obesity and student academic performance remains mostly unknown among young children at primary schools.

Objectives: This study aimed to assess the prevalence of obesity among fifth grade students at male public school in Kuwait and explore the association between obesity and students academic performance.

**Methods:**

A cross-sectional study was conducted on randomly selected students at fifth grade in 28 male public schools from all governorates in Kuwait. Weight and height were measured and recorded for each student using standard protocol. Data on students academic performance and socioeconomic status were extracted from the school records. Overweight was defined as more than or equal to eighty fifth BMI percentile, while obesity was defined as more than or equal to ninety fifth BMI percentile using growth charts provided by the Centre for Disease Control and Prevention (CDC, 2000).

**Results:**

Out of 1213 randomly selected students, 147 (12%) were absent. The overall prevalence of childhood obesity and overweight among fifth grade students in male public schools was 186 (17.4%; 95% CI: 15.2% - 19.9%) and 232 (21.8%; 95% CI: 19.3% - 24.4%) respectively. The prevalence of obesity and overweight seems to be significantly higher in the capital in comparison to other governorates. There was no significant association between BMI categories and students academic performance after adjusting for parental education in multivariate analysis.

**Conclusions:**

The current prevalence of childhood obesity in Kuwait highlights the need for preventive interventions which seem to be fruitful in western countries. There was no evidence for association between obesity and students academic performance which may reflect the complex relationship between students performance and health.

*Key Words: Obesity; Childhood; Performance*

*Funding Agency: None*



**Community Medicine**

Category: Undergraduate

29

**Kuwait University Students' Knowledge about Transmission Symptoms and Prevention of Sexually Transmitted Diseases**

\*Abbas A, Al-Rashed F, Al-Arabi T, Al-Abbasi S, Kalandar A, Akhtar S

Department of Community Medicine & Behavioral Sciences, Faculty of Medicine, Kuwait University

**Introduction:**

The main objective of this study was to assess the knowledge level about common sexually transmitted diseases (STDs) which include AIDS, syphilis and gonorrhoea among Kuwait university students in six different non-medical colleges. We also aimed to evaluate the association between the socio-demographic variables with the level of knowledge.

**Methods:**

A cross-sectional study was conducted among 1237 males and females students aged 17-25 years in six different non-medical colleges of Kuwait University. A self-administered questionnaire was used to collect data on socio-demographic variables, general knowledge, modes of transmission, symptoms and methods of prevention of STDs. Bivariate analysis was performed for all socio-demographic factors to evaluate their associations with knowledge level.

**Results:**

The prevalence of poor general knowledge score about common STDs was 44.3%. In our study, socio-demographic factors significantly associated with poor knowledge were age (OR=1.7; 95% CI: 1.4-2.2), gender (OR=1.9; 95% CI: 1.5-2.4), being in college of Art (OR=1.7; 95% CI: 1.2-2.5), being resident in Capital (OR=1.5; 95% CI: 1.1-2.1), or if the student never lived abroad more than three months (OR=1.3; 95% CI: 1.1-1.7).

**Conclusions:**

Alarming gaps in knowledge about common STDs were detected in this study. Based on the results of this study, we emphasize the need to educate young adults and equip them with the appropriate information related to signs, symptoms, modes of transmission and ways of prevention of common STDs. Such knowledge may enable them to protect themselves against STDs and encourage them to seek medical attention as needed.

*Key Words: STDs among teenagers; Awareness of STDs; Kuwait University Students*

*Funding Agency: None*



**Community Medicine**

Category: Basic Sciences

30

**Adulteration of Saffron with Carcinogenic Color at Kuwait Market.**

\*Abbas AB, Al-Johar WY, Al-Mufti SA, Al-Owaish RA

Food Chemical Lab., Public Health Laboratories, Ministry of Health, Kuwait

**Introduction:**

Saffron is the most frequently herbs used in Kuwait. Scientists stated that saffron having anticarcinogenic, antimutagenic, and antioxidant like properties. Its price very expensive according to its ISO table score. Adulteration of the cheapest one carried out by different ways specially by mixed with synthetic colors. The uses of banned color have raised the question not only of the quality but also the safety of saffron. Food Safety and Inspection Service (FSIS) does not permit any color in saffron. Ponceau4R is considered carcinogenic in some countries, including the USA, Norway, and Finland, GCC countries and it is currently listed as a banned substance by the U. S. Food and Drug Administration (FDA). Our work determines the prevalence of synthetic color at marketed saffron samples in Kuwait and determine its levels by different techniques.

**Methods:**

A total of 136 of marketed samples, from 3 countries origin, collected during a period of January 2009 to January 2010. Screening test was carried out by official paper chromatography and confirmed, quantify by liquid chromatography. Standard calibration controls, and samples in triplicate, were carried out by each method.

**Results:**

Screening revealed that 60.3% of tested saffron non-fit for human consumption [mainly contain Ponceau 4R (E124) and Erythrosin (E127)], 5.9% was not confirmed [contain Sunset Yellow (E110), tartrazine (E102), carmalum (E122) and Allura Red (E129)], while 33.8% safe. The data confirmed with HPLC with linear calibration graph 20– 200 mg/l, detection limit 5 mg/l, standard deviation 2.5 %, and average recovery was 96 ±2 %. The contaminated saffron ranged from 100 - 200 mg/kg with E124, E127, E102, E110, E122, E129 .

**Conclusions:**

The use of Paper chromatography is successful and very cheap as screening for color analysis, but for quantitation HPLC is highly precise. Most of Kuwaiti marketed samples are almost contaminated with banned color mainly E124 which induced significant increases in migration of nuclear DNA in glandular stomach, bladder and colon tissue, as mentioned in toxicity literature.

*Key Words: Saffron adulteration; Color analysis; Chromatography*

*Funding Agency: None*



**Community Medicine**

Category: Graduate PhD (Basic Science)

31

**Diabetes-related Symptom Distress and its Association with Depression in Type 2 Diabetic Patients**

\*Alshatti TS

Department of Psychology, Kuwait University, Faculty of Social Sciences

**Introduction:**

Evidence indicates that depression is linked to the development and worsening of diabetes. This study aims at examining the level of diabetes-related symptom distress and its association with depression in type 2 diabetic patients in Kuwait. Also, the relative contributions of diabetes-related symptoms to depression were evaluated.

**Methods:**

Diabetes-related symptom distress and depression was assessed approximately 24 months after the diagnosis of type 2 diabetes, with the Arabic version of Type 2 Diabetes Symptom Checklist (DSC-R) and the Arabic version of Beck Depression Inventory-II (BDI-II), respectively. The Cronbach's alpha coefficients of the DSC-R is (0.94) and of the BDI-II is (0.89) denoting good internal consistency for both scales. The data were analyzed using SPSS-V. 17.

**Results:**

The study sample consisted of (223) Kuwaiti subjects, including (107) males and (116) females of whom were identified as having type 2 diabetes in Mubarak Al-Kabeer hospital and in Kuwait Diabetes Society clinics. Mean age of the sample was 47 years. Patients had a mean body mass index (BMI) of (31.48) and mean hemoglobin A1c (HbA1c) of (10.40). Patients reported significantly greater burden of psychological, neuropathy, sensation, fatigue, hyperglycemia, cognition, cardiovascular, vision, hypoglycemic, & pain respectively as a diabetes-related symptom distress. The mean symptom distress (42.55) with no significant gender differences ( $t= .914$ ,  $p>0.05$ ). Moreover, depression was significantly lower in men ( $t=3.582$ ,  $p>0.001$ ). Depression was significantly positive related with the total symptom distress score (standardized coefficient  $\beta=0.39$ , 95% CI 3.83- 6.21).

**Conclusions:**

Diabetic patients were bothered more by diabetes-related symptom distress. More symptom distress is associated with increased depression in diabetic patients. The DSC-R performed well at predicting depression.

*Key Words: Type 2 diabetes-related symptom; Depression; Kuwait*

*Funding Agency: None*



**Community Medicine**

Category: Undergraduate

32

**Knowledge, Misconceptions, and Future Intentions Towards Breastfeeding  
among Female Students in Kuwait University**

Ebrahim B, \*Al-Enezi H, Al-Turki A, Al-Turki M, Al-Rabah F, Al-Taiar A  
Department of Community Medicine, Kuwait University, Faculty of Medicine

**Introduction:**

Knowledge, misconceptions, and future intentions towards breastfeeding among young adult females or university students remain unknown in Kuwait.

**Methods:**

A descriptive cross-sectional study was conducted on a conveniently selected sample of female seniors at nine colleges in Kuwait University. Data were collected using a simplified self-administered questionnaire that was pilot tested.

**Results:**

Out of 1250 questionnaires distributed, 1106(88.5%) were completed and returned. Although most students recognized the benefits of breastfeeding for infants and mothers, only few are aware of exclusiveness of breastfeeding in the first few months of life. Misconceptions on reasons to stop breastfeeding were common as 66%, 60% and 55% of participants believed mothers should temporarily stop breastfeeding if they have fever, skin rash, or sore throat respectively. Over one third of the participants believe that mothers should temporarily stop breastfeeding if they take paracetamol while more than 20% think that mothers should stop breastfeeding if the child has diarrhea, vomiting or skin rash. Less than 5% support breastfeeding in public places, but 38% support breastfeeding in female prayer rooms, which are widely distributed in public places. Intention to breastfeed was (87.0%) with (95%CI:84.9%-88.9%). Factors significantly associated with intention to breastfeed were exposure to breastfeeding in the past two years, perceiving breastfeeding as a religious duty, and knowledge on breastfeeding.

**Conclusions:**

The majority of female students are aware of benefits of breastfeeding to mother and child but the quality of knowledge is poor. Misconceptions on reasons to stop breastfeeding are common and should be corrected through health education. Breastfeeding in public places has little support amongst participants but most support it in female prayer rooms which are available in all public places in Kuwait and can be used to promote breastfeeding.

*Key Words: Breast feeding; Misconceptions; University students*

*Funding Agency: NONE*



**Community Medicine**

Category: Undergraduate

33

**Elevated Blood Pressure Among Kuwaiti Government Employees: Prevalence, Predictors, And Risk Score Assessment**

\*Qassab G<sup>1</sup>, Abul M<sup>1</sup>, Al-Kandari N<sup>1</sup>, Al-Bloushi S<sup>1</sup>, Moussa M<sup>2</sup>

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

**Introduction:**

Hypertension is a major public health issue. The aims of this study are: to measure the prevalence and predictors of hypertension and prehypertension; use the Framingham Heart Study (FHS) risk score to identify Kuwaiti participants at high risk and we developed a tool to estimate an individual's absolute risk of developing prehypertension.

**Methods:**

Using two stage cluster sampling method, a cross-sectional sample survey was conducted on 514 Kuwaiti employees from two public authorities. Data were collected through a self administered questionnaire, blood pressure (BP) was measured by one researcher according to the JNC 7 recommendations; height, weight and BMI were also measured. Multiple logistic regression model was used to compute the adjusted odds ratios for the predictors such as age, gender, BMI, cigarette smoking and parental hypertension, after fixing the confounding between them. Kuwaiti subjects were classified according to the FHS risk score to predict the risk of hypertension.

**Results:**

The prevalence of hypertension was 10.3% in the Kuwaiti working population aged 20-59 years, out of them 2.3% were discovered during the study. The prevalence of prehypertension was 56.6%. According to the FHS risk score, 29.9% of the participants were estimated to have a high risk for developing hypertension which is lower than the risk of the Framingham participants (47.0%). Significant associations were found between elevated BP and age, gender, body mass index and smoking. Using the multiple logistic regression model, the most influential predictors for elevated BP were gender ( $p < 0.001$ ), BMI  $> 30$  Kg/m<sup>2</sup> ( $p = 0.005$ ), current cigarette smoking ( $p = 0.041$ ), and parental hypertension ( $p = 0.047$ ).

**Conclusions:**

This study provides a tool for estimating individual risk for developing prehypertension. This would enable health authorities to organize preventive and intervention programs that would reduce the prevalence of hypertension.

*Key Words: Hypertension; Framingham Heart Study; Kuwaitis*

*Funding Agency: None*



**Community Medicine**

Category: Undergraduate

34

**Knowledge, Attitudes and Practices in regard to the Swine Flu A(H1N1) Pandemic in Kuwait**

Al-Ajmi AH<sup>1</sup>, AbdulRahem HA<sup>1</sup>, Hussein HA<sup>1</sup>, Al-Mahmoud SY<sup>2</sup>, Al-Sabah RN<sup>2</sup>, Al-Sharhan LA<sup>1</sup>,  
\*Al-Rushaid RA<sup>1</sup>, Bin-Shaibah ME<sup>1</sup>

<sup>1</sup>Second Clinical Program, Kuwait University, Faculty of Medicine; <sup>2</sup>Department of Community Medicine, Kuwait University, Faculty of Medicine

**Introduction:**

Swine flu A(H1N1) is an influenza A virus that was recently rediscovered in Mexico in April 2009 spreading worldwide becoming a pandemic. Swine flu is almost similar to seasonal flu in signs, symptoms, modes of transmission, and treatment. In Kuwait, WHO guidelines were implemented in order to prevent the spread of swine flu A(H1N1). Perception of the disease among people differs due to many reasons. Our research aims to obtain a clear understanding about the knowledge, attitudes, and health-related practices toward the swine flu A(H1N1) pandemic in Kuwait. This information can be used by the Ministry of Health of Kuwait to improve the health promotion campaign regarding the swine flu (H1N1) pandemic in Kuwait.

**Methods:**

This cross-sectional study design targeted the population of Kuwait. Twelve co-operative societies and four big department stores were selected through random sampling. 1508 participants were chosen with a response rate of 64.04%. A self-administered questionnaire (35 questions) was used. Chi-square analyses and descriptive statistical measures were performed.

**Results:**

The majority were knowledgeable about symptoms, transmission, prevention, treatment, and groups at greater risk for complications. However, behavior change was minimal. Although most people believed they are at risk of infection, the majority assessed it to be low.

**Conclusions:**

Majority of participants were knowledgeable about swine flu A(H1N1). Most of them trust the Ministry of Health in Kuwait to provide them with appropriate treatment if they got infected. The majority did not exhibit behavior change in response to the pandemic.

*Key Words: Swine Flu; Knowledge; Kuwait*

*Funding Agency: None*



**Community Medicine**

Category: Undergraduate

35

**Level of Job Satisfaction and Job Stability among Senior Medical Staff Working in Kuwait Public Hospitals**

\*Al-Othman D<sup>1</sup>, Al-Qahtani J<sup>1</sup>, Husain E<sup>1</sup>, Suresh A<sup>1</sup>, Shukur M<sup>1</sup>, Doi S<sup>2</sup>, Bouhaimed M<sup>1,3</sup>

<sup>1</sup>Department of Community Medicine and Behavioural Sciences, Kuwait University, Faculty of Medicine; <sup>2</sup>Department of Medicine, Kuwait University, Faculty of Medicine; <sup>3</sup>Department of Surgery, Kuwait University, Faculty of Medicine;

**Introduction:**

Research shows that job satisfaction is associated with job performance and assuring it is essential from many aspects including the humanitarian and ethical ones. Objectives: To assess the level of job satisfaction and stability with identification of reasons of dissatisfaction among senior medical staff working in Kuwait governmental hospitals.

**Methods:**

A cross-sectional survey was conducted in 2009. Data was collected through questionnaire submitted in a sealed box.

**Results:**

A total of 241 senior doctors participated. General satisfaction was reported by 74%. Further principle component analysis identified 10 domains of satisfaction and stability. Workload and stress had the lowest satisfaction score while relationships with patients and other staff members had the highest. There were gender differences in satisfaction with hospital resources, and job standing and security. Non-Kuwaitis were less satisfied with finance than Kuwaitis. For most of the domains, satisfaction increased with age. There was no significant difference in satisfaction between hospitals or between specialties. In general, as the number of years of medical experience in Kuwait increases, the level of satisfaction with professional development and finance significantly increases. Those holding an academic position in Kuwait University did differ from those who did not. Specialists showed the lowest levels of stability across ranks. Pediatricians were the most stable among specialties. With the logistic regression, dissatisfaction with 3 out of the 10 domains showed a statistically significant association with instability.

**Conclusions:**

To promote the retention of physicians in the government sector in Kuwait, our results suggest that finance-related dissatisfaction, leadership-related dissatisfaction, and workload and stress-related dissatisfaction should be looked at carefully by top Ministry of Health leadership.

*Key Words: Job Satisfaction; Job Stability; Senior Medical Staff*

*Funding Agency: None*



**Community Medicine**

Category: Graduate MSc (Basic Science)

36

**Anxiety and General Health Status**

Al-Gharib F, Al-Rifae Y, Al-Otaibi M, \*Al-Senafy A, Al-Kandery M  
Department of Community Medicine and Behavioral Sciences

**Introduction:**

Objectives: (a) To test the hypothesis that higher levels of anxiety in Kuwait University students are related to lower scores on indices of general health status, (b) to ascertain how anxiety and health status scores vary as a function of different diagnostic categories, and © to test if female groups have higher mean levels of anxiety than male groups and correspondingly lower general health status scores.

**Methods:**

Cross-sectional study was conducted on a total of 1100 students in Jabriya, Khladiya, and Shuweikh campuses of Kuwait University. The study employed three separate questionnaires: a questionnaire that asked a few questions concerning the student's personal information, another which provided the different indexes of general health status and one that assessed the anxiety level.

**Results:**

Significant correlations were found between the four main variables: the General Anxiety Factor (GAF), General Health Status (GHS), Diagnosed Illnesses Health Status (DIHS) and the Self-reported Health Status (SRHS); the highest correlation (-0.53) was between GAF and GHS. Three different diagnostic categories were found based on the degree of reduction in GHS; the group of illnesses that had the highest reduction in GHS was associated with the greatest increment in GAF. It was also found that females score more in the GAF and they correspondingly have less GHS scores.

**Conclusions:**

Anxiety should be acknowledged to be associated with more morbidity and if addressed early in life this prevent a lot of human suffering and could save finances that now have to be spent to treat individuals who have developed more serious illnesses due to the long term effects of chronic anxiety.

*Key Words: Anxiety; Health Status; Kuwait*

*Funding Agency: None*



**Community Medicine**

Category: Undergraduate

37

**Knowledge, Attitudes and Intentions Regarding Organ Donation in Kuwait**

\*Al-Awadi M, Al-Duaij L, Al-Enzi A, Al-Khalaf A, Buhaimed D, Shah N.

Department of Community Medicine, Kuwait University, Faculty of Medicine

**Introduction:**

The purpose of this study was to assess knowledge, attitudes and intentions regarding organ donation among Ministries Complex employees in Kuwait.

**Methods:**

A total of 613 male and female employees in the Ministries Complex aged 21 years and above were enrolled in a cross-sectional study. Data was collected by using a questionnaire to evaluate knowledge, attitudes and intentions towards organ donation among our study population. The response rate was 87.2%. Data analysis was performed by using cross tabulations and logistic regression models.

**Results:**

About two-thirds of the respondents had heard of organ donation in Kuwait. Only 46.2% of the participants stated that the shortage of organs is a problem in the country. Almost one-fifth of the participants knew someone in need of an organ. About 35% of our study population was willing to consider donating and 33.2% of the participants reported that they would allow a close relative to donate. A large percentage (65.6%) of participants were uncertain about the Islamic viewpoint on organ donation. We also found that Kuwaitis (40.2%) have a significantly higher level of knowledge than non-Kuwaitis (18.6%). Respondents believed that television was the best way to encourage organ donation.

**Conclusions:**

A lack of knowledge regarding organ donation needs was found among the participants of our study. Increasing public awareness and education are the major strategies for the success of organ donation and transplantation and should be promoted in Kuwait.

*Key Words: Organ; Donation; Kuwait*

*Funding Agency: None*



**Community Medicine**

Category: Graduate MSc (Basic Science)

38

**The Association Between Violent Media Exposure and Aggressive Behavior  
Among Kuwaiti Male Adolescents**

Al-Faraj D, \*AL-Rashedi D, Wais M, Hussein N, AL-Khalifa S  
Kuwait University, Faculty of Medicine

**Introduction:**

Objectives: (i) To assess the prevalence of aggression, and the amount of violent media exposure among Kuwaiti male adolescents. (ii) To study the association between violent media exposure and aggressive behavior, controlling for socio-demographic factors and psychoticism in personality.

**Methods:**

A sample of 628 students was selected randomly from six male intermediate schools in two governorates of Kuwait, Capital and Ahmadi, of whom 603 participated (96%). A self administered questionnaire was used for gathering information about characteristics of students and their parents, frequency of violent media exposure, aggression level during previous month, and level of psychotic personality. Different scores for exposure, aggression and personality were developed. Students who had a score  $\leq$  the mean were classified as “low” and those with a score above the mean were classified as “high”. Chi-square test, spearman correlation and logistic regression were used for data analysis.

**Results:**

Students with higher violent media exposure were 2.44 times more likely to have higher aggression level compared with those with lower violent media exposure. Also, students with higher psychotic personality had 4.77 times higher aggression level than those with lower psychotic personality. The odds of higher aggressive behavior among students living in Ahmadi was 1.70 times higher than those living in Capital. Students who lived with one parent or other relatives were 3.46 times more likely to have higher aggression level compared with those who lived with both parents. Students with fair/fail GPA were 1.93 times higher in aggressive behavior than those with excellent GPA.

**Conclusions:**

Violent media exposure was positively associated with reported aggressive behavior. After adjusting for psychotic personality, violent media exposure was independently related with reported aggressive behavior. The above findings highlight the need for appropriate violence prevention programs.

*Key Words: Violent Media; Adolescents Aggression; Kuwait*

*Funding Agency: None*



**Community Medicine**

Category: Undergraduate

39

**Non-illicit Substance Use Among Male University Students in Kuwait**

\*Al-Turki A, Bajwa H, Dawas A, Behbehani M, Al-Mutairi A, Mahmoud S, Thalib L  
Departments of Community Medicine, Kuwait University, Faculty of Medicine

**Introduction:**

Use of tobacco, alcohol and other substances has serious consequences for health and accounts for one of the greatest public health problems. Our aim was to determine the prevalence and of smoking, alcohol, sedative and inhalant use in male university students in Kuwait and to compare the prevalence of their use between private and public universities.

**Methods:**

A cross-sectional survey using a questionnaire was conducted among male university in Kuwait. A stratified, two-stage cluster-sampling approach was used to sample 1711 students at three randomly chosen faculties in Kuwait University and three of the largest private universities. Stepwise multiple logistic regression models were used to identify those factors that were independently and significantly associated with use of these substances.

**Results:**

Tobacco was by far the most commonly used substance with an overall prevalence of 60.6%; 56% in public universities and 64% in private universities. Use of alcohol was 17.3% in all students. A highly significant difference ( $p$ -value  $< 0.001$ ) existed between the public 9.6% and private 23.5% universities. The prevalence in the sample for the use of sedatives was 19.8% with 18% prevalence in public universities and 21% in private universities. Inhalants use was higher in students from the public university 11.2% (9.0-13.8) compared to private university 8.8%, with an overall use of 9.9%. Using multivariate logistic regression, high family income (OR= 1.4,  $p=0.035$ ), poor academic performance (OR=3.6,  $p=0.002$ ), having divorced parents (OR= 2.2,  $p= 0.004$ ) and graduating from a private high school (OR=1.5,  $p=0.013$ ) were identified as independent risk factors

**Conclusions:**

Our results show the alarming prevalence of non-illicit substance use among male students which constitutes a significant health burden. Having identified the independent risk factors for substance use, they can be targeted to decrease the health burden on society.

*Key Words: Smoking; Alcohol; Male university students in Kuwait*

*Funding Agency: Kuwait University*



**Community Medicine**

Category: Undergraduate

40

**Illicit drug Use Among Male University Students in Kuwait**

\*Bajwa H, Al-Turki A., Dawas A, Behbehani M, Al-Mutairi A, Mahmoud S, Thalib L  
Departments of Community Medicine, Kuwait University, Faculty of Medicine

**Introduction:**

The aim of the study was to estimate the prevalence of illicit drug use in male university students in Kuwait, compare the prevalence of drug use between private and public universities, identify the factors associated with drug use and its initiation, investigate the reasons for drug use initiation, and to determine the common sources of drug obtainment.

**Methods:**

The study was a cross-sectional survey among male university students, employing a stratified, two-stage cluster-sampling approach to include 1711 students (with a response rate of 92.8%) from three randomly chosen faculties in Kuwait University and three of the largest private universities.

**Results:**

The total lifetime prevalence of illicit drug use in the sample was 14.4% with a significant difference between public (10%) and private (18%) universities. The most frequently used illicit substance was marijuana (11%), followed by stimulants (7.1%), cocaine (2.2%), and heroin (1.3%). Using multivariate logistic regression analysis, it was found that drug use was positively associated with age, poor academic performance, high family income, being an only child, divorced parents, and graduation from a private high school. The majority of drug takers (55.9%) first obtained the drug from friends. The most frequent reason for initiation was enjoyment (35.7%), closely followed by curiosity (34.8%). The vast majority (92%) of illicit drug-takers had tried smoking before taking any illicit substance, illustrating the role of cigarettes as a gateway to more dangerous drugs.

**Conclusions:**

Given the above figures and considering that they are likely to be underestimates, drug use is an undeniable public health issue among young males in Kuwait. Knowledge of the factors associated with drug use can shape the design of key strategies targeting the initiation of drug use.

*Key Words: Illicit drug use; Male university students; Kuwait*

*Funding Agency: Kuwait University*



**Community Medicine**

Category: Basic Sciences

41

**Decline in Co-residence with Children Among Kuwaiti Men and Women:  
What is Driving the Change?**

\*Shah NM<sup>1</sup>, Badr HE<sup>2</sup>, Yount K<sup>3</sup>, Shah MA<sup>4</sup>

<sup>1</sup>Department of Community Medicine, Kuwait University, Faculty of Medicine; <sup>2</sup>Department of Health Promotion, Ministry of Health, Kuwait; <sup>3</sup>Department of Global Health and Sociology, Emory University, Atlanta USA; <sup>4</sup>Department of Health Sciences, Gujrat Univeristy, Pakistan

**Introduction:**

The percentage of older Kuwaitis aged 60+ co-residing with their children declined from about 95 % in 1999 to 76 % in 2005/6. We describe the patterns of change and assess the role of socio-demographic and health related factors in driving this change.

**Methods:**

Living arrangements of 1588 older persons were analyzed from a cross sectional survey of households conducted in 2005/6 in Capital and Ahmadi governorates. Information was collected through a face-to-face interview with older persons. Logistic regression was used to identify the significant correlates of living without children.

**Results:**

Significant positive associations were found between older age, female gender, a non-Bedouin cultural background, a smaller number of children, higher educational level, and the presence of 1 or more domestic helpers and absence of co-resident children. On the other hand, those who were widowed/divorced/separated were less likely to reside without co-resident children, as were those with higher family incomes. Except for self-rated health none of the health related variables, such as chronic illnesses, disability status, or depressive symptom experience, emerged as significant correlates of living arrangements. Socioeconomic and demographic changes occurring in the society seem to be at the core of the observed decline in co-residence with children, while the preference for independent living seems to be playing a minor, but probably growing, role in this transition.

**Conclusions:**

First, the traditional function of the family as the caregiver of older persons may no longer be assumed in all cases. Second, the transition in living arrangements is taking place fairly rapidly. Third, a disproportionately larger percentage of older widowed women, are being affected by the changes. Finally, there is a need to monitor the social, physical, and psychological health of the older population where the family may no longer be the primary caregiver.

*Key Words: Living arrangements; Residential patterns; Family social support*

*Funding Agency: KFAS Grant No. 2003-1302-02*



**Community Medicine**

Category: Undergraduate

42

**Prevalence of and Risk Factors for Eczema Among Students of Kuwait University**

\*Ajrawi F, Omani M, Safi Y, Hadlaq O, Saeed M, Ziyab A, Akhtar S  
Department of Community Medicine, Kuwait University

**Introduction:**

The objectives of our study were (a) to assess the prevalence of eczema among Kuwait University students; (b) to evaluate risk factors for eczema after taking into account age and gender differences, and © to evaluate the relationship of the severity of eczema with quality of life.

**Methods:**

A cross-sectional study design was used to address the study objectives. A questionnaire was completed by 1014 students from 12 of 14 faculties of Kuwait University that aimed to seek information on demographic variables, potential risk factors of eczema, diagnostic criteria for eczema, severity of eczema, and a set of questions to assess the quality of life among eczematous participants.

**Results:**

The prevalence of eczema any time during life (ever had eczema) was 11.8% (118/1001). After taking into account, age, gender, total household income (KD/mo) and governorate of residence through multivariate logistic regression analysis, the final model showed that the factors significantly associated with eczema status were parental history of eczema (adjusted odds ratio [aOR] = 3.6; 95% CI: 2.0 – 6.4), allergy to any food item (aOR= 3.9; 95% CI: 2.5 – 6.2), any skin condition other than eczema (aOR= 2.2; 95% CI: 1.4 – 3.4), ever diagnosed with asthma (aOR= 2.0; 95% CI: 1.2 – 3.2), and ever diagnosed with hay fever (aOR= 1.9; 95% CI: 1.2 – 3.0).

**Conclusions:**

This study showed that the prevalence of eczema among Kuwait University students is 11.8%. Eczema was strongly associated with parental history of eczema and food allergy according to our study. Future studies should focus more on evaluation of role of genetics in the occurrence of eczema along with other important risk factors, so that a prevention program could be implemented.

*Key Words: Eczema; Prevalence; Risk factors*

*Funding Agency: None*



**Community Medicine**

Category: Graduate MSc (Basic Science)

43

**Knowledge, Attitude and Practice of the Population in Kuwait Towards Blood Donation**

\*Al-Farhan L, Moussa MA, Gomez JE, Al-Mou'men F, Al-Quhtani N, Jawdat J,  
Al-Rasheedi A

Department of Community Medicine, Faculty of Medicine, Kuwait University

**Introduction:**

To assess knowledge, attitude and practice of the population in Kuwait towards blood donation; explore the association between blood donation and socio-demographic characteristics.

**Methods:**

A cross-sectional study was conducted including a representative sample of 1302 participants from the 6 governorates in Kuwait. A total of 13 shopping malls were selected from all governorates. Data were collected through a self-administered questionnaire including 4 sections: socio-demographic characteristics, knowledge, attitude, and practice of blood donation. A knowledge score was developed based on 8 items. Multiple logistic regression model was used to assess the association between practicing blood donation and various predictors after adjustment for potential confounders.

**Results:**

Regarding knowledge about blood donation, (79.1%) are found to have medium knowledge score. Regarding attitude, (92.8%) has positive attitude towards blood donation. The proportion of donors was 40.6%. Using the multiple logistic regression model, the following were found to be independently associated with the practice of blood donation; age (adjusted odds ratio for age group 30-39 years = 2.67,  $p < 0.001$  in reference to age group  $< 30$  years), sex (adjusted odds ratio for males = 6.30,  $p < 0.001$  in reference to females), nationality (adjusted odds ratio for non-Kuwaitis = 1.40,  $p < 0.018$  in reference to Kuwaitis), knowledge score (adjusted odds ratio for high knowledge score group = 2.43,  $p = 0.008$ ) and attitude towards blood donation (adjusted odds ratio for those who reported their willingness to donate = 2.33,  $p = 0.015$ ).

**Conclusions:**

The findings highlight the extent of knowledge of the population in Kuwait, their attitude, and practice of blood donation. It shows that the population in Kuwait has high positive attitude towards blood donation, but relatively less actual practice. This invites health authorities to organize regular campaigns to increase the number of blood donors.

*Key Words: Blood Donation; Knowledge; Practice*

*Funding Agency: None*



**Community Medicine**

Category: Undergraduate

44

**Undetected Visual Impairment and Academic Performance Among Fifth Grade Students in Public Schools in Kuwait.**

\*Al-Saqer F, Al-Assousi E, Al-Mutairi B, Mustafa A, Al-Adwani A, Al-Taiar A  
Department of Community Medicine, Kuwait University, Faculty of Medicine

**Introduction:**

Little is known about the prevalence of undetected visual impairment among primary school children in the Middle East. It is also not clear whether the undetected visual impairment has any impact on students' academic performance. This study aimed to investigate the prevalence of undetected visual impairment among fifth grade students in public schools in Kuwait, to describe the distribution of undetected visual impairment by the sociodemographic factors and to explore the association between visual impairment and academic performance.

**Methods:**

A cross-sectional study in which a random sample of 500 students at fifth grade were selected in 6 governorates. Visual acuity was assessed by an internally illuminated Snellen E chart. Visual impairment was defined as visual acuity of 6/12 or worse in the better eye. Pinhole test was used to identify the visual impairment due to refractive errors. The information about sociodemographic factors and grades were extracted from students' records at the schools.

**Results:**

Out of 617 sampled students, 117 (19.0%) were absent or refused to be examined. The prevalence of undetected visual impairment in the better eye was 8.8% (95%CI: 6.5%-11.6%) but 17.4% (95%CI: 14.2%-21.0%) in either eye. The prevalence was significantly higher among females than males, 30 (11.4%) and 14 (5.9%) respectively ( $p=0.03$ ). Most of vision impairment was correctable partially or totally with pinhole. There was no significant variation in the prevalence of undetected visual impairment by parental education or type of housing. There was no significant association between students' academic performance and undetected visual impairment in univariate or multivariate analysis.

**Conclusions:**

The number of students with undetected visual impairment was high. It is unlikely that the problem would be of this magnitude if an effective screening program is implemented. The effectiveness of the current screening program in Kuwait should be scrutinized.

*Key Words: Visual; Academic performance; Primary school*

*Funding Agency: None*



**Community Medicine**

Category: Undergraduate

45

**Use of Body Image Modifying Substances Among University Students in Kuwait**

\*Al-Shati H<sup>1</sup>, AL-Saqabi M<sup>1</sup>, Al-Jabri R<sup>1</sup>, Saleh M<sup>1</sup>, Al-Arouj A<sup>1</sup>, Abdullah A<sup>1</sup>, Suresh A<sup>1</sup>, Jakob S<sup>1</sup>, Bouhaimed M<sup>1,2</sup>

<sup>1</sup>Department of Community Medicine and Behavioral Sciences, Kuwait University, Faculty of Medicine; <sup>2</sup> Department of Surgery, Kuwait University, Faculty of Medicine

**Introduction:**

This study was conducted in order to understand the extent of use of the Body Image Modifying Substances (BIMS) among University students in Kuwait.

**Methods:**

This is a cross-sectional study including a total of 1962 students, consisting of 1112 females and 844 males. The study used a qualitative methodology (face to face key informant interview) in the initial stage to obtain a culturally sensitive insight into the use of these substances in Kuwait in view of the lack of published literature on this topic locally. A self-administered questionnaire was then developed on the basis of the qualitative analyses. Data entry and analysis were performed using the Statistical Package for Social Sciences (SPSS). The risk factors associated with the BIMS use were evaluated using logistic regression models. Crude odds ratios and 95 confidence intervals using univariate logistic regression model were reported. A multivariate normal regression model was used to identify the most important and independent predictors along with adjusted odds ratios for the demographic risks and risky social behaviours associated with BIMS use.

**Results:**

Prevalence of BIMS use was 26.6%. The most common substance used among male students was protein powder, while laxatives and diuretics were mostly used by females. The students nationality and having a friend or family member using BIMS were the only independent and significant characteristics associated with BIMS use. Mood disturbance was the most commonly experienced side effect among users.

**Conclusions:**

There is a high prevalence of BIMS use among university students in Kuwait to lose body fat and to gain muscle mass. Effective public health programs should be conducted to raise awareness about the use of these substances and policies need to be introduced to regulate the use of those substances in Kuwait.

*Key Words: Body Image Modifying Substances; Young Adults; Qualitative Methodology*

*Funding Agency: None*



**Community Medicine**

Category: Graduate PhD (Basic Science)

46

**Effect of Chair Design on Ratings of Discomfort**

\*Alnaser MZ<sup>1</sup>, Wughalter EH<sup>2</sup>

<sup>1</sup>Department of Occupational Therapy, Kuwait University, Faculty of Allied Health Sciences;

<sup>2</sup>Department of Kinesiology, San Jose University, San Jose, CA, USA

**Introduction:**

The purpose of this study was to determine if ratings of discomfort differ over time between two ergonomic chairs of the same approximate cost.

**Methods:**

Twenty participants from a metropolitan university sat on two types of ergonomic chairs for 90 minutes in each of two sessions while performing typing, reading, and writing tasks. Repeated measures three-way and two-way analyses of variance were used to examine the effect of the ergonomic chair design on rating of discomfort. Data were collected using the General Comfort Rating Scale (GCRS) and the Body Part Discomfort Rating Scale (BPDRS), which were administered at 0, 30, 60, and 90 minute marks of each session.

**Results:**

A significant main effect of Time on discomfort level was found ( $F=37.73$ ;  $p<0.05$ ). Moreover, the analysis of the GCRS revealed marginal main effect ( $F=3.07$ ;  $p=0.097$ ) of With and Without Switching Chair on discomfort. Four (25%) of respondents reported discomfort in low back, followed by arms and neck.

**Conclusions:**

1) discomfort was not related to the type of chair, 2) discomfort increased over time, 3) discomfort was influenced by the task performed while sitting, 4) discomfort level decreased when switching between different chairs, and 5) most discomfort was reported in the low back and lower arms.

*Key Words: Ergonomics; Musculoskeletal; Time*

*Funding Agency: None*



**Community Medicine**

Category: Undergraduate

47

**Patient Safety Culture in Health Care Organizations Survey: Perception of Clinical Staff at the Faculty of Medicine in Kuwait**

Bouhaimed M<sup>1,2</sup>, \*Al-Janaee A<sup>1</sup>, Jacob S<sup>1</sup>

<sup>1</sup>Department of Community Medicine and Behavioural Sciences, Kuwait University Faculty of Medicine; <sup>2</sup>Department of Surgery, Kuwait University Faculty of Medicine;

**Introduction:**

In this study we looked at the perception of patient safety culture among clinical academic members of staff at the Faculty of Medicine in Kuwait University.

**Methods:**

The patient safety culture was measured using the "MSI Patient safety culture scale 2006, Ginsburg RL, York University, Canada "with permission". Staff members in basic science departments were excluded. The survey focused on seven areas: (1) organizational leadership for safety; (2) unit leadership for safety; (3) perceived state of safety; (4) shame and repercussions of reporting; (5) safety learning behaviors; (6) reporting culture and (7) learning culture. Responses to questions in these dimensions were scored by a five-point scale where 1 is strongly disagree, 3 is neutral and 5 is strongly agree. Any negatively phrased items in the dimension were reversely coded. Accordingly, a higher mean score is always a more desirable score.

**Results:**

Of the 59 clinical academic staff members identified from the administrative personnel list in the Faculty -excluding those who were on leave- 39 returned a filled questionnaire with a response rate of 66.1%. Comparing Mean dimension scores on each of the seven safety culture dimensions showed broad differences which ranged from between 1.97- 4.42 as following: learning culture (3.53, SD . 58, 95% CI 3.31-3.76), organizational leadership for safety (3.28, SD. 99, 95% CI 2.90-3.65), safety learning behaviors /learning responses (3.23, SD . 87, 95% CI 2.90-3.56) and unit leadership for safety / supervisory leadership for safety (3.12, SD . 48, 95% CI 2.94-3.31). Scoring was highest on perceived state of safety/ threats to safety (4.42, SD . 42, 95% CI 4.26-4.58) and lowest for the shame and repercussions of reporting dimension (1.97, SD . 73, 95% CI 1.70-2.25).

**Conclusions:**

Data gathered through this survey can be used to stimulate discussion of safety culture through health care providing organizations in Kuwait.

*Key Words: Patient Safety Culture; Clinical Staff; Faculty of Medicine*

*Funding Agency: None*



**Dentistry**

*Category: Basic Sciences*

**48**

**Barriers in Seeking Preventive Dental Care by Dental Patients Attending the Dental Care Services of the Dental Division at Ahmadi Hospital**

\*Thomas A

Dental Services Division, Ahmadi Hospital, Kuwait

**Introduction & Objectives:** Most dental diseases can be prevented easily at a little cost or time through regular examination in combination with modern preventive modalities. The aim of this study was to identify self reported barriers as perceived by dental patients attending the dental care services of the Dental Division at the Ahmadi Hospital.

**Methods:** The data were collected from 271 employees of Kuwait Oil Sector seeking treatment at the Dental Centre through a self-administered questionnaire.

**Results:** Majority of patients (69.4%) had a previous visit to the dentist within the past 1 year. Reported reasons for their visit were pain or emergency (40.6%), dental cleaning (32.5%), regular checkup (15.1%) and restorative treatment (11.8%). Nationality showed a significant association with the history of last visit ( $p=0.012$ ), more proportion of Kuwaitis (73.0%) visited a dentist within the past 1 year than non-Kuwaitis (62.4%). Univariate analysis showed that 'lack of time', 'believing there was no need to visit unless there was pain', 'inability to get appointment', 'appointment scheduled too far ahead', and 'too much waiting in the waiting room' were significantly associated barriers reported by the patients for their infrequent visit. Multivariate logistic regression analysis showed 'believing there was no need to visit unless there was pain' was the only significant barrier.

**Conclusion:** The study highlights that the reason for infrequent visit was lack of perceived need. In conclusion, systematic surveys of dental utilization of oral health care outcomes among employees of Kuwait Oil Sector are needed to better understand the role of barriers to utilization of oral health services.

*Key Words: Preventive dental care; Barriers; Oil sector employees*

*Funding Agency: None*



**Dentistry**

Category: Basic Sciences

49

**The Association of Family Culture with the use of Sweets and Soft Drinks in Finnish Adolescents**

\*Honkala S<sup>1,2</sup>, Välimaa R<sup>3</sup>, Tynjälä J<sup>3</sup>, Kannas L<sup>3</sup>, Honkala E<sup>1,2</sup>

<sup>1</sup> Faculty of Dentistry, University of Turku, Finland; <sup>2</sup> Faculty of Dentistry, Kuwait University, Kuwait; <sup>3</sup> Research Centre for Health Promotion, University of Jyväskylä, Finland

**Introduction:**

This study aims to find out if any association exists between the use of sugar products and the parental monitoring and attachment of the Finnish adolescents.

**Methods:**

The survey was carried out in 2006 as a part of the WHO Health Behaviour in School-Aged Children (HBSC) study. Structured questionnaires were distributed to the nationally representative sample of the Finnish adolescents in school classrooms and collected in the sealed envelopes. Altogether 3, 405 adolescents (13- and 15 year olds) returned the questionnaire, response rate being 87%. The daily (5-7 times a week) use of soft drinks and sweets were dependent variables. The explaining variables were summaries of parental monitoring and attachment variables (i. e. family culture). Parental monitoring was measured by 5 and attachment by 8 questions, separately for mother and father.

**Results:**

Soft drinks were used daily by 13% and sweets by 16%. Boys used soft drinks more often than girls ( $p > 0.001$ ). There was no statistically significant gender difference in the use of sweets. Both soft drinks and sweets were used more often by 15-year-olds than 13-year-olds, except younger girls used soft drinks more often than the older ones. Mother- and father monitoring were strongly associated with daily use of soft drinks and sweets in all groups. When mother- and father monitoring were low the proportions of daily users were highest (max 32%) and when they were high the daily use was lowest (min 5%). Similarly, when mother- and father attachment were low the proportions of daily use of soft drinks and sweets were highest (max 31%).

**Conclusions:**

High parental monitoring (control) and attachment (affection) seemed to associate with lower proportions of daily use of soft drinks and sweets by the adolescents. This suggests that parents have a key role in modifying children's consumption of sweets and soft drinks.

*Key Words: Sweets; Family culture; Adolescent*

*Funding Agency: Ministry of Social Affairs and Health, Finland*



**Dentistry**

Category: Basic Sciences

50

**Smoking Habits Among Schoolchildren in Kuwait**

\*Honkala S, Honkala E, Behbehani JM  
Faculty of Dentistry, Kuwait University, Kuwait

**Introduction:**

This study aimed to find out how frequent smoking is among Kuwaiti schoolchildren and if the smoking of the family members and friends are associated with their smoking.

**Methods:**

The nationally representative sample of the children in government schools were drawn into this study. 2, 312 schoolchildren between the ages of 11 and 13 years filled a structured questionnaire anonymously in the school classrooms in 2002/2003. Questionnaire form of the WHO Collaborative Study was used as a basis in the study. The Ethical Committee of the Faculty of Dentistry, Kuwait University approved the study.

**Results:**

Daily smoking was reported to be very uncommon among 11 year-olds (boys 2.7%, girls 0.8%) and among 13 year-old girls (1.5%). Of 13 year-old boys, 4.5% reported to smoke every day and 2.8% once a week. From daily smokers every third reported that their best friend was also a daily smoker, for 15% the older brother and for 6% the father smoked daily. Only about 1% of female family members smoked daily. If the best friend was a non-smoker, only 1.4% of boys smoked daily; if the older brother/farther did not smoke 2.0-2.9% of the respondents were daily smokers. Habitual smoking (every day/once a week) was most commonly practiced in public places (43%), at friends' homes (38%) or on the way to/from the school (30%). Those who spent time with their friends during evenings were more commonly smokers compared to those who did not meet their friends. 11% of those who reported that the school performance was average or below reported to smoke regularly.

**Conclusions:**

Although smoking was not very commonly practiced among the studied age groups, the 13 year-old boys seem to be at risk of becoming smokers. Street-oriented life-style by some boys might explain this risk behavior.

*Key Words: Smoking; Schoolchildren; Kuwait*

*Funding Agency: Ku Grant No. [DD1/02]*



**Dentistry**

Category: Clinical

51

**Caries Experience by ICDAS in South-East Estonia**

\*Honkala E<sup>1</sup>, Nummela R<sup>2</sup>, Olak J<sup>2</sup>, Honkala S<sup>1</sup>, Saag M<sup>2</sup>, Makinen K<sup>3</sup>

<sup>1</sup>Faculty of Dentistry, Kuwait University, Kuwait; <sup>2</sup>Department of Stomatology, University of Tartu, Estonia; <sup>3</sup>Faculty of Medicine, University of Turku, Finland

**Introduction:**

This study aimed to find out caries experience of permanent dentition among the 2nd and 3rd grade children in the primary schools in South-East Estonia.

**Methods:**

The sample of 10 primary schools with 16 2nd and 16 3rd graders (n=436) were drawn representing South-East Estonia. The main age was 8.8 years in the second grade and 9.8 years in the third grade. The clinical examinations with ICDAS criteria were completed in January 2009 by four calibrated examiners. The Ethical Committee of the University of Tartu approved the study. The inter- and intra-examiner consistency was high (surface- and tooth-based kappas>0.9).

**Results:**

The mean caries experience was 1.0 (DMFT) and 1.5.0 (DMFS) among the 2nd graders, and 1.4 (DMFT) and 2.2 (DMFS) among the 3rd graders. There were no statistically significant difference in any caries experience indices between girls and boys. The mean number of enamel caries lesions (D1-3S/T), dentinal caries lesions (D4-6), D4-6MFT, D4-6MFS and restorations (FT, FS) were significantly lower among the 2nd graders than among the 3rd graders but there was no difference between the grades in D4-6S and D4-6T. There were no statistically significant differences between the schools, except in the D1-3S- and D1-3T-indices, but D4-6MFT varied from 0.7 to 1.4 and D4-6MFS from 1.5 to 2.3.

**Conclusions:**

Caries experience figures seem to be quite high in this area. There were no significant differences neither between the genders nor the schools in the provision of restorative treatment. Preventive programmes would be urgently needed.

*Key Words: ICDAS; Dental caries; Epidemiology*

*Funding Agency: Cargill R&D Centre Europe*



**Dentistry**

Category: Basic Sciences

52

**Oral Health Habits, Dental Visits and Instructions Received by the Finnish Adolescents.**

\*Honkala E<sup>1,2</sup>, Rimpelä A<sup>3</sup>, Honkala S<sup>1,2</sup>

<sup>1</sup> Faculty of Medicine, University of Turku, Finland;

<sup>2</sup> Faculty of Dentistry, Kuwait University, Kuwait; <sup>3</sup> Faculty of Medicine, University of Tampere, Finland

**Introduction:**

This study aimed to find out the possible associations between oral health habits and dental visits and instructions received by the adolescents from their dentists.

**Methods:**

The data were collected as part of a nation-wide research program, the Adolescents Health and Lifestyle Survey, which has already started in 1977. Since then a 12-page questionnaire has been sent every other year. The samples have represented 12-, 14-, 16-, and 18-year-old adolescents in Finland. In 2007, 5, 840 adolescents returned the questionnaire and the response rate was 61% (72% among girls and 50% among boys).

**Results:**

Higher proportion of adolescents aged 12- and 14 years, who visited a dentists during the previous year, brushed their teeth as recommended, twice a day or more often. Among the 16- and 18-year-olds this association was reverse. The daily use of sweets was more common among the 12- and 14-year-old girls and 12- and 16-year-old boys, but less common among the 16-year-old girls and 14- and 18-year-old boys, who had visited a dentists during the previous year. This association of the dental visits was similar with the daily use of soft drinks. Twice a day or more frequent toothbrushing was consistently lower among those adolescents, who had received instructions on toothbrushing than among those, who did not. Similarly the daily use of sweets and soft drinks was more common among those adolescents, who had received instructions on use of sugar products than among those, who did not.

**Conclusions:**

The association between oral health habits and dental visits were not consistent. However, oral hygiene and sugar instructions seemed to have been targetted to the high risk behaviour groups. Individually determined recall intervals might affect this association between dental visits and oral health habits.

*Key Words: Toothbrushing; Dental visit; Adolescent*

*Funding Agency: Ministry of Social Affairs and Health, Finland*



**Dentistry**

Category: Clinical

53

**Effect of Various Concentration of Dates Solution on Malodor Production**

\*Salako NO, Al-Shammari K, Philip L  
Faculty of Dentistry, Kuwait University

**Introduction:**

Halitosis is a major concern to the general public and a multimillion-dollar industry worldwide. Following protein degradation in the oral cavity, there is a subsequent breakdown of certain amino acids to malodorous compounds like sulfur containing volatiles, which are the central elements of oral malodor. Addition of sugars have shown to reduce the malodor production in the oral cavity.

Objective: To assess the ability of dates fruit to reduce production of volatile sulfur compounds (VSCs) by oral bacteria.

**Methods:**

Suspended Salivary Sediment (SSS) system was prepared as described by Salako and Kleinberg 1992. Wax stimulated whole saliva was collected in test tubes centrifuged at 1000 rpm for 10 minutes. Supernatant was poured out into another tube and sediment was washed three times and re-suspended in distilled water at a concentration of 50% (v/v). Incubation mixtures were prepared with the final compositions and concentrations: (a) 12.5% (v/v) salivary sediment (b) 25% salivary supernatant (c) glucose, sucrose and dates at various concentrations (10%, 20% and 30%) and (d) 6mM cysteine. The mixtures were incubated for 4h at 37°C and the VSCs were measured using OralChroma at various time intervals for 4 hours.

**Results:**

- Hydrogen sulfide (H<sub>2</sub>S) concentration was reduced to zero ppb after 1 hour incubation with 20% and 30% glucose solutions, while methyl mercaptan (CH<sub>3</sub>SH) was lowered below the threshold after 3 hours of incubation.
- 30% sucrose solution reduced the H<sub>2</sub>S and CH<sub>3</sub>SH concentrations to zero ppb after 1 hour of incubation.
- 20% and 30% dates solution reduced the H<sub>2</sub>S concentration to zero ppb after 1 hour of incubation.
- CH<sub>3</sub>SH concentration was reduced considerably from baseline with dates solution but remained higher than threshold throughout the period.

**Conclusions:**

Dates solution produced significant reduction in the concentration of major oral malodor producing gases.

*Key Words: Dates; Oral Bacteria; Malodor*

*Funding Agency: KU Grant # DD01/06*



**Dentistry**

Category: Clinical

54

**Comparison of the Use of Halimeter and OralChroma™ in the Assessment of the Ability of Common Cultivable Oral Anaerobic Bacteria to Produce Malodor from Cysteine and Methionine**

\*Salako NO, Philip L

Faculty of Dentistry, Kuwait University

**Introduction:**

Halitosis, or oral malodor, is caused by production of malodorous substances mainly associated with microbial fermentation of proteins, peptides, and mucins found in saliva, blood, and residual food retained on oral surfaces. The most conspicuous malodorous compounds are termed volatile sulfur compounds (VSCs), with hydrogen sulfide and methyl mercaptan accounting for roughly 90% of VSCs. Most breath clinics use Halimeter, a portable sulfide monitor, to measure VSCs. Recently a portable Gas Chromatograph equipment OralChroma™ (Ablit Corporation, Japan) was introduced to detect VSCs.

Objective: To compare the ability of Halimeter and OralChroma in assessing VSCs production by oral anaerobic bacteria.

**Methods:**

Broth cultures of the common anaerobes isolated and identified, were centrifuged and pellets resuspended in phosphate buffer (pH 7.7) with an OD550 of 0.3. 100µl of this suspension and 870 µl of buffer were added in two sterile 15ml head space vials. Reaction was initiated by addition of 30µl of 33mM L- methionine, and L-cysteine respectively in each vial and incubated at 37oC for 90 minutes. 500µl of 3M phosphoric acid was added to tubes and was kept aside for 10 minutes. Production of VSCs were measured using Halimeter and OralChroma™ .

**Results:**

Six anaerobes met VSC production threshold for Halimeter (160 ppb) whereas nine met the threshold for OralChroma (140 ppb) with L- Cysteine as substrate. Major VSC producers identified by both equipments were Bacteriodes ureolyticus, Porphyromonas gingivalis, Tannerella forsynthesis, Prevotella intermedia, Actinobacillus actinomycetemcomitans and Gamella morbillrum. With L- Methionine as substrate, Halimeter identified only two anaerobes, namely B. ureolyticus and P. gingivalis whereas, OralChroma identified nine namely B. ureolyticus, P. gingivalis, F. nucleatum, P. intermedia, Bacteriodes eggerthii, T. forsynthesis, Propionibacterium acnes, G. morbillrum and Veionella parvula

**Conclusions:**

OralChroma™ may produce a more comprehensive assessment of VSC production by oral microflora.

*Key Words: Halimeter; Oral Chroma; Malodor*

*Funding Agency: KU Grant # DD01/06*



**Dentistry**

Category: Basic Sciences

55

**Effect of C-factor and LED Curing Mode on Microleakage of Class V Resin Composite Restorations**

\*Alomari QD, Barrieshi-Nusair KM, Ali MA  
Kuwait University

**Introduction:**

Purpose: Manipulation of cavity configuration (C-factor) and curing light mode may improve marginal interface. The aim of this study was to investigate the effect of cavity C-factor and LED curing mode on microleakage of class V resin composite restorations.

**Methods:**

Eighty extracted human premolars were divided into four groups. In groups I and II, V-shaped cavities were prepared on the buccal surfaces of the teeth, and box-shaped cavities were prepared in groups III and IV. The restorations in groups I and III were cured with the fast curing mode of LED curing light, while the restorations in groups II and IV were cured with soft-start mode of the same curing light. The samples were thermocycled, immersed in a 0.5% basic fuchsin solution for 24 hours, sectioned and analyzed by stereomicroscopy. The degree of dye penetration was measured quantitatively and then qualitatively on a 0-4 scoring system.

**Results:**

Quantitatively, there was no statistically significant difference in the degree of microleakage between the groups at the enamel margin ( $P > 0.05$ ). At the dentin/cementum margin group III showed significantly more dye penetration than the other groups ( $P < 0.001$ ). Similarly, qualitative measurements of dye penetration showed that group III to have higher microleakage than the other three groups (I and III  $p < 0.001$ ; II and III  $p < 0.01$ ; III and IV  $p < 0.01$ ). Paired sample statistics showed that microleakage at dentin/cementum margin was not statistically different from enamel microleakage ( $P > 0.05$ ) except for group III ( $P < 0.000$ ).

**Conclusions:**

Class V cavities with low C-factor had less microleakage at the gingival floor than cavities with high C-factor. Soft-start polymerization using LED curing light was effective in reducing microleakage only for cavities with high C-factor.

*Key Words: C-factor; Curing mode; Microleakage*

*Funding Agency: KU Grant No. DR01/07.*



**Dentistry**

Category: Clinical

56

**Mean Daily Fluid Ingestion by Children During Summer in Kuwait**

\*Akpata ES<sup>1</sup>, Behbehani MJ<sup>1</sup>, Akbar J<sup>1</sup>, Thalib L<sup>2</sup>

<sup>1</sup> Department of Restorative Sciences, Faculty of Dentistry; <sup>2</sup> Department of Community Medicine, Faculty of Medicine, Kuwait University

**Introduction:**

Aim: To determine the pattern of fluid consumption by young children during summer in Kuwait.

**Methods:**

1177 children, aged 1-9 years, were randomly selected from Kuwait, using the cluster random sampling technique. Their body weights were measured, and mean daily fluid consumption from June to September, 2009 determined by an interviewer administered questionnaire on the mothers. This was validated by measuring the volume of water consumed from 1.5-liter bottles supplied to the mothers.

**Results:**

The mean daily fluid consumption was high, being 1235.9±295.2, 1437.1±322, and 1620.1±358 ml at ages 1-3, 4-6 and 7-9 years, respectively. ANOVA showed the differences among these values to be statistically significant ( $p < 0.05$ ). Plain water constituted 38.1% of the total daily fluid intake at age 1-3 years; and other fluids consumed included tea and different types of hot and cold beverages. The mean body weight of the 1-3-year-olds was 13.4±4.4 kg, while the mean maximum ambient temperature in Kuwait during the summer months was 43.8 degrees centigrade. If fluoride concentration of potable water in Kuwait were adjusted to 0.7 ppm (as sometimes recommended for tropical countries), and the beverages contained an average of 1.0 ppm of fluoride, daily fluoride ingestion by the 1-3-year-olds, during tooth mineralization, would exceed the threshold range of 0.04-0.07 mg/kg body that is considered appropriate, or upper limit, above which dental fluorosis would develop.

**Conclusions:**

The high water consumption in Kuwait should be taken into consideration when determining appropriate fluoride level for drinking water. This work was supported by Kuwait Foundation for the Advancement of Sciences.

*Key Words: Fluid; Consumption; Kuwait*

*Funding Agency: KFAS, Grant No. 2007-1302-06*



**Dentistry**

Category: Graduate MSc (Basic Science)

57

**Incidence of Carotid Artery Calcification seen in Digital Panoramic Radiographs of Patients in Kuwait and its Relation to Risk Factors of Stroke**

\*Anooj R<sup>1</sup>, SY Ng<sup>2</sup>

<sup>1</sup>Department of Restorative Sciences, Faculty of Dentistry, Kuwait University; <sup>2</sup>Department of Dental & Maxillofacial Radiology, King's College, University of London.

**Introduction:**

The main objective of this case control study was to identify the incidence of suspected carotid calcifications on digital panoramic radiographs of patients in Kuwait and its relation to the associated risk factors for stroke.

**Methods:**

2032 radiographs of patients of age range 25-85 years were examined and suspected calcifications were observed in 92 patients (4.53%). The medical records of the case group (92) and control group(94) without any calcification were reviewed for stroke related risk factors and analysed by Chi square analysis. Influence of age and gender was assessed by independent sample 't'test. High incidence of suspected calcification observed among Kuwaiti patients and its relation to stroke risk factors are studied by Chi square analysis. With calcification as the dependant variable, the significant risk factors noted are further studied by logistic regression analysis.

**Results:**

The mean age  $\pm$  standard deviation for the study population was 45.34 $\pm$ 11.964. Incidence of calcification was significantly high ( $P < 0.001$ ) among 45-65 year age groups and among Kuwaiti nationals ( $P < 0.05$ ). Hypercholesterolemia, advanced periodontitis and smoking habit were the significant risk factors in the case control study. Considering the significant risk factors observed among Kuwaiti patients in logistic regression analysis, smoking habit and hypercholesterolemia (Odd's Ratio 45.581 and 8.639) were observed to be the significant risk factors ( $P < 0.001$ ).

**Conclusions:**

As carotid calcification may be observed on panoramic radiographs of older patients with multiple stroke risk factors, general dental practitioners should scrupulously review both hard tissues as well as soft tissues of the neck region seen in radiographs. However more reliable tests like duplex ultrasound scanning (DUS), which is the current gold standard for diagnosis and confirmation of carotid calcifications, should be advised to benefit the suspected patients by early diagnosis and potentially life saving treatment.

*Key Words: Carotid artery calcification; Panoramic radiography; Dental*

*Funding Agency: None*



**Dentistry**

Category: Basic Sciences

58

**Diabetes Mellitus and Periodontal Health: Patients Knowledge**

AL-Khabbaz A<sup>1</sup>, Al-Shammari K<sup>1</sup>, \*Al-Ansari J<sup>2</sup>

<sup>1</sup>Division of Periodontics, Faculty of Dentistry, Kuwait University, Kuwait;

<sup>2</sup>College of Health Science, Kuwait

**Introduction:**

Objectives: Patients diagnosed with diabetes mellitus (DM) are considered as a high risk group with greater susceptibility to severe forms of periodontal destruction. The aim of this study was, therefore, to evaluate the awareness and the knowledge of patients regarding the risk for periodontal disease including specific periodontal complications.

**Methods:**

A random sample of Kuwaiti patients was recruited from primary public health care clinics from all six districts of Kuwait. A total of 1011 patients completed an anonymous, self administered, structured questionnaire with a response rate of 84%. Adequate knowledge level about periodontal complications was assessed through a 'knowledge score' of 1; if the respondent correctly answered the 6 questions (gingival inflammation, gingival bleeding, teeth movement, tooth loss, and abscess formation=yes; tooth staining=no).

**Results:**

The study comprised 269 diabetic patients. 59.7% of all patients were aware that DM affects periodontal health, and diabetic patients were significantly more aware than non-diabetic individuals ( $p < 0.001$ ). Only 25 patients (2.5%) from all participants scored adequate knowledge about periodontal complications associated with DM. Factors influencing patients knowledge of specific periodontal complications associated with diabetes were older age group ( $p = 0.006$ ), university education ( $p = 0.025$ ) and initial awareness of the fact that DM affects periodontal health ( $p < 0.001$ ). When physician and dentist were reported as source of information; respondents were significantly more likely to have knowledge of specific periodontal complications associated with diabetes ( $p = 0.003$  and  $p < 0.001$ , respectively).

**Conclusions:**

Effort should be directed to increase the awareness of the general population regarding the oral complications associated with DM. Dentists and physicians play a major role in patient's education.

*Key Words: Diabetes mellitus; Periodontal disease; Knowledge*

*Funding Agency: ZD02/07*



**Dentistry**

Category: Clinical

59

**Early Childhood Caries in 4- and 5-year-old Children in Kindergarten schools in Kuwait**

\*Shyama M<sup>1</sup>, Al-Mutawa SA<sup>1</sup>, Al-Duwairi Y<sup>2</sup>, Soparkar P<sup>3</sup>

<sup>1</sup>National School Oral Health Program, Ministry of Health, Kuwait; <sup>2</sup>Dental Administration, Ministry of Health, Kuwait; <sup>3</sup>Forsyth Institute, Boston, USA

**Introduction:**

Early childhood caries is a devastating form of caries that may affect the primary dentition as soon as infant teeth erupt and has been defined as the presence of any decayed, missing or filled teeth in the dentition of children under 6 years of age. The objective of this national dental survey was to determine the prevalence of early childhood caries in kindergarten schoolchildren and to aid the planning and evaluation of kindergarten oral health promotion in Kuwait.

**Methods:**

A national epidemiologic survey of the 4- and 5-year-old kindergarten schoolchildren (n=1, 277) was conducted in the five governorates of Kuwait. Dental caries was scored using WHO diagnostic criteria.

**Results:**

The prevalence of caries in maxillary teeth was 52.2% and in the mandibular teeth 34.2%. The caries prevalence in anterior teeth was 28% and in posterior teeth 58.4%. Among the anterior teeth, prevalence was higher in maxillary teeth, while among the posteriors, mandibular teeth had a higher prevalence. Among the anterior teeth, the maxillary central incisors had the highest caries prevalence (37.3%) followed by maxillary lateral incisors (22.4%), maxillary canines (11.1%), mandibular canines (5.9%), mandibular central incisors (4.2%) and the mandibular lateral incisors (3.5%) were the least affected teeth. Among the posterior teeth, mandibular second molars had the highest prevalence (31.1%) followed by maxillary second molars (30%), mandibular first molars (28.4%) and the maxillary first molars (27.6%). The percentage of 4- and 5-year-old children with dft=0 was 32% and 24% respectively. The corresponding mean dft/dfs for 4- and 5-year-olds were 3.7/6.9 and 4.8/9.6. The decayed score was the major component in the mean scores.

**Conclusions:**

The tooth-specific caries prevalence with a high percentage of caries showed a clear indication of early childhood caries. An extensive prevention program in preschool and kindergarten children is now in place to prevent caries.

*Key Words: Early childhood caries; Kindergarten schoolchildren; Kuwait*

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



**Dentistry**

Category: Clinical

60

**Dental Age Assessment for Kuwaiti children Using Demirjian's method**

\*Qudeimat MA, Behbehani F

Faculty of Dentistry, Kuwait University

**Introduction:**

Dental age can be estimated based on the level of tooth mineralization during the developmental process. Various methods of determining chronological and radiographical stages have been used for dental age estimation. AIM: To test the validity of the standards of dental maturation among Kuwaiti children by using the criteria of Demirjian and Goldstein (1976) originally described for French-Canadian children.

**Methods:**

The sample was selected from healthy Kuwaiti children attending the routine and emergency dental clinics of the Faculty of Dentistry, Kuwait University. Good quality rotational pantomographs were obtained for 509 children (263 girls and 246 boys) between the ages 3 and 14 years. Maturation of the seven permanent teeth on the left side of the mandible was determined according to the crown and root development stages described by Demirjian et al. (1973).

**Results:**

There were statistically significant differences in the mean of dental maturation between Kuwaiti and French-Canadian children ( $p < 0.0001$ ). Kuwaiti children were dentally delayed compared to the Canadian standards (mean dental maturation difference of 0.69 year,  $SD = 1.25$  years,  $CI = 0.58-0.80$ ). The mean delay in girls was 0.67 year ( $SD = 1.30$  years,  $CI = 0.51-0.83$ ) and in boys it was 0.71 year ( $SD = 1.18$  years,  $CI = 0.56-0.86$ ). Using a non-linear regression model, function formulae were developed for Kuwaiti girls and boys.

**Conclusions:**

The standards of dental maturation described by Demirjian and Goldstein (1976) for French-Canadian children may not be suitable for Kuwaiti children.

*Key Words: Dental age; Children; Demirjian*

*Funding Agency: Kuwait University, Research Grant No. DD01/05*



**Dentistry**

Category: Clinical

61

**Expectant Mothers Infant Oral Health Awareness and Socioeconomic Status**

\*Alsane' M<sup>1</sup>, Montero-Fayad M<sup>2</sup>, Abd-alsalam M<sup>3</sup>, Koerber A<sup>2</sup>

<sup>1</sup>Faculty of Dentistry, Kuwait University; <sup>2</sup>Univeristy of Illinois at Chicago;

<sup>3</sup>Ministry of Health, Kuwait.

**Introduction:**

To assess the relationship between the socioeconomic status (SES) and the awareness of Infant Oral Health (IOH) practices among expectant mothers in Kuwait.

**Methods:**

Questionnaires with 15 questions on IOH and multiple choice answers were distributed to 230 expectant mothers at a private maternity clinic in Kuwait. Answers were structured so that some were consistent with the American Academy of Pediatric Dentistry recommendations on IOH. The questionnaire also included demographic questions about education and income level. Responses were rated as either consistent or inconsistent with the referenced recommendations. We planned to rate knowledge as very high if >95% of the answers were correct, as adequate if 75-95% were correct, and as inadequate if <75% were correct. Correlations between income, education and knowledge were assessed using Pearson's correlation coefficient.

**Results:**

The return rate was 87% (n=200.) The majority of participants were Kuwaiti mothers, 20-29 years of age, with 0-2 children and income >59,000 \$/year. Percentages of correct answers ranged from 5-72% (mean = 33.5%), indicating that participants' knowledge was inadequate in all tested IOH related areas. There was no correlation between knowledge level and education or household income.

**Conclusions:**

IOH knowledge in this middle class cohort was inadequate in our sample of expectant mothers in Kuwait, regardless of education. The lack of association between education and knowledge may suggest that accurate IOH knowledge isn't part of the cultural background of women in Kuwait. More effective methods of educating mothers in Kuwait may be necessary. It was not possible to correlate knowledge to income due to the narrow range of reported income in this study.

*Key Words: Infant Oral Health; Early Childhood Caries; Expectant mothers*

*Funding Agency: Kuwait University Research Grant No. ZD01/08.*



**Dentistry**

*Category: Undergraduate*

**62**

**Evaluating Caregivers' Attitude Towards Preschooler's Oral Health- A Pilot Study**

\*Ashkanani F, Alsane' M  
Faculty of Dentistry, Kuwait University

**Introduction:**

To assess the attitude of Kuwaiti care givers towards the oral health of their preschool children.

**Methods:**

Self administered questionnaires with questions related to care givers attitude towards preschoolers oral health was given to 42 care givers (25 mothers, 17 fathers) visiting a vaccination center in Kuwait. The questionnaire included questions about the importance of: Primary teeth; daily tooth brushing; monitoring the carcinogenicity of the childs' diet; regular dental visits; and having a dental home. Responses were descriptively analyzed using SPSS.

**Results:**

Over 50% of participants were Parents of 2-5 children, had a university degree and monthly household income of 1000-2000KDs. Over 90% of participants thought that daily tooth brushing, monitoring their child's diet and regular dental visits were very important. Almost 86% thought that it is important to have a dental home (visit the same dentist for treatment and regular dental check-ups). However, only 76% of participants thought that primary teeth were important.

**Conclusions:**

The result of this pilot study indicate that care givers with high educational level, average to high income have a good attitude towards the dental health of their preschool children. This finding need to be verified with a larger and more diverse sample, to assess the effect of income and education on care givers attitude towards the oral health of their preschool children.

*Key Words: Early Childhood Caries; Prevention; Care givers*

*Funding Agency: None*



**Dentistry**

Category: Undergraduate

63

**Assessing the Attitude of Family Physicians in Kuwait Towards Infant Oral Health (IOH) - A Pilot Study**

\*Al-Suraia A, Abdallah M, Alsane' M  
Faculty of Dentistry, Kuwait University

**Introduction:**

To assess the attitude of family physicians in Kuwait towards Infant Oral health (IOH).

**Methods:**

A Self administered questionnaire was piloted on 22 family physicians practicing at poly clinics in Kuwait. In addition to the demographic questions, the questionnaire included questions related to the attitude of family physicians towards: their role in preventing early childhood caries; giving early caries preventive advices; screening infants for dental disease; as well as referring infants to dental care, as needed. The questionnaire included, also, questions about their perceived barriers in delivering (IOH) related messages to care givers. Results were descriptively analyzed using SPSS.

**Results:**

Over 60% of participants were Kuwaitis, practicing for 5-10 years, graduates of family medicine residency programs in Kuwait, and see over 30 patients / day on average. Medical school was the source of dental health related information for over 50% of the participants. The majority (>80%) felt that they have an important role in early childhood caries prevention, and that they should be giving IOH related preventive advice to care givers. Over 70% thought that it is important that family physicians perform a quick oral screening on their patients, particularly infants and young children. Almost 55% thoughts excessive patients load is the major barriers preventing them from delivering IOH related information to care givers.

**Conclusions:**

Family physicians in this pilot study had a positive attitude towards their role in preventing dental disease in infants and young children. One of the major barriers in translating this attitude into practice was the excessive number of patients they treat on daily basis, which leaves them with very little time to spend educating care givers about IOH related practices. This findings of this pilot study need to be verified with a larger sample family physicians practicing in Kuwait.

*Key Words: Infant Oral Health; Caries; Prevention*

*Funding Agency: None*



**Dentistry**

Category: Undergraduate

64

**Prevalence and Severity of First Permanent Molars Ectopic Eruptions**

\*Jassim A, Froughi E, Alsane' M

Faculty of Dentistry

**Introduction:**

To determine the prevalence and severity of ectopic eruptions of the first permanent molars in a sample of children treated at Faculty of Dentistry (FOD) clinic in Kuwait.

**Methods:**

This was a pilot study conducted through chart review of pediatric dental patients treated at Faculty of Dentistry Dental Clinic. All pediatric dental charts were screened regardless to gender and nationality. 217 patients between the ages 6-9 years, with existing panoramic radiographs(OPGs), with no prematurely lost primary molars were included in this study. Two calibrated examiners ( $\kappa = 0.9$ ) assessed the OPGs for the prevalence and severity of ectopic eruptions of all first permanent molars. A modified Barberia-Leache et al ectopic eruption severity classification system was used in this study. It classifies severity from I-IV, with grade I, being mild resorption limited to cementum or with minimal dentin penetration; grade II, moderate resorption of the dentin without pulp exposition; grade III, severe resorption of the distal root leading to pulp exposure; grade IV, very severe resorption that affects the mesial root of the primary second molar. Data were descriptively analyzed using SPSS.

**Results:**

12 patients (5.5%) had ectopic eruptions. 68.8% of the detected ectopic cases were of grade I severity, only 31.2% are of grade II. None of the detected cases were of severity III or IV.

**Conclusions:**

The prevalence of first molar ectopic eruption in this pilot study was 5.5%, which is slightly higher than that reported for other populations . Most of the detected ectopic cases, however, were of the self correcting grade I and II severity, this finding is consistent with that for other populations.

*Key Words: Ectopic eruptions; First permanent molars; Growth and Development*

*Funding Agency: None*



**Dentistry**

Category: Basic Sciences

65

**Antifungal susceptibility of oral Candida species obtained from patients attending the Kuwait University Dental Clinic.**

\*Ellepola AN<sup>1</sup>, Joseph B<sup>1</sup>, Chandy R<sup>2</sup>, Philip L<sup>1</sup>

<sup>1</sup>Faculty of Dentistry, Health Sciences Center, Kuwait University; <sup>2</sup> Department of Microbiology, Faculty of Medicine, Health Sciences Center, Kuwait University

**Introduction:**

It is now apparent that reduced susceptibility as well as frank resistance to antifungal agents could be an issue of clinical importance. Hence antifungal susceptibility testing could be a valuable tool for predicting efficacy of a given agent and could help guide empiric therapy. Hence, this study is carried out to assess the antifungal susceptibility of oral Candida in a Kuwaiti population seeking dental treatment at the Kuwait University Dental Clinic.

**Methods:**

Oral rinse technique was used for collection of samples. Germ tube test, CHROMAgar Candida medium and VITEK 2 yeast ID system were used for species identification. Identity of *C. dubliniensis* was confirmed by the production of rough colonies with hyphal fringes and chlamydoconidia on simplified sunflower seed agar besides VITEK 2 identification profile. E-test was performed for obtaining antifungal susceptibility values for amphotericin B, fluconazole, ketoconazole and caspofungin according to the manufactures instructions.

**Results:**

Of the 370 patients investigated 160 (43.2%) patients yielded Candida in culture. The species isolated were *C. albicans* (63.7%), *C. dubliniensis* (14.3%), *C. krusei* (8.1%), *C. glabrata* (6.2%) and *C. tropicalis* (7.5%). All *C. albicans*, *C. dubliniensis* and *C. tropicalis* isolates were susceptible to all drugs tested. *C. krusei* and *C. glabrata* isolates were susceptible for amphotericin B, ketoconazole and caspofungin, but resistant to fluconazole and elicited reduced susceptibility to fluconazole compared to other Candida isolates, respectively.

**Conclusions:**

Resistance and reduced susceptibility to fluconazole elicited by *C. krusei* and *C. glabrata*, respectively add credence to the importance of identifying the Candida species concern as identification of the infecting species is highly predictive of the likely drug susceptibility and can be used as a guide to therapy

*Key Words: Oral Candida; Antifungal susceptibility*

*Funding Agency: KU Grant No: DB01/07*



**Dentistry**

Category: Basic Sciences

66

**International Comparison of dental students knowledge and attitudes to HIV/AIDS**

\*Ellepola AN<sup>1</sup>, Devipriya B<sup>2</sup>, Jayathilake JA<sup>3</sup>, Joseph B<sup>2</sup>, Sharma P<sup>4</sup>

<sup>1</sup>Department of Bioclinical Sciences, Kuwait University Faculty of Dentistry; <sup>2</sup>Department of Diagnostic Sciences, Kuwait University Faculty of Dentistry; <sup>3</sup>Faculty of Dental Sciences, University of Peradeniya, Sri Lanka; <sup>4</sup>Kuwait University Health Sciences Center.

**Introduction:**

Several studies regarding the knowledge and attitudes of dental students towards HIV/AIDS patients have been reported from several countries. However, to the best of our knowledge, an international comparison between two countries with diverse cultural and educational backgrounds has not been reported in the literature. The aim of this study was to compare the knowledge and attitudes towards HIV/AIDS between dental students of Kuwait University(KU), Kuwait and University of Peradeniya (UP), Sri Lanka.

**Methods:**

A cross-sectional survey was conducted among a total of 258 dental students, representing all the three clinical years of both universities, using a structured questionnaire with 60 questions to examine their knowledge (HIV virus & AIDS disease process, potential transmission routes, HIV-associated oral lesions, risk groups, HIV transmission in the dental setting) and 13 questions to examine their attitudes towards the disease. Data regarding their gender and year of study were also collected. The mean knowledge and attitude scores were calculated and compared among students from both universities using t-test with SPSS 17.0.

**Results:**

A total of 215 questionnaires were returned (Response rate- 83%). The KU students were significantly more knowledgeable ( $p=0.018$ ) regarding HIV/AIDS when compared to the UP students. However, the UP students demonstrated a highly significant positive attitude ( $p<0.001$ ) towards the disease than those in KU.

**Conclusions:**

The relatively higher level of knowledge in Kuwait can be attributed to the 4 years of pre-clinical curriculum as opposed to 2 years in Sri Lanka. In spite of the acceptable level of knowledge in both countries, their attitude may be influenced, not only, by factors such as curriculum, but also the diverse cultural and social backgrounds, in particular. This information might help to define strategies to improve the quality of education among different countries.

*Key Words: HIV/AIDS; Knowledge; Attitudes*

*Funding Agency: None*



**Dentistry**

Category: Clinical

67

**The Attitude of Parents Toward Behavior Management Techniques in Pediatric Dentistry in Kuwait**

\*Al-Mutawa SA, Shyama M, Muhammad S

National School Oral Health Program, Ministry of Health, Kuwait

**Introduction:**

The objective of this study was to evaluate the parental attitudes toward different management techniques (BMT) used during dental treatment of schoolchildren and to assess the factors affecting such attitudes. The outcomes of this study are expected to aid dentists to select appropriate and acceptable management techniques which could potentially enhance cooperation between dentists, parents and children, and hence increase effectiveness of the treatment services.

**Methods:**

One-hundred and eighteen parents who accompanied their children to the clinics of Hawally school oral health program in Kuwait participated in this study. The parents viewed a videotape which showed scenes of different BMT's and then completed a questionnaire.

**Results:**

The most approved techniques by the entire participants (100%) were positive reinforcement and effective communication. Tell-Show-Do as well as distraction were accepted by 99.2% of the parents. About 95.8% of the parents were in favor of modeling and 81.4% for nonverbal communication. Only 66.1 % accepted hypnosis. Almost half of the parents (51.7%) opted for parental separation and one-thirds (30.5%) chose voice control. Less than one-fourth (20%) preferred nitrous oxide sedation and physical restraint. The least approved techniques were general anesthesia which was permitted by 5.9%, hand over mouth by 5.1% and conscious sedation which was merely agreed by 4.2% of the parents. None of the BMT's received total rejection. Majority of the parents regarded that use of various BMT's is key factor for successful dental care for their children. Acceptance of each BMT was not related to parental age, gender, nationality, education level or occupation.

**Conclusions:**

The general parental attitudes were positive regarding the BMT. Most parents preferred the non-pharmacological techniques to pharmacological techniques. The least aggressive techniques were most acceptable. Explanation enhanced their level of acceptance.

*Key Words: Behavior management techniques; Parental attitudes; Schoolchildren*

*Funding Agency: Ministry of Health, Kuwait*



**Dentistry**

Category: Basic Sciences

68

**Accuracy in Using Demirjian's Dental Age Estimation Method in Kuwaiti Adolescents**

\*Kullman L<sup>1</sup>, Al Sane M<sup>2</sup>

<sup>1</sup>Department of Diagnostic Sciences, Faculty of Dentistry, Kuwait University;

<sup>2</sup>Department of Developmental and Preventive Sciences, Faculty of Dentistry, Kuwait University

**Introduction:**

Previous studies suggest that there is a correlation between chronological age and developmental stages of the third molar and that maturation standards vary between populations of different ethnicities.

The developmental stages of teeth are best evaluated radiographically. Different dental age estimations using radiographs have been used, the one by Demirjian has been found to be reliable and accurate in different populations. To date, insufficient data are available on populations of Middle Eastern origin. In a previous preliminary study did we establish preliminary norms for Kuwaiti youths.

Hence, the objective of this study was to assess the accuracy of using these norms in a new sample of Kuwaiti youths.

**Methods:**

One hundred sixty five panoramic radiographs (79 males, 86 females) from the patient data base in KUDC were used. Inclusion criteria were: Kuwaitis, not included in last year's study and aged 9-18 years. Using Demirjian's eight stages for classification of tooth development, all mandibular third molars were assessed by one investigator (LK). Data were recorded and descriptively analyzed in SPSS to study the accuracy of using Demirjians method in Kuwaiti youth.

**Results:**

A significant correlation between chronological and estimated age was found for both sexes and the mean difference between chronological and estimated age was found to be between -0.4 years for boys and -0.7 years for girls.

**Conclusions:**

Chronological age was estimated in a reliable way using Demirjians methods in this study. However, there is a small systematic error during the age estimation, expressed as a slight overestimation of the chronological age.

A larger sample will therefore be used for the norms in the future, in order to establish more accurate Kuwaiti norms for both genders.

*Key Words: Third molar; Age Estimation; Chronological age*

*Funding Agency: None*



**Dentistry**

Category: Clinical

69

**Smoking and Periodontal health**

\*Kamber F

Department of Surgical Sciences, Kuwait University, Faculty of Dentistry

**Introduction:**

Numerous studies have concluded that smokers have at least three times the risk of developing severe periodontitis compared to non-smokers. Periodontal disease is a chronic inflammatory gingival disease which affects individuals with various ages. Smokers tend to exhibit more periodontal attachment loss compared to non-smokers. In addition, smoking has also debilitating effects on numerous periodontal treatments that include: non-surgical therapy, surgical therapy and regenerative therapy. The aim of the study was to evaluate the correlation between periodontal health and smoking on local population.

**Methods:**

This was a cross sectional study that utilized subjects between the ages of 18-70, All subjects were seeking dental treatment at Kuwait University, Dental Clinic. The study included 44 participants, all subjects had to fill a survey, and the survey inquired information regarding educational background, smoking status, amount of cigarettes and medical history. Upon completion of the survey patients received comprehensive periodontal evaluation. In this study, periodontal disease was defined as periodontal attachment loss of 2 mm or more in at least 4 or more sites. The study utilized SPSS descriptive analysis

**Results:**

The study utilized forty four smokers (n 44), all patients were 18 and older (36 males and 8 females). Out of the 44 patients only 11 smokers did not exhibit signs of periodontal disease (periodontal attachment loss). The majority of smoking patients (n 28) have at least 4 sites with periodontal attachment loss (2mm or more). The results showed that 63.6% of participating smokers in this study had signs of periodontal disease (periodontal attachment loss)

**Conclusions:**

Approximately two third of all smokers participating in this study had signs of mild-moderate and severe periodontitis. Further studies should have larger sample size and periodic evaluation of periodontal disease.

*Key Words: Periodontal Disease; Attachment Loss; Smoking*

*Funding Agency: None*



**Genetics and Molecular Biology**

Category: Graduate MSc (Basic Science)

70

**The Therapeutic Potential of the Gift of the Three Wise Men on Endocrine Resistant and Sensitive Breast Cancer Cell Lines**

\*Al-Mass A<sup>1</sup>, Al-Saleh S<sup>2</sup>, Benov L<sup>1</sup>, Luqmani YA<sup>2</sup>

<sup>1</sup>Department of Biochemistry, College of Medicine, Kuwait University;

<sup>2</sup>Department of Pharmaceutical Chemistry, College of Pharmacy, Kuwait University.

**Introduction:**

Myrrh, the resin of *Commiphora myrrha* is a herbal product that has been valued since ancient times for its alleged curative properties. Used in traditional medicine, it is claimed to have anti-proliferative activity on cancers that are resistant to conventional medications and beneficial effects have been claimed against hormone-dependent cancers such as of breast and prostate. In this study we investigated the in vitro effects of Myrrh on two breast cancer cell lines, MCF-7 and a derivative endocrine resistant line (pII) generated by siRNA induced down-regulation of the estrogen receptor.

**Methods:**

Crude aqueous extracts of Myrrh resin were standardized and tested at varying concentrations on pII and MCF-7 cell lines. Anti-cancer effects were investigated by MTT, anti-proliferative and cell motility assays in addition to various morphological analyses.

**Results:**

Myrrh induced a dose dependant inhibition of growth in both cell lines, with proportionately greater effect on pII. Unlike MCF7 cells, pII cells displayed significant motility after 24h; this was inhibited by relatively low concentrations of Myrrh. Exposure to Myrrh also resulted in changes in permeability and cell membrane morphology in both cell lines. Again, these effects were more pronounced in the pII cells.

**Conclusions:**

The activity of both cell lines was significantly modified by Myrrh, demonstrating its anti-cancer potential. The enhanced effects on pII cells suggest that this plant extract may contain components useful for reducing the metastatic potential of breast cancer cells that are therapeutically endocrine unresponsive. As pII cells demonstrate an increased dependence on alternative peptide growth factor induced signaling pathways, it will be useful to determine the effects of Myrrh on intermediates of this cascade.

*Key Words: Commiphora myrrha(Myrrh); Breast cancer; Anticancer effect*

*Funding Agency: Grant YM13/09 and YM08/09 from Kuwait University*



**Genetics and Molecular Biology**

Category: Clinical

71

**Genotyping of Non-Classical Congenital Adrenal Hyperplasia (NCCAH) in a Subgroup of Kuwaiti Females**

\*Al-Shoumer KAS<sup>1</sup>, Nair VS<sup>1</sup>, Ali AH<sup>1</sup>, Haider MZ<sup>2</sup>

<sup>1</sup>Division of Endocrinology & Metabolic Medicine, Department of Medicine; <sup>2</sup>Department of Pediatrics, Faculty of Medicine, Kuwait University, Kuwait

**Introduction:**

Congenital Adrenal Hyperplasia (CAH) due to the deficiency of 21-hydroxylase enzyme (21-OH) is divided into Classical (CAH) and non-Classical (NCCAH) forms. It arises mostly from mutations in the steroid 21-hydroxylase (CYP21) gene. No previous attempts were made to assess the genotypic CAH variants in Kuwaiti subjects.

**Methods:**

We assessed genotypic variation in 10 Kuwaiti females with NCCAH matched (for age and BMI) with 10 normal Kuwaiti females.

For 21-OH genotyping, genomic DNA was isolated from fresh whole blood of subjects using standard salting out procedure. To distinguish between the active CYP21 and the non-functional CYP21P genes, two pairs of oligonucleotide primers were designed. On Primary PCR, the CYP21 and CYP21P genes were amplified. The products generated from CYP21P and CYP21 genes were distinguished by digestion with EcoRI. Using primary PCR product as template, the secondary ACRS PCR was done. In secondary ACRS PCR, region specific primers for 11 known mutation loci associated with CAH were used and these were assessed in the patients and controls.

**Results:**

At least one mutation was found in each patient studied. Out of 11 mutations studied, 7 mutations were found in the patients. These 7 mutations were (Exon 1 Codon 30 – detected in 3 patients; Exon 4 Codon 172 – detected in one patient; Exon 6 Codon 237 – detected in one patient; Exon 7 Codon 281 – detected in all 10 patients; Exon 7 Codon 306 – detected in one patient; Exon 8 Codon 318 – detected in 3 patients; Exon 8 Codon 356 – detected in one patient). These data indicate that majority of the cases showed mutations in Exon 7 Codon 281, followed by Exon 1 Codon 30 and Exon 8 Codon 318. Three of the controls appeared to have hitherto un-identified mutations.

**Conclusions:**

To our knowledge, this is the first demonstration of these mutations in Kuwaiti females with NCCAH that would trigger genotypic assessment of a larger population of such patients.

*Key Words: Adrenal hyperplasia; Genotyping; Kuwaiti*

*Funding Agency: None*



**Genetics and Molecular Biology**

Category: Graduate MSc (Basic Science)

72

**Influence of Bilirubin Uridine Diphosphate Glucuronosyltransferase 1A Gene Promoter TATA box on Serum Bilirubin Levels and Cholelithiasis in Hemoglobinopathy Patients**

\*AlFadhli SM<sup>1</sup>, Hadi M<sup>1</sup>, Al Jafar H<sup>2</sup>

<sup>1</sup>Kuwait University, Faculty of Allied Health Sciences; <sup>2</sup>Ministry of Health, Amiri Hospital, Hematology Laboratory

**Introduction:**

High levels of erythrocyte destruction in sickle cell anemia (SCA) and  $\beta$ -thalassemia major (TM) result in chronic hyperbilirubinemia, accompanied with cholelithiasis occurring in a subset of patients. We have investigated the association between chronic hyperbilirubinemia and susceptibility to cholelithiasis in SCA and TM and the 5'-diphosphate-glucuronosyltransferase 1A1 (UGT1A1) gene promoter TATA box polymorphism which encodes a key enzyme in bilirubin catabolism.

**Methods:**

Denaturing HPLC and direct sequencing methods were used to screen for the various UGT1A1 gene promoter TATA box alleles. The frequencies of alleles were determined in 52 SCA, 35 TM patients and 30 healthy control. SCA and TM patients had undergone a full liver profile tests and Liver/biliary ultrasound scans several times for 6 months. The UGT1A1 promoter alleles were analyzed for association with steady-state total and unconjugated bilirubin concentrations and cholelithiasis.

**Results:**

Patients having allele 7(TA) repeats in the UGT1A1 gene promoter TATA box had significantly higher serum bilirubin concentration than those with the wild type 6(TA) repeat. The development of symptomatic bilirubin gallstones was significantly higher for patient with the homozygous TA7/7 genotype than those with the homozygous TA6/6 or heterozygous TA6/7 genotype.

**Conclusions:**

Genetic variation in the UGT1A promoter significantly influences serum bilirubin levels and the development of symptomatic cholelithiasis in hemoglobinopathy patients. The UGT1A promoter polymorphisms represent an important non-globin genetic modifier of clinical disease expression in hemoglobinopathies. A metaanalysis done on different ethnicities depicted both TA6/6 and TA6/7 genotypes as predominant and our data matched the Caucasians.

*Key Words: Cholelithiasis; UGT1A1; Hemoglobinopathy*

*Funding Agency: GM 01/01, GM 01/05*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

73

**Mammographic, Sonographic and MRI Findings in Breast Augmentation with Unknown Permanent Filler Injection**

\*Gupta R<sup>1</sup>, Alkandari L<sup>2</sup>, Alhazri F<sup>2</sup>, Roberts OM<sup>2</sup>, Bang RL<sup>3</sup>

<sup>1</sup>Department of Radiology, Faculty of Medicine, <sup>2</sup>Department of Radiology, Ministry of Health;

<sup>3</sup>Department of Surgery, Faculty of Medicine

**Introduction:**

Objective: To study sonographic(US mammographic and magnetic resonance imaging (MRI) features following breast augmentation with unknown permanent fillers injections.

Introduction: The augmentation mammoplasty by silicone prosthesis is well accepted choice in women with small breasts. Augmentation by unknown permanent fillers(silicone / collagen injections) can cause complications, like breast nodularity, persistent pain, skin changes and ever lasting apprehension. These substances disperse in the breast parenchyma obscuring the underlying breast tissue and making interpretation of breast abnormalities by mammography and ultrasound difficult.

**Methods:**

Five women of age ranging from 30 to 35 years (Mean 33 years) presented with history of breast augmentation by permanent filler injections of unknown material (silicone / collagen) in Private clinics in Kuwait. Of these patients, one presented with nodularity & itching, one with skin erythema & inflammation and two with persistent breast pain. All of them were apprehensive about the complications of the procedure. These patients were symptomatic and anxious and were evaluated by sonography, mammography, and MRI in Radiology department of Mubarak Al Kabeer Hospital.

**Results:**

US showed extensive shadowing due to injected material and made interpretation difficult. Mammography identified injected collagen in breast which appeared as multiple diffuse dense nodules obscuring underlying breast parenchyma. Further evaluation was done with breast MRI which showed multiple round nodules of low signal in T1W and high signal in T2 W images. Inflammatory response and edema of skin and subcutaneous tissue was seen in one patient, while others didn't show any abnormal enhancement or accompanying abnormality in underlying breast parenchyma. silicone/collagen.

**Conclusions:**

MRI breast is the imaging modality of choice in imaging women with breast augmentation performed by permanent filler injections.

*Key Words: Breast augmentation; Mammography; MRI Breast*

*Funding Agency: None*



**Imaging (Nuclear Medicine and Radiology)**

Category: Basic Sciences

74

**$^{99m}\text{Tc}$  Sulfur Colloid and  $^{99m}\text{Tc}$  Mebrofenin Hepatobiliary Functional Liver Imaging in Normal and Diabetic Rats.**

\*Al-Saeedi F, Loutfi I

Department of Nuclear Medicine, Kuwait University, Faculty of Medicine.

**Introduction:**

The use of  $^{99m}\text{Tc}$  sulfur colloid (SC) and  $^{99m}\text{Tc}$  mebrofenin (BrIDA) hepatobiliary scans and their kinetics changes for liver functional imaging in experimentally-induced diabetes mellitus (DM) in the rat were investigated.

**Methods:**

Two groups for SC and BrIDA of rats ( $n=40$ ; 20 rats per group) were studied. Imaging was obtained in each group before and after induction of DM using streptozotocin (55 mg/kg ip). Dynamic acquisition was performed for 1 h after injection of 37 MBq radiotracer. Organ/tissue distribution was determined by drawing regions of interest obtaining ratios as cumulative count rate over heart or liver or spleen to WB for SC and liver, liver parenchyma, biliary tree, or abdomen to WB for BrIDA for both control and DM rats. Statistical analysis was done using Student's paired t-test.

**Results:**

SC uptake ratios (mean $\pm$ SE) showed a lower liver uptake (0.75 $\pm$ 0.02) in the rats after DM induction compared to baseline studies (0.81 $\pm$ 0.03), while the cardiac blood pool and spleen showed higher radioactivity in the DM rats vs controls. For BrIDA, a similar pattern of radiotracer handling was seen in both controls and DM rats. Liver uptake ratio was 0.69 $\pm$ 0.07 in DM rats as compared to 0.67 $\pm$ 0.08 in controls, while in the biliary tree was 0.72 $\pm$ 0.02 in DM rats as compared to 0.70 $\pm$ 0.07 in controls.

**Conclusions:**

An experimental setting for studying liver function alterations in early DM is evaluated using SC and BrIDA. Detectable changes are shown in the liver phagocytic/RES while not in the hepatobiliary function after DM induction.

*Key Words: Liver scan; Phagocytic/RES; Hepatobiliary*

*Funding Agency: Kuwait University-Research Administration-Grant Nu*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

75

**Acute Gastrointestinal Bleeding: Diagnosis by Multidetector CT**

\*Al-Saeed OO<sup>1</sup>, Kombar OR<sup>2</sup>, Almorsy M<sup>3</sup>, Sheikh M<sup>1</sup>

<sup>1</sup>Department of Radiology, Faculty of Medicine, Kuwait University; <sup>2</sup>Department of Radiology;

<sup>3</sup>Department of Surgery, Amiri hospital, Kuwait

**Introduction:**

Endoscopy is considered the primary diagnostic modality for the diagnosis of acute upper gastrointestinal bleeding (AGIB) but it often fails to depict the exact focus of bleeding especially in cases with massive bleeding. Multi-detector CT angiography (CTA), especially with the 64- slice scanner which has increasingly been used in the diagnostic evaluation of most vascular diseases appears to be promising in the diagnosis of AGIB.

Aim of the study: To prospectively evaluate the accuracy of 64 slice multi-detector (MDCT) in the diagnosis of AGIB in our population.

**Methods:**

This prospective study was conducted on 28 consecutive patients presenting with AGIB. The CT examinations of the abdomen were performed with a 64 slice MDCT scanner using a standard protocol for triphasic abdominal imaging. Buscopan (1ml intra muscular) and water (1000 cc) was give prior to the CT examination.

The results of the MDCT were compared to the surgical findings to assess the accuracy.

**Results:**

Of the 28 patients (20 males and 8 females; mean age 56 years) 6 patients did not undergo surgery and were therefore excluded from analysis. Of the remaining 22 patients that were positive on MDCT 19 (86%) were confirmed at surgery, accurately depicting the site of bleed. The analysis revealed that the sensitivity, specificity, accuracy, for the detection of GI bleeding with MDCT were 100%, 75%, and 75% respectively. The positive predictive value and the negative predictive value were 100% and 89%, respectively.

**Conclusions:**

Our findings confirms that the triphasic technique with luminal water distension scanned with 64 slice MDCT with bolus tracking software is accurate for the detection and localization of sites of bleeding in patients with AGIB.

*Key Words: GI Bleed; CT Diagnosis; MDCT*

*Funding Agency: None*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

76

**Invasive Ductal Carcinoma of the Female Breast: Referral Pattern for 18F-Fluro-deoxy-glucose Positron Emission Tomography/Computed Tomography (PET/CT) Study**

\*Marafi F<sup>1</sup>, Esmail A<sup>1</sup>, Al-Said A<sup>2</sup>, Al-Nafisi N<sup>1</sup>, Al-Mohannadi SS<sup>1</sup>

<sup>1</sup>Department of Nuclear Medicine, PET/CT Unit, Faisal Sultan Bin Issa for Diagnostic and Radiotherapy; <sup>2</sup>Department of Surgery, Mubarak Al-Kabeer Hospital, Kuwait

**Introduction:**

Breast cancer is the most common female cancer and is the first cause of cancer mortality in females in Kuwait. F18-Fluro-deoxy-glucose (F18-FDG) PET/CT has been recently used in Kuwait. F18-FDG PET/CT for initial staging is not yet considered a standard imaging modality however it is used for restaging and evaluation of response to therapy. The objective of this study was to evaluate the referral pattern regarding the main cause of referral for PET/CT studies among female breast cancer in our initial experience.

**Methods:**

Charts of all female patients with the diagnosis of breast cancer and referred to our department for FDG PET/CT scans between November 2008 and January 2010 were retrospectively reviewed. The main reason for referral was found from records for each case. All cases were imaged using Siemens biograph 2 PET/CT camera using F18-FDG. Patients were injected with an average of 12 mCi of F18-FDG and waiting time of 60 minutes was used for the uptake period. Whole body scan was then obtained and standard uptake value (SUV) of abnormalities was calculated routinely.

**Results:**

There were 64 female patients with invasive ductal carcinoma of the breast (IDC) referred for PET/CT for variable clinical indications. Among those patients, 39 patients were referred for restaging, 10 patients for assessing response to therapy, 10 patients for detection of metastasis and 5 for initial staging. Clinically valuable information was evident mainly when the clinical question was to restage the patient with detection of pulmonary nodules or liver lesions, or to assess response to therapy where metabolic response versus disease progression is the clinical question.

**Conclusions:**

Majority of the referrals were for restaging of the disease while lesser number was for initial detection of metastasis. Our initial experience is in agreement with the referral pattern in the literature.

*Key Words: PET/CT; Invasive Ductal Carcinoma; Pattern*

*Funding Agency: None*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

77

**Kuwait's One Year Experience of 2-deoxy-2- [18F]fluoro-D-glucose (FDG)  
PET/CT Study.**

\*Esmail A<sup>1</sup>, Marafi F<sup>1</sup>, Al-Feeli M<sup>2</sup>, Ghanim M<sup>2</sup>, Al-Awadi E<sup>3</sup>, Al-Nafisi N<sup>1</sup>, Al-Mohannadi S<sup>1</sup>

<sup>1</sup>Department of Nuclear Medicine Department, PET/CT Unit, Faisal Sultan Bin Issa for Diagnostic and Radiotherapy; <sup>2</sup>Department of Nuclear Medicine, Mubarak Al-Kabeer Hospital; <sup>3</sup>Department of Nuclear Medicine, Farwania Hospital.

**Introduction:**

The use of F-18 FDG Positron Emission Tomography (PET) several decades ago has led to tremendous advanced in molecular imaging. Its use has been validated in clinical oncology, cardiology, neurology and psychiatry. We Report our experience over one year period.

**Methods:**

All patients referred to Kuwait Cancer Control Center for PET/CT examination are entered (oncology/non-oncology). Imaging was done using Siemens' PET/CT Biograph 2 machine after injecting the patient with F18-FDG intravenously. Demographic data and clinical indications are reviewed. Recommendations are drawn from the referrals.

**Results:**

After the imaging of the first volunteer case, physicians were encouraged to start requesting this study for oncological and non oncological indications. From the 11th Nov, 2008, till 19th Jan 2010, 869 cases were done. There have been 843 (97%) oncological cases and 26 (3%) cases done for other conditions including (detecting epileptic foci, fever of unknown origin, inflammatory conditions and psychiatric disorders). The general trend is a stepwise increase in the number of cases done. Oncological indications are the main causes of referral including lymphoma (58.5%), colorectal tumors (10.3%), breast tumors (7.6%), head and neck tumors (3.9%), lung tumors (3.4%) and unknown primaries (3.2%). All other malignancies (13.1%) are less experienced.

**Conclusions:**

The clinical utilization of the newly introduced functional imaging modality with PET/CT is growing. Oncological cases remain the majority of the work with emphasis for specific tumors. Non oncological uses are growing and physicians are encouraged to discuss imaging options before requesting a nuclear medicine examination.

*Key Words: PET/CT; F18-FDG; Oncology*

*Funding Agency: None*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

78

**The Ability of DWI to Differentiate Between Malignant and Benign Breast Lesions: Preliminary Study in Kuwait**

\*Al-Khawari HA<sup>1</sup>, Badran BMF<sup>2</sup>, Raees MG<sup>3</sup>, Brown MV A<sup>3</sup>, Mada JP<sup>3</sup>, Al-Manfouhi HA<sup>3</sup>  
<sup>1</sup>Department of Clinical Radiology, Kuwait University, Faculty of Medicine; <sup>2</sup>Department of Clinical Radiology, Al-Azhar University for Girls, Faculty of Medicine, Cairo; <sup>3</sup>Departments of Radiology, Pathology, Surgery, Al-Amiri Hospital, Kuwait

**Introduction:**

To evaluate the role of diffusion-weighted imaging (DWI) and the apparent diffusion coefficient (ADC) for detecting breast tumors, as compared with contrast-enhanced MRI in outpatient clinic.

**Methods:**

Dynamic contrast-enhanced MRI and DWI of the breasts were performed in 67 women (43 non-lactating non-pregnant patients with 51 suspected breast lesions >5 mm and 24 normal), age ranged from 34 to 70 years (mean 47.34 years)) using a 1.5-T scanner (HDX, General Electric Medical Systems). The DW sequences were pre-contrast echo-planar imaging with spectral fat saturation (EPI fs) and (b-values: 0, 500). Lesions were analyzed regarding visibility in DW sequences and ADC values. Each lesion was assigned either as malignant or benign, according to their imaging characteristics on contrast-enhanced MRI, DWI, and ADC measurements. ADCs of the malignant and benign breast lesions were calculated and compared to the ADCs of 24 normal fibroglandular tissues. Using histological results as the gold standard, the diagnostic accuracies of the dynamic contrast-enhanced MRI, DWI, and ADC were calculated and compared.

**Results:**

All breast lesions ((38 mass and 13 enhancing non-mass) were identified on both the dynamic contrast-enhanced MRI and DWI scans. The mean ADC value of benign lesions was  $1.64 \pm 0.32 \times 10^{-3} \text{ mm}^2/\text{sec}$ , of malignant lesions was  $1.09 \pm 0.27 \times 10^{-3} \text{ mm}^2/\text{sec}$  while normal breast parenchyma  $1.5 \pm 0.3 \times 10^{-3} \text{ mm}^2/\text{sec}$ . there was overlap in the ADC values of normal, benign and malignant lesions. The sensitivities/specificities of the dynamic contrast-enhanced MRI, qualitative DWI, and quantitative ADC were calculated.

**Conclusions:**

DWI is highly sensitive in the detection of malignant breast lesions even with qualitative assessment alone, whereas ADC measurement offers quantitative assessment and increases the specificity. However, considerable overlap in ADC of benign and malignant lesions necessitates validation of these findings in larger studies.

*Key Words: MRI Breast; Apparent Diffusion Coefficient (ADC); Diffusion-Weighted Imaging (DWI)*  
*Funding Agency: None*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

79

**Proton MR Spectroscopy of the breast in the clinical setting: Preliminary Study in Kuwait**

\*Al-Khawari HA<sup>1</sup>, Badran BMF<sup>2</sup>, Habeeb M<sup>3</sup>, Kovacs A<sup>3</sup>, Al-Manfouhi HA<sup>3</sup>, Madda JP<sup>3</sup>

<sup>1</sup>Department of Clinical Radiology, Kuwait University, Faculty of Medicine; <sup>2</sup>Department of Clinical Radiology, Al-Azhar University for Girls, Faculty of Medicine, Cairo; <sup>3</sup>Departments of Radiology, Surgery, Pathology, Al-Amiri Hospital, Kuwait

**Introduction:**

Purpose: To determine if Proton Magnetic Imaging Spectroscopy (1H MRS) of the breast differentiate benign vs. malignant breast tissue with adequate specificity & sensitivity to be useful in clinical management and can be reliably analyzed and be useful to the final interpretation of the breast MRI examination.

**Methods:**

Sixty-two MRS measurements were performed in 50 non-lactating non-pregnant women (32 patients with lesions >1 cm and 18 normal), age ranged from 34 to 70 years (mean 58.4 years). All MRI and MRS scans were performed on a 1.5-T MR scanner; single voxel <sup>1</sup>H MRS was performed using fat saturated BREASE sequence. The section location was defined by a radiologist to include the lesion visible on the contrast-enhanced scans. Choline was measured in the lesion and compared between benign, malignant lesions and normal breast tissue. The Choline peak is considered positive if it is twice the height of the baseline in the automatically generated MRS curve. Reference standard was histopathology for lesions with BI-RADS category 4 and 5 and histology or at least a 1-year follow-up for findings with BI-RADS 1, 2 and 3.

**Results:**

Spectroscopy findings were positive in 24 (100%) of 24 malignant tumor but negative for all benign lesions (20) and normal breast tissue (18) (sensitivity 100%; specificity, 100%).

**Conclusions:**

1HMRS is useful in the in vivo characterization of breast masses when the lesion exceeds 1 cm in maximal dimension. MRS using the Choline peak integral allows high sensitivity and specificity. Moreover, MRS is fast and well tolerated, and could be readily incorporated into a breast MRI examination. By reducing the number of benign biopsies recommended at MRI, the use of MRS will not only reduce patient morbidity, but will save unnecessary anxiety, cost and time for both the patient and the medical staff.

*Key Words: Proton Magnetic Imaging Spectroscopy (1H MRS); MRI Breast; Breast Cancer*

*Funding Agency: None*



**Imaging (Nuclear Medicine and Radiology)**

Category: Graduate (Resident)

80

**Myocardial Perfusion Abnormalities Among Asymptomatic Type 2 diabetic Patients- an Experience in Kuwait**

\*Al-Humaidi G, Elgazzar AH

Department of Nuclear Medicine, Faculty of Medicine, Kuwait University; Mubarak Al-Kabeer Hospital Kuwait

**Introduction:**

Type 2 diabetes is a relatively common disease in Kuwait. Seventy-five percent of patients with diabetes die of coronary artery disease. In diabetes, myocardial ischemia is often silent. Therefore, identifying diabetic patients with established coronary artery disease (CAD) occurs inevitably late. Myocardial perfusion imaging using  $^{99m}\text{Tc}$ -Tetrofosmin is a well-established procedure used to diagnose CAD. It is non-invasive, readily available and provides functional assessment of the heart. The aim of this study is to evaluate the prevalence of silent ischemia and abnormal cardiac scans in asymptomatic Type 2 diabetic patients using  $^{99m}\text{Tc}$ -Tetrofosmin myocardial perfusion scintigraphy.

**Methods:**

Fifty-nine patients with Type 2 diabetes, with no history of coronary artery disease, underwent myocardial perfusion scintigraphy using  $^{99m}\text{Tc}$ -Tetrofosmin stress/ rest protocol. The presence of perfusion abnormalities was correlated with the patient's diabetes history: duration, type of treatment, level of control, and presence and type of complications. The influence of other factors such as, hyperlipidemia, age, and family history of CAD, with abnormal scans was also studied.

**Results:**

Abnormal scans were detected in 37% of patients. Duration of diabetes, use of insulin, nephropathy, and neuropathy were significantly associated with abnormal scans ( $p=0.048$ ,  $p=0.045$ ,  $p=0.006$ , and  $p=0.03$ ) respectively. Positive family history of CAD was highly associated with abnormalities ( $p<0.001$ ), but no significant correlation was found between other risk factors and the presence of perfusion defects. To date, follow up data were available in 19 patients out of the 22 with abnormal scans. Among those, one died and three required stent placement.

**Conclusions:**

A high percentage (37%) of abnormal myocardial scans is found among asymptomatic diabetics with significant positive correlation with duration, insulin use, nephropathy, and neuropathy. Therefore, in such situations screening asymptomatic Type 2 diabetic patients for cardiac abnormalities is justified.

*Key Words: Silent ischemia; Asymptomatic; Type 2 diabetes*

*Funding Agency: Kuwait University*



**Imaging (Nuclear Medicine and Radiology)**

Category: Graduate (Resident)

81

**Bone Scan Display Mode. Should More Than one be used for Interpretation!**

Alsammeri H, Alfarsi S, Kazem N, Omar AM, \*Elgazzar AH

Department of Nuclear Medicine, Mubarak Alkabeer Hospital; Department of Nuclear Medicine,  
University of Kuwait

**Introduction:**

The diagnostic ability of bone scan depends on many factors including spacial and intrinsic resolutions, computer data manipulations, contrast, ability to detect abnormalities by the interpreting physician & quality of display which is manipulated in many ways to aid interpretation. Linear (white/black) and inverse (black/white) are most commonly used and the preferred one varies among department & readers. The objective of this study was to compare two gray scale display modes (linear and inverse) to find the effect on the physicians' interpretation.

**Methods:**

100 cases were chosen retrospectively, 59 males & 41 females in an age range of 6 months to 88years. The cases were reviewed by 2 qualified nuclear medicine consultants on two display modes of gray scale Black over white (linear) and white over black (inverse) independently with no other manipulations. Each physician determined which mode was better in seeing the findings on the whole body scans regardless to the actual patient's complaint. Parameters included contrast, definitions of findings, certainty of interpreter and number of lesions. Any disagreements were resolved by a third physician blind to the other two. The data were displayed using Xeleris work station.

**Results:**

Considering all parameters, linear display was overall superior in 27 cases (27%) while the inverse display was better in 23 cases (23%). In the remaining 50 cases (50%) there was no difference. Overall, vertebrae, ribs, knees, feet and shoulders showed better contrast in the linear mode with more certainty in identifying the lesions. On the other hand, skull and ankle joint lesions were better seen on inverse mode. Additionally, cold lesions in pelvis and spine were better identified in inverse than linear mode.

**Conclusions:**

To achieve the best possible diagnostic information from a bone scan the two gray scale display modes should be used together.

*Key Words: Bone Scan; Radionuclide; Display modes*

*Funding Agency: University of Kuwait*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

82

**Comparison of Pinhole and High Resolution Parallel Hole Imaging for Nodular Thyroid Disease**

\*Elgazzar AH<sup>1,2</sup>, M Elsaid M<sup>3</sup>, Shehab F<sup>2</sup>

<sup>1</sup>Departments of Nuclear Medicine, Mubarak Al-Kabeer Hospital; <sup>2</sup>Department of Nuclear Medicine, Faculty of Medicine; <sup>3</sup>Department of Radiologic Sciences, Faculty of Allied Health, Kuwait University, Kuwait

**Introduction:**

Thyroid scintigraphy provides important information on the size and function of thyroid nodules. Pinhole was the main standard collimator to be used for thyroid imaging. There has been a gradually increasing trend to replace pinhole with the use of high resolution low energy parallel-hole collimator with zoom in thyroid imaging. Vendors have even decreased manufacturing pinhole collimators particularly with the appearance of dual head cameras. The objective of this study is to compare parallel hole collimator acquisition of thyroid gland to that obtained by pinhole collimator.

**Methods:**

Twenty nine patients, 24 females and 5 males aged 18 to 70 years who were routinely referred for thyroid imaging were studied. Each patient was injected with 185 MBq (5 mCi) of Tc99m pertechnetate IV. After 20 minutes, acquisition using pinhole followed by parallel-hole collimators was obtained. For pinhole hole acquisition 3 mm insert was used and 3 images were obtained in the anterior and anterior oblique projections For parallel hole acquisition, anterior view was obtained for 250 K. The collimator was placed the closest possible to the patient. The image quality, number and definition of nodules were evaluated by one qualified nuclear medicine physician and a highly qualified technology scientist independently and differences were resolved by consensus.

**Results:**

Among the 29 patients, 14 patients had nodular disease on scintigraphy and 15 had non nodular patterns. Among the cases with nodular disease the quality of images was clearly better using pinhole acquisition in all cases. There were 40 nodules of different sizes detected by pinhole imaging. Only 10 (25%) of these nodules were seen on parallel hole images.

**Conclusions:**

Pinhole thyroid imaging must be used for thyroid imaging particularly in patients suspected of having nodular disease since 75% on nodules could be missed if parallel-hole collimator is used.

*Key Words: Thyroid scintigraphy; Pinhole; Nodular disease*

*Funding Agency: None*



**Imaging (Nuclear Medicine and Radiology)**

Category: Graduate (Resident)

83

**Preoperative Localization of Parathyroid Glands: Local Experience**

\*Al-Shammari A, Elgazzar AH, Al-Shammari H

Department of Nuclear Medicine, Faculty of Medicine, Kuwait University; Mubarak Al-Kabeer Hospital, Kuwait

**Introduction:**

Preoperative parathyroid imaging with  $^{99m}\text{Tc}$ - hexakis-2-methoxyisobutylisonitrile ( $^{99m}\text{Tc}$  MIBI), has proven to be beneficial for localization of hyperfunctioning glands since it reduces operative time, costs, and operative failure rates. The aim of this study was to evaluate the sensitivity of single isotope ( $^{99m}\text{Tc}$  MIBI), multi phase parathyroid scintigraphy technique for preoperative localization of parathyroid gland in Mubarak hospital's experience.

**Methods:**

This is a retrospective study, done between the years 2005-2008. Following injection with 25 mCi  $^{99m}\text{Tc}$ -MIBI, anterior cervicothoracic images were obtained at 10 minutes post injection with a dual-head gamma camera. A repeat set of images were obtained at one and two hours post-injection. SPECT was acquired at 1 hour post injection.

**Results:**

44 patients who were proven by parathyroid scintigraphy to have parathyroid adenomas and 32 patients with negative scan findings were followed up. Out of the 44 patients, 12 did bilateral neck exploration and specimens were sent to histopathology. In all cases, except one case, scan was able to correctly identify the site of parathyroid active tissue. In the group not operated, our results were confirmed by cytology in one patient and by U/S in three. Among the 32 patients with negative scan only 9 did other confirmatory test or neck exploration. Out of those 9 patients, only 2 showed abnormal glands confirmed either by surgery and or CT. The sensitivity of scan in correctly localizing glands is 88%.

**Conclusions:**

Multi phase parathyroid scintigraphy is a sensitive technique in localizing parathyroid glands. Our results are similar to results reported in the literature.

*Key Words: Parathyroid scintigraphy;  $^{99m}\text{Tc}$  MIBI; Parathyroid adenoma*

*Funding Agency: None*



**Imaging (Nuclear Medicine and Radiology)**

Category: Graduate (Resident)

84

**99mTc MIBI Whole Body Scan: A Potentially Useful Technique for Evaluating Metabolic Bone Disease**

\*Al-Shammari A, Elgazzar AH

Department of Nuclear Medicine, Faculty of Medicine, Kuwait University; Mubarak Al-Kabeer Hospital, Kuwait

**Introduction:**

Metabolic bone disease due to hyperparathyroidism is characterized by increased bone resorption and new bone formation. <sup>99m</sup>Tc- hexakis-2-methoxyisobutylisonitrile (<sup>99m</sup>Tc MIBI) accumulation is controlled by metabolic function and cell viability. Few case reports showed increased bone uptake in cases of hyperparathyroidism. Increased uptake of <sup>99m</sup>Tc MIBI is most likely due to increased perfusion, metabolism, and osteoblastic activity. The aim of this study was to investigate the potential of whole body <sup>99m</sup>Tc MIBI for detecting, visually and with the aid of quantitative analysis, various bony changes associated with hyperparathyroidism.

**Methods:**

Eighty six patients with hyperparathyroidism were included in this case-control prospective study. All patients were routinely referred for parathyroid localization. An extra whole body image was acquired 30 minute post injection using a gamma camera, equipped with a parallel hole collimator. Images were assessed visually and by drawing regions of interest over the sternum, femur, humeri, spine and the soft tissue adjacent to the bone. The ratios of bone to soft tissue were calculated and compared to ratios drawn in a control group routinely referred for cardiac imaging and injected with <sup>99m</sup>Tc MIBI, after confirming the absence of bone disease in this group.

**Results:**

The visual interpretation of the scans showed forty eight patients to have increased bone uptake. The quantitative assessment showed significant difference between the mean ratios of femurs, humeri, sternum and spine of the case and control groups. Kruskal-Wallis test showed significant agreement between the visual and quantitative ratios drawn from right and left femur and left humerus only ( $P < 0.05$ ).

**Conclusions:**

Whole body images using <sup>99m</sup>Tc MIBI are useful in detecting bony changes in long bones of metabolic bone disease associated with hyperparathyroidism. Quantitative analysis can help confirm the visual scan findings.

*Key Words: 99mTc MIBI; Metabolic bone disease; Hyperparathyroidism*

*Funding Agency: Kuwait university*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

85

**Blue Dye and Radionuclide Guided Sentinel Lymph Node Biopsy: Impact on Management & its Clinical Significance in Breast Cancer**

\*Usmani S, Khan HA, Huda FA, Ahmed N, Nafisi Al N, Marafi F, Mohannadi al S, Javed A, Amanguno HG, Saleh al N.  
Hussain Makki Al Jumma Centre for Specialized Surgery

**Introduction:**

To evaluate the efficacy of radioisotope guided Sentinel Lymph Node (SLN) biopsy in our institution, to correlate how it affects management of breast cancer and to establish the outcome results on follow-up.

**Methods:**

Fifty two patients (mean age  $47.28 \pm 9.7$ ; range 23-69 yrs) with operable breast carcinoma and clinically negative axilla were studied. SLN scintigraphy was performed 2-4 hour before surgery by injecting Tc-99m labeled nanocolloid intra-dermally in the peri-tumoral region. First lymph node (LN) to appear on the scan was labeled as SLN and marked on the skin by using gamma probe. Blue dye was also injected in all patients intraoperatively and blue and hot LN was explored in the axilla using a gamma probe.

**Results:**

The SLN was identified in 50 patients (96% success rate) while in two patients (4%) SLN was not visualized on imaging (negative study). The blue dye successfully localized SLN in 45 cases (87%). In 14 out of 52 (27%) cases SLN was positive for metastasis and in 8 out of these 14 (57%) the SLN was the only metastatic node. In remaining 38 (73%) cases SLN was negative for metastasis and all these patients remain disease free on follow-up (NPV of 100% for follow-up period of 12-36months).

**Conclusions:**

Lymphoscintigraphy with gamma probe guided SLN biopsy is a safe, simple and highly reliable procedure. When combined with blue dye technique it reduces the blindness of the procedure with some increases in cost. This strategy can accurately stage the axilla in most of the patients, allowing to forgo axillary dissection in patients in whom the SLN is clear.

*Key Words: Sentinel lymph node; Lymphoscintigraphy; Carcinoma breast*

*Funding Agency: None*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

86

**Patient Position & Phase of Respiration Affect the Doppler Waveform in the Celiac Artery**

\*Asbeutah AM, Al-Hussaini AJ, Al-Otaibi JA, Al-Nagi MN, Al-Obaidi SM  
Faculty of Allied Health Sciences

**Introduction:**

Multiple factors affect the velocity recording in the celiac artery (CA) causing a compression syndrome. Previous various reports have focused on the phase of respiration and found that the CA is highly compressed during the phase of expiration. There are few reports in the literature describing body position during Doppler scanning of the CA. The aim of this study is to evaluate the effect of patient position as well as the phase of respiration in velocity recording in the CA.

**Methods:**

Thirty male subjects were recruited prospectively into the study. Peak systolic velocity & vessel diameter at the origin of celiac artery at different body position and different phases of respiration were recorded while the subject fasted for at least 4-6 hours using duplex ultrasound.

**Results:**

There were 30 healthy males, their mean age ( $\pm$ SD, year) was  $25.5 \pm 5.30$ , and their mean body mass index ( $\pm$ SD,  $\text{Kg/m}^2$ ) ( $24.80 \pm 3.10$ ). The mean diameter ( $\pm$ SD, cm) of CA in supine position and during inspiration and expiration was ( $0.80 \pm 0.13$ ) and ( $0.70 \pm 0.10$ ), respectively. However, the mean peak systolic velocity ( $\pm$ SD, cm/s) was ( $93.80 \pm 22.85$ ) and ( $111.20 \pm 29.75$ ) during inspiration and expiration, respectively. Moreover, the mean diameter ( $\pm$ SD, cm) of CA in sitting position in inspiration and expiration was ( $0.85 \pm 0.16$ ) and ( $0.75 \pm 0.10$ ), respectively. The mean peak systolic velocity ( $\pm$ SD, cm/s) was ( $85.80 \pm 18$ ) and ( $96.80 \pm 25.27$ ) during inspiration and expiration, respectively. Paired student t-test for the effect of body position and phase of respiration in the peak systolic velocities and the diameter of the CA was performed and showed statistical significance ( $p < 0.05$ ).

**Conclusions:**

Patient position and phase of respiration are two important factors while performing Doppler for patient with celiac artery disease to avoid false positive results.

*Key Words: Celiac artery; Compression syndrome; Mesenteric vessels*

*Funding Agency: None*



**Medical Education**

Category: Clinical

87

**Multiple Authorship in Scientific Publications: Do they all Meet Authorship Criteria?**

\*Haider HH<sup>1</sup>, Sadeq A<sup>1</sup>, Al-Bahhar M<sup>2</sup>, Al-Herz W<sup>3</sup>, Al-Khayat H<sup>4</sup>

<sup>1</sup>Hamed Al-Essa Organ Transplant Center; <sup>2</sup>Department of Radiology, McGill University, Canada;

<sup>3</sup>Department of Pediatrics, Sabah Hospital; <sup>4</sup>Department of Surgery, Mubarak Al-Kabeer Hospital.

**Introduction:**

It has been reported that the number of coauthors have increased in the medical literature over the past 50 years. Few studies have shown that names are being added as coauthors that do not meet authorship criteria. The purpose of this study was to confirm these findings, and to analyze the reasons and the factors that are associated with unjust authorship.

**Methods:**

A survey link was sent by e-mail through [www.surveymonkey.com](http://www.surveymonkey.com) to corresponding authors of articles published in different medical and surgical journals in 2007 and 2008. Articles with a single author and partial survey responses were excluded from the study. Factors studied included: journal specialty, gender and level of corresponding author, institution type, the continent where the study was conducted, article type, journal impact factor, and total number of authors.

**Results:**

A total of 1245 out of 9283 authors responded to our survey (13.4% complete response rate). Responders were from 619 surgical (49.7%) and 626 medical (50.3%) articles. Journal's impact factor ranged from <1 to >50, and majority were between 2-5 (51%). Overall, 416 authors (33.4%) admitted that they had added names that did not deserve credit for authorship. Reasons for adding these names were; complimentary (39.4%), to avoid conflict at work (16.1%), secondary gain (7.2%), and other reasons (3.6%). Of the factors studied, number of authors (P= 0.000, more in > 8), study type (P=0.004, more in case report), and the continent where the study was conducted (P= 0.000, more in Asia) showed statistical significance. In retrospect, 75% of the authors would remove unjustified names from the article and 25% would still do the same.

**Conclusions:**

Our study shows that author list of one third of the current medical literature contains names that do not deserve credit for authorship. These observations call for developing measures to prevent the rising trend of unjustified authorship.

*Key Words: Multiple authorship; Unjustified authorship; Real author*

*Funding Agency: None*



**Medical Education**

Category: Clinical

88

**Therapeutic Traditional Cautery: Knowledge, Attitude, and Practice among Kuwaitis and Arabs in Kuwait**

\*Abdullah I, Isma'eeli H, AL-Ramyan A, Al-Ta'iar A  
Health Sciences Center, Faculty of Medicine

**Introduction:**

Traditional therapeutic cautery means burning the skin of human body with red hot iron rod with the aim to treat a wide range of diseases. There is no evidence that traditional cautery has therapeutic benefits and instead may lead to serious complications. Little is known about traditional cautery although it is practiced in areas where the modern health services are widely available and easily accessible.

**Methods:**

A cross-sectional study conducted on a group of shoppers who came to buy basic commodities in co-operative supermarkets. Two co-operative supermarkets were randomly selected from each governorate and data were collected by means of face-to-face interview using structured questionnaire.

**Results:**

Out of 618 approached, 518 responded (response rate 84%). The majority of the participants 60.4% (95% CI: 56.1%- 64.7%) thought that traditional cautery has therapeutic benefits. Diseases that can be treated by traditional cautery from the participants' perspective were mostly chronic conditions such as back pain and joints pain although other diseases such as psychological disorders and epilepsy were frequently mentioned. Approximately, 11.6% (95% CI: 9.0 %-14.6%) of the participants had traditional cautery at least once in their life-time. This was significantly higher in Jahra and Frawania governorates in comparison to other governorates. It was significantly higher among those with low level of education in comparison to those with high level of education. Approximately 54.0% thought that traditional cautery was derived from alleged saying of the Prophet Mohammed (Prophetic medicine). Almost half of the participants were against banning traditional cautery.

**Conclusions:**

Efforts should be made to increase the awareness about traditional cautery and its complications. Religious leaders should be involved in health education in order to gain the momentum to ban traditional cautery. Clinicians should discourage their patients to seek care through traditional cautery particularly those with chronic disease conditions.

*Key Words: Traditional; Therapeutic; Cautery*

*Funding Agency: None*



**Medicine**

Category: Clinical

89

**Reasons for Hospitalizations in Adults with Diabetes in Kuwait**

\*Al-Adsani AMS<sup>1</sup>, Abdullah KA<sup>2</sup>

<sup>1</sup>Diabetes Unit, Department of Medicine, Al-Sabah Hospital; <sup>2</sup>Diabetes Fellowship Programme

**Introduction:**

Diabetes is a major public health problem in Kuwait and it is a costly condition associated with significant levels of morbidity and mortality. This study was conducted to identify the impact of diabetes on hospitalizations and to determine the main reasons for admissions.

**Methods:**

A cross-sectional analysis was conducted for hospital admissions in Department of Medicine at Al-Sabah Hospital from 1<sup>st</sup> of January to 28<sup>th</sup> of February 2008 that contained diabetes either a primary or a coexisting diagnosis. Data were abstracted from the medical records. The principal reason for hospitalization was grouped into categories and diagnostic classes.

**Results:**

Of all hospital admissions during the study period (n=552), medical history of diabetes was listed in 40.6 %. Two patients were admitted as newly diagnosed diabetes with diabetic ketoacidosis, and 11.2% of the patients had unrecognized diabetes or hospital-related hyperglycaemia (i. e., an admission fasting blood glucose > 7 mmol/l or random blood glucose > 11.1 mmol/l). Patients with diabetes and those with hospital-related hyperglycaemia had significantly longer hospital stay than non-diabetic patients; 10.1 vs. 10.2 vs. 6.8 days. The three most common reasons for hospitalizations in patients with diabetes were diseases of the cardiovascular system (53.6%), diseases of the respiratory system (22.8%), and diabetes as a principal diagnosis (6.3%). The five most frequent specific cause for hospitalizations as a secondary diagnosis were acute coronary syndrome (27.2%), pneumonia (14.3%), heart failure (11.2%), cerebrovascular accident (10.3%), and chronic obstructive airway disease (3.6%).

**Conclusions:**

Diabetes imposes a great burden on secondary health care. Diseases of the cardiovascular and respiratory system were the commonest reasons for hospitalizations. Timely and effective primary care and hospital outpatient preventive and treatment strategies specifically for cardiovascular and respiratory diseases may reduce these hospitalizations.

*Key Words: Diabetes; Hospitalization; Kuwait*

*Funding Agency: None*



**Medicine**

*Category: Clinical*

**90**

**Risk Factors of Albuminuria in Adults with Type 2 Diabetes in Kuwait**

\*Al-Adsani AMS

Diabetes Unit, Department of Medicine, Al-Sabah Hospital

**Introduction:**

Diabetic nephropathy is the leading cause of kidney disease in diabetic patients and is associated with increased cardiovascular mortality. The risk of developing diabetic nephropathy starts with albuminuria, progressing from micro- to macroalbuminuria. This study is conducted to determine the risk factors associated with albuminuria in Kuwaiti subjects with type 2 diabetes.

**Methods:**

Kuwaiti subjects with type 2 diabetes attending the Diabetic Clinic at Al-Sabah Hospital, Kuwait were screened for albuminuria using urinary albumin:creatinine ratio test (U-ACR) or 24-hour collection. Albuminuria was defined as positive if U-ACR was  $>1.5$  mg/mmol and/or 24 hour collection was  $> 20$  mg/day on 2 occasions. Macroalbuminuria was defined if 24 hour collection was  $>300$  mg/day.

**Results:**

Data was available for 154 patients. The mean age was  $49.1 \pm 10.1$  years and the duration of diabetes was  $7.9 \pm 7.0$  years. Diabetic nephropathy was found in 43.5% of patients. The prevalence of microalbuminuria and macroalbuminuria were 27.3% and 16.2% respectively. Univariate analysis demonstrated significant associations between diabetic nephropathy and longer duration of diabetes, high glycosylated hemoglobin, elevated triglycerides, being hypertensive, systolic ( $>130$  mmHg) and diastolic ( $>80$  mmHg) blood pressure, higher body mass index, retinopathy, and treatment with sulphonylurea and/or insulin. Multivariate regression analysis showed that being hypertensive was the most significant predictor of albuminuria.

**Conclusions:**

Albuminuria is common among Kuwaiti adults with type 2 diabetes. Hypertension was the most significant independent risk factor for albuminuria. Early antihypertensive treatment is an important strategy to prevent diabetic nephropathy in these patients.

*Key Words: Diabetes; Nephropathy; Kuwait*

*Funding Agency: None*



**Medicine**

*Category: Clinical*

**91**

**Prophylactic Continuous Venovenous Hemofiltration can Prevent Worsening of the Kidney Functions after Percutaneous Coronary Intervention in Patients with Advanced Chronic Kidney Disease**

\*Ghani AA, Hussain N, Al Helal B  
Mubarak Al kabeer Hospital, Nephrology Department.

**Introduction:**

Contrast nephropathy (CIN) is associated with increased risk of in hospital morbidity and mortality. Patients with chronic kidney disease (CKD) are at higher risk of CIN. The purpose of this study is to find out whether post procedure continuous venovenous hemofiltration (CVVH) can prevent CIN in CKD patients after coronary angiography.

**Methods:**

Patients with stage III and IV CKD scheduled for coronary angiography between January 2004 and December 2005 were enrolled in the study. CVVH was done after the procedure. Serum creatinine and calculated GFR (c-GFR) were estimated before the procedure, repeatedly during hospitalization, at discharge, and 15 days after the procedure. The incidence of CIN was calculated.

**Results:**

98 patients were enrolled in the study. 52 (53.1%) were males, the mean age was  $60.7 \pm 10.99$  years. Pre procedure serum creatinine was  $411.29 \pm 79.94$   $\mu\text{mol/l}$ , GFR  $18.04 \pm 4.26$  ml/min. All patients underwent post procedure CVVH for  $21.34 \pm 2.12$  hrs. The mean time interval between the procedure and the start of CVVH was  $44.34 \pm 18.77$  min. The mean serum creatinine at discharge was  $403.58 \pm 88.39$   $\mu\text{mol/l}$ , and  $422.54 \pm 88.86$   $\mu\text{mol/l}$  15 days after the procedure. Mean GFR was  $18.52 \pm 4.61$  ml/min, and  $17.62 \pm 4.27$  ml/min at discharge, and 15 days after the procedure respectively. One patient (1.02%) developed CIN that required repeated CVVH during hospitalization and ended up on regular hemodialysis. The in hospital mortality was 0%.

**Conclusions:**

CVVH is effective in preventing CIN after coronary angiography in CKD patients.

*Key Words: Intravenous Contrast; Renal functions; CVVH*

*Funding Agency: None*



**Medicine**

Category: Clinical

92

**A Prospective Clinical Study on the Relation of Serum Levels of Vitamin D to Knee Osteoarthritis**

\*Shehab D<sup>1</sup>, Al-Jarallah K<sup>1</sup>, Al-Awadhi A<sup>1</sup>, Haider MZ<sup>2</sup>, Mini Abraham<sup>1</sup>.

<sup>1</sup>Department of Medicine, Faculty of Medicine, Kuwait University; <sup>2</sup>Department of Pediatrics, Faculty of Medicine.

**Introduction:**

Osteoarthritis (OA) is a common disease characterized by loss of cartilage and concomitant changes in subchondral bone. It is the most common cause of musculoskeletal disability in the elderly. Normal bone and cartilage metabolism depends on the presence of vitamin D. The objective of this study is to evaluate the serum levels of 25- vitamin D in Kuwaiti patients with knee osteoarthritis and correlate it with the functional status and radiological grading in these patients.

**Methods:**

This was a prospective study over 6 months of 99 patients who had clinical and radiographic findings of primary knee OA. 25-vitamin D level was measured in these patients using radioimmunoassay. The functional assessments using lequesne's indices and x-ray grading using Kellegran-Lawrence Grading Scale (0-4) were also evaluated in these patients in relation to 25-vitamin D level .

**Results:**

The study subjects included 90 females and 9 males with mean age 56.49±9.12. Age onset of disease was 51.1±7.1 years, duration of disease was 5.7 years and body mass index was 31.0±6.1. Mean scoring for functional assessment using Lequesne index was 10.31±4.3 and mean Kellegran-Lawrence radiological grading was 2.43 ±0.85. The mean value of 25-vitamin D level was 11.4 ±6.07 ng/ml. Analyzing the relation of 25- vitamin D level to the radiological findings of the knee x-ray using the Kellegran-Lawrence K-L grade yielded no significant difference among the patients with mild or severe x-ray changes in relation to the 25-vitamin D level,  $p \leq 0.153$ . Similarly the functional assessments using lequesne's indices was not significantly different among different functional classes of the patients with knee OA when correlated with 25-vitamin D level,  $p \leq 0.858$ .

**Conclusions:**

The findings indicate that vitamin D level is unrelated to the severity of the knee X-ray grading or the functional assessment in our patients with primary knee OA.

*Key Words: Vitamin D; Knee osteoarthritis; Kuwait*

*Funding Agency: None*



**Medicine**

*Category: Clinical*

**93**

**Prevalence of Helicobacter pylori Infection Among New Outpatients with Dyspepsia in Kuwait**

\*Alazmi WM, Siddique I, Alateeqi N  
Faculty of Medicine, Kuwait University

**Introduction:**

Test and treat for Helicobacter pylori has become widely accepted as the approach of choice in those with chronic dyspepsia with no alarming features. We evaluated H. pylori status among outpatients with uninvestigated dyspepsia.

**Methods:**

The prospectively collected database for patients who had <sup>13</sup>C-urea breath test (UBT) for various indications was reviewed for the period from October 2007 to July 2009. The status of H. pylori in dyspeptic patients was determined by UBT.

**Results:**

One thousands and thirty-five patients had UBT for different indications. Three hundred and sixty two patients had UBT for uninvestigated dyspepsia. The prevalence of H. pylori among patients with uninvestigated dyspepsia was 49.7% (95% CI=44%-55%), and increased with age (35.8% at age 20-29 years; 95% CI= 25.4% - 47.2%; and 59.3% at age 30-39 years; 95% CI= 48.5% - 69.5%)(P=0.013). The prevalence of H. pylori among Kuwaitis was 42.6% (95% CI=35%-50%) and 57.6% (95% CI=49.8%-65%) among expatriates (p=0.004). The prevalence among males was 51.3%, while in females was 48.6%.

**Conclusions:**

Almost half of the patients with dyspeptic symptoms in Kuwait were positive for H. pylori. The prevalence of H. pylori is varied with age and higher among expatriates. The American gastroenterology association guidelines to test and treat as the preferable approach for patients with uninvestigated dyspepsia should be endorsed in Kuwait.

*Key Words: Helicobacter; Dyspepsia; Kuwait*

*Funding Agency: None*



**Medicine**

*Category: Clinical*

**94**

**Efficacy of Standard Triple Therapy in the Treatment of Helicobacter pylori Infection: Experience from Kuwait**

\*Alazmi WM, Buhaimed W, Al-Mekhaizeem K, Siddique I  
Faculty of Medicine, Kuwait university

**Introduction:**

Recent studies suggested that the initial treatment success rates for H. pylori infection are falling below 80% in many parts of the World. AIM: To evaluate the efficacy of standard triple therapy in the treatment of H. pylori infection in Kuwait.

**Methods:**

Consecutive H. pylori positive patients were enrolled in the study to receive clarithromycin, amoxicillin and omeprazole for 10 days. H. pylori status was checked with 13C urea breath test 6 weeks after the end of therapy. Endoscopic findings was recorded in all patients.

**Results:**

One hundred and forty one patients (82 male and 59 females; mean age 41.8 years) were enrolled in the study. A total of 7 patients were excluded from the per protocol analysis. The eradication rates in intention to treat (ITT) and per protocol (PP) were 72.3% (95% CI: 64.2%-79.5%) and 76.1% (95% CI: 68%-83%), respectively. The main endoscopic findings were normal in (47.5%) and gastritis (37.6%).

**Conclusions:**

The efficacy of the current standard triple therapy for H. pylori eradication in our community is suboptimal. Confirmation for H. pylori eradication with noninvasive tests is recommended, especially in high-risk patients. New antimicrobial regimens for H. pylori eradication are considered necessary.

*Key Words: Helicobacter; Kuwait; Triple therapy*

*Funding Agency: None*



**Medicine**

Category: Clinical

95

**Comparative Evaluation of Retinol-Binding Protein 4 (RBP4), Adiponectin and RBP4 -to-Adiponectin Ratio as Adipokine Markers of the Metabolic Syndrome**

\*Abdella NA<sup>1</sup>, Mojiminiyi OA<sup>2</sup>, Al Mulla F<sup>2</sup>, Al-Mohammedi H<sup>3</sup>, Al-Dahi W<sup>3</sup>, Pinto C<sup>1</sup>, Al-Rammah T<sup>2</sup>.

<sup>1</sup>Department of Medicine; <sup>2</sup>Department of Pathology; Faculty of Medicine, Kuwait University, <sup>3</sup>Department of Medicine, Mubarak Al-Kabeer Hospital, Kuwait

**Introduction:**

Obesity promotes atherosclerosis via mechanisms that include production of adipokines such as adiponectin and Retinol-binding protein 4 (RBP4) which play important but different roles. Adiponectin has anti-inflammatory, antidiabetic and antiatherogenic effects, RBP4 increases insulin resistance and promotes atherogenesis. We hypothesized that the associations of RBP4-to-adiponectin ratio with the metabolic syndrome (MS) and associated variables are superior to adiponectin and RBP4 alone.

**Methods:**

RBP4, adiponectin, insulin, glucose, and full lipid profile were determined in 98 Type 2 Diabetic (T2DM) patients and 191 normoglycemic first degree relatives (FDR). Insulin resistance was assessed with the HOMA-IR. Subjects were classified by the IDF criteria for the MS.

**Results:**

RBP4 (mean 29.6 Vs. 24.5 µg/ml) and RBP4:adiponectin ratio (mean 4.7 Vs 3.6) were significantly higher in T2DM patients compared to the FDR and adiponectin was significantly lower (mean 7.4 Vs. 8.6 µg/ml) despite similar waist circumference (WC). The correlations of RBP4 improved after factoring with adiponectin in the RBP4:adiponectin ratio (WC (r = 0.17 Vs r = 0.38); Triglycerides (r = 0.41 Vs 0.49); HDL-Cholesterol (r = 0.16 Vs 0.41); glucose (r = 0.17 Vs 0.28); HOMA-IR (r = 0.10 Vs 0.39)). RBP4 and RBP4:adiponectin ratio showed stepwise increase while adiponectin showed stepwise decrease with increasing number of MS criteria. Logistic regression showed that the odds ratio (OR) of MS as predicted by adiponectin was 0.82; RBP4 (OR = 1.1); RBP4:adiponectin ratio (OR = 1.5). ROC analysis showed that RBP4:adiponectin ratio had significantly higher area under the curve (0.745) compared with adiponectin (0.676) and RBP4 (0.659) for detection of MS.

**Conclusions:**

RBP4 and adiponectin are additional and useful criteria for identification of the MS. Factoring RBP4 with adiponectin significantly improves the diagnostic performance characteristics.

*Key Words: Retinol-Binding Protein 4; Adiponectin; Type 2 diabetes mellitus*

*Funding Agency: KFAS grant 2004-1302-03*



**Medicine**

Category: Clinical

96

**Hot Season of Bronchopneumonia in Renal Transplant Patients in Kuwait  
2009**

Gheith O, Al Otaibi T, Biju, \*Awadeen W, Zakareya Z, Said T, Nair MP, Nampoory MRN, Cerna M,  
Sawy M, Muzairai I  
Hamed Al-Essa Organ Transplant Center

**Introduction:**

It has been reported that MMF possesses potent activity against pneumocystis pneumonia (PCP), while the rapamycin was reported to induce interstitial pneumonitis. Aim: Analyze retrospectively the diagnosis and treatment of severe pneumonia and risk factors in kidney transplantation recipients detected during the last few months.

**Methods:**

During the last 6 months, 28 adult renal transplant recipients were admitted because of severe bronchopneumonia. Empirical therapy was initiated with aztreonam, moxifloxacin and ganciclovir, and therapy was switched to proper antibiotics according to sensitivity testing. The responsible pathogen was detected by BAL (bronco-alveolar-lavage), sputum, urine and blood specimens. Analyses included differential cell count, cytopathologic examination and cultures for bacteria, fungi and viruses. The immunosuppressive therapy was drastically reduced. Hypoxia was relieved by Bi-level Positive Airway Pressure or mechanical ventilation if necessary, usually following BAL. Our patients were categorized-according to the maintenance immunosuppressive regimen- into two groups. Cases who were maintained on rapamycin (group 1), while other cases were served as (group2).

**Results:**

All patients experienced low grade fever (82%), classical clinical syndrome of fever accompanied by cough and dyspnea (46%). Patients in both groups were comparable regarding mean age, sex distribution, original kidney disease, source of donor and nationality. All cases showed absolute lymphopenia which was more prominent in group2. BiPAP and mechanical ventilation were required in most of cases which was complicated by critical illness syndrome in 6 cases. We had detected the etiology in only 12 out of 28 cases.

**Conclusions:**

Chronic graft dysfunction might be a risk factor for severe infection, and lymphocyte counts might be useful for monitoring the intendance of the occurrence of PCP.

*Key Words: Renal transplant; Pneumonia; Cd count*

*Funding Agency: None*



**Medicine**

Category: *Clinical*

97

**Prevalence and Associated Factors of Iron Deficiency Anaemia Among Kuwaiti Children**

\*Asiri F<sup>1</sup>, Al-Sumaie M<sup>2</sup>, Safar F<sup>3</sup>, Al-Saigh F<sup>4</sup>, Kalifa<sup>5</sup>

<sup>1</sup>Kafan Center of Family Medicine; <sup>2</sup>Nutritional Department, Sabah Hospital; <sup>3</sup>Ameri Hospital, <sup>4</sup>Mubarak Hospital; <sup>5</sup>Khaldiya Clinic

**Introduction:**

Iron deficiency anemia (IDA) affects more than 30% of the world population especially young children & adolescents can result in diminished mental, motor and behavioral functions. This study aims to determine the prevalence rate of IDA among Kuwaiti children 2-10 years old and to study the related sociodemographic, personal, nutritional and clinical factors.

**Methods:**

The study design consisted of two components. A cross sectional descriptive one to identify the prevalence of IDA among the selected sample, attending Kifan, Khaldiya, and Suleibikhat PHC centers, from August 2004 to Feb 2005. And a nested case-control study to define factors associated with the disease.

**Results:**

A total number of 356 children were included in the study. 16.3% was the overall prevalence of IDA. 17.6% in the age group 2-<5years and 15.6% among the 5-10 year old. Rates were higher in females than in males in both groups. Anemic children were significantly younger, lower in weight and height than non anemic children, with less intake of food that enhance iron absorption. All lab tests were significantly different in both groups. Hemoglobin, serum ferritin and transferrin were significantly correlated with age, weight for age, height for age and weight for height. Lower school performance and feeling dizzy or fainting were significantly associated with anemia.

**Conclusions:**

Prevalence of IDA among Kuwaiti children 2-10 years is low as compared with previous studies in Kuwait and other countries in the area. Since IDA is a preventable disease, interventions should be directed to reduce it among young children and to increase the awareness of mothers to change the unhealthy food habits of their children.

*Key Words: Iron deficiency anaemia; Associated factors to I. D. A; Kuwait*

*Funding Agency: None*



## **Medicine**

*Category: Clinical*

**98**

### **Clinical Characteristics of Multiple Sclerosis in Kuwait**

\*Al-Shammri S<sup>1,2</sup>, Bhattacharya A<sup>1</sup>, Al Sayed Amr<sup>2</sup>, Girgis M<sup>2</sup>, Chadha G<sup>2</sup>, Akanji AO<sup>3</sup>  
<sup>1</sup>Department of Medicine, Kuwait University, Faculty of Medicine; <sup>2</sup>Department of Medicine, Mubarak Al Kabir Hospital, Kuwait; <sup>3</sup>Department of Pathology, Kuwait University, Faculty of Medicine.

#### **Introduction:**

The demographic clinical and laboratory characterizations of multiple sclerosis in people of Northern European origin is well- established, however limited data is available from the Arab world. The increase incidence of MS and the availability of powerful means of diagnosis and of potent immune therapies makes it essential to report the clinical characteristics and outcome of MS. We report a cohort of Kuwaiti MS patients including data of their demographic, clinical and laboratory characteristics.

#### **Methods:**

The medical records of 196 patients fulfilling Mc Donald criteria and followed up in a national MS clinic at Mubarak Al Kabir hospital was reviewed.

#### **Results:**

The mean age and age at presentation of the cohort was 32.49±9.58 and 27.83±9, respectively. Female vs male ratio was 1.95:1. A positive family history was seen in 11% of the cohort. The median duration of the disease was 2 years (range= 0-20years). Most frequent presenting symptom was sensory (39.5%), visual (16.9%), brainstem and cerebellar (16.6%), motor (14.8%), multiple symptoms (5.2%), L'hermitte sign (3.6%), sphincter disturbances (2.5%), seizures (1%) and others (1.5%). Majority of the patients (82.6%) had an Expanded Disability Status Scale <3. Relapsing–remitting disease course was most common (62.2%) followed by relapsing progressive (11.3%), primary progressive (2.1%) and benign (1%) MS. Visual, brainstem, and somato- sensory evoked responses were abnormal in 21%, 8.2%, and 10.8% of patients tested, respectively. CSF showed pleocytosis (15.4%), and positive oligoclonal bands (28.7%).

#### **Conclusions:**

Compared to western series our cohort has an earlier age of onset and more benign course with lesser disability.

*Key Words: Multiple Sclerosis; Expanded Disability Status Scale; CSF*

*Funding Agency: None*



**Medicine**

*Category: Clinical*

**99**

**Predicting Stroke Severity from Traditional Risk Factors: A Hospital Based Acute Stroke Study**

\* Bhattacharya A<sup>1</sup>, Al-Shammri S<sup>1,3</sup>, Doi SAR<sup>2</sup>, Chadha G<sup>3</sup>, Akanji AO<sup>4</sup>

<sup>1</sup>Department of Medicine, Kuwait University Faculty of Medicine; <sup>2</sup>School of Population Health, University of Queensland, Brisbane, Australia; <sup>3</sup>Department of Medicine, Mubarak Al Kabeer Hospital, Kuwait; <sup>4</sup>Department of Pathology, Kuwait University Faculty of Medicine.

**Introduction:**

The prevalence of stroke continues to rise in affluent Arab countries. In hospital stroke represents an important area for prevention since many cases occur in high-risk patients with modifiable risk factors. Our objectives were to determine if cases clustered together in definable groups and if factors at presentation could predict stroke severity as determined by the Rankin scale at discharge.

**Methods:**

A 2 year prospective cohort of stroke cases from a hospital based acute stroke registry. Data were abstracted on demographic, clinical characteristics, in-hospital care and in-hospital outcomes (modified Rankin Scale at discharge).

**Results:**

30% of the cases in the registry had large vessel atherosclerosis and 40% had small vessel occlusion while 12% had cardioembolism. Hierarchical agglomerative cluster analysis revealed three clusters (1a, 1b and 2). Cluster 2 was essentially limited to small vessel occlusion, while clusters 1a and 1b had a preponderance of large artery atherosclerosis. Cluster 1b had a worse outcome, and the majority of the haemorrhagic strokes. An absence of smoking, diabetes and age > 60 years was associated with a seven fold greater odds of group 1b membership even after adjusting for hypertension.

**Conclusions:**

In this prospective registry, absence of three traditional risk factors for ischaemic stroke (diabetes, smoking and age > 60) predicted a haemorrhagic stroke with a significantly worse outcome.

*Key Words: Stroke subtribe; Ranking Scale; Risk factors*

*Funding Agency: None*



## **Medicine**

*Category: Clinical*

**100**

### **A Stroke Registry for Kuwait: Preliminary Observations**

\*Al-Shammri S<sup>1,2</sup>, Chadha G<sup>2</sup>, Lasheen I<sup>2</sup>, Zaki M<sup>2</sup>, Al Muttari M<sup>2</sup>, Bhattacharya A<sup>1</sup>, Al Sayed Amr<sup>2</sup>, Girgis M<sup>2</sup>, Akanji AO<sup>3</sup>

<sup>1</sup>Department of Medicine, Kuwait University, Faculty of Medicine; <sup>2</sup>Department of Medicine, Mubarak Al Kabeer Hospital, Kuwait; <sup>3</sup>Department of Pathology, Kuwait University, Faculty of Medicine.

#### **Introduction:**

Frequency of occurrence of stroke subtypes and their risk factors vary among different countries and populations. Objective of this study is to determine stroke subtypes, associated risk factors and to report the outcome of stroke in Kuwait as determined by the Rankin scale at discharge and incorporate it into a stroke registry.

#### **Methods:**

The records of 662 patients (372 male, 290 female) of which 50.3% were Kuwaiti, admitted with diagnosis of stroke in 7 different tertiary care hospitals covering most of the Governorates in Kuwait, during a 2-year period, were retrospectively reviewed. It is anticipated that such information will be updated on a continuous basis.

#### **Results:**

The patients were aged  $58.12 \pm 12.75$  years. Common stroke subtypes included small artery occlusion(44.4%), atherosclerotic large artery disease(29.3%); cardio embolic origin(8.8%) and venous infarction(0.3%). Strokes of cardio embolic origin were significantly higher in women than in men( $p < 0.05$ ). Identifiable risk factors were hypertension(68.3%), diabetes mellitus(53%), hyperlipidemia(38.7%), ischaemic heart disease(35.3%), history of TIA(18.3%), old stroke(13.4%), and migraine(7.9%). Incidence of stroke was significantly higher in females with diabetes( $p < 0.001$ ) and/or hyperlipidemia ( $p=0.001$ ) than in males with similar condition. Poor Ranking disability scales found on 30day outcome of stroke, (indicated by severe disability and death) was significantly higher in female( $p=0.001$ ), and in large artery or hemorrhagic strokes. Most of the strokes resulted from small artery occlusion, which however happened to have better outcome than the less frequent hemorrhagic and large artery atherosclerotic strokes.

#### **Conclusions:**

The prevalence rates of hypertension, diabetes and hyperlipidemia among patients with stroke in Kuwait, are higher than those found in reports from Gulf countries. Women tended to have more cardio embolic strokes and a worse outcome.

*Key Words: Stroke; Ranking Disability Scale; Risk factors*

*Funding Agency: None*



**Medicine**

Category: Basic Sciences

101

**Differences in Diabetes Knowledge Among Diagnosed and Undiagnosed Diabetes in Kuwait**

\*Alansari BM

Department of Psychology, Faculty of Social Sciences, Kuwait University

**Introduction:**

Diabetes education is of critical importance and should be considered an integral part of diabetes prevention and care. The objective of the study was to determine the percentage of correct answers on diabetes knowledge scale among diagnosed and undiagnosed diabetes in Kuwaiti population.

**Methods:**

The sample of (990) adult Kuwaiti, including (547) undiagnosed diabetes (51%males & 49% females) and (443) diagnosed diabetes (48.3% males & 51.7% females) whom were identified as having type 2 diabetes in Kuwait Diabetes Society clinics were selected for the study. Their age ranged between 28–53 years (M=42.49, SD=5.89). The Arabic version of the Diabetes Knowledge Scale DKN-B (Beeney, Dunn & Welch, 1996) was used for assessing diabetes knowledge. The alpha coefficients of the DKN-B is ( $\alpha=0.71$ ) in the undiagnosed sample and ( $\alpha=0.85$ ) in the diagnosed sample, denoting good internal consistency of the Arabic DKN-B.

**Results:**

The mean score for diabetes knowledge in undiagnosed and diagnosed samples was (5.08±2.50) and (8.64 ±2.57) respectively. It was significantly lower in undiagnosed diabetes ( $t=21.88$ ,  $p<0.001$ ). Also, the score of diabetes knowledge was rated as “Good” (>60%) in only 29.3% of undiagnosed, compared with 40.4% in the diagnosed ( $z=3.57$ ,  $p<0.001$ ).

**Conclusions:**

[1] Diabetes knowledge is poor among those who took part in the study. [2] There is a group difference, with the undiagnosed diabetes sample being significantly less informed about diabetes. [3] This study highlights the urgency of improving the awareness of diabetes health education among the Kuwaiti population.

*Key Words: Diabetes Knowledge; Undiagnosed diagnosed Diabetes; Kuwait*

*Funding Agency: Kuwait University, Research Administration, Grant # OP01/05.*



**Medicine**

Category: Clinical

102

**Circulating Adiponectin is Associated with Severity of Obstructive Sleep Apnea in Obese Subjects**

\*AL-Mutairi SS<sup>1</sup>, Mojiminiyi OA<sup>1</sup>, Abdella NA<sup>1</sup>, Al-Alawi A<sup>2</sup>

<sup>1</sup>Departments of Medicine and Pathology, Kuwait University Faculty of Medicine;

<sup>2</sup> Ministry of Health, AL-Amiri Hospital

**Introduction:**

Obstructive sleep apnea (OSA) is associated with central obesity and adipokines such as adiponectin. The objectives of this study are to evaluate the associations between OSA, obesity-related markers and adiponectin.

**Methods:**

Fasting adiponectin, were determined in 55 subjects with provisional diagnosis of OSA. Clinical and anthropometric data were recorded and subjects were classified on the basis of the degree of adiposity, insulin resistance (IR) (HOMA-IR) and the number of criteria of the MS (International Diabetes Federation). All subjects had overnight polysomnography and spirometry. Uni- and multivariate regression analysis were used to relate obesity-related markers with results of polysomnography and severity of OSA.

**Results:**

23 subjects had moderate-severe OSA. Obesity was more prevalent in subjects with moderate-severe OSA (47%) compared to non-obese subjects (33%). BMI was significantly higher in those with severe OSA (48 kg/m<sup>2</sup>) compared to those without OSA (42 kg/ m<sup>2</sup>). Mean (SD) adiponectin was significantly lower in those with severe OSA, 13 (9) µg/ml compared those without OSA, 17 (12) µg/ml. Binary logistic regression analysis showed that low adiponectin is associated with OSA Odds Ratio = 0.98. However, there is gender dimorphism in the effects of adiponectin on OSA as lower adiponectin was found in females with severe OSA.

**Conclusions:**

Adiponectin could be used to predict the severity of OSA in obese subjects.

*Key Words: Obesity; Adiponectin; Obstructive sleep apnea*

*Funding Agency: Kuwait University Grant No. MM01/07*



**Medicine**

*Category: Graduate (Resident)*

**103**

**Management of Acute Antibody Mediated Rejection in Renal Transplant Recipients-Kuwait Experience**

\*Balaha MA, Al-Otaibi T, El-Sayed A, Nair MP, Gheith O, Nawas KM, Tawab KA, Nampoory MRN  
Organ Transplant Center

**Introduction:**

Acute antibody mediated rejection (AAMR) is a major risk factor for graft loss in renal transplant recipients (RTR). Diagnostic tools for AAMR improved significantly using immunohistochemistry and donor specific antibody (DSA) or panel reactive antibodies (PRA) monitoring. Treatment with I. V. immunoglobulin, plasma exchange, anti-lymphocyte globulins in addition to maximization of maintenance immunosuppressives are the treatment modalities for AAMR.

**Methods:**

All RTR with unexplained graft dysfunction underwent graft biopsy. Patients were diagnosed as AAMR when they had 2 out of 3 criteria: histopathological evidence, positive C4d staining and high PRA or positive DSA. They were treated with 6 PE sessions, IVIG as 2 gm/kg, anti-CD20 (rituximab) and maximization of maintenance immunosuppressives. Follow up period was 12 months.

**Results:**

Incidence of AAMR was 1.7%. Mean age was 30.4±11.7 years, 50% were males and total HLA mismatches was 3.6±3.4. Patients with high PRA were 39% and 11.1% received desensitization management pre-transplant. RTR who had multiple renal transplants were 22.2%. Induction therapy was given to 66.7% as anti-lymphocyte globulin and to 16.7% as basiliximab, and 56.5% were maintained on prednisolone, mycophenolate mofetil and tacrolimus before developing AAMR. Most patients had good response to treatment within a mean period of 2.78±4.2 months. Most patients (55.6%) had complete response in addition to 27.8% had incomplete response (p 0.005) while only 16.7% did not respond to treatment and continued to deteriorate their graft function without any graft loss within one year of follow up.

**Conclusions:**

The demographic features of our RTR who developed AAMR were at high risk for developing graft rejection in spite of adequate immunosuppression. They were successfully managed with prompt diagnosis and treatment.

*Key Words: Renal transplantation; Rejection; Antibody mediated*

*Funding Agency: None*



**Medicine**

Category: Clinical

104

**Health Related Quality of Life of Kuwaiti Women with Breast Cancer: A Comparative Study Using the European Organization for Research and Treatment Quality of Life Questionnaire (EORTC QLQ –C30).**

\*Alawadi SA<sup>1</sup>, Ohaeri JU<sup>2</sup>

<sup>1</sup>Department of Medicine, Faculty of Medicine, Kuwait University; <sup>2</sup>Department of Psychiatry, Psychological Medicine Hospital, Kuwait

**Introduction:**

The Kuwaiti perspective on quality of life (QOL) in breast cancer adds the contribution from a country where the disease affects women at a relatively younger age and seems to be more aggressive. The objectives were, to (i) use the EORTC QLQ – C30 and its breast-specific module (BR-23) to highlight the health-related QOL of Kuwaiti women with breast cancer; and (ii) assess the socio-demographic and clinical correlates of QOL.

**Methods:**

Participants were consecutive clinic attendees for chemotherapy, in stable condition, at the Kuwait Cancer Control Center.

**Results:**

The 348 participants were aged 20 -81 years (mean 48.3); 58.7% had stages III and IV disease. Although the mean scores for QLQ- C30 (45.3 - 61.2%) indicated that the patients had poor to average functioning, only 5.8% to 11.2 % had scores that met the  $\leq 3\%$  criterion for problematic functioning. Most (47.8% -70.1%) met the  $>66\%$  criterion for “good functioning” on the BR-23 functional scales. The mean scores of the QLQ – C30 indicated that Kuwaiti women had clinically significantly poorer global QOL and functional scale scores, and more intense symptom experience, in comparison with the international data (i. e.,  $\leq 10\%$  difference between groups). For the BR-23, Kuwaiti women seemed to have clinically significantly better functional scale scores, but more severe systemic side effects and breast symptoms. Younger women had poorer HRQOL scores. In regression analysis, social functioning accounted for the highest proportion of variance for GQOL.

**Conclusions:**

The relatively high number that met the criterion for good functioning on the functional scales should encourage national health education about psychosocial prognosis in cancer. In view of the poor performance on the symptom scales, clinicians treating Kuwaiti women with breast cancer should prepare them for the acute toxicities of treatment and address fatigue. The findings call for the institution of a psycho-oncology service.

*Key Words: Quality of life; Breast cancer; EORTC QLQ-C30*

*Funding Agency: None*



**Medicine**

*Category: Clinical*

**105**

**Risk Factors for In-Hospital Stroke after Myocardial Infarction in the GULF RACE Registry**

\*Al-Baker O<sup>1</sup>, Zubaid M<sup>1</sup>, Rashed W<sup>2</sup>, Ridha M<sup>3</sup>, Alenezi F<sup>4</sup>, Bulbanat B<sup>5</sup>, Alhamdan R<sup>6</sup>, Akbar M<sup>7</sup>, Zubair S<sup>8</sup>

<sup>1</sup>Department of Medicine, Kuwait University; <sup>2</sup>Mubarak Al-kabeer Hospital, Cardiology Department; <sup>3</sup>Al-Adan hospital, Cardiology Department; <sup>4</sup>Chest Hospital, Cardiology Department; <sup>5</sup>Al-Amiri Hospital, Cardiology Department; <sup>6</sup>Al-Jahra Hospital, Cardiology Department; <sup>7</sup>Al-Sabah Hospital, Cardiology Department; <sup>8</sup>Kuwait Oil Company Hospital, Medicine Department.

**Introduction:**

Stroke following acute myocardial infarction is a potential complication in patients with acute coronary syndrome. Stroke tends to be more severe with poor outcome. The aim of this study was to identify the risk factors predisposing to in-hospital stroke in the GULF RACE registry.

**Methods:**

Total of 5, 821 patients were included, out of which 50 had strokes. Using univariate comparisons, continuous variables we presented as medians (interquartile limits) and compared using the Wilcoxon rank sum test. Using logistic regression, the odds ratio was calculated and factors significantly associated with stroke were identified.

**Results:**

The rate for in-hospital stroke following AMI was 0.9 %. Most cases were STEMI-related and ischemic in nature. Risk factors for developing stroke were age, female gender, previous coronary bypass surgery, prior use of aspirin, cigarette smoking, diabetes mellitus, hyperlipidemia, previous history of stroke and peripheral vascular disease. Patients with stroke were more likely to present with ischemic type chest pain and have Killip class ii-iv. Heart rate and higher serum creatinine were shown to be independent risk factor for stroke. Patients with stroke had longer hospital admission with minor on non-disabling stroke. Stroke was fatal in 44% of cases with 12.5 odds ratio risk of death from in-hospital stroke.

**Conclusions:**

The GULF RACE population had low incidence for in-hospital stroke with little disability. The fatality rates remain high. Future work should be focused on long-term effect of acute myocardial infarction on cerebrovascular diseases with the main goal of myocardial infarction-related-stroke prevention.

*Key Words: Acute myocardial infarction; Registry; In-hospital stroke*

*Funding Agency: None*



**Medicine**

Category: Clinical

106

**Clinical Pattern of Hospitalized H1N1 Cases in Department of Medicine at Al-Sabah Hospital**

\*Mahmood M, Al-Adsani A, Abraham PK, Hamoud E  
Department of Medicine, Al-Sabah hospital

**Introduction:**

Aim: To describe the pattern of clinical presentation and course of hospitalized H1N1 influenza case patients.

**Methods:**

Data were collected for patients hospitalized with influenza-like illness from July 2009 to Dec 2009 in Department of Medicine at Al-Sabah hospital. H1N1 infection was confirmed using a real-time reverse transcriptase polymerase chain reaction assay.

**Results:**

Of 114 patients studied 46.5% (53/114) were confirmed to have H1N1 influenza with a male to female ratio of 1.15:1. The mean age for males and females was  $37.8 \pm 19.6$  years and  $45.2 \pm 18.1$  years respectively. Of the H1N1 influenza patients 39 (73.6%) had underlying medical conditions, the most common being bronchial asthma (n=12) followed by Diabetes mellitus (n=11) and obesity (n=8). One woman was pregnant. Typical symptoms reported among H1N1 influenza patients include fever (72.8%), cough (53.5%), sore throat (44.7%), and shortness of breath (59.6 %). X-ray chest was done for all cases, of those 26 (49.0%) patients had abnormalities indicative of pneumonia; 20 (37.7%) patients required ventilation (Bi-PAP n=6; mechanical n=14). The median length of stay was 6 days. The majority of the patients were discharged home with a median length of hospital stay of 7 days (range 1 to 36 days), 22 were transferred to ICU, 8 were transferred to infectious disease hospital and 4 (7.5%) patients died.

**Conclusions:**

Majority of patients hospitalized for H1N1 influenza had underlying medical conditions. Most of the cases recovered and were discharged. The mortality was 7.5%.

*Key Words: H1N1; Influenza; Pneumonia*

*Funding Agency: None*



**Medicine**

Category: Clinical

107

**Investigation of the Distribution of Lymphocyte Subsets in Multitransfused  $\beta$ -Thalassemia Major Patients**

\*Al-Awadhi AM<sup>1</sup>, AlFadhli SM<sup>1</sup>, Al-Khalidi DA<sup>2</sup>, Borhama M<sup>3</sup>, Borusly M<sup>3</sup>

<sup>1</sup>Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, Kuwait University;

<sup>2</sup>Department of Hematology, Sabah Hospital, Ministry of Health; <sup>3</sup>Department of Hematology, National Bank of Kuwait Hospital, Ministry of Health.

**Introduction:**

Homozygous  $\beta$ -thalassemia is a common genetic disorder in the Arabian Peninsula and an important cause of morbidity in Kuwait. The anemia is so severe that chronic blood transfusions, and the resulting iron overload, cause a shift in immunoregulatory balances.

**Methods:**

Our study was designed to utilize flow cytometric immunophenotyping to characterize effect of regular blood transfusion, and high serum ferritin levels due to irregular use of iron chelation therapy on T-lymphocytes (CD2, CD3, CD4 and CD8), B-lymphocytes (CD19) and natural killer cells (CD56) in the blood of patients with thalassemia major (n=49) and healthy normal controls (n=60) in Kuwait.

**Results:**

No significant differences were observed between patients and controls for age and gender. All patients had high serum ferritin levels with no significant correlation to CD8+ T-lymphocytes ( $p>0.05$ ). T cell markers' percentage levels were comparable between patients and controls ( $p>0.05$ ), while B cell marker (CD19) was significantly higher in patients (15.9%) compared to controls (11.4%) ( $p=0.007$ ). Patients had lower percentage levels of CD56 cells (2.9%) compared to controls (4.3%) ( $p=0.007$ ).

**Conclusions:**

High iron stores did not have an effect on T lymphocytes' profile. The high B cell marker may be indicative of stimulation of antibody producing cells due to regular blood transfusions.

*Key Words:  $\beta$ -thalassemia major; Blood transfusion; Immunophenotyping*

*Funding Agency: None*



**Medicine**

Category: Basic Sciences

108

**The Role of Group IV Protein Tyrosine Kinase in the TNBS Colitis Model**

\*Khajah M<sup>1,2</sup>, Kaiyu Wu<sup>3</sup>, McCafferty DM<sup>2</sup>

<sup>1</sup>Faculty of Pharmacy, Department of Applied Therapeutics, Kuwait University; <sup>2</sup>Gastrointestinal Research Group, University of Calgary, Calgary, Alberta, Canada; <sup>3</sup>Centre for Antimicrobial Resistance, Calgary Health Region, Calgary Laboratory Services, University of Calgary, Calgary, Alberta, Canada

**Introduction:**

Fer and Fps/Fes kinase are the only members of group IV family of non-receptor PTK. We have previously shown in vivo that Fer plays a key role in leukocyte recruitment and epithelial barrier dysfunction during endotoxin-induced inflammation. Herein, we examined the role of these kinases in the TNBS colitis model and in various neutrophil functions.

**Methods:**

Colitis was induced in wild type (WT), Fer null (FerDR/DR), or Fps/Fer double deficient (FpsKR/FerDR) mice by a single intra-rectal injection of TNBS. Macroscopic and microscopic inflammatory scores and myeloperoxidase activity (MPO) were assessed. In vitro neutrophil chemotaxis, the kinetics of superoxide production, intracellular killing capacity, and apoptosis was also assessed.

**Results:**

In WT mice, TNBS induced a significant increase in the macroscopic inflammatory score at 3 and 7 days post induction of colitis relative to controls, but they had normal macroscopic score level at 10 days. A significant increase in macroscopic score was observed in FerDR/DR and FpsKr/FerDR relative to WT mice at 3, 7, and 10 days. FerDR/DR mice had normal macroscopic score at 14 days, but the double deficient mice still had a significantly higher macroscopic score ( $p < 0.05$ ) at 14 days. The microscopic score and colonic MPO activity followed the same pattern seen in the macroscopic score of inflammation. A significant increase in FerDR/DR and FpsKr/FerDR chemotaxis toward fMLP was observed compared to WT neutrophils. The chemotactic response was the same in all groups toward LTB<sub>4</sub>. An accelerated rate for superoxide production was observed in Fer mutant compared to WT neutrophils. No differences in the rate of intracellular killing capacity toward *S. aureus* or apoptosis were observed between WT and group IV PTK mutant neutrophils.

**Conclusions:**

group IV PTK play a role in a chemically-induced model of colitis through modulating leukocyte recruitment and functions at the site of inflammation.

*Key Words: IBD; Group IV PTK; Neutrophil*

*Funding Agency: Canadian institute of health and research (CIHR)*



**Medicine**

*Category: Clinical*

**109**

**Role of Continuous Venovenous Hemofiltration in Treating Acute Renal Failure in Cancer Patients**

Ghani AA, \*Hussain N

Mubarak Al kabeer Hospital, Nephrology Department

**Introduction:**

Acute renal failure (ARF) is a common complication in patients with cancer and may occur as a consequence of the cancer itself, its treatment, and associated severe complications like sepsis. In critically ill cancer patients ARF is associated with high mortality rates ranging from 53% to 93%. Continuous venovenous hemofiltration (CVVH) for treatment of ARF in such patients has a potential advantage of being applicable at bedside and associated with a good hemodynamic tolerance. The aim of the present study was to demonstrate the effectiveness of CVVH in treatment of ARF in cancer patients and to determine the factors associated with hospital mortality.

**Methods:**

A retrospective single center study was conducted in Kuwait. All patients with cancer and ARF requiring dialysis and treated with CVVH between January 2006 and December 2007 were included in the study.

**Results:**

Eighteen cancer patients were included in the study. Fourteen were males and 4 were females. Their median age was 45.5 years. Two patients had solid organ malignancy while 16 had hematological malignancy. The number of organ failure (MOF) was 1/2/3/4 in respectively 6/2/3/4 patients. The median duration of CVVH therapy was 52 hours. Ten (55.5%) patients were discharged alive from the hospital, whereas, 8 (44.5%) died. Renal recovery was noted in 14 (77.8%), four of them died from other causes. Univariate analysis showed that older age, more than two MOF, hemodynamic instability, use of vasopressors and mechanical ventilation were significantly associated with hospital mortality. Multivariate analysis showed that the presence of MOF and the use of vasopressor drugs were the only independent factors determining hospital mortality. (p= 0.001, 0.01 respectively)

**Conclusions:**

CVVH is an effective treatment for ARF in cancer patients. The presence of more than 2 MOF and the use of vasopressors were the only variables associated with hospital mortality.

*Key Words: Acute renal failure; Cancer patients; CVVH*

*Funding Agency: None*



**Medicine**

Category: *Clinical*

110

**Clinical and Histopathological spectrum of IgA nephropathy in Kuwait**

Ghani AA<sup>1</sup>, Al Waheeb S<sup>2</sup>, Al Homoud E<sup>3</sup>, \*Al Helal B<sup>1</sup>, Hussain N<sup>1</sup>

<sup>1</sup>Nephrology Unit, Mubarak Al kabeer Hospital; <sup>2</sup>Department of Histopathology, Mubarak Al Kabeer Hospital; <sup>3</sup>Department of Internal Medicine, Mubarak Al kabeer Hospital

**Introduction:**

Little is known about the nature and the course of IgA nephropathy (IgAN) in Arab countries. The aim of this work was to review cases of IgAN in Mubarak Al Kabeer Hospital- Kuwait between January 2000 and December 2004, and to study the spectrum of clinical presentation and histopathological findings.

**Methods:**

From all renal biopsies done between January 2000 and December 2004 in Mubarak Al Kabeer Hospital, cases of IgA nephropathy were selected and their medical records as well as biopsy findings were reviewed.

**Results:**

Eighty patients (9.2% of all native kidney biopsies) were diagnosed to have IgA nephropathy. Sixty nine biopsies were included in the study and eleven were excluded because of presence of any of the exclusion criteria or missing clinical data. Forty three (62.3%) cases were males, and 26 (37.7) cases were females. Fifty cases (72.5%) were below the age of 40 years. Mean duration of follow up was 3.6±1.3 years. The first presentation included nephrotic range proteinuria (49.3%), and renal impairment(50.7%). During the follow up period, 56 (81.2%) were stable or improved. Hass classification of biopsies showed; 36.2% had Class I, 27.5% had class II, 13.0% had class III, 5.8% had class IV, and 17.4% had class V IgAN. Females had milder forms of the disease than males. Macroscopic hematuria and renal impairment at presentation were seen more in patients with class IV and V. The presenting serum creatinine and uric acid were higher in those with Hass classes III to V. Deterioration of renal function during the follow up period was more significant in presence of hypertension, renal impairment at time of biopsy, and macroscopic hematuria.

**Conclusions:**

The prevalence of IgAN in Kuwait is about 9.2%. Renal impairment at presentation and macroscopic hematuria were seen in patients with more aggressive renal lesions and attributed to poor outcome.

*Key Words: Proteinuria; Hass classification; Renal Biopsy*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Clinical

111

**Rapid Molecular Detection of Multidrug-Resistant *Mycobacterium tuberculosis* Isolates Directly from AFB-positive Liquid Cultures for Proper Management of MDR-TB**

\*Al-Mutairi NM, Ahmad S

Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait

**Introduction:**

Objective: Rapid detection of multidrug-resistant (resistant at least to rifampin, RMP and isoniazid, INH) strains of *Mycobacterium tuberculosis* (MDR-TB) is crucial for starting second-line therapy, reducing mortality and limiting further transmission. Two line probe assays (Genotype MTBDRplus, gMTDR<sup>+</sup> and INNO-LiPA Rif. TB, LiPA), PCR-RFLP and DNA sequencing were tested for detection of RMP and INH resistance-associated mutations in hot-spot region of rpoB (HSR-rpoB), katG codon 315 (katG315) and inhA regulatory region (inhA-RR) for rapid diagnosis of MDR-TB.

**Methods:**

The AFB-positive cultures of 82 MDR-TB and 43 pansusceptible *M. tuberculosis* strains were tested. Mutations in HSR-rpoB, katG315 and inhA-RR were detected by LiPA, gMTDR<sup>+</sup>, PCR-RFLP and DNA sequencing of appropriate regions of *M. tuberculosis* genome. PCR-based fingerprinting methods and genetic group analysis were used for strain relatedness.

**Results:**

All susceptible strains contained wild-type sequences in target genes. RMP resistance was detected in 94% (77/82) and 95% (78/82) of MDR-TB strains by gMTDR<sup>+</sup> and LiPA, respectively. One isolate with L533P mutation was detected as RMP susceptible by gMTDR<sup>+</sup> while 2 isolates with insertion 514TTC were detected as RMP susceptible by LiPA. Two of 3 isolates detected as RMP susceptible by both assays contained a novel I572F mutation that is outside the HSR-rpoB. Concordance of gMTDR<sup>+</sup> and LiPA for RMP resistance detection with HSR-rpoB sequencing was 97% (121/125) and 96% (120/125), respectively. INH-resistance was detected in 73% (60/82), 73% (60/82), 27% (22/82) and 93% (76/82) of MDR-TB strains by katG315 PCR-RFLP, katG315 sequencing, inhA-RR sequencing and gMTDR<sup>+</sup> assay, respectively. Majority of MDR-TB isolates were genotypically unique strains.

**Conclusions:**

Only gMTDR<sup>+</sup> assay alone rapidly (<10 h) detected MDR status of most (72 of 82, 88%) of MDR-TB strains. The gMTDR<sup>+</sup> test is most suitable for proper disease management in Kuwait when MDR-TB is suspected.

*Key Words: Mycobacterium tuberculosis; Multidrug resistance; Detection*

*Funding Agency: KURA grant YM 03/06*



**Microbiology and Immunology**

Category: Basic Sciences

112

**Propred Analysis for Prediction of HLA-DR-Promiscuous Regions and Epitopes of *Mycobacterium tuberculosis* Protein Rv1980c, and their Recognition by Human T Cell Lines**

\*Mustafa AS, Shaban F

Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait

**Introduction:**

Rv1980c, a major secreted antigenic protein of *Mycobacterium tuberculosis*, is encoded by *M. tuberculosis*-specific region of difference 2, which is deleted in many vaccine strains of BCG. Thus, this protein could be useful in the diagnosis of tuberculosis (TB) as well as a new vaccine against TB. However, to have world-wide application, this protein should have HLA-promiscuous regions/epitopes recognized by human T helper-1 (Th1) cells. The aim of this study was to determine HLA-promiscuous regions/epitopes of Rv1980c using a computational method, and confirm the prediction results in Th1 cell assays.

**Methods:**

The sequence of Rv1980c protein was analyzed for binding to 51 HLA-DR alleles using PROPPRED, a computational method. The prediction results were experimentally verified by testing 20-mer synthetic peptides corresponding to the predicted HLA-DR binding regions and epitopes with T-cell lines established from peripheral blood of PPD-positive and HLA-heterogeneous healthy subjects in Th1-cell assays (antigen-induced proliferation and Interferon-gamma secretion).

**Results:**

The PROPPRED analysis suggested that Rv1980c sequence could bind to all 51 HLA-DR alleles. Furthermore, PROPPRED identified 26 epitopes and eight non-overlapping HLA-DR binding regions (9 to 35 aa in length) in Rv1980c sequence, with five regions (aa 20-44, aa 68-102, aa 132-146, aa 164-186 and aa 194-202) being HLA-DR promiscuous. The results of testing synthetic peptides with T cell lines in Th1 cell assays showed that four peptides belonging to four HLA-promiscuous regions of Rv1980c (aa 21-40, aa 81-100, aa 171-190 and aa 191-20), had immunodominant epitopes and were HLA-DR promiscuous.

**Conclusions:**

The computational method (PROPPRED) used in this study suggested promiscuous HLA-DR binding of mature MPT64 (Rv1980c) sequence. In addition, PROPPRED could faithfully identify four HLA-promiscuous and immunodominant regions/epitopes of Rv1980c.

*Key Words:* *M. tuberculosis*; *Rv1980c*; *Promiscuous epitopes*

*Funding Agency:* *KU Grant No. MI03/05*



**Microbiology and Immunology**

Category: Basic Sciences

113

***Lodderomyces elongisporus*: First Report on its Isolation and Characterization from Clinical Specimens in Kuwait**

\*Khan ZU

Department of Microbiology, Faculty of Medicine, Kuwait University

**Introduction:**

Objective: *Lodderomyces elongisporus*, is a recently recognized bloodstream pathogen with phenotypic similarities with *Candida parapsilosis* and other members of *C. parapsilosis* complex. So far, little information is available about the geographic distribution of this species. The aim of this study was to determine its occurrence among phenotypically identified *C. parapsilosis* strains isolated from clinical specimens in Kuwait.

**Methods:**

A total of 165 strains identified as *C. parapsilosis* by Vitek2 yeast identification system were studied. All the isolates were cultured on BBLTM CHROMagar *Candida* for development of turquoise blue color colonies for provisional identification of *L. elongisporus*. The identity of the isolates was further studied on BBLTM Corn Meal agar for the formation of ascospores. The unequivocal identification of *L. elongisporus* was confirmed by direct DNA sequencing of internally transcribed spacer (ITS)-1 and ITS-2 regions of rDNA.

**Results:**

Of 165 isolates cultured on Chromagar *Candida*, two strains produced turquoise blue color colonies and formed ascospores on Corn Meal agar as well as on Malt extract agar. They were tentatively identified as *L. elongisporus*. The isolates originated from the tip of central venous catheter and sputum. Direct DNA sequencing of the ITS region of rDNA confirmed the identification of both the isolates as *L. elongisporus*. Of the remaining isolates, 158 and five strains were identified as *C. parapsilosis* and *C. orthopsilosis*, respectively. The rDNA sequence data of all five *C. orthopsilosis* and four randomly selected *C. parapsilosis* strains were consistent with their species-specific identification.

**Conclusions:**

The isolation of *L. elongisporus* is reported for the first time from the Middle-Eastern region. Identity of the isolates was confirmed by phenotypic characteristics and DNA sequencing of rDNA. This report highlights that *L. elongisporus* may be masquerading as *C. parapsilosis* in some cases of fungemia.

*Key Words:* *Lodderomyces elongisporus*; *Candida parapsilosis*-complex; Occurrence

*Funding Agency:* KURA grant No. MI 01/08.



**Microbiology and Immunology**

Category: Basic Sciences

114

**Etiological Agents of Fungal Rhinosinusitis in Kuwait**

\*Khan ZU<sup>1,2</sup>, Al-Obaid I<sup>3</sup>, Chandy R<sup>1</sup>, Joseph L<sup>1</sup>, Farhat D<sup>2</sup>, Al-Hajri S<sup>2</sup>

<sup>1</sup>Department of Microbiology, Faculty of Medicine, Kuwait University; <sup>2</sup>Department of Microbiology, Mubarak-Al-Kabeer Hospital;

<sup>3</sup>Department of Microbiology, Al-Sabah Hospital, Kuwait

**Introduction:**

Objective: Fungal rhinosinusitis, once considered an uncommon disorder, is now being increasingly recognized worldwide. In the present study, we have analyzed the etiologic spectrum of fungi isolated from clinical material obtained from patients with rhinosinusitis over a 14-year period (January 1996-October 2009) in Kuwait.

**Methods:**

All the clinical specimens (nasal tissues, curettages/washings and swabs) received from different hospitals in Kuwait were cultured on Sabouraud dextrose agar supplemented with chloramphenicol. The identity of the isolates was established by typical phenotypic characteristics following the standard procedures. The molecular identification of the isolates was carried out by PCR amplification using panfungal primers and sequencing of the amplified products.

**Results:**

Fungal isolates from 83 patients with rhinosinusitis were analyzed. The age of these patients ranged between 3-70-years, 7 % of them were <12 years of age. Forty (48%) of the patients were males and 63% of them were Kuwaiti nationals. Of the 83 fungal isolates, 36 (43%) were identified as *Aspergillus flavus*, 30 (36%) as *Bipolaris hawaiiensis*, 6 as *Aspergillus niger*, 4 as *Aspergillus terreus*, 3 as *Aspergillus fumigatus*, and one each as *Bipolaris spicifera*, *Paecilomyces lilacinus* and *Alternaria alterans*. Of the total 30 isolates of *B. hawaiiensis*, 26 (87%) came from Kuwaiti patients. The distribution of 36 *A. flavus* isolates between Kuwaiti and non-Kuwaiti patient was 13 (36%) and 23 (64%), respectively.

**Conclusions:**

The findings suggest that *A. flavus* and *B. hawaiiensis* are the two major species associated with the etiology of fungal rhinosinusitis in Kuwait. The isolation rate of *A. flavus* from Kuwaiti patients was only 25 % (13 of 52), but much higher from non-Kuwaiti patients (23 of 31, 74%). Furthermore, the isolation of *B. hawaiiensis* predominantly from the Kuwaiti patients is also an interesting observation warranting further epidemiologic and immunologic studies.

*Key Words:* Fungal rhinosinusitis; Kuwait; *A. flavus* and *B. hawaiiensis*

*Funding Agency:* KURA grant MI 04/02



**Microbiology and Immunology**

Category: Clinical

115

**Vaginal Infection in Women of Reproductive Age: A Five Year Survey**

\*Draghijeva E, Egbase P, Mathai S.

London Hospital

**Introduction:**

The purpose of this study was to observe and analyse the nature and evolution of epidemiology and antibiotic resistance patterns in *Mycoplasma hominis* (Mh), *Ureaplasma urealyticum* (Uu), Group B Streptococcus (GBS) and *Candida* spp. isolated from women of reproductive age with vaginal infection.

**Methods:**

Our study was carried out over a 5-years period (10/2004-10/2009) and included 106 non-pregnant premenopausal patients who attended the out patient department of our general hospital. All these women were diagnosed as having vaginal infection. Organism identification and resistance to antibiotics was determined by either/or: BioMerieux miniAPI, Mycoplasma IST2, Kirby Bauer disk diffusion, using resistance criteria from CLSI.

**Results:**

106 women were enrolled in the study and mean age was 26 years (range 17-48) and most of these women were less than 30 years old (58%). The prevalence of GBS and *Candida* spp. vaginitis in women was 38.7% and GBS and Mh/Uu - was 24% respectively. GBS and Mh/Uu showed low sensitivity to microlides (50% and 48.4% respectively). Uu showed the lowest sensitivity to quinolones (58.5%).

**Conclusions:**

Knowledge of most frequent vaginal pathogens and their antimicrobial resistance patterns is essential to provide clinically successful, cost effective antimicrobial therapy for vaginal infections.

*Key Words: Vaginal pathogens; Antibiotic resistance; Epidemiology*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Clinical

116

**Evaluation of Gene Xpert® MTB/RIF System for the Direct Detection of Rifampicin-Resistant *Mycobacterium tuberculosis***

\*Saad Eldeen H, Hanif SNM, Mokaddas E

Kuwait National TB Reference Laboratory, TB Unit A; Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait

**Introduction:**

Direct detection of *Mycobacterium tuberculosis* (MTB) from clinical specimens and rapid testing of its antimicrobial susceptibility helps the early treatment as well as prevention of spread among contacts of patients with open pulmonary TB. This study was done to evaluate the Gene Xpert® MTB/RIF system in the direct detection of MTB and rifampicin resistance from clinical specimens.

**Methods:**

A total of 236 specimens were included in the evaluation. Sputum comprised 196 specimens out of which 154 were smear negative. Extrapulmonary specimens comprised 40 specimens with 26 being smear negative. All the specimens were processed for culture by MGIT960 and Gene Xpert® MTB/RIF system. A total of 76 isolates of MTB were processed for direct susceptibility testing using Bactec 460 and compared to the Gene Xpert® MTB/RIF system. Twelve non-tuberculous mycobacteria (NTM) isolates were also tested by the Gene Xpert® MTB/RIF system to check its specificity.

**Results:**

The sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPP) for smear-negative sputum were 60%, 100%, 100% and 97%, respectively while for smear positive the sensitivity and specificity were 98% and 100%, respectively. For smear-negative extrapulmonary specimens, sensitivity was 83% while the specificity, PPV and NPP were all 95% and for smear positive the sensitivity and specificity were 100%. Compared to Bactec 460 system, the sensitivity, specificity, NPP and PPV of rifampicin resistance by Gene Xpert® MTB/RIF system were 91%, 97%, 83% and 98%, respectively. An analysis of 12 NTM species confirmed 100% specificity.

**Conclusions:**

Gene Xpert® MTB/RIF system is a rapid and reliable technique for the detection of MTB and rifampicin resistance in both pulmonary and extrapulmonary specimens.

*Key Words: Evaluation; Gene Xpert MTB/RIF; Mycobacterium tuberculosis*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Clinical

117

**Comparison of 3 Methods for the Detection of Extended-Spectrum  $\beta$ -Lactamases and AmpC among *Enterobacteriaceae* in a Tertiary Hospital Center in Kuwait.**

\*Al-Hashem GM, Shetty SA, Abdullah AA, Mokaddas E.  
Department of Laboratory Medicine, Ibn Sina Hospital

**Introduction:**

Extended spectrum  $\beta$ -lactamase (ESBL) producing *Enterobacteriaceae* are increasingly being isolated from different specimens in Ibn Sina hospital. It has been estimated that the prevalence of ESBL producing *E. coli* was 31.7% in that hospital. The aims of this study were to identify all ESBL-producing *Enterobacteriaceae* and verify the prevalence of ESBL-producing *Enterobacteriaceae* with inducible AmpC from all types of clinical specimens.

**Methods:**

All non-duplicated consecutive isolates from different clinical specimens that were identified by manual sensitivity and vitek 2 machine as ESBL -producing *Enterobacteriaceae* were included in the study. Production of ESBL was confirmed by the CT/CTL and TZ/TZL Etest strips. The Mastdisc ID AmpC and ESBL detection discs were also used to confirm ESBL production and to show the presence or absence of inducible AmpC .

**Results:**

Of the 132 isolates, 116 (88.3%) were *Escherichia coli* and 16 (11.6%) were *Klebsiella pneumoniae*. Forty nine (37.5%) isolates were from the urine, 40 (30%) from wound, 23 (17.5%) from respiratory secretions and 10 isolates (7.5%) from blood and pus each. All these isolates were ESBL- producer by vitek 2, Etest and Mastdisc ID tests. Inducible AmpC was detected in 6 (4.5%) of the ESBL producing *Enterobacteriaceae* exclusively in *E. coli* in which 3 were from pus and 3 from urine.

**Conclusions:**

Our data show a significant prevalence of inducible AmpC among ESBL-producing *Enterobacteriaceae* compared to the literature. More genotypic identification methods should be considered in the future.

*Key Words: ESBL; Enterobacteriaceae; AmpC*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Clinical

118

**MRSA Septicemia in the Burns Unit: A 5 Year Study**

\*Abdullah AA, Shetty SA, Mokaddas E.

Department of Laboratory Medicine, Ibn Sina Hospital

**Introduction:**

Methicillin resistant *Staphylococcus aureus* (MRSA) is responsible for most of the blood stream infections in burn patients.

OBJECTIVES: This 5-year retrospective study was done at the Al- Babtain center for burns and plastic surgery to evaluate the prevalence of MRSA septicemia, identify the risk factors and analyze the antimicrobial susceptibility of those isolates.

**Methods:**

This study was done at Ibn- Sina Microbiology Laboratory on all blood culture samples from January 2004 to December 2008. The blood culture bottles were processed in Bactec 9240. Positive cultures growing *Staphylococcus aureus* were identified and further tested for methicillin resistance by the disc diffusion method using cefoxitin and methicillin discs. Antimicrobial susceptibility pattern of all MRSA to other antibiotics was done. Detail analysis of the risk factors for MRSA sepsis was done including percentage of burns, timing of grafting and ICU stay.

**Results:**

Out of a total of 283 positive blood cultures evaluated over the study period, 164 (58%) were caused by Gram-positive organisms. *Staphylococcus aureus* and MRSA accounted for 23 (14%) and 75 (46%) of the Gram positive organisms respectively. Forty four patients had 75 MRSA septic episodes, out of whom 29 (66%) patients were admitted to the ICBU with more than 50% burns. Septic episodes occurred more in patients in whom grafting was delayed for more than five days. All MRSA isolates were susceptible to the glycopeptides and Linezolid.

**Conclusions:**

The leading cause of septicemia in burns patients today is MRSA. Prevention of bloodstream infections mainly depends on adoption of strict infection control practices, early wound grafting, with rational antibiotic usage.

*Key Words: MRSA; Septicemia; Burns*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Graduate MSc (Basic Science)

119

**Development of an Inhalation Murine Model of Invasive Pulmonary Aspergillosis for Comparative Assessment of Four Biomarkers as Surrogates of Infection: A Novel Diagnostic Approach**

\*Al-Shaikh A, Ahmad S, Khan ZU

Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait.

**Introduction:**

Invasive pulmonary aspergillosis (IPA) caused by *Aspergillus fumigatus*, is a highly fatal disease of immunocompromised patients. Its early diagnosis is crucial for improved prognosis. We developed an inhalation rat model of IPA and evaluated efficacy of four non-invasive markers [(1->3)- $\beta$ -D-glucan (BDG), galactomannan (GM), *A. fumigatus* DNA and 18 kDa secreted antigen (mitogillin, MIT)] in serum and bronchoalveolar lavage (BAL) samples for early diagnosis of IPA.

**Methods:**

BDG was detected by enzyme immunoassay in a kinetic format. GM was detected by sandwich ELISA using anti-GM monoclonal antibody. *A. fumigatus* DNA was detected by developing a single-step PCR assay and rat 18S rRNA gene amplification was used to rule out presence of PCR inhibitors. Mitogillin was detected by blotting with anti-MIT serum which was generated by cloning *A. fumigatus* MIT gene in *E. coli* and purification of expressed protein. Effect of serum addition in culture medium on expression and secretion of mitogillin during growth of *A. fumigatus* was also detected by blotting.

**Results:**

An inhalation model of IPA was successfully developed. All animals until day 5 post-infection showed lung tissue culture and KOH-calcofluor smear positivity. Although mitogillin was uniformly absent, 14 of 30 (47%) and 27 of 30 (90%) serum and BAL samples, respectively, were positive for BDG, GM and DNA with 100% specificity. Expression and secretion of mitogillin increased from 24 h to 96 h, however, delayed and reduced secretion of mitogillin was noted with increasing amount of serum in culture broth during *in vitro* growth of *A. fumigatus*.

**Conclusions:**

Our data show that BAL is a superior specimen than serum and combined detection of BDG, GM and DNA are useful surrogate markers for sensitive diagnosis of IPA. In contrast, mitogillin is not a useful marker as its release is down-regulated by serum during *in vitro* growth of *A. fumigatus*, which also explains its absence in serum/BAL specimens.

*Key Words:* Invasive pulmonary aspergillosis; Inhalation model; Diagnosis

*Funding Agency:* College of Graduate Studies and KURA grant YM 07/07



**Microbiology and Immunology**

Category: Basic Sciences

120

**Genotype-Specific PCR and DNA Sequencing of Internally Transcribed Spacer Regions of rDNA Identify Major Genotypes Among Clinical *Candida dubliniensis* Isolates in Kuwait**

\*Ahmad S

Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait

**Introduction:**

Objective: Sequence analysis of internal transcribed spacer (ITS) regions of rDNA has identified four genotypes among clinical *Candida dubliniensis* isolates. Some isolates from Kuwait and Middle East are resistant to 5-flucytosine (5-FC). This study determined nucleotide differences in ITS region (ITS1-5. 8S rRNA-ITS2) of rDNA that define 5-FC resistance among *C. dubliniensis* isolates in Kuwait.

**Methods:**

Clinical *C. dubliniensis* isolates (n=94) recovered from various specimens in Kuwait were assigned to specific genotypes by genotype-specific amplification of rDNA. Susceptibility of isolates to antifungal agents including 5-FC was performed by E-test. DNA sequencing of ITS region was performed to confirm genotype assignment and to define signature residues associated with 5-FC resistance in *C. dubliniensis* isolates.

**Results:**

Majority (61 of 94, 65%) of *C. dubliniensis* isolates belonged to genotype 1, 27 of 94 (29%) isolates belonged to genotype 4 and only one isolate belonged to genotype 3. The DNA sequences of ITS region of rDNA from 15 selected genotype 1 isolates and all genotype 3 and genotype 4 isolates matched completely with genotype-specific sequence of reference strains. No genotype 2 isolates were detected. Five isolates yielded amplicons with more than one genotype-specific primer pair and DNA sequences of ITS region identified them as hybrid strains. A total of 27 *C. dubliniensis* isolates were resistant to 5-FC, belonged to genotype 4 and were characterized by a T residue at nucleotide position 82 in ITS region.

**Conclusions:**

Only three of four genotypes based on ITS region sequences were detected among clinical *C. dubliniensis* isolates in Kuwait with most (65%) isolates belonging to genotype 1. All *C. dubliniensis* isolates resistant to 5-FC belonged to genotype 4 and were defined by a signature nucleotide in ITS region of rDNA. The *C. dubliniensis* hybrid strains closely related to genotype 4 but not containing this signature were not resistant to 5-FC.

*Key Words: Candida dubliniensis; Genotypes; Kuwait*

*Funding Agency: KU Research grant MI 01/08*



**Microbiology and Immunology**

Category: Clinical

121

**Analysis of Carbapenem Resistance Genes in *Acinetobacter baumannii* Isolates from Kuwait Hospitals**

\*Al-Sweigh N, Mona AH, Rotimi V  
Faculty of Medicine, Kuwait University

**Introduction:**

Objectives: This study was designed to investigate the molecular epidemiology and genetic basis of the carbapenem resistance in clinical isolates of *Acinetobacter baumannii* obtained from all government hospitals in Kuwait.

**Methods:**

A total of 250 clinical isolates were collected from 8 hospitals. Their susceptibility to 18 antibiotics was determined by E test method. Carbapenems resistant isolates were screened for phenotypic MBL production by disk approximation test (DAT) and MBL E test. Genetic characterization of the resistant mechanisms was performed by PCR. Their clonal relatedness was assessed by PFGE.

**Results:**

All the isolates were multidrug resistant. Of the 250 isolates, 93 (37.2%) were resistant to carbapenems. The prevalence of MBL-producing isolates was 74.2% and 57% by DAT and MBL Etest, respectively. Sixty-five (69.9%) of the carbapenem-resistant isolates were positive for one or more resistance genes; 37 were positive for blaIMP-1, 17 blaVIM-1, 43 blaVIM2, 24 blaSPM-1, 32 blaOXA-23, 1 blaOXA-24. PFGE demonstrated widespread clones of similar strains in different hospitals and a cluster of 3 clones found only in one particular hospital.

**Conclusions:**

Resistance clinical isolates to carbapenem has reached unacceptable levels in Kuwait and MBLs, as well as oxacilinases, are highly prevalent among *A. baumannii* in our hospitals.

*Key Words:* *Acinetobacter baumannii*; Carbapenems resistance; Genetic analysis

*Funding Agency:* Kuwait University Research Grant no. YM 01/08



**Microbiology and Immunology**

Category: Clinical

122

**Frequency and Clinical Association of Pantone-Valentine Leukocidin Positive *Staphylococcus aureus* in a Kuwait Hospital**

\*Dhar R<sup>1</sup>, Al-Haddad A<sup>2</sup>, Al-Fouzan W<sup>1</sup>, Mathew B<sup>2</sup>, Udo EE<sup>2</sup>

<sup>1</sup>Microbiology Section, Department of Laboratories, Farwania Hospital, Farwania, Kuwait;

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

**Introduction:**

*Staphylococcus aureus* cause a myriad of diseases ranging from mild skin infections to life-threatening infections including septicemia, pneumonia, endocarditis and deep-seated abscesses. Since 1991 there has been an increase in emergence of methicillin-resistant *S. aureus* (MRSA) causing infections in the community (CMRSA) as well as in the hospital (EMRSA). Although CMRSA are not generally multi-drug resistant their pathogenicity is attributed to presence of Pantone-Valentine leukocidin (PVL) toxin. However, PVL has also been detected in strains of EMRSA and methicillin-susceptible *S. aureus* (MSSA). The present study was undertaken to determine the frequency of PVL genes among all *S. aureus* strains isolated in Farwania Hospital Lab (FHL) in Kuwait and the association of presence of PVL genes with staphylococcal diseases.

**Methods:**

From June through November, 2009, 160 isolates of *S. aureus* were collected from different clinical specimens cultured in FHL. Identification of *S. aureus* was confirmed by positive tube-coagulase and DNase tests. Antimicrobial susceptibility testing was performed by disk-diffusion method according to CLSI recommendations. The presence of *mecA* and genes for PVL was detected in PCR analysis.

**Results:**

Of 160 strains studied, 107 were MSSA while 53 were MRSA. PVL was positive (PVL+) in 19 (18%) and 11 (21%) of MSSA & MRSA isolates, respectively. All PVL+ - MRSA strains were isolated from skin and soft tissue infections (SSTI). Eight of them were CMRSA (SCC*mec* IV & V) and three were EMRSA (SCC*mec* III). Fourteen (74%) of the 19 PVL+ - MSSA strains were isolated from SSTI.

**Conclusions:**

Our prevalence rate (19%) of PVL+ - *S. aureus* and the observation that all *S. aureus* can produce PVL is similar to recently reported data. These isolates were associated mostly with SSTI. None of PVL+ - CMRSA or - EMRSA, which were all isolated from SSTI in hospitalized patients, was associated with pneumonia.

*Key Words: Staphylococcus aureus; Pantone-Valentine Leukocidin; Clinical association*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Clinical

123

**Selective IgM Deficiency with Recurrent Infections**

\*Husain M, Al-Otaibi S, Qabazard Z

Department of Pediatric, Al-Adan Hospital, MOH

**Introduction:**

Selective Immunoglobulin M (IgM) deficiency is reported in several cases with recurrent infections, allergic and autoimmune diseases.

**Methods:**

We report 2 cases of recurrent infections associated with selective IgM deficiency.

**Results:**

In case 1, an 8 year old who presented with a history of recurrent otitis media and skin infections was evaluated for possible immunodeficiency. In addition, he had significant history of food allergy to peanut and sesame. He was on valproic acid for seizure disorders associated with severe developmental delay and spastic quadriplegia of unknown etiology. Immunological investigations revealed normal IgG, IgG subclasses and A but significantly reduced IgM of 0.1 gm/l. He had low isohemagglutinins at 1:8. Specific antibody production was normal for tetanus, diphtheria and pneumococcal antibodies. Further evaluation showed significant lymphopenia affecting CD4, CD8 and NK cells but normal CD20. ADA and PNP levels were normal. T cell proliferative response was normal. He was placed on antibiotic prophylaxis with significant reduction in the episodes of infections. In case 2, a 7 year old male was evaluated for immunodeficiency disorders because of bilateral bronchiectasis of unknown etiology. He was known to have recurrent chest infections since the age of 5 months requiring frequent hospital admission for intravenous antibiotics. His immunological evaluation revealed normal IgG, IgG subclasses, IgA and IgE but low IgM of 0.18 gm/l. He had normal antibody production for tetanus, diphtheria, H. influenza as well as normal total IgG for pneumococci (38.5 IU/l). Lymphocyte phenotype and T lymphocyte proliferative response were normal. He was managed with antibiotic prophylaxis and lobectomy of the most affected lobe.

**Conclusions:**

We reported 2 cases with selective IgM deficiency with recurrent infections. Both are managed with antibiotic prophylaxis.

*Key Words: IgM Deficiency; Recurrent infections; Bronchiectasis*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Clinical

124

***Candida* Colonization Among Pediatric Cancer Patients does not Lead to Elevated Levels of (1-3)- $\beta$ -D-glucan, *Candida* Mannan and *Candida* DNA detection in Serum Samples**

\*Mokaddas E<sup>1</sup>, Burhamah MHA<sup>2</sup>

<sup>1</sup>Department of Microbiology, Faculty of Medicine, Kuwait University; <sup>2</sup>NBKCancer Ward, Al-Sabah Hospital, Kuwait

**Introduction:**

Objective: An 18-month prospective surveillance study was undertaken to determine the extent of *Candida* colonization among pediatric cancer patients and its possible impact on detection of (1-3)- $\beta$ -D-glucan (BDG), *Candida* mannan and *Candida* DNA in serum samples.

**Methods:**

A total of 972 swabs originating from throat (n=294), nostrils (n=600), anus (n=28), and groin (n=50) from 63 pediatric cancer patients were cultured on Sabouraud dextrose agar supplemented with chloramphenicol. Serum samples were collected from the patients colonized with *Candida* species at a single or multiple sites for the detection of BDG by Fungitell kit *Candida* mannan by Platelia *Candida* Ag kit and *Candida* DNA by using species-specific primers and DNA sequencing.

**Results:**

Seventy-four (7.6%) swab cultures from 35 (55.5%) patients yielded *Candida* species. The isolates included 61 of *C. albicans*, 8 of *C. dubliniensis*, 2 each of *C. glabrata* and *C. tropicalis* and one of *C. krusei*. Eleven patients were colonized at three or more sites. None of the serum samples from the colonized patients yielded BDG and/or *Candida* mannan levels higher than the currently recommended cut-off values of >80 pg/ml and >0.5 ng/ml used for the two diagnostic tests, respectively. Likewise, none of the serum samples of patients colonized with *Candida* species yielded a positive PCR test for *Candida* DNA. Two patients who were colonized with *C. tropicalis*, subsequently developed candidemia due to this species. Besides positive blood culture, *C. tropicalis* DNA, BDG (119.3 and 203 pg/ml), and *Candida* mannan (0.77 and 0.28 ng/ml) were detected in the serum samples.

**Conclusions:**

The present study demonstrates that while mucosal colonization with *Candida* species in cancer patients is not uncommon, it may not give rise to diagnostically significant levels of BDG, *Candida* mannan or *Candida* DNA in serum specimens, thus not compromising the specificity of these markers in the diagnosis of invasive candidiasis.

*Key Words:* *Candida* colonization; *Candida* mannan (1 $\rightarrow$ 3)- $\beta$ -D-glucan; *Candida* DNA

*Funding Agency:* KFAS grant No. 2005-130-205



**Microbiology and Immunology**

Category: Clinical

125

**Large Scale Evaluation of Multiplex PCR and DNA Sequencing of Internal Transcribed Spacer Region for Rapid Differentiation and Identification of *Mycobacterium* Species Isolates in Kuwait**

\*Mokaddas E, Ahmad S

Microbiology Department, Faculty of Medicine, Kuwait University, Kuwait

**Introduction:**

Objective: Specific identification is of clinical relevance since treatment varies according to *Mycobacterium* species causing infection. This large scale study evaluated the performance of a multiplex PCR (mPCR) assay for rapid differentiation of acid-fast bacilli (AFB)-positive liquid cultures as *Mycobacterium tuberculosis* (MTB) or non-tuberculous mycobacteria (NTM) and DNA sequencing of 16S-23S internal transcribed spacer (ITS) region to confirm each NTM isolate.

**Methods:**

A total of 993 AFB-positive cultures by MGIT 960 system in Kuwait were used. The DNA was extracted by boiling method and mPCR targeting oxyR-ahpC intergenic region and rpoB gene was performed to differentiate NTM from MTB. The 16S-23S ITS region was amplified and sequenced by using pan-mycobacterial primers. Mixed cultures were identified by a line probe assay.

**Results:**

The mPCR identified 924 isolates as MTB, 67 isolates as NTM and two isolates as mixed cultures. Thirteen different NTM species were identified. Of the 67 NTM isolates, 19, 12, 10, 8, 6, 2, 2 and 2 isolates were identified as *M. kansasii*, *M. fortuitum*, *M. abscessus*, *M. avium*, *M. intracellulare*, *M. lentiflavum*, *M. gordonae*, and *M. chelonae*, respectively. One isolate each was identified as *M. chimaera*, *M. parascrofulaceum* and *M. immunogenum* while two isolates were identified as *Mycobacterium* species. One NTM isolate contained a mixed culture, *M. kansasii* and *M. scrofulaceum*. The 150 randomly selected MTB isolates were identified as *M. tuberculosis* by 16S-23S ITS sequencing and/or hybridization with MTB-specific probes. Both mixed cultures contained *M. tuberculosis* and *M. fortuitum*.

**Conclusions:**

The mPCR accurately and rapidly differentiated all MTB from NTM isolates and DNA sequencing of 16S-23S ITS region identified nearly all NTM isolates. Rapid differentiation as MTB or NTM by mPCR followed by species-specific identification of NTM by DNA sequencing is most suitable for proper management of mycobacterial infections in Kuwait.

*Key Words:* Multiplex PCR; 16S-23S ITS DNA sequencing; Mycobacterial identification

*Funding Agency:* KURA grant MI02/04.



**Microbiology and Immunology**

Category: Basic Sciences

126

**Cysticercosis in Kuwait: Making the Connection in a Global Environment**

Hira PR<sup>1,2,3</sup>, Al-Ali FM<sup>2</sup>, Khalid N<sup>1</sup>, Shelahi F<sup>2</sup>, Al-Enezy NA<sup>3</sup>, Asfoor F<sup>3</sup>, \*Iqbal J<sup>1,3</sup>, Al-Saffar A<sup>3</sup>,  
Montazeri SM<sup>3</sup>, Sheikh M<sup>4</sup>

<sup>1</sup>Department of Microbiology, Faculty of Medicine, Kuwait University; <sup>2</sup>Department of Laboratories, Farwaniya Hospital; <sup>3</sup>Department of Laboratories, Mubarak Al-Kabeer Hospital  
<sup>4</sup> Department of Radiology, Faculty of Medicine, Kuwait University

**Introduction:**

We previously reported neurocysticercosis (NC) in an Islamic country where porcine products are prohibited. We now report continued transmission of the cestode clinching the global link and report our experience with a commercially-available immunoblot (IB) test in the diagnosis of NC in a county where cystic hydatid disease (CHD) is endemic.

**Methods:**

We first describe three patients diagnosed with NC to illustrate the diversity of clinical presentations. We report our experience with the IB test (Immunetics, Boston, USA) in these patients and on clinical samples from suspected NC cases and patients with CHD.

**Results:**

In the first patient we show direct evidence that a Kuwaiti child presenting with NC was infected by a maid excreting ova of *Taenia solium*, which stained negative with the Ziehl-Neelsen stain but the IB was negative. We describe the 2nd case, a child clinically suspected of NC and confirmed by the IB. In the third patient with CHD, the IB showed precipitin bands other than those associated with NC. Of the 135 requests for NC diagnosis over two years, the test was positive in 24 (17.8 %), of which 19 (80 %) were imported infections. The five patients (20%) with an autochthonous infection were all children, 4 Kuwaitis and a Syrian. Each was cared for by maids from endemic areas. Sera of patients with hydatid disease showed precipitin bands other than those in patients with NC and we discuss the limitations of the test.

**Conclusions:**

We illustrate and reconfirm the continuing transmission of cysticercosis in Kuwait. The increased prosperity in households leads to the employment of domestic help from developing countries endemic for *T. solium*. Thus the typical presentation of NC does not preclude the diagnosis in Islamic countries as least one of the risk factors (source of transmission) exists in this global environment.

*Key Words: Cysticercosis; Kuwait; Taenia solium*

*Funding Agency: Kuwait University*



**Microbiology and Immunology**

Category: Clinical

127

**The Impact of Hepatitis C virus Infection on the Development of Diabetes Complications**

\*Chehadeh W<sup>1</sup>, Ben-Nakhi A<sup>2</sup>, Al-Arouj M<sup>2</sup>, Almuaili T<sup>2</sup>, Al-Mutairi O<sup>2</sup>, Abdella NA<sup>3</sup>, Al-Nakib W<sup>1</sup>

<sup>1</sup>Department of Microbiology, Kuwait University Faculty of Medicine; <sup>2</sup>Diabetes Unit, Amiri Hospital, Kuwait; <sup>3</sup>Department of Medicine, Faculty of Medicine, Kuwait University

**Introduction:**

Previous studies have reported an association between hepatitis C virus (HCV) infection and type 2 diabetes (T2D). In Kuwait, we have previously reported that 5.3% of T2D patients had evidence of HCV infection compared to 1.6% of healthy subjects. The aim of this study was to investigate whether HCV genotype and viral load detected in T2D patients precipitate the development of diabetes-associated complications such as hypertension, hyperlipidemia, cardiovascular and kidney diseases.

**Methods:**

The study population consisted of 305 patients with type 2 diabetes, and 300 control subjects. HCV infection was assessed by testing for serum HCV-specific antibodies and confirmed by detection of HCV RNA using nested RT-PCR. HCV genotyping was determined using Versant hybridization Line Probe HCV assay. Real-time Reverse Transcription-PCR for the quantification of HCV RNA was carried out on LightCycler 2.0 instrument.

**Results:**

In the group of healthy subjects, three were HCV seropositive, of whom two subjects were HCV RNA positive, while in the group of T2D patients, 21 patients were seropositive, of whom 15 patients had evidence of HCV viraemia. Most of HCV RNA detected in T2D-patients and control subjects were of genotype 4. The Median HCV RNA concentration in non-diabetic subjects was 3.4 x 10<sup>5</sup> copies/ml, while in the group of T2D patients, the median HCV viral load was 4.6 x 10<sup>6</sup> copies/ml. There was no significant difference in the HCV RNA load between T2D patients and patients with normal fasting plasma glucose levels (p= 0.13). Similarly, the median HCV RNA concentration in patients who developed diabetes-associated complications, was not significantly different from that in diabetic patients with no complications (p=0.15).

**Conclusions:**

These findings suggest that HCV genotype 4 and high viral load are not associated with high risk for diabetes complications.

*Key Words: Type 2 diabetes; Hepatitis C; Complications*

*Funding Agency: KFAS Grant No. 2006-1302-03, KU Grant No. [MI 01/07].*



**Microbiology and Immunology**

Category: Basic Sciences

128

**Lack of Integron-Mediated Drug Resistance in *Campylobacter jejuni* Isolated from Kuwait**

\*Albert MJ, Haridas S

Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait

**Introduction:**

*Campylobacter jejuni* is a major food-borne pathogen and a cause of diarrhoea worldwide. Serious campylobacter infections are treated with erythromycin, ciprofloxacin, tetracycline or gentamicin. However, increasing resistance to these antimicrobials is being reported. Integrons that capture gene cassettes containing resistance determinants have been implicated in the transfer of drug resistance in campylobacter. Of the nine classes of integrons, class 1 integron is clinically important. We investigated the presence of class 1 integron-mediated drug resistance in *C. jejuni* isolated from patients with diarrhoea in Kuwait.

**Methods:**

Single *C. jejuni* isolates from 122 patients with diarrhea, treated at Mubarak Al-Kabir Hospital, Kuwait during 2000-2009 were screened for the presence of class 1 integron by PCR with primers corresponding to 5' and 3' conserved segments flanking the integron. The PCR products were separated by agarose gel electrophoresis. Since the average size of a bacterial coding sequence is approximately 800 bp long, we considered the possibility of integron-mediated drug resistance if a PCR product of  $\geq 800$  bp was generated. Bands of interest were extracted from the gel and sequenced by BigDye chain termination method.

**Results:**

One hundred and six (86.8%) isolates generated bands by PCR and were assumed to possess integron-like structures. The number of bands generated varied from 1 to 3 and their size varied from 300 bp to 700 bp. A 423 bp band was present in 92 of the 106 isolates (86.8%). Sequencing of this band revealed that the sequence matched with that of class 1 integron.

**Conclusions:**

The majority of *C. jejuni* isolates from Kuwait carried class 1 integron-like structures. Since none of the isolates generated PCR bands of  $\geq 800$  bp, it was concluded that the class 1 integron carried by Kuwaiti isolates did not possess antibiotic-resistance determinants.

*Key Words: Campylobacter jejuni; Integron; Drug resistance*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Graduate MSc (Basic Science)

129

**A Recombinant PorA Vaccine Elicits Homologous and Heterologous Protection in an Adult Mouse Intestinal Colonization Model of *Campylobacter jejuni* Infection.**

\*Islam A, Raghupathy R, Albert MJ

Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait

**Introduction:**

*Campylobacter jejuni* is a foodborne pathogen and a leading cause of diarrhea worldwide. Prevention of campylobacteriosis by vaccination is a priority. There are numerous Penner serotypes of *C. jejuni* and immunity seems to be serotype-specific. Therefore, vaccines based on common antigens that are shared by all serotypes seem attractive for broad protection. One such antigen is the major outer membrane protein (MOMP-PorA) involved in ion transport and bacterial adhesion to the intestinal mucosa.

**Methods:**

Two oral doses of 300 µg of a recombinant glutathione S transferase (GST) fused to PorA prepared from *C. jejuni* strain C31 (serotype 6, 7) (GST-PorA) were combined with 5 µg of a mutant heat-labile Escherichia coli enterotoxin (LT R192G) as an adjuvant and given 7 days apart to groups of adult BALB/c mice. The mice were later orally challenged with C31 strain or three heterologous strains, 48 (serotype 19), 75 (serotype 3) and 111 (serotype 1, 44). Control mice included animals given phosphate buffered saline (PBS) or LT R192G. Fecal shedding of, and protection from colonization with, the challenge organisms were studied over the next 9 days. Serum and intestinal lavage antibodies against the vaccine and Sarkosyl-purified MOMP of C31 were measured by ELISA.

**Results:**

The vaccine produced robust antibody responses in serum and secretion against both antigens. It also reduced fecal load and colonization of all 4 strains. The protective efficacies were 55% (for strain C31,  $P < 0.001$ ), 43% (for strain 48,  $P < 0.001$ ), 29% (for strain 75,  $P < 0.005$ ) and 42% (for strain 111,  $P < 0.001$ ) for the 9-day period in comparison with control mice given PBS.

**Conclusions:**

The recombinant PorA vaccine provided significant protection against colonization with homologous and heterologous serotypes. Thus, PorA vaccine is a highly promising candidate and further studies with this vaccine can now be undertaken.

*Key Words: Campylobacter jejuni; Major Outer Membrane Protein; Vaccine*

*Funding Agency: KU grant number YM 06/07*



**Microbiology and Immunology**

Category: Clinical

130

**Analysis of Prevalence, Risk Factors and Molecular Epidemiology of  
*Clostridium difficile* Infection in Kuwait over 3 Years Period**

\*Jamal W<sup>1</sup>, Rotimi VO<sup>1</sup>, Duerden BI<sup>2</sup>

<sup>1</sup>Department of Microbiology, Faculty of Medicine, Kuwait; <sup>2</sup>Department of Medical Microbiology, Cardiff University, Cardiff, UK

**Introduction:**

The incidence of *Clostridium difficile* infection (CDI) has been increasing in recent years. The aim of the study was to investigate the prevalence, epidemiology and risk factors of CDI and to determine the ribotypes responsible for CDI and ribotype 027 in Kuwait.

**Methods:**

Stool samples of patients with diarrhoea were collected and sent to the Anaerobe Reference Laboratory for *C. difficile* toxin A and B detection and culture over 3 years period 2003-2005. Demographic data and data on risk factors for CDI were carefully recorded. PCR ribotyping was performed for the isolates.

**Results:**

A total of 697 patients were investigated of which 73 (10.5%) were positive for *C. difficile* toxin A and B. Of these, 56 (76.7%) were hospital-acquired and 17 (23.3%) outpatient cases. The prevalence of hospital-acquired CDI was c. 8%. About 43% of CDI patients were aged  $\geq 60$  years and 79% of these were aged  $\geq 71$  years. Only 23.2% of patients were in younger age group (41-60 years). About half of the patients developed CDI within 4-10 days of admission to the hospital. Nasogastric tube feeding ( $P < 0.025$ ), immunosuppressive drugs ( $P < 0.031$ ) and exposure to specific antimicrobial therapy ( $P < 0.001$ ) in CDI patients versus controls were statistically significant risk factors. *C. difficile* was isolated in only 38 (67.9%) patients. These isolates belonged to 16 different ribotypes. Ribotype 002 (18.4%) was the commonest, followed by ribotype 001 (15.7%), 126 (10.5%) and 140 (10.5%). No PCR-ribotype 027, 017 or 078 was encountered in this series.

**Conclusions:**

Prevalence of hospital-acquired CDI was c. 8%. Exposure to the third-generation cephalosporins, nasogastric tube feeding and immunosuppressive therapy were the most significant risk factors for CDI. The most common ribotypes were 002 and 001 and no hypervirulent 027 strain was encountered.

*Key Words: Clostridium difficile; Kuwait; Epidemiology*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Graduate MSc (Basic Science)

131

**Studies Towards Expression and Immunological Evaluation of BCG Transformed with a Shuttle Vector Containing *esat6***

\*Shaban K, Amoudy H, John S, Shaban F, Mustafa AS

Department of Microbiology, Kuwait University, Faculty of Medicine.

**Introduction:**

Although BCG is the world's most widely used vaccine, its protection estimates vary greatly. One approach to improve it is to express *M. tuberculosis*-specific antigens (e. g. CFP10 and ESAT6) that are not present in BCG. The aim of this study was to introduce *esat6* genes into a plasmid vector capable of transforming BCG, detect protein expression and evaluate antigen-specific immune responses induced by recombinant BCG in mice.

**Methods:**

BCG was transformed by electroporation with a recombinant shuttle vector pAU151 carrying the above genes. DNA isolated from colonies of BCG growing on a selective medium were tested for the presence of recombinant plasmids using plasmid- and gene-specific primers in PCR. In vitro expression of the proteins in recombinant BCG was studied by using protein-specific antibodies in western immunoblotting. In vivo immunological responses were evaluated in Balb/c mice after immunization with recombinant BCG and using spleenocytes plus peptide pools of each antigen in antigen-induced proliferation assays. The expected coding regions of recombinant plasmids were sequenced to verify the DNA sequence of the cloned genes and the fusion partner.

**Results:**

PCR results indicated that the colonies of BCG growing on the selective medium were transformed with recombinant pAU151. However, neither in vitro expression of the proteins nor in vivo immunological response to the peptides in immunized mice could be detected. DNA sequencing showed that there was a frame-shift in the sequence of cloned DNA due to the presence of two extra nucleotides in the original plasmid, which were not reported by people who constructed the plasmid pAU151.

**Conclusions:**

BCG was transformed with recombinant pAU151 containing *esat6*, but proteins were not expressed most probably due to problems in the construction of the vector.

*Key Words: Tuberculosis; BCG; Immunization*

*Funding Agency: KU Grant No. YM14/08*



**Microbiology and Immunology**

Category: Graduate MSc (Basic Science)

132

**Construction of Recombinant Mycobacterial Shuttle Plasmids to Transform Fast Growing *Mycobacterium Vaccae***

\*Ebrahimi B, Amoudy H, Shaban F, Mustafa AS

Department of Microbiology, Kuwait University, Faculty of Medicine.

**Introduction:**

The comparison of the genomes of pathogenic *M. tuberculosis* with vaccine strains of *M. bovis* BCG has identified several regions of differences (RD). Among these regions, RD1 is immunodominant and contains genes that encode several immunologically dominant proteins. The aim of this work was to clone two RD1 genes that encode ORF6 (cfp10) and ORF7 (esat-6) in a shuttle vector pDE22 and use the recombinant plasmids to transform *M. vaccae*, a non pathogenic mycobacterial vaccine candidate.

**Methods:**

The genes encoding ORF6 and ORF7 were restriction-digested from recombinant pGES-TH1 plasmid (an expression vector constructed to express these genes in *Escherichia coli*), and subcloned into the mycobacterial shuttle vector pDE22. *E. coli* cells were transformed with recombinant pDE22 and plasmids were purified using a mini-prep method and commercial kits. The isolated recombinant pDE22 were used to transform *M. vaccae* by electroporation and the presence of recombinant plasmids in transformed *M. vaccae* was studied by plasmid isolation and PCR amplification of the cloned genes.

**Results:**

The genes of both ORFs were successfully digested from recombinant pGES-TH1 and subcloned into pDE22. The transformation of *M. vaccae* with recombinant pDE22 was inefficient using plasmids from mini-preps, but highly efficient with plasmids isolated on a large scale using commercial kits. Both plasmid isolation from transformed *M. vaccae* as well as PCR targeting amplification of the cloned genes confirmed the presence of recombinant pDE22 in *M. vaccae*.

**Conclusions:**

*M. vaccae* can be stably transformed with pDE22 shuttle vector containing RD1 genes. Thus, it may be useful for delivery of *M. tuberculosis*-antigens as a recombinant non-pathogenic mycobacterial vaccine.

*Key Words:* Tuberculosis; *M. vaccae*; Immunization

*Funding Agency:* KU Grant YM15/08



**Microbiology and Immunology**

Category: Graduate MSc (Basic Science)

133

**The Expansion of ST80-SCCmec-IV Clone of Community-Acquired Methicillin Resistant *Staphylococcus aureus* in Kuwait Hospitals.**

\*Sarkhoo EM, Udo EE

Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait.

**Introduction:**

Community- acquired methicillin resistant *S. aureus* (CA-MRSA) that infects patients with no traditional risk factors for the acquisition of MRSA infections is increasing in many parts of the world. In this study, CA-MRSA obtained from patients in eight Kuwait hospitals were characterized for their antibiotic resistance and typed using pulsed-field gel electrophoresis (PFGE), SCCmec and multilocus sequence typing (MLST) to ascertain their relatedness.

**Methods:**

In total, 135 CA-MRSA isolates were obtained from eight hospitals in Kuwait between 1 January 2005 and 31 December 2006. Antibiotic susceptibility testing was performed by the disk diffusion method. MIC was determined using Etest strips. PFGE with SmaI digested genomic DNA, SCCmec typing and MLST were performed according to standardized protocols.

**Results:**

They were resistant to kanamycin (62%), fusidic acid (42.2%), tetracycline (39.3%), erythromycin and clindamycin (21.5%), gentamicin (5.9%), streptomycin (6.7%), trimethoprim (5.9%), mupirocin (8.9%) cadmium acetate (82.2%) and ethidium bromide (12.6%). All were susceptible to vancomycin, teicoplanin and linezolid. One hundred and three (76.3%), 11 (8.14%), 9 (6.67%) and 12 (8.9%) isolates carried SCCmec type IV, SCCmec –Iva, SCCmec- Ivc and SCCmec - V genetic elements, respectively. PFGE yielded 10 PFGE types and subtypes with the majority of them belonging to PFGE type 1 and subtypes (50.4%), type 2 (22.2%), type 3 (3.7%), type 4 (13.3%). Other PFGE types were present in small numbers. MLST revealed 10 sequence types comprising ST80 (50.4%), ST30 (22.2%), ST5 (14.1%), ST1 (4.45), ST6 (3.7%), ST88 (1.5%), ST834 (1.5%), ST8 (0.7%), ST46 (0.7%) and ST950 (0.7%). Isolates belonging to the same PFGE pattern had the same sequence type.

**Conclusions:**

The study showed that the ST80-SCCmec IV clone belonging to PFGE type 1 and subtypes was the most prevalent clone. Its presence in all eight hospitals shows its continuing expansion in Kuwait hospitals.

*Key Words: Community-acquired MRSA; Mupirocin resistance; MLST*

*Funding Agency: KU Grant YM 05/06*



**Microbiology and Immunology**

Category: Clinical

134

**Nosocomial Bacteria on Doctors Mobile Phones**

\*Rawdhan H<sup>1</sup>, Shamsah M<sup>1</sup>, Joshi R<sup>2</sup>

<sup>1</sup>Department of Anaesthesia and Intensive Care, Al-Adan Hospital; <sup>2</sup>Microbiology Unit, RNMLC Yiacco Medical Co. Al-Adan Hospital.

**Introduction:**

Recently mobile phones have been extensively used in hospitals and other health care settings for quick patient care communication. But if the mobile phones are not properly disinfected they may cause nosocomial infections. To our knowledge there is no study from Kuwait on mobile phones in this context. Therefore, present prospective study was planned to evaluate nosocomial bacterial colonization on doctors mobile phones at Al-Adan hospital.

**Methods:**

Bacteriological study on mobile phones of 82 doctors (including participant questionnaire sheet) was done in June - August 2009. Wet sterile swabs were smeared on keypads, back and sides of mobile phones and transported within 1 hour to Microbiology department. Inoculations were done on sheep blood agar plates and incubated at 37 degree C overnight. After routine preliminary tests, the isolates were finally identified in MicroScan 96 automated system using Positive combo 21 panels. However, *S. viridans* was identified by conventional tests including optochin sensitivity.

**Results:**

Out of 82 mobile phones, 40(48.78%) were positive for bacterial colonization and 42 (79.25%) of total 53 isolates were coagulase negative staphylococci, 5 (9.43%) were coagulase positive (*S. aureus*). Of 42 coagulase-negative staphylococci 18 (42.86%) were *S. epidermidis*. Most of mobiles yielded only one isolate but 12 mobiles were positive for two or more species/strains. While, 59% doctors used mobile phones more often than fixed phones, 82% used them for patient related issues and 61% did not clean mobile phones at all. Neither MRSA nor any Gram negative bacilli were isolated in the study.

**Conclusions:**

Our study confirms bacterial colonization including nosocomial pathogens on doctors mobile phones. The mobile phones should be properly disinfected to minimize cross infection. Further studies including other health staff may be more informative regarding colonization of different bacterial species on mobile phones.

*Key Words: Mobile phones; Bacteria; Colonization*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Clinical

135

**In-vitro Susceptibility of Gram negative Bacilli Against Tigecycline.**

\*Joshi RM, El-Desouky M, Nair S, Oommen M, Subramanian S

Radiology, Nuclear Medicine & Laboratory Center, Yiacco Medical CO. K. S. C. C.

**Introduction:**

Tigecycline is a novel broad spectrum glycylycylcine antibiotic administered parenterally for treating infections by multidrug resistant bacteria including ESBL (Extended Spectrum Beta Lactamase) strains. In Kuwait, the experience of susceptibility of different bacterial species against tigecycline is limited. Gram negative bacteria especially multi drug resistant strains like ESBL often cause serious/fatal infections. Therefore, the present study was planned to evaluate the in-vitro susceptibility of Gram negative bacilli against tigecycline.

**Methods:**

The study included recent bacterial strains isolated from different clinical specimens received from inpatients and out patients of Al-Adan hospital. The specimens were cultured on standard bacteriological media. The isolates were identified in MicroScan 96 using NBPC 34 which has a confirmatory screen for ESBL. The antibacterial susceptibility against tigecycline was carried out using disk diffusion technique incorporating 15 microgram disks. Inhibition zone of 19 mm or more around tigecycline disk indicated susceptibility and zone less than 19 mm suggested resistance. *E. coli* ATCC 25922 was included as a control strain.

**Results:**

217 bacterial strains of the present study included *E. coli* (108), *K. pneumoniae* (48), *A. haemolyticus/baum* (44), *E. cloacae* (11), *S. maltophilia* (3), *C. freundii* (2) and *Y. enterocolitica* (1). While 162 (74.65%) were found to be sensitive to tigecycline only 55 (25.35%) exhibited resistance. Nearly half of the strains (49.31%) were ESBL producers. Of individual 61 *E. coli*, 35 *K. pneumoniae*, 9 *E. cloacae* and 2 *C. freundii* strains positive for ESBL production, the resistance to tigecycline was encountered in only 12 (19.72%), 18 (51.43%) 3 (33.33%) and 1 (50.00%) respectively.

**Conclusions:**

Tigecycline is a promising antibiotic against multidrug resistant Gram negative bacterial species including ESBL strains as per our in-vitro susceptibility results.

*Key Words: Gram negative bacilli; In-vitro susceptibility; Tigecycline*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Basic Sciences

136

**Recombinant Rv3619c, Rv3872, Rv3873, Rv3874 and Rv3875 Proteins of *Mycobacterium tuberculosis* Induce Delayed Type Hypersensitivity Responses in Guinea Pigs**

\*Hanif SNM, Al-Attiyah R, Mustafa AS

Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait

**Introduction:**

The PPD skin test is widely used as a diagnostic and epidemiological tool to identify individuals infected with *M. tuberculosis*. However, PPD contains antigens that are shared among pathogenic mycobacteria, environmental mycobacteria and the vaccine strains of *M. bovis* BCG. For diagnosis, a reagent should distinguish tuberculosis patients from BCG vaccinated individuals and individuals exposed to environmental mycobacteria. The present study investigated the diagnostic potential of four *M. tuberculosis* antigens encoded by RD1 region genes (Rv3872, Rv3873, Rv3874, Rv3875) and Rv3619c (a protein of ESAT-6 family).

**Methods:**

DNA corresponding to Rv3872, Rv3873, Rv3874, Rv3875 and Rv3619c were PCR amplified from genomic DNA of *M. tuberculosis* H37Rv, cloned in pGES-TH1 and expressed in *Escherichia coli*. The recombinant proteins were purified and tested for delayed type hypersensitivity responses in guinea pigs injected with heat killed *M. tuberculosis* and live BCG, *M. avium* and *M. vaccae*. Two to four weeks later, the guinea pigs were challenged intradermally in the flank region with 1 µg of purified recombinant proteins and mycobacterial sonicates. The DTH responses were quantitated by measuring erythema at the sites of injections after 24 h.

**Results:**

All mycobacterial sonicates induced positive DTH responses in *M. tuberculosis*, BCG, *M. avium* and *M. vaccae* injected guinea pigs. The purified proteins Rv3872, Rv3873, Rv3874 and Rv3875 elicited positive DTH responses in *M. tuberculosis* injected group but not in BCG, *M. avium* and *M. vaccae* injected guinea pigs, whereas Rv3619c elicited positive DTH responses in *M. tuberculosis* as well as in BCG injected groups but not in *M. avium* and *M. vaccae* injected guinea pigs.

**Conclusions:**

The results suggest that the recombinant antigens tested in this study may be useful as skin test reagents to discriminate between tuberculous infection, BCG vaccination and exposure to environmental mycobacteria.

*Key Words:* DTH; Guinea pigs; Tuberculosis

*Funding Agency:* Research Administration grant YM01/03.



**Microbiology and Immunology**

Category: Clinical

137

**Microscopy and Rapid Diagnostic Tests for the Detection of Malaria:  
Performance and Limit of Detection**

\*Ali Sher<sup>1</sup>, Al-Owaish RA<sup>2</sup>, Latif SA<sup>3</sup>, Mandkar Y<sup>2</sup>, Al-Mufti S<sup>4</sup>

<sup>1</sup>Malaria Laboratory, Ports & Borders Health Division, Department of Public Health, MOH; <sup>2</sup>Clarion University, Pittsburg, USA; <sup>3</sup>Virology Laboratory, <sup>4</sup>Ministry of Health, Kuwait

**Introduction:**

Accurate diagnosis of *Plasmodium* spp is essential for the rational treatment of malaria. Despite its many disadvantages, microscopic examination of blood smears remains the current “gold standard” for malaria detection and speciation. Rapid diagnostic tests are evaluated and used as an alternative to microscopy.

**Methods:**

Thick and thin blood films were made from all the immigrants coming from malaria endemic countries and stained with Giemsa and screened for the presence of malaria. All the infected individuals were again checked by rapid diagnostic tests (immunochromatographic test, ICT).

**Results:**

215,000 immigrants were checked for malaria in 2009 and 81 (0.038%) were found positive. All the four species of malaria were detected and their distribution was found as; *P. vivax* 48.00%; *P. falciparum* 13.50%; *P. ovale* 2.50%; *P. malariae* 1.50% and mixed infection of *P. falciparum* and *P. vivax* 34.50%. Infection with *P. vivax* was found in 45.00% and *P. falciparum* in 12.00% in ICT, respectively. The ICT can differentiate *P. falciparum* or non - *P. falciparum* species only. Microscopy was used as the reference standard for comparison with ICT.

**Conclusions:**

The ICT test may be as good as Giemsa’s stained thick and thin blood films in the diagnosis of malaria in very remote areas where proper laboratory facilities and well trained microscopists are not available. The ICT is simple and the results are available in 5 minutes.

*Key Words: Malaria; Immunochromatographic test; Microscopy*

*Funding Agency: Ministry of Health, Kuwait*



**Microbiology and Immunology**

Category: Basic Sciences

138

**Absence of Glycopeptide Resistance in *Enterococcus* species isolated from Cow's milk in Kuwait.**

\*Udo EE<sup>1</sup>, Abdelkhalek A<sup>2</sup>, Noronha B<sup>1</sup>, Mathews B<sup>1</sup>, Abdul Salem F<sup>2</sup>

<sup>1</sup>Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait;

<sup>2</sup>Public Authority of Agriculture Affairs and Fish Resources, Kuwait.

**Introduction:**

Acquired antibiotic resistance in human isolates of Enterococci is well documented in Kuwait. However, data on antibiotic resistance in *Enterococcus* isolated from food animals in Kuwait are lacking. Consequently, Enterococci isolated from milk obtained from Cows with mastitis were studied for their resistance to different antibiotics.

**Methods:**

A total of 105 Enterococci were obtained from Cows' milk between June to December 2006. They were identified to species level using cultural characteristics and biochemical tests using API Strep (BioMerieux). Antibiotic susceptibility testing was performed by the disk diffusion method. Minimum Inhibitory concentration (MIC) for aminoglycosides and glycopeptides was determined by agar dilution and Etest methods respectively. Genes for aminoglycoside modifying enzymes, AAC (6)-APH (2')-1a, APH (3')-IIIa, ANT (4')-1a and ANT (6')-1 were detected by PCR.

**Results:**

They consisted of 81 *Enterococcus faecium* (77.1%), 14 *E. durans* (13.3%) and 10 *E. faecalis* (9.5%). They were all susceptible to vancomycin and teicoplanin but resistant to ampicillin (19.0%), high level gentamicin (MIC > 500 mg/L; 13.3%), high- level kanamycin (MIC>1000 mg/L; 69.5%), high-level streptomycin (MIC > 2000 mg/L; 69.5%), tetracycline (85.7%), minocycline (80.0%), chloramphenicol (55.5%), ciprofloxacin (69.5%), erythromycin (97.7%) and rifampicin (83.8%). None of the ampicillin-resistant isolates produced  $\beta$ -lactamase. Genes encoding AAC (6)-APH (2')-1a was detected only in isolates with gentamicin MIC  $\geq$  4000 mg/L. The Kanamycin-resistant isolates (MIC  $\geq$  1000 mg/L) were positive for genes for APH (3')-IIIa and the genes for ANT (6')-1a was detected in all streptomycin resistant isolates (MIC.  $\geq$  2000 mg/). They were negative for ANT(4')-1a.

**Conclusions:**

The results demonstrated the absence of glycopeptide resistance and the presence of resistance to other antibiotics in Enterococci isolated from Cows milk in Kuwait.

*Key Words: Antibiotic resistance; Enterococcus species; Cows milk*

*Funding Agency: KU Grant MI 01/05*



**Microbiology and Immunology**

Category: Basic Sciences

139

**Nosocomial Candidemia in Kuwait: Species Spectrum and their Antifungal Susceptibility Profile**

Al-Sweih N<sup>1</sup>, \*Al-Hajri S<sup>2</sup>, Farhat D<sup>2</sup>, Chandu R<sup>1</sup>, Joseph L<sup>1</sup>

<sup>1</sup>Department of Microbiology, Faculty of Medicine, Kuwait University;

<sup>2</sup>Microbiology Unit, Mubarak Al-Kabeer Hospital, Ministry of Health, Kuwait

**Introduction:**

*Candida* species have emerged as the fourth leading cause of bloodstream infections of critically ill adult and pediatric patients. In recent years, a change in the epidemiology of *Candida* infections, characterized by the predominance of non-albicans *Candida* species has been witnessed. Some of these species exhibit reduced antifungal susceptibility and are prone to developing resistance. A continuous monitoring for possible emergence of antifungal resistance is required for effective therapeutic management.

**Methods:**

A total of 479 bloodstream isolates of *Candida* species received from different tertiary care hospitals in Kuwait from 2007 to 2009 were retrospectively analyzed. The isolates were identified by CHROMagar *Candida* and/or Vitek2 yeast identification system. In vitro antifungal activity against amphotericin B (AP), fluconazole (FL), voriconazole (VO) and flucytosine (FC) was determined by the Etest. The plates were incubated at 35 °C and read after 24 h. Interpretive susceptibility breakpoints for FL, VO and FC were those recommended by Clinical and Laboratory Standards Institute and for AP, an isolate showing minimum inhibitory concentrations of  $\leq 1.0 \mu\text{g ml}^{-1}$  was considered as susceptible.

**Results:**

Of the 479 *Candida* species isolates studied, 32% (n=154) were identified as *C. albicans* and 68% (n=325) as non-albicans *Candida* species. The latter included *C. parapsilosis* (n=128), *C. tropicalis* (n=64), *C. glabrata* (n=40), *C. dubliniensis* (n=8) and others. None of the isolates of *C. albicans*, *C. parapsilosis* and *C. tropicalis* were found resistant to AP, FL, and VO. Fluconazole and VO resistance was observed in about 4% and 2% isolates of *C. glabrata*, respectively. Three percent isolates of *C. albicans* were resistant to FC.

**Conclusions:**

The study indicates that although fluconazole and amphotericin B are the two most common antifungal drugs used in clinical practice in Kuwait, the resistance against these agents has remained low.

*Key Words:* Candidemia; *Candida* species; Antifungal susceptibility

*Funding Agency:* None



**Microbiology and Immunology**

Category: Clinical

140

**Diabetes Mellitus is a Risk Factor for Zygomycosis in Renal Transplant Recipients.**

\*Said T<sup>1</sup>, Al-Otaibi T<sup>1</sup>, Nair MP<sup>1</sup>, Halim MA<sup>1</sup>, Biju MV<sup>1</sup>, Awadain WH<sup>1</sup>, Khan ZU<sup>2</sup>

<sup>1</sup>Hamed Al-Essa Organ Transplant Center Kuwait; <sup>2</sup>Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait

**Introduction:**

Invasive fungal infection is an important cause of morbidity and mortality in renal transplant recipients (RTR). Although rare, zygomycosis carries an extremely poor prognosis when affects RTR. Diabetes mellitus, metabolic acidosis, use of steroids and iron overload are known risk factors in these patients. Diabetic patients have increased iron stores because of impaired iron utilization, which may contribute to their increased risk of zygomycosis.

**Methods:**

We retrospectively reviewed our patient's records to find out the prevalence of the infection among them and to point out risk factors, diagnostic approaches, therapeutic options and clinical outcome.

**Results:**

Five patients out of 950 RTR under follow up from 1994 till 2009 were diagnosed to have invasive zygomycosis. Two had nasal sinus infection without cerebral involvement, one had hepatic, one had pulmonary and another had isolated renal graft involvement. They were all heavily immunosuppressed either through induction immunosuppression or treatment of acute rejection. Four patients were diabetic with poor control in spite of intensive insulin therapy. One of the nasal cases had a history of chronic sinusitis and the other had surgically treated renal cell carcinoma of the native kidney. The nasal sinuses cases were treated aggressively with surgical debridement and anti fungal therapy and cured. One of them died after cure due to associated infections. The patient with liver involvement was transferred to a specialized center abroad for further management. The last two patients died during treatment with antifungal therapy due to associated infections.

**Conclusions:**

Zygomycosis in diabetic renal transplant recipients is a serious life-threatening infection. High index of suspicion, early diagnosis and aggressive therapeutic management are essential for improved outcome.

*Key Words: Zygomycosis; Kidney transplantation; Diabetes Mellitus*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Clinical

141

**Retransplantation After Renal Allograft Loss to Polyoma Virus-Associated Nephropathy (PVAN)**

\*Said T<sup>1</sup>, Pacsa AS<sup>2</sup>, Khalik D<sup>2</sup>, Halim MA<sup>1</sup>, Balaha MA<sup>1</sup>, Nawas KM<sup>1</sup>, Samhan M<sup>1</sup>

<sup>1</sup>Hamed Al-Essa Organ Transplant Center, Ministry of Health, Kuwait.

<sup>2</sup>Department of Microbiology, Faculty of Medicine, Kuwait.

**Introduction:**

Polyomavirus-associated nephropathy (PVAN) is an emerging cause of kidney transplant failure affecting 1-10% of patients. Limited data exists concerning retransplant in patients who lost their previous graft due to PVAN.

**Methods:**

Live donor retransplantation was done in four recipients who lost their grafts due to PVAN at a mean of 10 months after graft failure. Graft nephrectomy was done in all except one who was negative for viraemia and viruria and did not require dialysis prior to transplantation. Induction immunosuppression was given for three patients (2 monoclonal and one polyclonal antibody). Post transplant immunosuppression was similar to the current center policy during the first three months (Prednisolone, Mycophenolate and either sirolimus [n: 1], cyclosporine [n: 1], or tacrolimus [n: 2]). Immunosuppression was tapered over the next 3 – 9 months to the minimum that keeps normal graft function. Follow up to detect virus reactivation in blood and urine was done monthly for the first 3 months then every 3 months for the first year using polymerase chain reaction (PCR).

**Results:**

The follow up period was 50, 31, 22 and 19 months post transplant with serum creatinine 85, 72, 91 and 94  $\mu\text{mol/l}$  respectively. All patients tolerated reduction of immunosuppression without rejection episodes. Viral reactivation was observed in two patients one turned negative and the second remained viruric on further reduction of immunosuppression.

**Conclusions:**

Retransplantation with reduced immunosuppression is a successful therapeutic option in recipients who lost earlier graft due to PVAN.

*Key Words: Polyoma virus; Kidney transplantation; Immunosuppression*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Basic Sciences

142

**Application of Molecular and Serological Methods for Rapid Detection of *Mycoplasma gallisepticum* infection (Avian Mycoplasmosis)**

\*Qasem JA<sup>1</sup>, Al-Ali I<sup>2</sup>, Al-Mouqati S<sup>2</sup>

<sup>1</sup>Department of Applied Medical Sciences, College of Health Sciences, Public Authority for Applied Education and Training; <sup>2</sup>Biotechnology Department Food Resources & Marine Sciences Division  
Kuwait Institute for Scientific Research

**Introduction:**

Mycoplasma infection is a major problem in veterinary medicine and in poultry production. *Mycoplasma gallisepticum* (MG) is the causative agent for avian Mycoplasmosis. The objective of this work was to evaluate under our conditions two rapid detection methods (a molecular and a serological) for the detection of *Mycoplasma* infection in chicken, in comparison to the traditional culture method.

**Methods:**

A PCR based diagnostic kit (VenoMGs) supplied with primer set specific for a highly conserved membrane protein coding segment of the genome of the pathogen was used. ELISA diagnostic kit (ProFLOK) was used for Serological determination of *Mycoplasma*-specific antibodies in the sera. A total of 50 samples including choanal and cleft swabs and blood serum were obtained from two different local farms from broiler and layer flocks. The blood samples were processed for ELISA detection and swab samples were tested for MG infection by culture and PCR procedure. The swab specimens were inoculated in Pleuro pneumonia like organisms (PPLO) broth and agar supplemented with Mycoplasma supplements, and glucose (0.1%) plus phenol red (0.002%) to serve as an indicator for growth. The plates were incubated at 37°C in an atmosphere of 5% CO<sub>2</sub> and 95% air.

**Results:**

The amplified PCR product of *Mycoplasma gallisepticum* produced a 281 bp amplicon with a sensitivity for 1 to 5 fg of mycoplasma DNA. From the fifty tested chicken samples for mycoplasmosis, samples tested with ELISA gave 24 positive (48%) and 29 were positive with PCR (58%) and only seven (14%) were positive with culture-based methods. PCR procedure gave higher positive results from choanal cleft than swab samples from trachea, 60% and 56.6% respectively.

**Conclusions:**

The PCR-based method is faster and more sensitive for detection of MG infection than ELISA. Both the PCR and ELISA methods were superior to traditional culture method for laboratory detection of avian Mycoplasmosis.

*Key Words: Mycoplasma gallisepticum; Mycoplasmosis; PCR*

*Funding Agency: Kuwait Institute for Scientific Research*



**Microbiology and Immunology**

Category: Clinical

143

**Evaluation of Gene Xpert *Clostridium difficile* Assay, Ridascreen *C. difficile* Toxin A/B Assay, Tox A/B II Assay, Tissue Culture and Stool Culture in the Diagnosis of *C. difficile* Infection (CDI).**

Jamal W, Shaheen M, \*Rotimi VO

Faculty of Medicine, Kuwait University, Kuwait

**Introduction:**

*Clostridium difficile* infection (CDI) is the most common hospital-acquired infection in hospitalized patients. Early diagnosis is associated with better prognosis. Therefore, rapid and accurate testing of stool samples is highly desirable. The aim of this study was to evaluate Gene Xpert *C. difficile* Assay (GXFDA), a qualitative automated real-time PCR diagnostic test for rapid identification and differentiation of toxin B and binary toxin of *C. difficile*, along with 4 other methods, for the diagnosis of CDI.

**Methods:**

Stool samples from 223 suspected CDI in-patients were collected. Culture and incubation conditions were according to standard methods on the day of receipt. *C. difficile* were identified by API 20 AN. Tissue culture (TC: gold standard) was carried out on monolayer of Vero cells. Two immunoassays, Tox A/B II Assay (TABIA) and Ridascreen Toxin A/B Assay (RABA), were performed on the same portion of homogenized stool on the same day. GXFDA was used to detect sequences in gene for Toxin B ( $tcdB$ , Binary Toxin  $tcdT$  and  $tcdC$  detection nt 117 ( $tcdCkappa117$ )).

**Results:**

Of the 223 specimens 63 (28.3%) tested positive by GXFDA, TC and stool culture, 43 (19.3%) by RABA and 42 (18.8%) by TABIA. One sample was positive by RABA but negative with GXFDA, TABIA and TC. GXFDA showed 100% sensitivity and 100% specificity unlike TABIA and RABA with 66.7% and 66.7% sensitivity, and 100% and 99.4% specificity, respectively. The positive and negative predictive values for GXFDA were 1 each.

**Conclusions:**

GXFDA is more accurate than the other immunoassays for the direct detection of toxins in stools of CDI patients. It offers sensitivity and specificity for toxin B detection that are comparable to the reference method. With the results available within 1 h, it provides prompt and precise laboratory diagnosis.

*Key Words: GeneXpert; Clostridium difficile; Stool specimens*

*Funding Agency: None*



**Microbiology and Immunology**

Category: Clinical

144

**Detection of Extended-Spectrum  $\beta$ -Lactamases (ESBL), Metallo- $\beta$ -Lactamases (MBL) and AmpC in *Enterobacteriaceae* and *Acinetobacter* spp. Using Cica Beta<sup>TM</sup> tests.**

Jamal W, Shaheen M, \*Rotimi VO

Department of Microbiology, Faculty of Medicine, Kuwait University, Jabriya, Kuwait

**Introduction:**

Because of increased prevalence of infections caused by Gram-negative bacteria producing extended-spectrum beta-lactamases (ESBLs), early and accurate detection of these enzymes is now more than ever important in clinical laboratories. Cica-Beta-test<sup>TM</sup> is a novel chromogenic test kit designed to shorten the detection period of ESBLs, metallo- $\beta$ -lactamases (MBLs) and AmpC in hospital laboratories. The objective of this study was to evaluate the Cica Beta test for the detection of these enzymes in our hospital laboratory.

**Methods:**

ESBL-positive *Escherichia coli*, *Klebsiella pneumoniae*, *Salmonella* species and *Acinetobacter baumannii*, and strains positive for ESBLs, MBLs, or AmpC  $\beta$ -lactamases (positive control strains) were used in the study. They were grown on Mueller-Hinton (MH) agar. ESBLs, MBLs and AmpC were detected from single colonies by Cica-Beta-test (CBT) in CBT 1, CBT CVA, CBT C and CBT MBL panels according to manufacturer's instructions. Results were interpreted by color changes from yellow to red and compared with confirmatory test results obtained by PCR using specific primers.

**Results:**

A total of 99 ESBL-positive isolates and 10 control strains were used. All were positive with CBT 1 (detection of ESBL + MBL) and CBT CVA (confirmation of ESBL). Surprisingly, 17 of 20 *E. coli*, 25 of 49 *K. pneumoniae*, 10 of 10 *Salmonella* spp., and 20 of 20 *A. baumannii* were positive for CBT C (derepressed AmpC). Also 1/20, 1/49, 0/10 and 20/20, respectively were positive for CBT MBL. Confirmatory test by PCR showed complete correlation with CBT 1, CBT CVA, and CBT MBL but not with CBT C. The relative sensitivity, specificity and accuracy of the CBT were each 100%. Positive predictive values were also 100%. The results with AmpC was equivocal.

**Conclusions:**

This novel kit provides rapid screening results and holds promise for life-saving early therapeutic guidance of the management of severely septic patients.

*Key Words:* ESBL; Cica-Beta-Test; Gram-negative bacteria

*Funding Agency:* Sultan Bader



## Microbiology and Immunology

Category: Clinical

145

### Sequence Analysis of Extended-Spectrum Beta-Lactamase (ESBL) Genes Harboured by Invasive Isolates of *Escherichia coli* in Kuwait.

\*Al-Hashem G, Al-Sweih N, Jamal W, Shaheen M, Rotimi VO

Department of Microbiology, Faculty of Medicine, Kuwait University

#### Introduction:

The prevalence of extended-spectrum  $\beta$ -lactamases (ESBL) in Enterobacteriaceae is on the increase worldwide. This study was undertaken to analysis the genes encoding ESBL phenotypes in invasive isolates of *Escherichia coli* obtained from patients managed in Kuwait hospitals.

#### Methods:

ESBL-positive *E. coli* collected from all hospitals in Kuwait were studied. DNA extracts were screened for the presence of  $bla_{CTX-M}$ ,  $bla_{TEM}$  and  $bla_{SHV}$  genes using the following primers: MA-1-5'-SCSATGTGCAGYACCAGTAA-3' and MA-2 5'-CCGCRATATGRTTGGTGGTG-3' ( $bla_{CTX-M}$ ), C<sup>f</sup>-TCGGGGAAATGTGCGCG and D<sup>f</sup>-TGCTTAATCAGTGAGGCACC ( $bla_{TEM}$ ) and OS-5<sup>f</sup>-TTATCTCCCTGTTAGCCACC and OS-6<sup>f</sup>-GATTTGCTGATTTGCTCGG ( $bla_{SHV}$ ). Strains with PCR amplicons positive for these *bla* genes were sequenced. Selected CTX-M-, TEM- and SHV-producing strains were evaluated for transfer of genetic determinants by conjugation experiments and plasmid DNA visualized by agarose gel electrophoresis.

#### Results:

Out of 136 ESBL-positive isolates, 106 (77.9%), 55 (40.4%), 10 (7.4%) and 71 (52.2%) harboured  $bla_{CTX-M}$ , ( $bla_{TEM}$ ), ( $bla_{SHV}$ ), and  $bla_{ISEp1}$ , respectively. Fifty-three (50%) of the CTX-M-positives harboured  $bla_{TEM}$  and 6 harboured  $bla_{SHV}$ , but only 5 carried the 3 genes simultaneously. Sequence analysis showed that 89 (84%) carried  $bla_{CTX-M-15}$ , followed by 7 (6.6%)  $bla_{CTX-M-14}$ , 6 (5.7%)  $bla_{CTX-M-14b}$ , and 4 (3.8%)  $bla_{TOHO-1}$ . The CTX-M-15 genotypes were easily transferrable to *E. coli* J53 (rif<sup>r</sup>) recipient. Four of the SHV-producing harboured  $bla_{SHV-1}$  and the remaining 6  $bla_{SHV-11}$  while 32 of the TEM-producing strains harboured  $bla_{TEM-1}$ , 2  $bla_{TEM-170}$ , 1  $bla_{TEM-174}$  and remaining contained no sequence.

#### Conclusions:

The majority of invasive ESBL-positive *E. coli* isolates in Kuwait produced the CTX-M-15 type  $\beta$ -lactamases and about half of them also produced the TEM-type enzymes simultaneously. SHV ESBL is relatively rare. However, all these ESBL phenotypes are transferable by conjugal plasmids.

*Key Words:* Sequence; Bla genes; *E. coli*

*Funding Agency:* Kuwait University Research Grant, No. YM07/06



**Microbiology and Immunology**

Category: Basic Sciences

146

**Acute Toxoplasmosis Leads to Lethal Overproduction of Th1 Cytokines.**

\*Iqbal J<sup>1</sup>, Houria N<sup>1</sup>, Raghupathy R<sup>1</sup>

<sup>1</sup>Department of Microbiology, Faculty of Medicine, Kuwait University

**Introduction:**

Virulence in *Toxoplasma gondii* is strongly influenced by the genotype of the parasite. Type I strains uniformly cause rapid death in mice regardless of the host genotype or the challenge dose. In contrast, the outcome of infections with type II strains is highly dependent on the challenge dose and the genotype of the host. This study was undertaken to understand the basis of acute virulence in toxoplasmosis.

**Methods:**

Low and high doses of the RH strain (type I) and the SR23 strain (type II) of *T. gondii* were inoculated intra-peritoneally in out bred BALB/C mice. The mice were sacrificed on specified days after inoculation and parasite numbers in tissues and blood were counted every 2nd day after inoculation. Cytokine levels were estimated on blood and tissues using micro-ELISA and tissue damage detected by histopathology.

**Results:**

Differences in virulence were reflected in only modestly different growth rates in vivo, and both strains disseminated widely to different tissues. The key difference in the virulent RH strain was the ability to reach high tissue burdens rapidly following a low dose challenge. Lethal infections caused by type I (RH) or type II strain infections were accompanied by extremely elevated levels of Th1 cytokines in the serum, including IFN  $\gamma$ , TNF- $\alpha$ , and IL-18. Extensive liver damage and lymphoid degeneration accompanied the elevated levels of cytokines produced during lethal infection. Increased time of survival following lethal infection with the RH strain was provided by neutralization of IL-18, but not TNF- $\alpha$  or IFN- $\gamma$ . Nonlethal infections with a low dose of type II strain parasites were characterized by a modest induction of Th1 cytokines that led to control of infection and minimal damage to host tissues.

**Conclusions:**

Our findings establish that overstimulation of immune responses that are normally necessary for protection is an important feature of acute toxoplasmosis.

*Key Words: Toxoplasmosis; Tissue pathology; Cytokine profile*

*Funding Agency: Kuwait University, YM 18/07*



**Microbiology and Immunology**

Category: Graduate MSc (Basic Science)

147

**Prevalence of Cephalosporin Resistant blaSHV, PER-2 *Salmonella* Isolated from Poultry in Kuwait.**

\*Eissa A

Biological Science, Kuwait University

**Introduction:**

*Salmonella* is considered a main source of gastrointestinal diseases. *Salmonella* harbor pathogenicity genes that are used to detect, characterize and monitor salmonellosis. Additionally, the detection of antibiotic resistance genes such as the bla genes responsible for the resistance of  $\beta$ -lactam antibiotics in some *Salmonella* can be used for epidemiological purposes. In the current study, the antibiotic susceptibility profile, minimum inhibitory concentration (MIC) and the predominant antibiotic resistance genotype of *Salmonella* strains isolated from poultry were determined.

**Methods:**

Isolation and identification of *Salmonella*: Standard microbiological methods were used to detect *Salmonella* in 161 poultry samples in Kuwait. Confirmed strains were identified by sequencing of the 16S rDNA. Antibiotic susceptibility testing (AST): The AST of isolated *Salmonella* and the MIC of range of antibiotics were determined using the Vitek Compact (bioMerieux, France).

**Results:**

The AST results of isolated *Salmonella* showed that 100% of isolates were resistant to few classes of antibiotics tested. The dominant types of resistance were to 1st, 2nd generation cephalosporins and aminoglycosides. Resistant *Salmonella* isolates were examined for antibiotic resistance genes. All tested strains were blaSHV positive, 92% were blaPER-2 positive and 42% were blaTEM positive. The most frequent strains identified were *Salmonella enterica* strain E6 (36%) and n*Salmonella enterica* strain E5 (26%). Furthermore, variable MIC values were determined for antibiotics tested (penicillins, < 4 - >128; cephalosporins, < 0.25 - >64; aminoglycosides, < 1 - >16, quinolones < 0.25 - 8; sulfonamide < 20; nitrofurantion < 16 - > 512).

**Conclusions:**

Similar AST determined of isolates probably reflected the horizontal transfer of antibiotic resistance determinants. Also, the prevalence of cephalosporin resistance genes implied their applicability for further epidemiological studies.

*Key Words: Infection; Salmonella; Antibiotics*

*Funding Agency: Grant No. YM 06/09*



**Microbiology and Immunology**

Category: Basic Sciences

148

**In vitro Characterization of the Potential Immunostimulatory and Anti-Cancer Activities of Black Pepper (*Piper nigrum*) and Cardamom (*Elettaria cardamomum*).**

\*Majdalawieh AF<sup>1</sup>, Carr RI<sup>2</sup>

<sup>1</sup>Department of Biology & Chemistry, American University of Sharjah, Faculty of Arts & Sciences, United Arab Emirates; <sup>2</sup>Department of Microbiology & Immunology, Dalhousie University, Faculty of Medicine, Canada

**Introduction:**

Although the immunomodulatory effects of many herbs have been extensively studied, research related to possible immunomodulatory effects of various spices is scarce. Herein, the potential immunomodulatory activities of black pepper and cardamom are investigated.

**Methods:**

In vitro splenocyte proliferation assay was performed to assess the potential of black pepper and cardamom aqueous extracts, both separately and in combination, to modulate murine splenocyte proliferation. The ability of such extracts to stimulate macrophage activity was assessed by Griess assay. Using YAC-1 lymphoma cells as targets, the potential of such extracts, both separately and in combination, to promote the cytotoxic activity of murine splenic NK cells was examined by NK cytotoxicity assay. ELISA was used to assess cytokine secretion by murine splenocyte after treatment with the indicated extracts.

**Results:**

Black pepper and cardamom aqueous extracts significantly enhance murine splenocyte proliferation in a dose-dependent, synergistic fashion. Black pepper and cardamom extracts significantly enhance and suppress Th1 cytokine (interferon- $\gamma$ ) release by splenocytes, respectively. Conversely, Th2 cytokine (interleukin-4 and interleukin-10) release by splenocytes is significantly suppressed and enhanced by black pepper and cardamom extracts, respectively. Based on interleukin-6, tumor necrosis factor- $\alpha$ , and nitric oxide (NO<sub>2</sub>) production by macrophages, black pepper and cardamom extracts exert pro-inflammatory and anti-inflammatory roles, respectively. Remarkably, black pepper and cardamom extracts significantly enhance the cytotoxic activity of splenic NK cells, indicating their potential anti-cancer effects.

**Conclusions:**

Our findings clearly indicate that black pepper and cardamom play immunomodulatory and anti-tumor activities, and hence, they manifest themselves as natural immunomodulatory agents that can promote the maintenance of a healthy body.

*Key Words: Immunomodulation; Cancer; Herbal Medicine*

*Funding Agency: American University of Sharjah*



*Microbiology and Immunology*

Category: Basic Sciences

149

**Stimulus Specific Role for Fer Kinase in Neutrophil Chemotaxis: Role of p38 MAPK and PI3K Signalling Pathways.**

\*Khajah M<sup>1,2</sup>, Andonegui G<sup>2</sup>, McCafferty DM<sup>2</sup>

<sup>1</sup>Faculty of Pharmacy, Department of Applied Therapeutics, Kuwait University;

<sup>2</sup>Gastrointestinal Research Group, University of Calgary, Calgary, Alberta, Canada

**Introduction:**

Neutrophil recruitment and directional movement toward chemotactic stimuli are important processes in the innate immune response. This study examined if Fer protein tyrosine kinase (PTK) plays a role in neutrophil recruitment and chemotaxis to various stimuli in vivo and in vitro.

**Methods:**

Mice targeted with a kinase-inactivating mutation (FerDR/DR) or wild types (WT) were used. In vivo time-lapse intravital microscopy was used to examine leukocyte recruitment and chemotaxis in response to keratinocyte-derived cytokine (KC; 5.2  $\mu$ M) or chemotactic peptide WKYMVm (0.1  $\mu$ M). In vitro neutrophil chemotaxis was assessed with bone marrow derived neutrophils using an under agarose gel assay.

**Results:**

In WT and FerDR/DR mice no difference in chemotaxis in response to KC was observed. However, in response to WKYMVm a two-fold increase in leukocyte emigration was noted in FerDR/DR mice ( $P < 0.05$ ). Bone marrow chimeras, where FerDR/DR received WT bone marrow, showed similar chemotaxis to WT in response to WKYMVm suggesting that endothelial Fer kinase was not playing a role in chemotaxis. In vitro neutrophil chemotaxis was assessed using the under agarose gel assay. No difference in chemotaxis was noted between WT and FerDR/DR mice in response to KC in vitro. However, a two-fold increase in chemotaxis was noted in FerDR/DR vs. WT neutrophils in response to various concentrations of WKYMVm. This chemotactic response toward WKYMVm was inhibited by p38 MAPK inhibitors (SKF86002, SB239063, and SB203580) in WT but not in FerDR/DR neutrophils. Interestingly, in FerDR/DR neutrophils a role for the PI3K pathway in chemotaxis was revealed using PI3K inhibitors (LY294002, and wortmannin).

**Conclusions:**

these data suggest that Fer kinase regulates neutrophil chemotaxis in response to WKYMVm through the regulation of the PI3K signalling pathway.

*Key Words:* Neutrophil; Chemotaxis; p38 MAPK and PI3K

*Funding Agency:* Canadian institute of health and research (CIHR)



**Obstetrics and Gynecology**

Category: Clinical

150

**Adolescent Pregnancies not Associated with Adverse Outcome.**

\*Diejomaoh FME<sup>1</sup>, Abo Diba F<sup>2</sup>, Hassan L<sup>2</sup>, Al-Khars R<sup>2</sup>, Shamali I<sup>2</sup>, Mohd A<sup>1</sup>

<sup>1</sup>Department of Obstetrics and Gynaecology, Faculty of Medicine, Kuwait University; <sup>2</sup>Department of Obstetrics and Gynaecology, Maternity Hospital, Kuwait

**Introduction:**

Adequate antenatal care and psychosocial support have been associated with satisfactory outcome in adolescent pregnancies. There is a high population of female adolescents in Kuwait. The study was planned to evaluate the obstetric performance of the adolescent population in our tertiary centre.

**Methods:**

A retrospective study of 101 women 19 years and below (study group) and 101 women 20-23 years (control) who delivered singleton pregnancies at Maternity Hospital, Kuwait, from June 1, 2008 through January 31, 2009, was conducted. The antenatal, intrapartum/postpartum events of the index pregnancy were extracted from the records and the outcome analyzed. Statistical analysis was by Fisher Exact two tailed test, chi-square and the Welch t test.

**Results:**

During the study period, 5, 687 deliveries were conducted at Maternity hospital, Kuwait. As expected, the mean age of the study population was significantly lower than the control group [18.11±1.157 vs 21.9±1.147, P<0.0001] and the parity of the control was significantly higher, P<0.0001. There was no significant difference in the ethnic distribution although the percentage of non Kuwaiti Arabs in the study group was higher. There was no significant difference in the incidence of antenatal/intrapartum complications [PROM: 21.8% vs 25.7%, PIH : 5.9% vs 6.1%] and the mean gestational age at delivery [38.14±4.722 vs 38.06±2.887] and the mean birth weight [3002.01±643.011 vs 3027.570±655.032gm] and the Apgar scores in both study and control groups were comparable. There was no significant difference in the incidence of caesarean section in the study and control groups [15.8% vs 18.8%, P=0.710]; however, the rate of caesarean section in the study group was significantly lower than the incidence of 29% for the department in the same period, P<0.0001. The overall maternal and perinatal outcomes were satisfactory.

**Conclusions:**

Adolescent pregnancies were not associated with adverse maternal and perinatal outcome and the caesarean section rate was low.

*Key Words: Adolescent; Pregnancy; Outcome*

*Funding Agency: None*



**Obstetrics and Gynecology**

Category: Clinical

151

**Antioxidants Modulate the Effects of Diabetes Mellitus on the Ontogeny of Human Sperm.**

Omu AE<sup>1</sup>, Al-Azemi MK<sup>1</sup>, Kehinde EO<sup>2</sup>, Omu FE<sup>3</sup>, Mathew TC<sup>4</sup>, Anim JT<sup>5</sup>

<sup>1</sup>Departments of Obstetrics and Gynaecology, Faculty of Medicine, Health Sciences Center, Kuwait University; <sup>2</sup>Surgery, Faculty of Medicine, Health Sciences Center, Kuwait University; <sup>4</sup>Anatomy, Faculty of Medicine, Health Sciences Center, Kuwait University; <sup>5</sup> Pathology, Faculty of Medicine, Health Sciences Center, Kuwait University; <sup>3</sup>College of Nursing, PAAET, Kuwait.

**Introduction:**

Uncontrolled insulin dependent diabetes mellitus impairs male fertility but mechanisms are unknown and this has restricted drug treatment

Objective of study: The study was conducted to evaluate the effect of antioxidants on sperm quality of men with diabetes mellitus.

**Methods:**

Thirty-one men with diabetes mellitus and 25 non-diabetic infertile men underwent semen analysis, semen, hormone profile, HbA1c, malonedialdehyde (MDA), Butyrylcholinesterase (BuChE), lipid profile and Acridine Orange denaturation of sperm. The patients were administered Zinc, Selenium and vitamins E and C for three months.

**Results:**

Diabetes mellitus was associated with significantly impaired sperm motility (asthenozoospermia) and normal morphology compared to control. Diabetic men had higher HbA1C and MDA (P<0.01). There was an inverse relationship between glucose level and BuChE. Antioxidant therapy significantly decreased glucose level, 18-40 %; HbA1c 9-29%; MDA level 33-41%; and Sperm DNA Fragmentation index, 23-33%, and increased BuChE 21-40% and TAC, 27-36 %.

**Conclusions:**

Diabetes mellitus is associated with impaired sperm quality, involving oxidative stress in the pathogenesis of sperm damage. Antioxidant therapy has been shown to significantly improve the sperm quality.

*Key Words: Antioxidants; Oxidative stress; Sperm Quality*

*Funding Agency: None*



**Obstetrics and Gynecology**

Category: Clinical

152

**The Effects of Zinc Deficiency on Spermatogenesis: An Experimental Study in the Rat Model.**

Omu AE<sup>1</sup>, Al-Azemi MK<sup>1</sup>, Mathew TC<sup>2</sup>, Omu FE<sup>3</sup>, Kehinde EO<sup>4</sup>, Anim JT<sup>5</sup>, Oriowo MA<sup>6</sup>

<sup>1</sup>Departments of Obstetrics and Gynaecology, FOM, Kuwait University; <sup>2</sup>Anatomy (Electron Microscopy Unit), FOM, Kuwait University; <sup>4</sup>Surgery, FOM, Kuwait University; <sup>5</sup> Pathology, FOM, Kuwait University; <sup>6</sup>Pharmacology and Toxicology, FOM, Kuwait University, Faculty of Medicine, Kuwait University; <sup>3</sup>College of Nursing, PAAET, Kuwait.

**Introduction:**

Zinc is an essential trace element involved in the structure of over 300 metalloenzymes. The role of zinc in testicular function is poorly understood.

Objective: The aim of this study was to investigate the effects of zinc deficiency on spermatogenesis in the Sprague-Dawley (SD) rat.

**Methods:**

Three groups of eight adult male SD rats were maintained for four weeks on normal diet as control, Zinc deficient diet and Zinc supplementation of 28 mg Zinc/kg body weight respectively. The following parameters were compared between the 3 groups of experimental animals at the end of 4 weeks: a) serum Zinc, Mg, Cu, Se and Cd which were estimated by atomic absorption spectrophotometry (AAS), b) serum sex hormones, malondialdehyde (MDA), superoxide dismutase (SOD) and glutathione peroxidase (GPX) estimated with commercial kits, c) IL-4, TNF- $\alpha$ , Bcl-2, Bax and Caspase 3 expression in the testes which were evaluated quantitatively by ELISA technique and qualitatively by immunohistochemical staining, d) Light and Electron Microscopy were used for assessment of apoptosis of testicular cells and e) testicular volume and histology using the orchidometer and Johnsen score respectively.

**Results:**

The Zinc deficient group showed reduction of: testicular volume, serum concentrations of Zn, Cu, Se, Mg, SOD, GPX, IL-4, Bcl-2 and testosterone ( $P < 0.05$ ), as well as increased levels of serum Cd, MDA and tissue TNF- $\alpha$ , Bax, Caspase 3 and apoptosis of the germ cells ( $P < 0.05$ ) compared to control and zinc supplementation groups. Immunohistochemical staining revealed low intensity of Bcl-2 with zinc deficiency but maximum intensity with Bax and Caspase 3.

**Conclusions:**

Zinc deficiency is associated with impaired spermatogenesis from increased oxidative stress and apoptosis. The impaired spermatogenesis may be corrected by zinc supplementation

*Key Words: Antioxidants; Testicular function; Zinc Deficiency*

*Funding Agency: None*



**Obstetrics and Gynecology**

Category: Clinical

153

**Randomised Cross-over Evaluation of Hyperprolactinaemia Treated with Bromocriptine Versus Cabergoline: Resistance Carves a Role for Ovarian Drill.**

\*Al-Azemi MK<sup>1,3</sup>, Omu FE<sup>2</sup>, Al-Kandari F<sup>3</sup>, Saad ZS<sup>3</sup>, Omu AE<sup>1,3</sup>

<sup>1</sup>Department of Obstetrics and Gynaecology, Faculty of Medicine; <sup>2</sup>College of Nursing, PAAET;

<sup>3</sup>Maternity Hospital, Kuwait.

**Introduction:**

Dopamine agonists bromocriptine and cabergoline are the gold standards in the management of hyperprolactinaemia associated with infertility. Resistance to these has continued to pose a problem.

Objective of study: To evaluate the treatment of Hyperprolactinaemia with Bromocriptine and Cabergoline in an open cross study and the role of ovarian drill in resistant cases.

**Methods:**

This was a randomized open cross over study involving 205 consecutive women with hyperprolactinaemia that attended the infertility clinic at the Maternity Hospital, Kuwait, between Jan 2001 to December 2008. In 3 phases. In phase 1, the patients were randomized in a 1:1 ratio to receive Bromocriptine or Cabergoline for 6 months. In Phase 2, patients without ovulation and/or reduction of serum prolactin levels were moved over to the other treatment group of Bromocriptine or Cabergoline and again treated for 6 months. Those without ovulation after 6 months, had laparoscopic ovarian drill in phase 3. The reduction of serum prolactin levels, ovulation and pregnancy outcome were compared.

**Results:**

In both phases 1 and 2, Cabergoline, was significantly more effective than Bromocriptine in reducing serum prolactin ( $p < 0.05$  and  $P < 0.01$ ), pregnancy rate ( $p < 0.01$ ) and ovulation in phase 2 ( $p < 0.01$ ). In patients resistant to both drugs, ovarian drill was associated with ovulation and pregnancy in 54% and 33% respectively. There were no significant differences in the pregnancy outcome, in the three treatment groups.

**Conclusions:**

Cabergoline was more effective in reducing serum prolactin levels, inducing ovulation and pregnancy than Bromocriptine. Ovarian Drill has a role in inducing ovulation and pregnancy in patients resistant to both drugs

*Key Words: Bromocriptine; Hyperprolactinaemia; Resistance*

*Funding Agency: None*



**Obstetrics and Gynecology**

Category: Clinical

154

**Lithium Protects Against Toxic Effects of Cadmium in the Rat Testes.**

Al-Azemi MK<sup>1</sup>, Omu FE<sup>2</sup>, Kehinde EO<sup>3</sup>, Fatinikun T<sup>1</sup>, Anim JT<sup>4</sup>, Oriowo MA<sup>5</sup>, \*Omu AE<sup>1</sup>.

<sup>1</sup>Department of Obstetrics and Gynaecology, Faculty of Medicine, HSC, Kuwait University; <sup>3</sup>Surgery, Faculty of Medicine, HSC, Kuwait University; <sup>4</sup>Pathology, Faculty of Medicine, HSC, Kuwait University; <sup>5</sup> Pharmacology and Toxicology, Faculty of Medicine, HSC, Kuwait University, Faculty of Medicine, HSC, Kuwait University;<sup>2</sup> College of Nursing, PAAET, Kuwait.

**Introduction:**

Cadmium is known to have toxic effects on animal and human testes through its capacity to induce oxidative stress and apoptosis of the germ cells of humans and animals. Lithium is associated with an enhanced expression of Bcl-2, an anti-apoptotic protein.

The objective of this study was to investigate the protective effects of lithium against the toxic effect of cadmium in the rat testes.

**Methods:**

Adult male SD rats were studied in four subgroups of 6 animals each: cadmium only, cadmium + lithium, lithium only given in water and controls. Rats were sacrificed after 6 wks and serum levels of IL-4, TNF- $\alpha$ , Bcl-2 and Bax were measured by ELISA while serum levels of FSH, LH, prolactin and testosterone were measured using the Vidas parametric system. In addition, histopathological changes and apoptosis of testicular cells were examined with light and electron microscopy.

**Results:**

Treatment with lithium was associated with significant reduction of the toxic effects of cadmium as shown by reduced serum levels of TNF- $\alpha$  (19 versus 45 pg/L), Malondialdehyde (8 vs 13) and Bax (89 versus 216), and increase of IL-4 (7 versus 2), Zn-Cu SOD (4 versus 2), Bcl-2 (256 versus 90) and testosterone (17 versus 5 mmol/L,  $p < 0.01$ ), testicular histopathology.

**Conclusions:**

Lithium has a protective effect against cadmium-induced toxic effects in the rat testes, due to a combination of its anti-inflammatory, antioxidant and anti-apoptotic mechanisms.

*Key Words: Antioxidant Activity; Cadmium Toxicity; Lithium*

*Funding Agency: None*



**Obstetrics and Gynecology**

Category: Basic Sciences

155

**Effect of Reduced Maternal Perfusate Flow on Maternal-Fetal Transport Kinetics of Palmitic Acid in Human Placenta In Vitro.**

\*Nandakumaran M, Al-Shammari M, Al-Harmi J, Susan G, Al-Saleh E

Obstetrics & Gynecology Department, Faculty of Medicine, University of Kuwait

**Introduction**

Previous reports from our laboratory had shown that maternal-fetal transport kinetics of palmitic acid was altered in hyperglycemic perfusions mimicking diabetic state in human pregnancies. This study was meant to evaluate if reduced placental flow as reported in some diabetic pregnancies could affect transport behavior of the fatty acid in-vitro.

**Method**

Human placentae from normal pregnancies were collected post-partum. <sup>14</sup>C labeled palmitic acid (2.2 GBq/mmol) and tritiated water (185 MBq/mmol) as reference marker were then injected as a single bolus into the maternal arterial circulation of perfused placental lobules and perfusate samples collected from fetal circulations over 5 minutes. NCTC medium, diluted in Earle's buffered salt solution was used as the perfusate. After a control phase of 6 minutes, maternal perfusate flow was reduced artificially to 50 % of control phase to mimic a diabetic flow situation and experiment repeated. Concentration of labeled substances in perfusate was assessed by scintillation spectrometry and transport kinetics of substances computed using established permeation parameters.

**Results**

Differential transport rates of palmitic acid and tritiated water in dual-phase perfusions (n=8) differed significantly ( $p < 0.05$ ) in control and experimental phases. TR50 indices of palmitic acid compared to reference marker averaged 1.49 and 1.09 in control and experimental phase respectively and was statistically significant ( $p < 0.05$ ). Indices of transport fraction and pharmacokinetic parameters-area under the curve, absorption & elimination rate of the fatty acid compared to reference marker were significantly different ( $p < 0.05$ ). Absorption rate: elimination rate indices of palmitic acid differed significantly ( $p < 0.05$ ) in control and experimental states.

**Conclusion**

Our studies show for the first time that transport behaviour of fatty acids could be compromised in diabetic as well as pre-eclamptic states having reduced maternal blood flow with potential harmful effects on fetuses or infants in such pregnancies

*Key Words: Placental Perfusion; Palmitic Acid; Maternal-Fetal Exchange*

*Funding Agency: MO01/00*



## ***Oncology***

*Category: Clinical*

**156**

### **Outcome of children with Neuroblastoma: An 11 years analysis from Kuwait Cancer Control Centre (KCCC).**

Khalifa S, Mittal R, Khalifa N, Basmy A.

Pediatric Oncology Unit, Department of Medical Oncology, Kuwait Cancer Control Centre, Kuwait

#### **Introduction:**

Neuroblastoma is the second most common tumor in pediatric age group, accounting for 7% of all childhood malignancies. The peak incidence is 2 years. Neuroblastoma usually presents with a tumor mass along the sympathetic neural pathway.

#### **Methods:**

This is a retrospective study, in which we analyzed the data of all patients, who presented with diagnosis of neuroblastoma over an 11 years period (January 1998 – December 2008). During this period, 57 new cases of neuroblastoma were registered.

#### **Results:**

Females (56.2%) were slightly more than the males (43.8%). Median age was 2 years (47 days to 11 years). Most common site was abdomen (44%). Twenty three patients (40.3%), had stage IV. In the 15 patients (26.3%), stage was not known. Twenty two patients were excluded from the study because their treatment was unknown. Among the remaining 35 patients, complete excision was done in 20 patients (57.1%), while partial excision was performed in 15 patients (42.8%). Surgery was not done in two patients. Thirty three patients (94.2%) received chemotherapy. Radiotherapy was given only in 25.5%. Twenty six patients (74.2%) of the treated group achieved CR, 4 (11.4%) were in PR, while 4 patients (11.4%) developed disease progression. At the median follow-up of 7.5 years (range 6 months 10 years) 22 patients were having complete remission and 2 patients had partial response. Death was reported in 14 patients and 19 patients were lost to follow up.

#### **Conclusions:**

Neuroblastoma is common malignant tumor in infancy and childhood. It is difficult disease to be treated because most of cases present in late stages and all patients with Metastatic disease need high dose chemotherapy followed by stem cell transplant. Many of our patients were lost to follow-up. In spite of lack of full facilities, our results are not very inferior to international results.

*Key Words: Childhood cancers; Neuroblastoma; Chemotherapy*

*Funding Agency: None*



**Oncology**

Category: Graduate MSc (Basic Science)

157

**Effect of Tyrosine Kinase Inhibitors is Enhanced in Endocrine Resistant Breast Cancer Cells Displaying Increased Metastatic Potential.**

\*Al Saleh S<sup>1,2</sup>, Luqmani YA<sup>2</sup>, Al Mulla F<sup>3</sup>

<sup>1</sup>College of Graduate Studies; <sup>2</sup>Dept of Pharmaceutical Chemistry, Faculty of Pharmacy, Kuwait University; <sup>3</sup> Dept of Pathology, Faculty of Medicine, Kuwait University

**Introduction:**

The mechanisms of endocrine resistance and subsequent aggressive behaviour of breast cancer is poorly understood and is being explored in various cell models. Our previous data suggests that siRNA induced reduction of estrogen receptor (ER) can lead to dramatically altered phenotype. In this study we compared the effect of several tyrosine kinase inhibitors on proliferation and motility of parental (MCF7) and ER-siRNA transfected (PII) breast cancer cells.

**Methods:**

MTT assay was used to measure cell proliferation. A wound closure assay and confocal microscopy to visualise phalloidin staining of actin filaments were employed to assess cellular motility. Invasion through basement membrane was mimicked by a matrigel assay. Microarray hybridisation and realtime RT-PCR were used for comparative transcriptional analysis.

**Results:**

ER-depleted PII cells assumed a distinct morphology associated with loss of inter-cellular adhesion (reduced E-cadherin), displaying a loose arrangement of colonies in contrast to the slower growing more tightly packed and regular MCF7 cells. Confocal imaging highlighted increased membrane ruffling activity of PII cells. Gene expression profiling indicated loss of epithelial and gain of mesenchymal markers, paralleling the morphological transition. PII cells were found to be highly invasive in contrast with MCF7. Anti-proliferative effects of the platelet derived growth factor receptor inhibitor, imatinib, were marked in both MCF7 and PII cells whereas the epidermal growth factor receptor inhibitors, gefitinib, erlotinib and suramin showed similar but proportionately greater effect in PII cells. At low concentrations suramin caused a mild proliferative effect on MCF7 which was not observed in PII cells. Imatinib was the only agent that inhibited cell motility and only in PII cells.

**Conclusions:**

Loss of ER function leads to an endocrine unresponsive state that is characterized by both morphological and molecular differentiation to a more motile and invasive phenotype. Our data also indicate that signaling through tyrosine kinase receptors is accentuated.

*Key Words: Breast cancer; Endocrine resistance; Tyrosine kinase inhibitors*

*Funding Agency: KURA Grants YM08/09, GM01/05, GM01/01.*



## **Oncology**

Category: Basic Sciences

158

### **In Silico Molecular Modeling Assisted-Design and Synthesis of Syringic Acid Analogues: Inhibition of Proteasome Activity and Cancer Cell Growth.**

\*Orabi KY<sup>1</sup>, Abaza MS<sup>2</sup>, ElSayed KA<sup>3</sup>, Elnagar AY<sup>3</sup>, Guleri R<sup>2</sup>

<sup>1</sup>Department of Pharmaceutical Chemistry, Kuwait University, Faculty of Pharmacy; <sup>2</sup>Department of Biological Sciences, Kuwait University, Faculty of Sciences; <sup>3</sup>Department of Basic Pharmaceutical Sciences, University of Louisiana at Monroe, Faculty of Pharmacy

#### **Introduction:**

Growing understanding of the molecular events that mediate tumor growth and metastases has led to the development of rationally designed therapeutics. These therapeutics offer dual hope of maximizing efficacy and minimizing toxicity to normal tissues. Promising strategies include proteasome inhibition. This report accounts on the design, synthesis and the anti-proteasome and anticancer activities evaluation of a panel of syringic acid analogues with predetermined specificity to proteasome developed using in silico molecular modeling.

#### **Methods:**

Using Sufflex-Dock program interfaced with SYBYL, the docking affinities of syringic acid and its proposed analogues to 20 S proteasome were studied. Analogues with high binding scores were considered for synthesis using standard chemical procedures. Anti-mitogenic effects of these analogues towards human colorectal, breast, lung and melanoma cancer cells as well as normal human fibroblast cells were studied.

#### **Results:**

Thirteen analogues were proposed, however, three analogues, benzyl ester (RGB-I-8), 3-methoxybenzyl ester (RGB-I-25), and 3, 5-dimethoxybenzyl ester (RGB-I-27), were selected for anti-mitogenic activity evaluation. Time and dose response studies indicated specific anti-proliferative effects on human melanoma cells (HTB66 and HTB68) with minimal effects on normal human fibroblast cells (CRL1554). The IC<sub>50</sub> values of RGB-I-8 towards HTB66 and HTB68 were 274 and 290 µg/ml, respectively. On the other hand, IC<sub>40</sub> of RGB-I-25 on HTB66 and HTB68 were 442 and 630 µg/ml, respectively. Moreover, IC<sub>30</sub> values of RGB-I-27 towards HTB66 and HTB68 were 281 and 307 µg/ml, respectively. The maximum growth inhibitory effect on CRL1554 was 5-22%.

#### **Conclusions:**

In silico molecular modeling proved to be a powerful tool in rational drug design. Three analogues, with high docking scores were found to possess good anti-melanoma proliferative activity.

*Key Words: Syringic Acid; In silico Molecular Modeling; Proteasome Inhibitor*

*Funding Agency: KU Grant No. PC02/09. Spectral analyses were carried out at Science Analytical Facilities, Faculty of Sciences, Kuwait University, supported by grant No. GS03/01*



**Oncology**

Category: Clinical

159

**Prevalence of Human Papilloma Virus and its Subtypes among Cervical Carcinoma in Maternity Hospital, Kuwait.**

\*Al-Jassar W<sup>1</sup>, Saleh R<sup>2</sup>, Al-Owayesh R<sup>3</sup>, De Sanjose<sup>4</sup>, Bosch X<sup>4</sup>

<sup>1</sup>Dept of OBGYN, Faculty of Medicine, Kuwait University; <sup>2</sup>Maternity Hospital, Ministry of Health, Kuwait; <sup>3</sup>Ministry of Health, Kuwait; <sup>4</sup>Institut Català d'Oncologia-Catalan Institute of Oncology, Spain

**Introduction:**

Carcinoma of the uterine cervix is the second most common cause of cancers among women worldwide with human papilloma virus (HPV) being an essential factor in the carcinogenesis of this type of carcinoma. There are more than 100 subtypes of HPV detected in human, some of which have strong association with cervical cancers such as HPV 16 and 18 subtypes. We investigated the prevalence of HPV and its subtypes among all cervical cancers diagnosed at the maternity hospital during the period of 2003 to 2008 as part of larger multicentric International Epidemiologic Study of Worldwide Distribution of Type-Specific Human Papillomavirus (HPV) DNA in Invasive Cancers of the uterine cervix.

**Methods:**

All the cases of carcinoma of the uterine cervix, including squamous cell carcinoma, adenosquamous carcinoma and adenocarcinoma, diagnosed during the period between January 2003 to August 2008 were retrieved and reviewed. Representative one to two blocks of each case were sent to Catalan institution of oncology, Barcelona for further HPV-DNA testing by polymerase chain reaction (PCR).

**Results:**

Seventy seven cases of cervical carcinoma out of the 87 sent were considered adequate for further HPV testing. Squamous cell carcinoma formed 83.1% (64/77) of the diagnosed cases while adenocarcinoma formed 9.1%(7/77) and adenosquamous formed 6.1% (5/77). One other carcinoma case was also found forming 1.3%(1/77) of the total cases. HPV was positive in 66/77 (85.7%) of which the most common subtype found was HPV 16 (56.1%) followed by HPV 18 (16.7%). Two cases showed multiple HPV subtypes Multiple 2/66 (3.0%) and in one case the HPV subtype could not be detected 1/66 (1.5%).

**Conclusions:**

The histological diagnosis and HPV DNA detection with the very sensitive PCR assay (in a validated lab) showed the distribution of HPV serotypes in Kuwait to be in a close similarity with the rest of the world, where HPV 16 accounts for the majority of the cases followed by HPV 18. These findings suggest the need of the HPV vaccination in our part of the world.

*Key Words: Cervical Cancer; HPV; HPV Vaccine*

*Funding Agency: Self and for the DNA testing it's by Institut Català d'Oncologia-Catalan Institute of Oncology*



**Oncology**

Category: *Clinical*

**160**

**The value of Second TUR for Superficial Bladder Cancer.**

\*El-Barky EM<sup>1</sup>, Hussein S<sup>2</sup>

<sup>1</sup>Department of Surgery (Urology Division), Mubarak Al-Kabeer Hospital; <sup>2</sup>Department of Pathology, Mubarak Al-Kabeer Hospital, Kuwait

**Introduction:**

Objectives: We evaluated the necessity of a second transurethral resection of bladder tumor (TURB) in patients with newly diagnosed superficial bladder cancer and its value on subsequent treatment strategy.

**Methods:**

We performed a prospective study of 72 patients with newly diagnosed superficial bladder cancer in whom 2nd TURB was done 2-6 weeks after initial resection, in the period of September 2008 to July 2009, to evaluate the incidence of residual tumors and adequacy of clinical and pathological staging.

**Results:**

Of the 54 patients who underwent second resection, 34 (63%) had no tumors, 12 (22%) had visible residual tumors, and 8 (15%) had microscopic residual tumors. Overall residual tumors were found in 20 (37%) patients. Of the 20 patients, 5 had pTa, 8 had pT1, and 7 had pT2 disease. Of residual tumors detected, 80% were high grade tumors (16 cases), and only 20% were low grade tumors. Upstaging and change of treatment strategy due to the result of the second resection occurred in 13 (24%) cases, in which 7 cases (13%) underwent radical cystectomy for muscle invasive tumors.

**Conclusions:**

Residual tumors could be identified in more than one third of patients with superficial bladder cancer. A second cystoscopy ± TURB is recommended 2-6 weeks after initial resection of stage Ta and T1 bladder with high grade tumors. It should also be considered in extensive and multiple tumors.

*Key Words: Bladder cancer; Transurethral resection; Second look*

*Funding Agency: None*



**Pathology**

Category: Clinical

161

**Chromogenic and Fluorescent in situ Hybridization Analysis of HER-2/neu (Cerb-B2) Expression in Fine Needle Aspiration Samples of Breast Carcinoma. A pilot Study Comparing FISH, CISH and Immunocytochemistry.**

\*Kapila K<sup>1,2</sup>, Francis IM<sup>1</sup>, George SS<sup>1</sup>, Al-Awadhi S<sup>2</sup>, Al Mulla F<sup>1</sup>.

<sup>1</sup>Department of Pathology, Kuwait University, Faculty of Medicine; <sup>2</sup>Cytopathology Laboratory, Mubarak Al Kabeer Hospital, Kuwait

**Introduction:**

Carcinoma breast, one of the commonest cancers in women world wide including Kuwait, comprises a heterogeneous group of patients. Breast cancers with HER-2/neu gene amplification are recognized as important markers for aggressive disease and targets which respond to therapy with trastuzumab. The HER-2/neu testing on histological sections has been performed widely for select patients who may benefit from anti- HER-2/neu therapy. Few reports are available in the literature where studies for documentation of HER-2/neu status have been attempted on material obtained by fine needle aspirates (FNA). The aim of this study was to document the expression of HER-2/neu (Cerb-B2) on cytopsin smears and cell block sections made from fine needle aspirates obtained from patients with breast carcinoma.

**Methods:**

Twenty samples of FNA already collected for diagnostic purposes from primary breast carcinoma were studied for demonstration of HER-2 expression by immuno-histochemistry (IHC), fluorescent in situ hybridization (FISH) and chromogenic in situ hybridization (CISH) on cytopsin smear and cell block sections of aspirated material and their expression was compared with that seen on tissue sections where possible.

**Results:**

Good correlation was observed between HER-2 protein expression and gene amplification in cytopsin smears. Three of 5 (60%) breast carcinomas cases with moderate and strong positivity on IHC showed gene amplification by FISH while 5 of 7 (71.4%) cases were positive by CISH. Three of 5 (60%) and 3 of 6 (50%) cases negative on IHC did not show gene amplification. However, the correlation with HER-2 expression in tissue sections was not found to be statistically significant.

**Conclusions:**

Demonstration of HER-2 by IHC, FISH or CISH in aspirated material is possible and may play a role in the management of patients with advanced breast cancer or those cases where surgical resection of the tumor is not advisable.

*Key Words: Breast Aspirates; HER-2/neu; FISH, Immunocytochemistry*

*Funding Agency: KU Grant No. MG01/07*



**Pathology**

Category: Graduate MSc (Basic Science)

162

**Epstein-Barr Virus (EBV) Associated Gastric Carcinoma in Kuwait.**

\*Al-Shemmery BS, Francis I, Junaid TA

Department of Pathology, Kuwait University, Faculty of Medicine

**Introduction:**

The Epstein-Barr Virus (EBV) involvement in a subset of gastric carcinoma (GC) has been estimated to vary between 1.3% to 20.1% with a mean of about 10% in different countries but no information is available on the possible association of EBV with GC in Kuwait. This study was to determine if there is an association between EBV and GC in Kuwait, relating any such association to the age, sex and nationality of the patients, and the histological types of GC.

**Methods:**

Cases registered as GC in the surgical pathology files of the Mubarak Al-Kabeer, Amiri and Farwaniya hospitals between January and December 2007 were retrieved, reviewed and classified according to the Lauren classification of GC. Immunohistochemistry and chromogenic in-Situ hybridization (CISH) were used to detect the expression of EBV latent membrane protein-1 (LMP-1) and EBV- encoded small RNAs (EBERS) respectively in tissue specimens. Bio-data of patients were collected from hospital files and, or histopathology request forms.

**Results:**

GC afflicted men more often than women (M:F = 69:26) and the intestinal histological type (54.7%) was more frequent than the diffuse type (45.3%). Immunohistochemistry demonstrated EBV LMP-1 in 7 cases while CISH showed EBER in 9 cases, one of which also harboured LMP-1. Thirteen of the 15 EBV associated GC (EBVaGC) were males while 9 were Kuwaitis. EBVaGC showed intestinal-type histology in 12 cases and lymphoepithelioma-like pattern in 1 case.

**Conclusions:**

About 15% of GC in Kuwait are associated with EBV. The role of EBV in the aetiopathogenesis of GC and the effect of such association with prognosis particularly in Kuwaiti men need further research.

*Key Words: Epstein-Barr virus; Adenocarcinoma; Stomach*

*Funding Agency: College of Graduate Studies KU Grant: YMI3/08*



**Pathology**

Category: Clinical

163

**Fine Needle Aspiration Cytology of Liver - A Study of 90 Cases.**

\*Alath P<sup>1</sup>, Kapila K<sup>2</sup>, Jassar A<sup>1</sup>, Francis IM<sup>1,2</sup>

<sup>1</sup>Department of Pathology, Hussain Makki Al Juma Centre for Specialized Surgery;

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

**Introduction:**

Fine needle aspiration of liver plays an important role in the diagnosis and classification of neoplastic and non neoplastic lesions. The main indications of liver aspirates are single or multinodular lesions seen by radiological studies. The aim of this study was to evaluate the spectrum of lesions identified in the aspirates in our hospital.

**Methods:**

Fine needle aspiration cytology (FNAC) done in 90 cases with liver lesions in the department of cytology, Hussain Makki Al Juma centre for specialized surgery during a period of three years (Jan 2007 to Dec 2009) were reviewed. The standard technique using a 22 gauge needle or long spinal needle attached to 5ml disposable syringe was used to evaluate the liver lesions under computed tomographic or ultrasound guidance. Smears were stained by Papanicolaou and Diff Quick methods. Mucicarmine, PAS, Zeihl Neelson stains and immunocytochemistry were done whenever needed.

**Results:**

Of the 90 patients who underwent FNAC of liver, 46 (51.1%) were Kuwaitis and 44 (48.9%) non Kuwaitis. The age ranged from 20 to 84 years with a mean of 46. There were equal numbers of males and females in the study. The cytological diagnosis in 27 (30%) were benign, malignant in 55(61.1%), atypical in 2(2.2%) and non diagnostic in 6(6.7%). Of the 55 malignant tumours 10(18.2%) were primary Hepatocellular carcinoma, 42(76.4%) were metastatic tumours and 3(5.4%) could not be classified. The primaries of the metastatic tumours were from GIT, lungs, breast, kidney, prostate and cervix. The two atypical cases were lost to follow up.

**Conclusions:**

CT or ultrasound guided FNAC is a useful tool in the evaluation of hepatic lesions. The procedure is simple, safe, economical and the results can be given within 24 hours. No serious complications were seen in our study.

*Key Words: Liver lesions; CT Ultrasound guided; FNAC*

*Funding Agency: None*



**Pathology**

Category: Basic Sciences

164

**Fine Needle Aspiration Cytology: Role in Diagnosis of Paediatric Lymph Nodes Mubarak Al-Kabeer Hospital Experience.**

\*Pathan SK<sup>1</sup>, Haji BE<sup>1</sup>, Das DK<sup>1,2</sup>, Al-Ansari TA<sup>1</sup>, George SS<sup>2</sup>, Kapila K<sup>1,2</sup>.

<sup>1</sup>Mubarak Al-Kabeer Hospital, Kuwait; <sup>2</sup>Department of Pathology, Faculty of Medicine, Kuwait University

**Introduction:**

Fine Needle Aspiration (FNA) is a widely accepted method to diagnose masses. This study was undertaken to assess the role of FNA in the evaluation of palpable peripheral lymph nodes in paediatric and adolescent patients.

**Methods:**

Over a period of 10 years (2000 - 2009) 876 patients in the paediatric and adolescent age group (6 months to 20 years) underwent FNA of peripheral lymph nodes in Mubarak Al-Kabeer Hospital. Their files were reviewed. A histological examination was available in 16 cases.

**Results:**

Of the 803 (91.7 %) satisfactory aspirates, 414 (51.6 %) were performed in males and 389 (48.4 %) in females. The spectrum of the disease seen in the lymph node aspirates included reactive lymph nodes (620 cases, 70.8 %); necrotizing granulomatous lymphadenitis (29 cases; 3.3 %); granulomatous lymphadenitis (66 cases; 7.5 %); tuberculous lymphadenitis (18 cases, 2.1 %), lymphoproliferative lesions (48 cases, 5.5 %); atypical cytology (18 cases, 2.1 %), tumours (2 cases, 0.2 %) and two miscellaneous conditions. Of the 48 lymphoproliferative lesions - 10 were Nonhodgkins lymphoma, 28 were diagnosed as Hodgkins disease and 10 were suspicious of it. The two tumours seen were in the females and were metastases from a papillary carcinoma and a nasopharyngeal carcinoma .

**Conclusions:**

FNA is a feasible option in diagnosing paediatric and adolescent lymph nodes. Its main advantage being its minimally invasive nature and avoidance of an open surgical procedure for benign persistent lymphadenitis.

*Key Words: FNAC; Paediatric; Lymph nodes*

*Funding Agency: None*



**Pathology**

Category: Basic Sciences

165

**Investigation of Un-natural Death in Kuwait During 2007.**

\*Al-Kandary MN<sup>1</sup>, Elfawal MA<sup>2</sup>, Varghese R<sup>3</sup>.

<sup>1</sup>Department of Forensic Medicine, General Department of Criminal Evidence, Ministry of Interior, Kuwait; <sup>2</sup>Department of Pathology, Kuwait University, Faculty of Medicine; <sup>3</sup>Department of Psychiatry, Kuwait University, Faculty of Medicine.

**Introduction:**

Un-natural death happens almost everywhere in the world and forensic pathologists have to deal with a wide spectrum of such fatalities. Data on un-natural death in a particular geographic area can reflect the nature of that community. The objective of this study is to evaluate the incidence of various categories of un-natural deaths in Kuwait. Data presented herein may assist in setting preventive strategies and possibly motivate investigators to perform further in-depth study of the subject.

**Methods:**

A total number of 935 un-natural deaths were referred during the year 2007 to the Forensic Department, Ministry of Interior, Kuwait, constituted the material of this study. Data were collected on various categories of un-natural deaths. Analysis involved a full review of data, scene examination, complete autopsy study, serological and toxicological screening whenever necessary.

**Results:**

Un-natural fatalities in expatriates exceeded the Kuwaiti population (65.2% and 34.8%) and males outnumbered females (82.5% and 17.5%). Accidents accounted for (83.1%), followed by suicides (9.1%) and homicides (7.8%). Farwania Governorate demonstrated the highest incidence in all categories of un-natural fatalities (33.7%), while Mubarak Al-Kabeer showed the lowest rates (2.2%). There was a significant variation between categories of un-natural death amongst different governorates. A significant difference was also demonstrated between the various age groups.

**Conclusions:**

The current work has shown that accident is a major cause for un-natural death in Kuwait. Our data have demonstrated a higher incidence of such fatalities among males in areas heavily inhabited with non-Kuwaiti populations, presumably of the lower working class. It has also shown a significant difference between categories of un-natural death among various age groups. More in-depth studies are required in order to identify trends and to set appropriate preventive strategies.

*Key Words: Un-natural death; Suicide; Homicide*

*Funding Agency: None*



**Pathology**

Category: Clinical

166

**Alanine Aminotransferase Levels Within the Normal Range Predict Metabolic and Androgenic Phenotypes in Women of Reproductive Age.**

\*Mojiminiyi OA<sup>1</sup>, Safar FH<sup>1</sup>, Al Rumaih H<sup>2</sup>, Al Rammah T<sup>1</sup>, Diejomaoh FME<sup>1</sup>

<sup>1</sup>Department of Pathology and Obstetrics & Gynaecology, Kuwait University Faculty of Medicine;

<sup>2</sup>Maternity Hospital, Ministry of Health

**Introduction:**

Obesity plays pathogenetic roles in nonalcoholic fatty liver disease (NAFLD) and hyperandrogenic states like polycystic ovary syndrome (PCOS). As PCOS and NAFLD have insidious onset, we hypothesise that alanine aminotransferase (ALT), a marker of NAFLD and liver dysfunction, will show significant associations with endocrine and metabolic abnormalities in women with normal ALT.

**Methods:**

Fasting glucose, insulin, total testosterone, DHEAS, 17-hydroxyprogesterone, prolactin, leptin, soluble leptin receptor (sOb-R), free leptin index (FLI), lipid profile, ALT, gonadotropins, and sex hormone binding globulin (SHBG) were measured in the early follicular phase in 200 women aged 18 – 48 years. Beta cell function (%B), insulin sensitivity (%S) and insulin resistance (IR) were calculated using the homeostasis model assessment (HOMA).

**Results:**

Ninety-two women had PCOS (Rotterdam criteria); 64 had idiopathic hyperandrogenism; 44 were normal controls. 25% of controls, 25% of women with idiopathic hyperandrogenism and 44% of women with PCOS had ALT  $\geq$  18 IU/l. ALT showed significant positive correlations with waist circumference (WC), systolic blood pressure, glucose, leptin, FLI, triglycerides, HOMA-IR and androgens and significant inverse correlations with sOb-R, HDL-cholesterol, %S and SHBG. Partial correlation, correcting for WC showed that the associations between ALT and glucose, HOMA-IR and androgens are independent of obesity. Binary logistic regression analysis showed significant association of ALT with PCOS and hyperandrogenemia. ALT  $\geq$ 18 IU/l also showed significant association with PCOS with OR = 2.28, p = 0.043.

**Conclusions:**

In women of reproductive age, we suggest routine estimation of ALT and extension of its routine use beyond the diagnosis of liver disease. Studies in different populations are necessary to ascertain the significance of routine ALT estimation as an adjunct for the early detection of insulin resistance.

*Key Words: PCOS; Phenotypes; Alanine aminotransferase*

*Funding Agency: KU research admin grant MG01/05*



**Pathology**

Category: Basic Sciences

167

**Platelet Functional Disorders in Kuwait - A Profile.**

\* Varghese SJ<sup>1</sup>, Kumar R<sup>2</sup>, Sreejith M<sup>1</sup>

<sup>1</sup>Hematology Unit, YIACO Adan Diagnostic Centre (YADC), Al Adan Hospital Complex, Kuwait;

<sup>2</sup>Consultant and Head, Dept of Hematology, Al Adan Hospital, MoH, Kuwait

**Introduction:**

Platelet functional disorders (PFD) comprise hereditary bleeding diathesis related to ineffective platelet aggregability. Although information on platelet antigen characterization of various PFD is available, yet the diagnosis is practically based on the results of platelet aggregation tests (PAT). This study aimed to understand the pattern of these disorders in the local population.

**Methods:**

During 2006-2009, 76 patients were referred to YADC from Al Adan Hospital. Blood samples were collected in EDTA and sodium citrate vacutainer tubes. PAT was carried out with ADP, Collagen, Epinephrine and Ristocetin on Platelet Aggregation Profiler PAP-8E, Bio Data Corporation USA. Results were analyzed using statistical software.

**Results:**

The study subjects varied widely over the age range of 4 days to 46 years with 63% females. The indications for PAT were suspected von Willebrand disease (vWD) (14%), essential thrombocythemia (22%), thrombasthenia (4%), unexplained menorrhagia (4%) and unexplained prolonged aPTT (6%). The results of PAT showed normal findings in 41%, complete absence of response to Ristocetin, indicating vWD in 28% and lack of response to all agonists indicating Thrombasthenia in 5%. As many as 24% cases were non responders to single agonist, mostly ADP, with normal aggregation to other agonists.

**Conclusions:**

The present study gives the pattern of PFD observed over a period of 3 years in Adan Hospital Area of Kuwait. The largest group of patients with excessive bleeding tendency comprised of vWD (28%). These included 3 cases with clinical presentation as only unexplained menorrhagia. Thrombasthenia was observed in 5% cases. Some observations requires more insight:(a) As many as 41% cases showed normal results (b) patients with isolated defective aggregation with single agonist like ADP (24%) and Epinephrine (5%) requires further work up .

*Key Words: Platelet functional disorder; Platelet aggregation; Bleeding tendency*

*Funding Agency: None*



**Pathology**

Category: Clinical

168

**Folate, Vitamin B12 and Homocysteine Levels in Kuwait Adolescent Subjects:  
Potential Implications for Cardiovascular Disease Risk in Later Life.**

\*Akanji AO<sup>1</sup>, Thalib L<sup>2</sup>, Al-Isa AN<sup>2</sup>

<sup>1</sup>Department of Pathology, Kuwait University, Faculty of Medicine; <sup>2</sup>Department of Community Medicine, Kuwait University, Faculty of Medicine

**Introduction:**

Elevated circulating fasting total homocysteine (tHcy) concentration is associated with an increased risk of occlusive vascular disease in adults. Important determinants of tHcy levels are folate and vitamin B12. This study investigated age, gender, and body mass as determinants of folate, vitamin B12 and tHcy levels in Kuwaiti Arab adolescents and to propose population, gender & age-specific reference ranges for these biomarkers.

**Methods:**

A total of 774 (316 boys, 458 girls) apparently healthy 10-19 yr olds attending various secondary schools in Kuwait were assessed for anthropometry, blood pressure and fasting blood levels of Hcy, folate and vitamin B12, after informed voluntary parental/guardian consent.

**Results:**

Boys had significantly higher waist/hip ratio, tHcy and folate concentration than girls, although BMI was similar for both groups. Vitamin B12 was greater in the girls. In all, tHcy had positive correlations with both markers of adiposity (BMI and WHR) and with systolic blood pressure. Additionally, tHcy was negatively correlated with folate and vitamin B12. These relationships persisted on multiple regression. Folate and vitamin B12 levels decreased significantly with age. Correspondingly, Hcy levels increased, with mean values (umol/L) for boys (6.6; 7.9) and girls (4.5; 6.2) aged 10-14yr and 14-19 yr respectively.

**Conclusions:**

There is an age-related increase in tHcy in adolescents reflecting decreased levels of folate and vitamin B12. It is suggested that age-related reference ranges for tHcy and associated vitamins be used in adolescents, to assess and prevent future cardiovascular disease risk.

*Key Words: Homocysteine; Folate & Vitamin B12; Adolescent*

*Funding Agency: KURA/KFAS Grant #MC 01/04*



**Pathology**

Category: Clinical

169

**Determinants of Blood Levels of Putative Thrombogenic Factors in Healthy Kuwaiti Adolescent Subjects.**

\*Akanji AO<sup>1</sup>, Thalib L<sup>2</sup>, Al-Isa AN<sup>2</sup>

<sup>1</sup>Department of Pathology, Kuwait University, Faculty of Medicine; <sup>2</sup>Department of Community Medicine, Kuwait University, Faculty of Medicine

**Introduction:**

Clinical presentation with atherosclerotic disease (AD) is linked to plaque rupture and thrombosis possibly related to altered homeostasis of thrombogenic factors. It is unclear if this change can be predicted from blood levels of these factors as observed in children and adolescents at increased risk. This study aims to examine blood levels of lipoprotein(a) [Lp(a)] and the thrombogenic factors - fibrinogen and plasminogen activator inhibitor -1 (PAI-1) - in healthy adolescents stratified according to gender, pubertal status, body mass and insulin sensitivity.

**Methods:**

There were a total of 774 (316m, 458f) subjects aged 10-19yr. Anthropometry and biochemical tests were carried out on each to determine insulin sensitivity (HOMA-IR) and blood levels of lipids (TG, total cholesterol, LDL, HDL, apo B, Lp(a), PAI-1 and fibrinogen.

**Results:**

HOMA-IR, PAI-1 and fibrinogen levels were higher in the boys than in the girls (all  $p < 0.01$ ). Additionally, for both sexes, these parameters were greater in the overweight/obese in comparison to the normal weight subjects, suggesting an increased atherogenic and thrombogenic risk. Lp(a) levels were not affected by gender and body mass. Findings in relation to pubertal age differed somewhat between the boys and girls, with a tendency in the girls towards more deleterious levels when post-pubertal, less so with the boys. On simple correlative analyses, the important determinants of these variables are for: Lp(a) - (LDL, apo B and HOMA-IR); PAI-1 - (LDL, apo B, HOMA-IR); fibrinogen (age, BMI, LDL, apo B, HOMA-IR. These determinants remained independent on multiple regression analyses.

**Conclusions:**

Levels of novel putative thrombogenic variables in blood of healthy Kuwaiti adolescent subjects are influenced by age, gender, body mass and insulin sensitivity. It is important to assess these factors in assigning future global atherosclerotic disease risk.

*Key Words: Adolescent; Atherosclerotic disease; Thrombogenic factors*

*Funding Agency: KURA/KFAS Grant #MC 01/04*



**Pathology**

Category: Clinical

170

**How Successful are we at Achieving Target Treatment Goals in Kuwaiti Dyslipidemic Patients?**

\*Mathew R, Akanji AO

Department of Pathology, Kuwait University, Faculty of Medicine

**Introduction:**

It is now widely accepted that significantly lowering plasma LDL levels dramatically reduce heart disease development. Key problems in achieving desirable treatment outcomes are patient compliance and physicians' knowledge of management guidelines. This study evaluates the success rate in achieving optimal treatment goals in dyslipidemic patients attending a Lipid Clinic in Kuwait.

**Methods:**

A total of 281(103M, 178F) patients had full lipid data at initial enrollment and on follow up for at least 6 months. They were classified on the bases of gender and presence/absence of the major risk factors of diabetes, hypertension and the metabolic syndrome (MetS). Treatment was with a statin (201(72%)) and/or a fibrate (30(11%)). We assessed attainment of the optimal LDL/HDL treatment targets as follows: LDL: US NCEP-ATP III - <2.6mM; European and Canadian guidelines- <2.5mM; HDL mM (M >1.03, F > 1.20).

**Results:**

With respect to LDL, 10% (17% M, 6% F)attained optimal LDL target using NCEP guidelines; for the European & Canadian Guidelines, the corresponding figures were 9%, 15% and 5%. For the diabetic patients, 15% and 13% respectively achieved NCEP and European & Canadian targets, in contrast to the 13% and 10% in patients with hypertension. For those with MetS, percentage target success was even much lower - 7% M; 3% F (NCEP) and 5% M; 2% F (European&Canadian). In contrast, HDL targets were more commonly achieved - at rates of 45% for both males and females, (irrespective of presence of hypertension or diabetes) but much lower with MetS (3% M; 9% F).

**Conclusions:**

Many Kuwaiti patients, especially women and those with metabolic syndrome attending a Kuwaiti Lipid Clinic fail to achieve optimal LDL treatment targets. Success rates appear higher with HDL targets. It is important to optimize treatment and educate in these cases in particular.

*Key Words: NCEP-ATP III; European & Canadian guidelines; Dyslipidemia*

*Funding Agency: None*



**Pathology**

Category: Graduate (Resident)

171

**Associations of Leptin, Leptin Receptor and Free Leptin Index with Metabolic Phenotypes of PCOS.**

\*Safar FH<sup>1</sup>, Mojiminiyi OA<sup>1</sup>, Al Rumaih H<sup>2</sup>, T. Al Rammah<sup>1</sup>, Diejomaoh FME<sup>1</sup>

<sup>1</sup>Faculty of Medicine, Kuwait University, Kuwait; <sup>2</sup>IVF unit, Maternity hospital, Kuwait

**Introduction:**

Polycystic ovaries syndrome (PCOS) is a complex endocrine disorder with heterogeneous presentation and different phenotypes in women of reproductive age. This study evaluates the association, if any, between circulating leptin, leptin receptor (sObR), free leptin index (FLI) with the metabolic phenotypes of PCOS.

**Methods:**

We measured follicular phase hormones, androgens, SHBG, fasting lipid profile, leptin, sObR, FLI, glucose, insulin and insulin sensitivity (%S) and resistance using the homeostasis model assessment (HOMA-IR). Univariate and logistic regression analyses were used to find the associations of these variables with each other and with metabolic phenotypes of PCOS.

**Results:**

PCOS patients had significantly higher leptin (p=0.03), FLI (p=0.02) and lower sObR (p=0.03) than controls. Leptin (p=0.01) and FLI (p=0.01) were significantly higher in metabolic syndrome positive MS+ve PCOS patients while sObR was significantly lower (p=0.03). The levels of leptin (p=0.004) and FLI (p=0.002) were also significantly higher while sObR levels were significantly lower (p=0.01) among PCOS women with HOMA-IR $\geq$ 2. However, no significant differences were detected in leptin, sObR and FLI between hyperandrogenic and normoandrogenic PCOS. Leptin and sObR had significant direct correlations with waist, BMI, TG, insulin, HOMA-IR, FAI and inverse correlations with SHBG, %S and HDL-C. sObR had similar but inverse significant correlations. Leptin (O.R 1.04,p=0.003), sObR (O.R 0.88,p=0.03) and FLI (O.R 1.32,p=0.01) were significantly associated with MS. Leptin (O.R 1.05,p=0.001), sObR (O.R 0.82,p=0.01) and FLI (O.R 1.46,p=0.002) were also significantly associated with insulin resistance phenotypes. No significant associations were found with androgens.

**Conclusions:**

We conclude that leptin, sObR and FLI are significantly associated with metabolic and insulin resistance phenotypes of PCOS but leptin does not appear to contribute to the hyperandrogenic status in PCOS patients.

*Key Words: Leptin; Polycystic Ovaries Syndrome; Metabolic Phenotypes*

*Funding Agency: MG 01/05 and YM 21/07*



## **Pathology**

Category: *Clinical*

172

### **Kikuchi-Fujimoto disease: A Clinicopathologic Study.**

\*Rifat Mannan AAS<sup>1</sup>, Kahvic M<sup>1</sup>, Rifaat AA<sup>1</sup>, Singh NG<sup>1</sup>, Vurghese T<sup>2</sup>

<sup>1</sup>Department of Pathology, Al-Jahra Hospital, Kuwait; <sup>2</sup>Medicine, Al-Jahra Hospital, Kuwait

#### **Introduction:**

Kikuchi - Fujimoto disease(KFD) is a rare self-limiting disease of unknown etiology. It is a rare cause of cervical lymphadenitis, which commonly affects young Asian women. KFD is known to have a higher prevalence among Japanese and other Asiatic people. There are increasing reports of occurrence of the disease in various other parts of the world. However, there is very little available data about the epidemiology and clinicopathologic profile of this entity in Kuwait. Hence, the present study was aimed at analyzing the clinical and laboratory parameters of KFD diagnosed at Al-Jahra Hospital.

#### **Methods:**

We retrospectively analyzed 8 cases of KFD diagnosed during the period of January 2000 and December 2008. All the cases were diagnosed based on lymph node excision biopsy. Clinical and laboratory details were retrieved from the patients' files, while histologic slides were reviewed from the archives of the department of Pathology.

#### **Results:**

The mean age of the patients was 36.5 years (range 13 to 49 years) . The male to female ratio was 1:3. All the patients had tender cervical lymphadenopathy at presentation, accompanied by fever. One patient had associated skin rash and arthralgia. Laboratory findings showed leukopenia (n= 7), leukocytosis (n=1), anemia(n=4), and an elevated ESR(n=7). Lymph node biopsy revealed characteristic findings consistent with KFD, such as paracortical necrosis with karyorrhectic debris. Seven patients received conservative therapy with antipyretics alone, while one patient was treated with prednisolone. All the patients had spontaneous resolution of symptoms following the lymph node biopsy.

#### **Conclusions:**

KFD is not so uncommon in Kuwaiti population and should be considered in the differential diagnosis for young adults with prolonged fever and lymphadenopathy. An early diagnosis is crucial since the clinical presentation can mimic tuberculous lymphadenitis or malignant lymphoma.

*Key Words: Kikuchi-Fujimoto Disease; Necrotizing histiocytic lymphadenopathy; Reactive lymphadenitis*

*Funding Agency: None*



**Pathology**

Category: Clinical

173

**Significance of Teeth Lead Accumulation in Age Estimation.**

\*Elfawal MA<sup>1</sup>, Al-Qattan SI<sup>2</sup>

<sup>1</sup>Department of Pathology, Faculty of Medicine, Kuwait University; <sup>2</sup>Department of Forensic Medicine, Ministry of Interior, Kuwait

**Introduction:**

Age estimation may pose a real difficulty in the forensic practice particularly when examining skeletal remains. Lead concentration in teeth is a cumulative meaning of earlier exposure. No adequate statistical analyses have been applied to estimation of age by means of lead teeth accumulation. The aim of this work is to verify if lead levels in teeth are correlated with age and possibly gender, and whether such correlation can be utilized for the purpose of age estimation.

**Methods:**

Lead accumulation in 398 permanent teeth of Kuwaiti subjects, aged between 11 and 74 years was analyzed by atomic absorption spectrophotometry. A regression formula was established to calculate the age from lead levels in teeth and was applied to a validation group of 90 Kuwaiti donors of known ages. The calculated ages, using the regression formula and the known ages, were statistically analyzed.

**Results:**

A significant correlation was found between dentin lead levels and age. The mean dentin lead concentration was significantly higher in males than in females ( $6.8 \pm 4.7$  and  $5.6 \pm 4.6$ , respectively,  $p = 0.015$ ). A formula was established to calculate age from lead levels in teeth ( $\text{Age} = 1. \text{dentine Pb} + 17.6$ ). When the formula was applied to the validation group, the standard error of age estimation was  $\pm 5.8$  years with R square = 52.3%. The mean difference between the true and calculated ages was  $1.3 \pm 4.8$  years. The coefficient of variation was 43%.

**Conclusions:**

The proposed formula can be employed for estimating the age from dentin lead levels in Kuwaiti population and can be useful in forensic investigations. Similar formulas could possibly be established on dentin lead levels among various populations.

*Key Words: Age estimation; Lead; Dentin*

*Funding Agency: None*



**Pathology**

Category: Clinical

174

**Peptidyl Arginine Deiminase: A Novel Immunohistochemical Marker for Liver Fibrosis in Patients with Chronic Hepatitis.**

\*Abdeen SM, Olusi SO

Department of Pathology, Faculty of Medicine, Health Science Center, Kuwait University, Kuwait

**Introduction:**

Peptidylarginine deiminase (PAD) is an enzyme known to be involved in the pathogenesis of rheumatoid arthritis (RA). Since many of the molecular events present in the joints in RA also take place in the injured liver, we postulated in this study that PAD may be involved in liver fibrosis. The objectives of this study therefore were to find out if PAD could be demonstrated immunohistochemically in liver biopsies of patients with chronic hepatitis and if it is associated with METAVIR activity and fibrosis scores.

**Methods:**

Liver biopsies were obtained from 100 patients with chronic liver diseases between September 2006 and September 2007. The biopsies were scored by two histopathologists according to the METAVIR activity and fibrosis scores after histological preparation. Immunohistochemical staining for PAD was performed on the biopsies using monoclonal antibody against PAD.

**Results:**

PAD could not be demonstrated in normal liver biopsies but was found in the hepatocytes of patients with chronic hepatitis. PAD expression could distinguish patients with no fibrosis from either F1 or F2 or F3 or F4 fibrosis. Similarly PAD expression could separate patients with no inflammatory activity from those with mild or moderate or severe activity.

**Conclusions:**

We concluded that PAD could be demonstrated immunohistochemically in liver biopsies of patients with chronic hepatitis and that its expression was significantly associated with Metavir activity and fibrosis scores.

*Key Words: Peptidylarginine deiminase enzyme; Metavir activity; Fibrosis scores*

*Funding Agency: None*



**Pathology**

*Category: Clinical*

**175**

**A Comparison of Fine Needle Aspiration Cytology [FNAC], Histopathological and Radiological Findings in Breast Lesions at Mubarak Al-Kabeer Hospital – A Pilot Study.**

\*Jaragh M<sup>1</sup>, Haji BE<sup>1</sup>, Roberts OM<sup>2</sup>, Mothafar F<sup>3</sup>, Abdulla AlMousawi F<sup>1</sup>, Gupta R<sup>2</sup>, Abdulla F<sup>2</sup>, Kapila K<sup>1,4</sup>

<sup>1,2,3</sup>Departments of Cytopathology, Radiology and Pathology, Mubark Al-Kabeer Hospital, Kuwait;

<sup>4</sup>Departments of Radiology and Pathology, Kuwait University Faculty of Medicine.

**Introduction:**

Cytological evaluation and radiological assessment is vital for the management of breast lesions. The aim of this study was to correlate the cytological and histological findings with imaging.

**Methods:**

Over a period of two years (2005-2006) in 76 of the total 1862 breast aspirates done in Mubarak Al-Kabeer Hospital (MAKH) a cyto-histo-radiological correlation was available. Imaging findings were classified according to the Breast Imaging and Reporting Data System (BIRADS) - BIRADS 2 (benign) BIRADS 3 (probably benign) BIRADS 4 (suspicious for malignancy) and BIRADS 5 (highly suggestive of malignancy). Fine Needle Aspiration [FNA] findings were reported as benign, atypical cytology, suspicious for carcinoma, cancer and unsatisfactory.

**Results:**

Of the 76 FNA 33 were of Kuwaiti origin. The age ranged from 17 to 80 years with a mean age of 50. All 8 cases with BIRADS 2 were diagnosed as fibroadenoma on FNA and reported as fibroadenoma on histology. One case of BIRADS 3 was benign on FNA and reported as fibroadenoma. In BIRADS 4 category 15 of 16 cases were reported as malignant on histology, of these 10 and 3 were diagnosed as malignant and atypical cytology and one case each as suspicious, Phyllodes tumor and unsatisfactory. Of 51 BIRADS 5 cases, 44 were ductal carcinoma and 7 lobular carcinoma. On FNA 38 were malignant (34 ductal + 4 lobular), 12 suspicious and 1 was reported as atypical cytology. Lobular carcinoma posed a problem as four were called suspicious cytology and 75% of them were reported as ductal carcinoma on histology.

**Conclusions:**

The demonstration of extent of disease by breast imaging is obligatory for optimum pre-operative planning. FNAC is a valuable method which is most accurate with experienced cytopathologists. However, it provides scarce material in fibrotic and collagenous lesions such as lobular carcinoma.

*Key Words: Breast Carcinoma; Imaging; Cytohistological correlation*

*Funding Agency: None*



**Pathology**

Category: Clinical

176

**Diagnosis of Tuberculosis in Serous Cavity Effusions: Poor Performance by Cytology due to Absence of Useful Diagnostic Features.**

\*Das DK<sup>1,2</sup>, Al-Juwaiser A<sup>2</sup>, Sathar SA<sup>1</sup>, Bharadwaj S<sup>3</sup>, Pathan SK<sup>2</sup>

<sup>1</sup>Department of Pathology, Faculty of Medicine, Kuwait University; <sup>2</sup>Cytology Unit, Mubarak Al-Kabeer Hospital; <sup>3</sup>Histopathology Unit, Mubarak Al-Kabeer Hospital, Kuwait.

**Introduction:**

There are numerous studies on the utility of pleural effusion and ascitic fluid cytology in diagnosis malignancies but its role in diagnosis of tuberculous lesions (TB) has not been sufficiently highlighted. This study was undertaken after discovering from quality control exercise that TB is rarely diagnosed by effusion cytology.

**Methods:**

161 pleural effusion and ascitic fluid samples from 127 biopsy proven cases were seen during a period of 5 years. The histological diagnoses were correlated with initial cytologic diagnoses. Cytologic features in 58 samples seen during 2 years were assessed, graded in a sliding scale of + to +++ and compared (as per histological diagnoses) under following three headings: 24 cases of TB (Group-A), 22 malignancy (Group-B) and 12 nonspecific inflammation/benign (Group-C).

**Results:**

The cytodiagnostics were as follows: benign (19.3%), nonspecific inflammation (37.9%), granulomatous inflammation (1.2%), suspicious of malignancy (15.5%), malignancy (13.7%), and others (12.4%). The histological diagnoses included 37.0% as malignant, 37.0% TB, 11.0% nonspecific inflammation, 9.4% benign, and 5.5% others. Of the 47 histologically diagnosed TB cases, only 2 (4.3%) were diagnosed by cytology, which was significantly lower than malignancy (30 of 47) and nonspecific inflammation/benign lesions (20 of 26) diagnosed by cytology ( $p < 0.0001$ ). In group A, cases with excessive lymphocytes (+++) and necrotic material were significantly higher ( $p = 0.0382$  to  $< 0.0001$ ), and neutrophils and mesothelial cells were less frequent ( $P = 0.0103$  to  $< 0.0001$ ) as compared to groups B and C. Fibrin meshwork was found in a higher number of group-A cases than group-B ( $p = 0.0122$ ). However, no significant difference was observed between these groups in respect dispersed epithelioid histiocytes or granulomas.

**Conclusions:**

Serous effusions are a very poor source for cytologic diagnosis of TB, which is mainly due to absence of epithelioid cell granulomas.

*Key Words: Pleural effusion; Ascitic fluid; Tuberculosis*

*Funding Agency: None*



**Pathology**

Category: Clinical

177

**Fine Needle Aspiration (FNA) Cytology Diagnosis of Papillary Thyroid Carcinoma (PTC): Contribution of Immunocytochemical Stainings for Galectin-3, CD-44 and HBME-1 in FNA Smears.**

\*Das DK<sup>1,2</sup>, Al-Waheed SKM<sup>3</sup>, George SS<sup>1</sup>, Haji BI<sup>2</sup>, Mallik MK<sup>2</sup>.

<sup>1</sup>Department of Pathology, Faculty of Medicine, Kuwait University; <sup>2</sup>Cytology Unit; <sup>3</sup>Histopathology Unit, Mubarak Al-Kabeer Hospital, Kuwait.

**Introduction:**

Fine needle aspiration (FNA) cytology is the most valuable tool for the preoperative diagnosis of papillary thyroid carcinoma (PTC). However, in practice of cytology, a large number of cases have inconclusive diagnoses. This study was undertaken to find out if immunocytochemical staining for Galectin-3, CD-44 and HBME-1 could be of use in distinguishing PTC from suspicious and benign lesions sharing some cytologic features of PTC.

**Methods:**

32 cases with following FNA cytodiagnoses were included in this study: PTC (12 cases), suspicious of (S/O) PTC (5 cases), follicular lesions (5 cases) and colloid goiters (10 cases). Smears immunostained for galectin3, CD44 and HBME1 were found suitable for assessment in 31, 28, and 31 cases, respectively. Staining reactions assessed in 100 cells was categorized as strong or weak and graded in a sliding scale of -, +, ++, +++ and +++++. Further, each cell with weak and strong positive reaction were assigned a score of one and four, respectively.

**Results:**

The comparing of immunocytochemical staining reactions (frequency of cases with ++ to +++ reaction, scores >100 and scores >200) for Galectin3, CD44 and HBME1 between various groups revealed that all the parameters were significantly higher in PTC cases than combined follicular lesion and colloid goiter cases (p= 0.0261 to 0.0008). Similarly, all the parameters were significantly higher in combined PTC and S/O PTC cases as compared to follicular lesions and colloid goiter cases taken together (p=0.0454 to 0.0016). However, there was no significant difference between PTC and S/O PTC with respect to any of the parameters except for higher frequency of PTC cases with score above 200 for HBME 1 (p= 0.0441).

**Conclusions:**

Galectin 3, CD 44 and HBME 1 are useful immunocytochemical parameters for distinguishing PTC and S/O PTC cases from follicular lesions and colloid goiters.

*Key Words: Papillary thyroid carcinoma; Fine needle aspiration cytology; Immunocytochemistry*

*Funding Agency: Kuwait University, MG 01/08*



**Pathology**

Category: Clinical

178

**Correlation of Mycobacterial Culture and Acid Fast Bacilli with the Cytologic Spectrum of Tuberculosis in Fine Needle Aspirates Mubarak Al-Kabeer Hospital Experience.**

\*Haji BE<sup>1</sup>, Jaragh M<sup>1</sup>, AliAlansary T<sup>1</sup>, Pathan SK<sup>1</sup>, Sheikh ZA<sup>1</sup>, Al-Waheeb S<sup>1</sup>, Mallik MK<sup>1</sup>, Das DK<sup>1,2</sup>, George SS<sup>2</sup>, Kapila K<sup>1,2</sup>.

<sup>1</sup>Cytology Laboratory, Mubark Al-Kabeer Hospital, Kuwait; <sup>2</sup>Departments of Microbiology and Pathology, Kuwait University, Faculty of Medicine.

**Introduction:**

Fine Needle Aspiration (FNA) is used worldwide in the diagnosis of tuberculosis. The diagnostic morphologic findings comprise of granulomas and giant cells with or without necrosis. The purpose of this study was to correlate the cytomorphologic diagnosis with demonstration of Acid Fast Bacilli (AFB) and mycobacterial culture.

**Methods:**

FNA, AFB by Ziehl Neelsen Stain and culture (MGIT 960, Becton Dickinson, USA) were correlated in 381 patients with suspected tuberculosis over a period of one and a half years [January 2008-August 2009].

**Results:**

The aspirates were from lymph nodes(313cases, 82%), soft tissue(37 cases, 10%), breast(24cases, 6%), thyroid(3cases, 1%) and epididymis94cases, 1%). Age ranged from 3 months to 77 years. 74 of the 381 patients were Kuwaitis. Papanicolaou and/or MGG stained smears were classified into four categories -Group A: granulomas with caseous necrosis 202 (53%), Group B: granulomas alone 59 (15.5%), Group C: necrosis alone 53 (13.9%) and Group D: an acute inflammatory exudate 67 (17.6%). The AFB positivity by Ziehl Neelsen staining was 75 of 161 (46.6%) Group A cases; 3 of 38 (7.9%) Group B cases; 25 of 43 (58.1%) Group C cases and 11 of 50 (22%) Group D cases. Culture was positive in 52 of 98 (53.1%) Group A cases; 2 of 30(6.7%) Group B cases; 14 of 25 (56%) Group C cases and 4 of 26 (15.4%) Group D cases. Of the 46 cases with AFB on ZN staining 32 (69.6%) were culture positive and 14 (30.4%) cases were culture negative. Of the 77 cases negative for AFB on ZN staining the culture was positive in 24 (31.2%).

**Conclusions:**

We recommend that evaluation of all FNA from suspected cases of tuberculosis should include staining for AFB and culture for mycobacteria.

*Key Words: Fine needle aspirates; Tuberculosis; Mycobacterial culture and Acid Fast Bacilli*

*Funding Agency: None*



**Pediatrics**

Category: Clinical

179

**Quantitative Food Intake in Children During Acute Stage of Diarrhoea and After Recovery.**

\*Al-Souri H<sup>1</sup>, Al-Zinnati N<sup>1</sup>, Al-Ruwayih A<sup>2</sup>, Molla AM<sup>3</sup>, Molla Abdul M<sup>4</sup>

<sup>1</sup>Department of Pediatrics, Al-Adan Hospital; <sup>2</sup>Department of Pediatrics, Al-Amiri Hospital;

<sup>3</sup>Department of Medical Laboratory Sciences, Kuwait University, Faculty of Allied Health Sciences;

<sup>4</sup>Department of Pediatrics, Kuwait University, Faculty of Medicine.

**Introduction:**

Mortality due to acute diarrhoea has substantially been reduced with effective treatment by oral rehydration therapy. However without continued feeding after several episodes of diarrhoea, nutritional status of a child cannot improve prospectively. Although starvation in diarrhoea is no longer recommended and is discouraged, many societies still practice with-holding and feeding modified diet in diarrhoea. Quantitatively we estimated food intake of children with diarrhoea due to different aetiologies both in acute and recovery stages. The objective is to show that continuation of feeding during diarrhoea is helpful for recovery and for the nutritional rehabilitation as well.

**Methods:**

The study was conducted at Al-Amiri Hospital and Al-Adan Hospital. A total of 72 children with acute diarrhoea due to rota virus, Ecoli, Salmonella and shigella was studied. After full hydration with intravenous fluid, food intake was estimated for 72 hours in the acute stage and also the study was repeated 3 weeks after recovery. Calorie intake was calculated for each of the patients in both the stages.

**Results:**

During the acute stage, calorie intake was 45-50 Kcal/kg/day and it improved to 60-65 Kcal/kg/day on the 3rd day after recovery. Food intake improved further, 15 days after recovery up to 70-75 Kcal/kg/day. The results were similar for all the aetiologies of diarrhoea. Majority of the patients recovered within 3 days of hospitalizations.

**Conclusions:**

Although anorexia reduces food intake for a brief period during the acute stage, there is a compensatory increase in the nutrient intake during recovery period. Therefore feeding of familiar food should be continued during acute phase of diarrhoea and an extra amount of food should be allowed after recovery.

*Key Words: Acute stage of Diarrhoea; Recovery stage after diarrhoea; Calorie intake*

*Funding Agency: None*



**Pediatrics**

Category: Clinical

**180**

**Transcatheter Closure of Ventricular Septal Defect Using Amplatzer Devices:  
Local Experience.**

\*Kabad R<sup>1</sup>, Uthaman B<sup>1,2</sup>, Al-Qbandi M<sup>1</sup>, Selvan JP<sup>1</sup>, Alanbaei M<sup>1,2</sup>, Abushaban L<sup>1,3</sup>, Al-Hay A<sup>1</sup>, Al-Hassan A<sup>1</sup>

<sup>1</sup>Division of Pediatric & Congenital Cardiology, Cardiology Department, Chest Hospital, Kuwait;  
<sup>2</sup>Department of Medicine, Kuwait University Faculty of Medicine; <sup>3</sup>Department of Pediatrics, Kuwait University, Faculty of Medicine.

**Introduction:**

Transcatheter closure has been introduced recently to treat medium sized perimembranous and muscular ventricular septal defects (VSDs). This study evaluates our institution experience.

**Methods:**

During the past two years, we attempted to close VSDs in 28 patients using various AMPLATZER devices, delivered through Amplatzer introducer sheath inserted to the left ventricle from femoral vein over an arterio-venous guide wire loop from femoral artery with fluoroscopic and transesophageal guidance under general anaesthesia. Device size chosen was the same size or one mm more than the size of VSD.

**Results:**

Mean age was twelve years (Range 4-42 yrs). Three patients were symptomatic. Eighteen patients had perimembranous defect with muscular extension, remaining had muscular defects. Mean size of VSD was 5.82 mm. Nine cases had moderate shunt (>1.5:1). We used membranous VSD device in 7, muscular VSD device in 18. One needed an additional Amplatzer septal occluder (ASO). Two VSDs were closed using ASO. We failed to enter the VSD in one patient. Post closure, two patients developed trivial aortic regurgitation. One had transient junctional rhythm. During the follow up ranging from 3 months to 2 years 3 months, all patients remained well. Five (18.5%) had residual left to right shunt.

**Conclusions:**

Majority of perimembranous and muscular VSDs can be closed non-surgically using Amplatzer devices. However residual shunt and aortic regurgitation are complications requiring long term follow up in addition to heart block.

*Key Words: Amplatzer devices; Transcatheter closure; Ventricular septal defect*

*Funding Agency: None*



**Pediatrics**

Category: Clinical

181

**Infectious Causes of Transient Neutropenia in Otherwise Healthy Children.**

\*Husain EH, Mullah-Ali AM, Elsayed AF, Adekile A  
Department of Pediatrics, Faculty of Medicine

**Introduction:**

Previously healthy children presenting with fever and neutropenia are often hospitalized and started on broad spectrum antibiotics without an evidence of infection. Objective :To investigate the infectious causes of isolated transient neutropenia in otherwise previously-healthy children.

**Methods:**

A prospective study was conducted at the Department of Pediatrics, Mubarak Al-Kabeer Hospital. All hospitalized children (aged 1 month to 12 years) with a first episode of isolated neutropenia defined as absolute neutrophil count (ANC) < 1.5x 10<sup>9</sup>/L were enrolled in the study. Investigations to identify the infectious causes included blood and urine cultures for bacterial causes, viral (EBV, CMV, adenovirus, parvovirus) serology and PCR for HHV6 and enterovirus.

**Results:**

Twenty three children were enrolled during a nine-month period (March - November 2009). The median age was 15 months. Children less than 2 years constituted 65% of the sample. There were 2 peaks in the monthly distribution of cases; one between April and May (8 cases, 35%) and another between September and October (10 cases, 43%). All patients presented with fever. Associated clinical symptoms were: congested throat and runny nose in 13 patients (56%), cervical lymphadenopathy in 5 patients (22%) and rash in 4 patients (17%). The median ANC was 550. Severe neutropenia (ANC ≤ 0.5x 10<sup>9</sup>/L) was seen in 11 (48%) of the patients. All patients had negative blood and urine cultures. Thirteen patients (57%) had an underlying viral diagnosis for their neutropenia. Of these, 5 (38.5%) were Enterovirus, 4 (30.8%) were HHV6, 2 (15.4%) were parvovirus, and 2 (15.4%) were adenovirus.

**Conclusions:**

Viral infections are responsible for 57% of the infectious etiologies of isolated neutropenia in previously healthy children. These children should not be managed with antibiotics.

*Key Words: Neutropenia; Healthy children; Viral infection*

*Funding Agency: KU Grany No. MK01/07*



**Pediatrics**

Category: Clinical

182

**Application of the Stable Isotope Dilution LC-MS/MS Method for the Diagnosis of Inherited Metabolic Disorders.**

\*Abdel-Hamid ME, Sharaf LH, Phillips OA

Department of Pharmaceutical Chemistry, Kuwait University, Faculty of Pharmacy.

**Introduction:**

Inherited metabolic disorders (IMDs) are autosomal recessive diseases which have high prevalence among infants due to consanguinity. Early diagnosis of these disorders is important to avoid serious consequences such as mental retardation. Tandem mass spectrometry (MS/MS) and GC-MS are now becoming essential for diagnosis of IMDs. Although MS/MS has revolutionized the metabolic screening process, however, not all IMDs could be screened by routine MS/MS e.g. classical galactosemia could not be diagnosed and MMA and PA could not be differentiated. The objective of this study was to highlight the applicability of the stable isotope dilution LC-MS/MS for the diagnosis of IMDs.

**Methods:**

Reference standards of the diagnostic biomarkers of IMDs and their respective stable isotopic labeled standards (as internal standards) were selected. LC (Waters 2695) coupled with MS/MS (Micromass, Quattro LC) in either positive or negative ionization mode was used. LC conditions were: mobile phase (CH<sub>3</sub>CN/ammonium acetate, 10 mM, 1:1) and XTerraR LC column. MRM transitions for each biomarker and its isotopic labeled internal standard were established.

**Results:**

Stable isotopic labeled d<sub>4</sub>-MA (m/z 104.9 □ 61.2) for MA, d<sub>3</sub>-MMA (m/z 120.2 □ 76.3) for MMA and EMA, d<sub>2</sub>-orotic acid (157.2 □ 113.2) for orotic acid, d<sub>6</sub>-galactose (185.2 □ 92.2) for Gal-1-P, were used as labeled internal standards for the diagnosis of malonic, methylmalonic and ethylmalonic acidurias, urea cycle disorders and classical galactosemia, respectively.

**Conclusions:**

The stable isotope dilution LC-MS/MS method was successfully applied for the diagnosis of a wide range of IMDs. The developed method permits definitive confirmation of the metabolic disorders. Furthermore, the method is simple, needs no derivatization and can be tailored according to a physician's request.

*Key Words: Inherited metabolic disorders; Stable isotope dilution; LC-MS/MS*

*Funding Agency: None*



**Pediatrics**

*Category: Clinical*

**183**

**Results of ROP Screening According to ETROP Guidelines - Are We Treating More Babies?**

\*Wani VB<sup>1</sup>, Uboweja AK<sup>1</sup>, Muzafar Gani AW<sup>3</sup>, Mahmood K<sup>1</sup>, Al-Naqeeb N<sup>2</sup>, Cherian T<sup>2</sup>

<sup>1</sup>Department of Ophthalmology, Al Adan Hospital; <sup>2</sup>Department of Pediatrics, Al Adan Hospital;

<sup>3</sup>Department of Pediatrics, Ahmadi Hospital

**Introduction:**

Retinopathy of prematurity (ROP) is a disease of premature infants and is potentially sight threatening. We have evaluated the results of ROP screening and treatment according to Early Treatment of ROP(ETROP) guidelines.

**Methods:**

This was a retrospective, hospital-based study. We reviewed ROP records of premature babies having either birth weight of less than 1501 g or gestational age at birth of 34 weeks or less and born between July 2005 to March 2008.

**Results:**

We screened 413 babies in the said period and 51 babies(12.35%) developed treatable ROP according to ETROP guidelines. Presence of Plus sign was main factor to diagnose Type I ROP. Low birth weight, Lung disease, Intraventricular hemorrhage and presence of sepsis were important factors for development of ROP.

**Conclusions:**

In the present study 12.35% babies needed laser, higher as compared to CRYO-ROP study. All of the babies had favourable outcome in present while 25.7% of babies had unfavourable outcome at the age of one year in CRYO\_ROP study. Though the incidence of laser was high in our study, it validates the ETROP guidelines.

*Key Words: Retinopathy of Prematurity; ETROS*

*Funding Agency: None*



**Pharmacology and Toxicology**

Category: Graduate MSc (Basic Science)

184

**Does Angiotensin-(1-7) Inhibit the Development of Diabetes-Induced Vascular Dysfunction by Inhibiting Epidermal Growth Factor Receptor Signaling?**

\*Al-Farsi OA, Yousif MHM, Benter IF, Akhtar S

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

**Introduction:**

Vascular dysfunction is a devastating complication of diabetes mellitus and a major component of cardiovascular diseases. Enhanced signaling via the epidermal growth factor receptor (EGFR) is a key early step in the development of diabetes-induced vascular dysfunction, whereas Angiotensin (Ang)-(1-7) prevents vascular dysfunction in experimental diabetes. The aim of this study was to determine whether Ang-(1-7) provides vascular protection in streptozotocin (STZ)-induced diabetes through counter-regulating activation/ transactivation of EGFR and its downstream effectors, ERK1/2 and p38 MAP kinase.

**Methods:**

Diabetes was induced by intraperitoneal injection of 55mg/kg of STZ. Treatment with Ang-(1-7) (1mg/kg daily) and AG1478 (0.3 mg/rat every other day) was started on the first day on inducing diabetes and continued for 4 weeks. The vascular responsiveness of the isolated perfused mesenteric bed to norepinephrine (vasoconstrictor), and carbachol and sodium nitroprusside SNP (vasodilators) was used as a measure of vascular function. Western blot analysis was used to detect the levels of phosphorylated EGFR, ERK1/2, and p38 MAP kinase.

**Results:**

Four weeks of diabetes led to marked vascular dysfunction in the isolated perfused mesenteric bed compared to non-diabetic controls ( $p < 0.05$ ) that could be prevented upon treatment with AG1478, a selective inhibitor of EGFR phosphorylation or treatment with Ang-(1-7) ( $p < 0.05$ ). Signal transduction studies showed that Ang-(1-7) treatment led to a significant reduction in the protein expression and phosphorylation of EGFR and its downstream effectors, ERK1/2 and p38 MAP kinase ( $p < 0.05$ ).

**Conclusions:**

These data suggest that the beneficial effects of Ang-(1-7) on diabetes-induced vascular dysfunction are mediated, at least in part, via inhibition of EGFR signaling. Thus, Ang-(1-7) and/or inhibitors of EGFR signaling may represent novel strategies for the treatment for diabetes-induced vascular dysfunction.

*Key Words: Epidermal Growth Factor Receptor; Angiotensin-(1-7); Diabetes-induced Vascular Dysfunction*

*Funding Agency: KU Grant (YM06/08)*

**Pharmacology and Toxicology***Category: Basic Sciences***185****Investigating Activation of Human G Protein-Coupled Receptor Kinase 2 by c-Src, Using Site-Directed Mutagenesis and Real-Time FRET Measurements.**\*Al-Sabah S<sup>1</sup>, Kara E<sup>2</sup>, Ellis E<sup>2</sup>, Moulton CM<sup>2</sup>, Archer CR<sup>2</sup>, Rodriguez-Martin I<sup>3</sup>, Krasel C<sup>4</sup><sup>1</sup>Department of Pharmacology and Toxicology, Faculty of Medicine, Kuwait University, Kuwait;<sup>2</sup>School of Pharmacy, University of Reading, UK; <sup>3</sup>Department of Physiology and Pharmacology, University of Bristol, UK; <sup>4</sup>Institute of Pharmacology and Toxicology, University of Marburg,

Germany.

**Introduction:**

G protein-coupled receptors (GPCRs) desensitize after agonist binding via several mechanisms, one of which is homologous desensitization. The first step in homologous desensitization is the phosphorylation of agonist-activated receptors at serine and threonine residues in the C terminus and/or intracellular loop regions by G-protein-coupled receptor kinases (GRKs). There are seven GRKs, four of which (GRK2, GRK3, GRK5 and GRK6) show broad tissue distribution. GRK activity has been shown to be regulated by other kinases and by interactions with other proteins. Here, we investigated the regulation of GRKs by the protein tyrosine kinase c-src.

**Methods:**

GRK activity was measured in transiently transfected HEK293 cells as FRET increase between YFP-labeled GPCRs (the  $\beta$ 2-adrenergic and the mu-opioid receptor) and CFP-labeled arrestins.

**Results:**

Co transfection of c src decreased GRK2 steady state levels in HEK293 cells slightly but nevertheless accelerated arrestin recruitment to the  $\beta$ 2-adrenergic receptor two-fold. This effect was dependent on the catalytic activity of c-src as it was completely abolished by PP2, an inhibitor of the c-src family (10  $\mu$ M for 1 hour), and required GRK2 residues Tyr86 and Tyr92. In contrast, co-transfection of c-src had no effect on GRK3- or GRK5-mediated arrestin recruitment to the  $\beta$ 2-adrenergic receptor. GRK6 transfection resulted in apparently constitutive  $\beta$ 2-adrenergic receptor phosphorylation under our conditions. Surprisingly, c src had no effect on arrestin recruitment to the mu-opioid receptor, showing that its effect was receptor-specific. Mutation of Tyr350 in the  $\beta$ 2-adrenergic receptor to Phe abolished the effect of c-src on GRK2 activity.

**Conclusions:**

Our data show that c-src can accelerate GRK2-mediated phosphorylation of the  $\beta$ 2-adrenergic receptor but not GRK-mediated phosphorylation of the mu-opioid receptor. This suggests a previously unappreciated cross-talk between GRKs

*Key Words: Desensitization; FRET; GPCR**Funding Agency: BBSRC*



**Pharmacology and Toxicology**

Category: Graduate MSc (Basic Science)

186

**11, 12-Epoxyeicosatrienoic Acid is a Vasodilator in the Rat Perfused Mesenteric Vascular Bed.**

\*Bihzad S, Cherian A, Yousif MHM

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

**Introduction:**

Arachidonic acid is metabolized by cytochrome P450 enzymes to 20- hydroxyeicosatetraenoic acid and epoxyeicosatrienoic acids (EETs). 20- hydroxyeicosatetraenoic acid is a vasoconstrictor whereas EETs are potent vasodilators that have been proposed to function as an endothelium-derived hyperpolarizing factor in some tissues. The objective of this study is to examine whether 11, 12-Epoxyeicosatrienoic acid (11, 12-EET) has a vasodilator effect in the mesenteric vasculature and to also investigate the role of nitric oxide (NO) and prostaglandins in mediating this response.

**Methods:**

Male Wistar rats weighing about 250g were used in this study. Animals were sacrificed and the vascular responsiveness of isolated perfused mesenteric beds to the vasoactive agonists (11, 12-EET, carbachol and sodium nitroprusside, SNP) were investigated. The mesenteric beds were perfused with Krebs' solution at 37degreeC, oxygenated with 95% oxygen and 5% carbon dioxide, delivered at a constant flow rate of 6 ml/min using a multichannel masterflex peristaltic pump. Changes in perfusion pressure were measured via a pressure transducer connected to a Lectromed. All animal studies were performed in accordance with our institutional committee for the care and use of animals in research and education.

**Results:**

11, 12-EET, carbachol and SNP produced dose-dependent vasodilator responses in the perfused mesenteric beds. Incubation with nitro-L-arginine methyl ester (10-4M), an inhibitor of NO synthase, or Indomethacin (10-6M), an inhibitor of prostaglandin synthesis, did not inhibit the vasodilator response to 11, 12-EET.

**Conclusions:**

These results demonstrate that 11, 12-EET is vasodilator in the rat mesenteric vasculature and the NO/prostaglandins vasodilator pathways are not directly involved in mediating its effect.

*Key Words: Vasodilation; Nitric oxide; Mesenteric bed*

*Funding Agency: College of Graduate Studies*



**Pharmacology and Toxicology**

Category: Basic Sciences

187

**Effect of Lead Exposure on the Activity and Expression of Serine/Threonine Protein Phosphatases in the Brain of Young Rats.**

\*Rahman A<sup>1</sup>, Jacob SS<sup>2</sup>, Attur S<sup>1</sup>, Khan I<sup>3</sup>, Khan KM<sup>2</sup>

<sup>1</sup>Department of Family Sciences, College for Women, Kuwait University; <sup>2</sup>Department of Anatomy, Faculty of Medicine, Kuwait University; <sup>3</sup>Department of Biochemistry, Faculty of Medicine, Kuwait University

**Introduction:**

Serine/threonine protein phosphatases regulate several key cellular events in the brain, including learning and memory. These enzymes, when over-activated, are known to function as a constraint on learning and memory. Since lead impairs learning and memory, we investigated whether lead exposure would affect these enzymes in the brain.

**Methods:**

Pups were culled to 10/litter at birth and exposed to 0.2% lead acetate via their dams' drinking water from postnatal day (PND) 1 to 21 and 30 days. Control group was given regular drinking water. Lead levels in blood and brain was measured by atomic absorption spectrophotometer. Dissected brains were homogenized and analyzed for protein expression of PP1, PP2A, PP2B and PP5 by Western blot analyses. Total phosphatase and PP2A activities were determined by colorimetric assay using pNPP as substrate.

**Results:**

Levels of lead in blood of control and lead-exposed 21-day old rats were 50 ng/ml and 96 ng/ml, respectively. At 30 days, lead levels were 16 ng/ml in control and 117 ng/ml in lead-exposed rats. Brain lead was 0.23 µg/g in control and 0.50 µg/g, in lead-exposed 21-day old rats, whereas, in 30-day old rats it was 0.21 µg/g and 0.58 µg/g, respectively in control and lead-exposed. In 21-day old rats, lead exposure significantly increased expression of PP1 and PP5, but significantly decreased PP2A expression. 30-day exposure of rats to lead significantly decreased expression of all the phosphatases studied. Total phosphatase activity was not significantly affected by lead exposure in either 21-day or 30-day old rats, whereas, PP2A activity was significantly increased in 30-day old rats, and marginally increased in 21-day old rats.

**Conclusions:**

These results suggest that lead exposure increase the expression and activity of some phosphatases in young rats. These phosphatases may be involved in lead-induced impairment of learning and memory.

*Key Words: Lead toxicity; Protein phosphatases; learning and memory*

*Funding Agency: Kuwait University Grant No. WF-01/07*



**Pharmacology and Toxicology**

Category: Graduate MSc (Basic Science)

188

**Angiotensin-(1-7) Treatment can Attenuate Diabetes-induced Cardiac Dysfunction Through Inhibition of ERK1/2 and p38 MAPK.**

\*Al-Otaibi HJ, Akhtar S, Varughese S, Benter IF.

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

**Introduction:**

Diabetes induced complications can lead to cardiovascular dysfunction including hypertension, atherosclerosis, and congestive heart failure and are a leading cause of increased morbidity and mortality in patients with diabetes. We have previously shown that treatment with angiotensin-(1-7) [Ang-(1-7)] or AG1478, an inhibitor of epidermal growth factor receptor (EGFR), can inhibit diabetes-induced vascular dysfunction. This study was designed to determine whether Ang-(1-7) and AG1478 have similar protection against diabetes-induced cardiac dysfunction.

**Methods:**

4 groups of male Wistar rats were used. Group 1: vehicle-treated control rats. Group 2: vehicle-treated diabetic rats. Group 3: diabetic rats treated with Ang-(1-7) for 4 weeks. Group 4: diabetic rats treated with AG1478 for 4 weeks. Diabetes was induced by a single ip injection of streptozotocin. Hearts were isolated, mounted on a Langendorff Perfusion Assembly and exposed to 30 min perfusion followed by 30 min ischemia and 30 min reperfusion. Western blotting analysis for phosphorylated EGFR, phosphorylated extracellular-signal related kinases 1 and 2 (p-ERK1/2) and phosphorylated p38 MAPK were also performed on cardiac left ventricular tissues.

**Results:**

Diabetes significantly elevated the levels of p-ERK1/2 as well as p-p38 MAPK and attenuated post-ischemic cardiac recovery measured as left ventricular contractility (maximum developed pressure) and hemodynamics (coronary flow). Treatment of with Ang-(1-7) prevented diabetes-induced elevation of p-ERK1/2 and p-p38 MAPK and improved cardiac recovery following ischemia/reperfusion (I/R). AG1478 attenuated cardiac recovery in both control and diabetes.

**Conclusions:**

Ang-(1-7) reduced diabetes-induced cardiac dysfunction through inhibition of p38 MAPK and ERK1/2 phosphorylation. EGFR activation is necessary for recovery after I/R in diabetes. Thus, therapeutic activation of Ang-(1-7) and EGFR signaling may represent a novel strategy for the prevention of cardiac dysfunction in diabetes.

*Key Words: Diabetes; Angiotensin; Signal transduction*

*Funding Agency: Grant YM 09/08, College of Graduate Studies, Kuwait University*



**Pharmacology and Toxicology**

Category: Basic Sciences

189

**Expression of Serine/threonine Phosphatases in Rat Hippocampus After Exposure to Lead: An Immunohistochemical Study.**

\*Khan KM<sup>1</sup>, Al-Shamary T<sup>1</sup>, Jacob SS<sup>1</sup>, Attur S<sup>1</sup>, Khan I<sup>2</sup>, Rahman A<sup>3</sup>

<sup>1</sup>Department of Anatomy; <sup>2</sup>Department of Biochemistry, Faculty of Medicine; <sup>3</sup>Department of Family Sciences, College for Women, Kuwait University, Kuwait

**Introduction:**

Lead is a persistent environmental toxin that affects developing brain and lead toxicity is linked with impairment of cognitive and behavioral development. Lead preferentially accumulates in hippocampus, an area associated with learning and memory. Serine/threonine phosphatases, key enzymes for several cellular events, are linked with learning and memory, however, effect of lead on expression and localization of these enzymes remain uncertain.

**Methods:**

Pups were culled to 10/litter at birth and exposed to 0.2% lead acetate via their dams' drinking water from postnatal day (PND) 1 to 21. Control group was given regular drinking water. Lead levels in blood and hippocampus were measured by atomic absorption spectrophotometer. Brain was dissected and processed for immunohistochemical localization of PP1, PP1  $\beta$ , PP1 $\gamma$ , PP2A, PP2B and PP5 in hippocampus.

**Results:**

Levels of lead in blood of control and lead-exposed 21-day old rats was 50 ng/ml and 96 ng/ml, respectively. In hippocampus of control rats lead was 0.30  $\mu\text{g}/\text{mg}$  and in lead-exposed rats it was 0.72  $\mu\text{g}/\text{mg}$ . Immunohistochemical localization results showed higher number of immunoreactive cells in the hippocampus of lead-exposed rats for all enzymes.

**Conclusions:**

Our results show that higher level of lead in blood and hippocampus leads to over-expression of phosphatases in the hippocampus. It is hypothesized that this biochemical change in the hippocampus, caused by lead accumulation in blood and hippocampus, is responsible for learning and memory deficits.

*Key Words: Neurotoxicity; Protein phosphatases; Hippocampus*

*Funding Agency: Kuwait University Grant # WF01/07; GM01/01; GM01/05*



**Pharmacology and Toxicology**

Category: Basic Sciences

190

**Inhibition of Phosphatidylinositol 3-kinase Produces Cardiovascular Protection in a Model of Diabetes and Hypertension.**

\*Yousif MHM, Akhtar S, Benter IF

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

**Introduction:**

Phosphatidylinositol 3-kinase (PI3K) is a family of lipid and protein kinases that are ubiquitously expressed in many cells, including the vasculature and heart. These enzymes phosphorylate phosphatidylinositol 4, 5-bisphosphate to form phosphatidylinositol 3, 4, 5-trisphosphate. Class IA PI3Ks (p110 $\alpha$ ,  $\beta$ ) are critical regulators of physiological heart growth and cell survival, and are generally considered to be beneficial for heart function. In contrast, activation of class IB PI3K (p110 $\gamma$ ) is detrimental for heart function, reducing cardiac contractility. The objective of this study was to examine the effect of LY294002, an inhibitor of PI3K, on vascular and cardiac function in diabetic spontaneously hypertensive rats (D-SHR).

**Methods:**

We examined the ability of chronic administration of LY294002, an inhibitor of PI3K, on (1) diabetes-induced abnormal vascular reactivity in isolated renal artery, (2) ischemia/reperfusion (I/R)-induced cardiac dysfunction in D-SHR and (3) expression of phosphorylated Akt in diabetic heart.

**Results:**

Treatment with phosphatidylinositol 3-kinase inhibitor attenuated diabetes-induced abnormal vascular reactivity and I/R-induced cardiac dysfunction. In addition, Western blotting analysis showed that treatment with LY294002 prevented diabetes-induced elevation in expression of cardiac phosphorylated Akt (ser 473).

**Conclusions:**

This is the first study to suggest that selective blockade of PI3K could be an important strategy to reduce vascular and cardiac dysfunction in patients with simultaneous diabetes and hypertension.

*Key Words: Heart; Diabetes; Ischemia*

*Funding Agency: KU Grant No. MR01/09*



**Pharmacology and Toxicology**

Category: Graduate MSc (Basic Science)

191

**The potential of TH-9, a Theophylline Derivative, as a Memory Enhancer in Dementia.**

\*Nashawi H<sup>1</sup>, Oriowo MA<sup>1</sup>, Kombian SB<sup>2</sup>

<sup>1</sup>Department of Pharmacology and Toxicology, Faculty of Medicine, Kuwait University; <sup>2</sup>Department of Applied Therapeutics, Faculty of Pharmacy, Kuwait University, Kuwait

**Introduction:**

Dementia is a general term referring to cognitive deficit, including memory impairment. Alzheimer's disease (AD), the most common form of dementia is one of the most disabling and burdensome health conditions worldwide. Memory loss, the main and initial complaint in AD, is associated with defects in synaptic transmission and plasticity in the hippocampus and other brain areas. Since AD is largely an age-dependent disease and its prevalence continues to rise due to increasing human life expectancy, there is an urgent need for novel drugs that can cure AD. This study investigates the effect of TH-9 on synaptic transmission, long-term potentiation (LTP) and long-term depression in young and old rats.

**Methods:**

350- $\mu$ m coronal hippocampal slices were generated from brains of male Sprague-Dawley rats aged 1 and 20 months. Evoked, field excitatory postsynaptic potentials (fEPSPs) were recorded from the dendritic layer of area CA1 of the hippocampus by stimulating appropriate afferents. LTP was induced using high-frequency stimulation (HFS; 100 Hz for 1 second) while LTD was elicited using low-frequency stimulation (LFS; 1 Hz for 5 minutes).

**Results:**

TH-9 (10  $\mu$ M) increased the slopes of fEPSPs by 34.9 $\pm$ 7.3% ( $p < 0.05$ ) and 38.9 $\pm$ 18.7% ( $p < 0.05$ ) in young and old rats respectively. LTP induction resulted in an increase of 59.9 $\pm$ 11.0% ( $p < 0.05$ ) and 47.4 $\pm$ 16.5% ( $p < 0.05$ ) in fEPSP slopes in slices from young and old rats, respectively. Induction of LTP in the presence of TH-9 resulted in a greater total increase in fEPSP slopes in old rats compared to young rats (58.3 $\pm$ 10.1% and 89.1 $\pm$ 27.8%, respectively). LFS depressed fEPSP slopes by 24.7 $\pm$ 3.4% ( $p < 0.05$ ) and 26.7 $\pm$ 3.9% ( $p < 0.05$ ) in young and old rats respectively. However, pre-treatment with TH-9 abolished LTD responses in old but not young rats.

**Conclusions:**

TH-9 enhances LTP in hippocampal slices of both young and old rats while preventing LTD maintenance only in older rats. This action of TH-9 is consistent with a potential to be used for dementia.

*Key Words: Dementia; Synaptic plasticity; Hippocampus*

*Funding Agency: KU Grant # YM08/08*



**Pharmacology and Toxicology**

Category: Basic Sciences

192

**L-Ascorbic Acid Significantly Protects Two Cycles of Cisplatin Induced DNA Double-Strand Breaks Exhibiting 3' Overhangs and 5' Blunt Ends in a p53-Independent Manner but not the Structural Changes in the Liver.**

\*Narayana K

Department of Anatomy, Faculty of Medicine, HSC, Kuwait University, Kuwait

**Introduction:**

Cisplatin, a commonly used anticancer drug was studied to investigate its effects on structure, DNA damage and p53 along with the possible protective effects of L-ascorbic acid in the liver.

**Methods:**

Adult male BALB/c mice were treated with 0, 10 mg/kg L-ascorbic acid, two cycles of cisplatin 1 mg/kg and 2.5 mg/kg with 17 days recovery between the cycles, akin to human treatment protocol, and sacrificed at 72h. Structural damage was analyzed in Masson's trichrome and Hortege's silver stained liver tissues. Formation of DNA double-strand breaks was labeled by in situ oligo ligation (ISOL) with oligonucleotide probes designed to label 3' overhangs and 5' blunt ends. The expression of p53 was analyzed by immunohistochemistry (IHC). The ISOL and IHC results were analyzed by the image analyzer. Data were analyzed by one way ANOVA and Bonferroni's post hoc test.

**Results:**

Structural changes such as vacuolization of hepatocytes, nuclear shrinkage and pyknosis, infiltration of leukocytes and pericentral fibrosis were observed without any protection from L-ascorbic acid. The reticular framework was also affected in all experimental groups, wherein the reticular fibers and the incidence of Kupffer cells decreased. Cisplatin induced the duplex 3' overhangs and 5' blunt ends indicating DNA double-strand breaks ( $P<0.05$ ), however, these genotoxic effects of cisplatin were independent of activities of p53. L-ascorbic acid showed significant protective effect on cisplatin-induced DNA damage ( $P<0.05$ ).

**Conclusions:**

Cisplatin has induced structural changes and affected the reticular framework without any protection from L-ascorbic acid. For the first time this study revealed that cisplatin induced the DNA damage with duplex 3' overhangs and 5' blunt ends, which were significantly alleviated by L-ascorbic acid in a p53 independent manner.

*Key Words: DNA damage; Genotoxicity; Anticancer drugs*

*Funding Agency: None*

**Pharmacology and Toxicology**

Category: Basic Sciences

193

**Central Nervous System Effects of Linezolid and Novel Oxazolidinone Analogs in vitro.**\*Kombian SB<sup>1</sup>, Phillips OA<sup>2</sup><sup>1</sup>Department of Applied Therapeutics; <sup>2</sup>Department of Pharmacy Chemistry, Faculty of Pharmacy, Kuwait University**Introduction:**

Linezolid is an oxazolidinone approved for use against MRSA infections. Prolonged use causes neuropsychiatric disturbance as part of its side effects. The underlying mechanism(s) of these neurological side effects are not known. In this study, we examined the effects of linezolid and other novel oxazolidinone compounds with demonstrated activity against MRSA on synaptic and cellular responses in CNS neurons.

**Methods:**

Using in vitro slices containing the NAc or hippocampus, we recorded whole-cell excitatory postsynaptic currents (EPSCs) and tested the effects of linezolid and selected active novel oxazolidinone compounds on these currents.

**Results:**

Bath application of PH084 and PH027 produced concentration-dependent suppression of evoked non-NMDA receptor-mediated excitatory postsynaptic currents (EPSCs). PH084 was the most potent, with 10  $\mu$ M producing a depression of  $-36.9 \pm 4.0\%$  (n=9). This effect did not recover following 10-15 minute washout. PH027 (10  $\mu$ M) also irreversibly depressed the EPSC amplitude by  $-19.4 \pm 4.0\%$  (n=5). PH036, PH108 and linezolid did not produce a significant suppression of the evoked EPSC. Similar depression was also observed on non-NMDA responses recorded in the hippocampus. PH084 (10  $\mu$ M) suppressed isolated NMDA receptor mediated synaptic current by  $-43.7 \pm 6.8\%$  (n=5) which did not recover during 10-15 minutes washout while PH027 (10  $\mu$ M) also irreversibly suppressed the current by  $-15.1 \pm 7.7\%$  (n=3). PH084 (10  $\mu$ M) reversibly suppressed evoked IPSC by  $-25.4 \pm 7.7\%$  (n=6) while 10  $\mu$ M PH027 also reversibly suppressed it by  $-22.4 \pm 3.6\%$  (n=4). All these synaptic effects of PH084 and PH027 occurred without a significant change in holding current at -80 mV and -50 mV and were blocked by antagonists to GABA-B,  $\alpha$ -adrenergic and dopamine D1 receptors.

**Conclusions:**

Our data indicate that, while linezolid, PH036 and PH108 have no significant effects on CNS neuronal processes, PH084 and PH027 suppress non-NMDA, NMDA and GABAA receptor-mediated synaptic currents indirectly through neuromodulators.

*Key Words: Antimicrobial agents; Neurotoxicity; Structure activity relationship*

*Funding Agency: KURA Grant # PT02/06*



**Pharmacy**

Category: Clinical

194

**Amikacin Population Pharmacokinetics in Critically-ill Patients in Kuwaiti Hospitals.**

\*Matar K<sup>1</sup>, Al-lanqawi Y<sup>2</sup>, Abdul-Malek K<sup>3</sup>, Jelliffe R<sup>4</sup>

<sup>1</sup>Department of Applied Therapeutics, Kuwait University, Faculty of Pharmacy; <sup>2</sup>Department of Pharmacy, Al-Amiri Hospital, Ministry of Health; <sup>3</sup>Intensive Care Unit, Al-Amiri Hospital, Ministry of Health; <sup>4</sup>Laboratory of Applied Pharmacokinetics, University of Southern California, USA.

**Introduction:**

Amikacin (AMK) is an aminoglycoside antibiotic that is most effective against G-negative infections. Intensive care unit's (ICU) patients demonstrate a large pharmacokinetic (PK) variability. Individualized AMK dosage regimes should be designed to obtain maximal therapeutic efficacy. To the best of our knowledge, this is the first study in Arab population. The aim of the present study was to develop a population PK model using sparse data collected routinely from Kuwaiti patients in the ICU to provide an optimal clinical care.

**Methods:**

An initial AMK dosage regimen (500 mg q 12 h) was administered intravenously over 5 min to 42 Kuwaiti patients in the ICU of Al-Amiri Hospital in Kuwait. Blood samples were collected from the patients just before AMK administration (trough) and 1 h post-dose (peak). The samples collected (300 concentrations) were analyzed by Kobas Integra 400. The elimination rate constant (kel) was described by the following equation:  $kel = k_{int} + k_s$ . Clcr. AMK data were analyzed by NPAG software of MM-USCPACK PC program. Demographic data and biological covariates were tested for evaluating their impact on AMK PK parameters.

**Results:**

The PK of AMK was described by an open two-compartment model. The mean ( $\pm$  SD) population PK parameters of AMK and their inter-individual variability (CV %) for 42 ICU patients were as follows: Kslope ( $0.0026 \pm 0.0023$  h<sup>-1</sup>, 87.6%) and initial volume of distribution ( $0.24 \pm 0.12$  L/kg, 50.7%).

**Conclusions:**

AMK population PK model in ICU patients was described. The mean values obtained for AMK PK parameters are consistent with reported results in ICU patients in other nations. The present model will be validated in phase-II of this project by using 20 ICU patients to validate and determine the predictive performance of this model. The population PK parameter results of our model could be utilized to adapt an optimal dosage regimen of AMK for Kuwaiti patients in ICU.

*Key Words: Amikacin; Population Pharmacokinetics; ICU*

*Funding Agency: KU Grant (PT 02/07).*



**Pharmacy**

*Category: Undergraduate*

**195**

**Role of Pharmacists as Health Educators in Early Detection and Prevention of Breast Cancer in Kuwait.**

Aboqrais NA<sup>1</sup>, Abahussain EA<sup>2</sup>, Qaddoumi MG\*<sup>1</sup>

<sup>1</sup>Department of Applied Therapeutics; <sup>2</sup>Department of Pharmacy Practice, Faculty of Pharmacy, Kuwait University

**Introduction:**

Breast cancer is one of the commonest types of cancer among women worldwide. In Kuwait, it accounts for 36.3% of all types of cancer. This study was conducted to investigate the role of pharmacists and their willingness to educate patients about breast cancer risk and screening methods.

**Methods:**

An anonymous, non-experimental, cross-sectional questionnaire was designed and pharmacists' responses were collected using a self-administered questionnaire in 101 community and hospital pharmacists representing Capital and Hawalli governorates of Kuwait. A knowledge score among pharmacists was deduced (weak, intermediate, and high) based on ability to answer correct questions. Multiple regression analysis and chi square tests were used for data analysis.

**Results:**

34% of the pharmacists displayed low knowledge level about breast cancer prevention, whereas 56% and 9% showed intermediate and high levels of knowledge, respectively. This level of knowledge was not significantly associated with gender, age, educational level, and work experience. Most of the pharmacists (81%) were comfortable with discussing breast cancer education to patients but cited time and level of training as a hindrance. Majority of the pharmacists (83%) were willing to educate female patients about breast cancer.

**Conclusions:**

This study highlights the importance for further investigations to evaluate the reasons behind the unsatisfactory knowledge level of breast cancer prevention among hospital and community pharmacists in Kuwait. Educational programs are needed to increase the level of knowledge such that pharmacists can assume an active role as health educators about breast cancer prevention in the future.

*Key Words: Breast Cancer; Awareness; Health Education*

*Funding Agency: None*



**Pharmacy**

Category: Basic Sciences

196

**Synthesis and Anti-inflammatory Effects of Enhydrazones.**

\*Edafiogho IO<sup>1</sup>, Zamil HA<sup>2</sup>, Soja<sup>2</sup>, Ezeamuzie CI<sup>2</sup>

<sup>1</sup>Department of Pharmacy Practice, Kuwait University, Faculty of Pharmacy; <sup>2</sup>Department of Pharmacology and Toxicology, Kuwait University, Faculty of Medicine

**Introduction:**

Enhydrazones are synthetic compounds containing a hydrazino group linked to a keto group through a carbon-carbon double bond. However, very little is known about their anti-inflammatory effects. The objective of this research was to synthesize a series of novel enhydrazones, and evaluate them for anti-inflammatory activity in vitro and to determine their mechanism of action.

**Methods:**

The synthesis of cyclic enhydrazones was achieved by reacting  $\beta$ -hydroxyketo compounds with appropriate hydrazino derivatives in our laboratory. Peritoneal macrophages were induced in male BALB/c mice by intraperitoneal injection of 2% thioglycolate. Cells were recovered by peritoneal lavage. Cultured adherent macrophages were pretreated with the enhydrazones or vehicle and then stimulated with LPS for 8 h. TNF- $\alpha$  release into the supernatant was quantified by ELISA. The inhibition of TNF- $\alpha$  release was used as the index of anti-inflammatory activity. Possible inhibition of TNF- $\alpha$  mRNA expression by enhydrazones was studied by RT-PCR.

**Results:**

Three enhydrazones (BRG12, BRG13, and E166) inhibited TNF- $\alpha$  release in vitro in a concentration-dependent manner, with IC<sub>50</sub> values of 4.2, 4.6, and 0.9  $\mu$ M, respectively, and almost complete inhibition by all the 3 compounds at 30  $\mu$ M. These 3 active compounds contained the NH-NH functional group in their structures. 2, 4-Dinitro substitutions on the phenyl ring attached to the hydrazino group as in EMP11 and EMP12 resulted in complete loss of activity. The anti-inflammatory activity of enhydrazones could not be explained by induction of cell death and was characterized to be reversible.

**Conclusions:**

These results show that some enhydrazones, especially those with NH-NH functional group, possess strong anti-inflammatory effect exerted on cytokine production in vitro, but this effect is not a result of inhibition of TNF- $\alpha$  expression at the mRNA level.

*Key Words:* Anti-inflammatory; Enhydrazones; Synthesis

*Funding Agency:* KU Grant No. MR03/09.



**Pharmacy**

Category: Basic Sciences

197

**Enhancement of In-Vitro Dissolution and Oral Bioavailability of Gliclazide by Lyophilized Solid Dispersion Technique.**

\*Bandarkar FS, Khattab IS

Department of Pharmaceutics, Faculty of Pharmacy, Kuwait University, Kuwait

**Introduction:**

Gliclazide (GLC), an oral hypoglycemic agent, is characterized by low solubility in gastric fluids, low dissolution rate and inter-individual variability in bioavailability. The objective of this study was therefore to design optimized solid dispersions (SD) of GLC with a hydrophilic carrier viz., poloxamer 407 (PXM) by lyophilisation method to enhance the aqueous solubility and therapeutic efficacy of the drug.

**Methods:**

Phase solubility study with increasing PXM concentrations (0.5 to 10%w/v) was done to study the influence of polymer concentration on solubility of GLC. SD's of GLC and PXM in 1:1, 1:3 and 1:5w/w ratios were prepared by physical mixing and lyophilisation (freeze drying) method, followed by in vitro dissolution analysis. An in vivo study was conducted on twelve New Zealand rabbits to compare the pharmacokinetic parameters of the optimized SD and plain GLC

**Results:**

The drug solubility increased linearly with increasing PXM concentrations indicative of the AL type of phase solubility diagram. The dissolution rate of GLC from the lyophilized dispersions was greatly enhanced as compared to those from physical mixtures and pure drug. Results of the in vivo study indicated that the pharmacokinetic parameters following oral administration of the optimized SD and plain GLC were significantly different ( $P < 0.05$ ). The peak serum concentration ( $C_{max}$ ) for the lyophilized SD and GLC were found to be  $3.01 \pm 0.72 \mu\text{g/mL}$  and  $2.27 \pm 0.49 \mu\text{g/mL}$  respectively, whereas the time required to reach the peak serum concentration ( $T_{max}$ ) for the optimized SD was significantly shorter ( $2.16 \pm 0.41\text{h}$ ) compared to that for GLC ( $4.33 \pm 0.52\text{h}$ ). The relative bioavailability of the SD under in-vivo test was found to be 158.52%.

**Conclusions:**

Thus a suitable hydrophilic carrier like PXM can be used to formulate SDs by lyophilisation technique to rapidly accelerate the solubility, in vitro dissolution and bioavailability of a lipophilic drug like GLC.

*Key Words: Gliclazide; Poloxamer 407; Oral bioavailability*

*Funding Agency: None*



**Pharmacy**

Category: Basic Sciences

198

**Preliminary Pharmacokinetic and Metabolic Studies of Novel Triazolyl-oxazolidinones (TOZs) in NZW Rabbits.**

Phillips OA<sup>1</sup>, Abdel-Hamid ME<sup>1</sup>, Kehinde EO<sup>2</sup>, \*Sharaf LH<sup>1</sup>, Babua A<sup>2</sup>

<sup>1</sup>Department of Pharmaceutical Chemistry, Faculty of Pharmacy; <sup>2</sup>Department of Surgery, Faculty of Medicine, Kuwait University, Kuwait

**Introduction:**

Triazolyl-oxazolidinones (TOZs) are novel derivatives with potent in vitro antibacterial activity against multi-drug resistant Gram-positive bacteria. In vivo assessments of the pharmacokinetics and metabolism of these compounds were not yet established. The objectives of this study were to evaluate the pharmacokinetic (PK) behavior and identify the major metabolites of these compounds in NZW rabbits using positive electrospray ionization (ESI) tandem mass spectrometry.

**Methods:**

Three TOZs namely, PH027, PH084 and PH121, were examined in comparison to linezolid (LNZ). An intravenous bolus dose (10 mg/kg) of each compound was given to a NZW rabbit, and serum samples were collected at intervals for 6 hours. A developed and validated LC-MS/MS assay for analysis of TOZs using PH009 as an internal standard was applied. The PK parameters namely, area under the curve (AUC), volume of distribution (Vd) and clearance (Cl) were determined using a software for PK-data analysis. Solid phase extraction (SPE) of urine samples and MS analysis of the reconstituted extract were used for metabolic study.

**Results:**

The LC-MS/MS method showed a good linearity and reproducibility for the analysis of TOZs at a concentration range of 5-20 µg/ml. The preliminary PK data for elimination half-life (t<sub>1/2</sub>), AUC<sub>0-t</sub>, Vd and Cl, were in the range of 0.47-1.13 hr, 8.3-21.6 µg. hr/ml, 313.9-2164.6 ml/kg, 462.3-1205.8 ml/hr/kg, respectively. The MS analysis of the urine sample of PH027 showed two major [M+1]<sup>+</sup> masses at m/z 348 and 365.

**Conclusions:**

The PK study showed that these TOZs have comparable AUC, Vd and Cl values to LNZ. The MS analysis of the urine sample of PH027 indicated the presence of a signal at m/z 348 corresponding to free PH027, and a newly identified signal at m/z 365 corresponding to the oxidized metabolite. The favorable PK data might reflect the potential of these compounds as promising antibacterial agents.

*Key Words: Triazolyl-oxazolidinones; Pharmacokinetic study; Metabolic study*

*Funding Agency: KU Grants PC01/05 (OAP), GSO1/01, GS03/01*

**Pharmacy***Category: Basic Sciences***199****The Influence of Varied Substitutions on the Antibacterial Activity of N-piperazinyl 5-(4-methyl-1, 2, 3-triazole) Oxazolidinones.**Phillips OA<sup>1</sup>, Udo EE<sup>2</sup>, Abdel-Hamid ME<sup>1</sup>, \*Varghese R<sup>1</sup>, Abraham RE<sup>1</sup>, El-Said E<sup>1</sup>.<sup>1</sup>Department of Pharmaceutical Chemistry, Kuwait University, Faculty of Pharmacy; <sup>2</sup>Department of Microbiology, Kuwait University, Faculty of Medicine.**Introduction:**

Introduction of 4-methyl-1, 2, 3-triazolyl moiety at position 5 of oxazolidinones containing acylpiperazinyl groups yielded derivatives with moderate to strong antibacterial activity. In this study we investigated the influence of substituted-acyl, aroyl, arylsulfonyl, dithiolane and guanidino groups on the antibacterial activity of piperazinyl containing 5-(4-methyl-1, 2, 3-triazolyl)methyl oxazolidinones.

**Methods:**

Novel oxazolidinones were synthesized and evaluated against Gram-positive and Gram-negative clinical isolates in comparison to linezolid. Microorganisms tested included methicillin-resistant and -susceptible *Staphylococcus aureus*, methicillin-resistant and -susceptible coagulase-negative staphylococci; vancomycin-resistant and -susceptible enterococci, penicillin-resistant *Streptococcus pneumoniae*, *Moraxella catarrhalis* and standard reference strains. Minimum inhibitory concentrations (MIC's, ug/ml) were determined by agar dilution method on Brain Heart Infusion agar with the medium containing dilutions of antibacterial agents ranging from 0.25-64ug/ml, with and without 50% human plasma.

**Results:**

Against Gram-positive bacteria, the aroyl and arylsulfonyl (MIC range: 0.5-4ug/ml) derivatives were more active than the substituted-acyl (1-4 ug/ml), dithiolane (4-8ug/ml) and guanidino (16-32ug/ml) derivatives. Five-membered heteroaryl groups enhanced activity against Gram-positive bacteria as noted with PH139 (R=5-nitrofuranyl-2-carbonyl), PH153 (R=thiophene-2-sulfonyl) and PH154 (thiophene-2-carbonyl) and PH156 (R=furan-2-carbonyl) with MIC's in the range of 0.5-1ug/ml. Guanidino derivative PH173 was devoid of antibacterial activity. PH139 and PH175 (R=3, 5-dinitrophenylcarbonyl) showed activity against *M. catarrhalis* with MIC's of 2 and 1 ug/ml, respectively, compared with linezolid (MIC:8 ug/ml).

**Conclusions:**

Most compounds exhibited moderate to strong antibacterial activity against all Gram-positive cocci tested and some against *M. catarrhalis*.

*Key Words: Antibacterial activity; Linezolid; Triazolyl-oxazolidinones*

*Funding Agency: KU Grants PC01/05 (OAP), and GS01/01 and GS03/01 (Science Analytical Facilities)*



**Pharmacy**

Category: Basic Sciences

200

**Piroxicam-Loaded Microemulsion: Preparation, Characterization and Stability Studies.**

Abd-Allah FI<sup>1</sup>, Dawaba HM<sup>1</sup>, Samy A<sup>1</sup>, \*Zaghloul A<sup>2</sup>

<sup>1</sup>Department of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, Al-Azhar University, Cairo, Egypt; <sup>2</sup>Department of Pharmaceutics, Faculty of Pharmacy, Kuwait University, Kuwait.

**Introduction:**

Objectives: To improve the solubility and dissolution of a poorly water soluble drug; piroxicam through preparation of thermodynamically stable microemulsion (ME) formulations. The prepared formulations were characterized and subjected to accelerated and shelf-life stability studies.

**Methods:**

Included investigating the solubility of piroxicam in different oils, surfactants (S) and cosurfactants (CoS). The ingredients showing high drug solubility were used to prepare different ME formulations. Triangular phase diagrams were plotted to outline the areas of ME formation upon dilution with water. Formulations showing good emulsifications were evaluated for their particle size and shape, drug solubilization, viscosity, electric conductivity and in-vitro drug release. The thermodynamic stability of selected formulations was evaluated through heating-cooling cycles, centrifugation and freeze-thaw stress cycle methods. The passed formulations were further assessed for shelf-life stability for six months.

**Results:**

Oleic acid (solvent), Tween 80 (S), and propylene glycol (CoS) showed the highest solubility of piroxicam and used to prepare pre-ME. The triangular phase diagrams showed 10% oil, 30-70% S, 20-60% CoS and 0.5% drug loading led to stable ME formulations on dilution with 50% water. The particle size ranged from 100 to 500nm of nearly spherical shape, the viscosity ranged from 10000 to 45000 cp and the highest drug solubility (5.87 mg/ml) was obtained when the ratio of CoS:S was 0.29:1. The highest percent drug released (74.2%) was observed in ME composed of 10% oil, 60% S and 30% CoS. All the prepared formulations showed stability towards accelerated and shelf-life stability testing.

**Conclusions:**

The incorporation of piroxicam in ME led to improvement in its solubility and in-vitro availability. The prepared formulations were stable and may have high potential for using in topical formulations.

*Key Words: Piroxicam; Microemulsion; Characterization and Stability*

*Funding Agency: None*



**Pharmacy**

Category: Basic Sciences

201

**Bioequivalence Study of Calcium Dobesilate Capsules in Healthy Subjects.**

\*Etman MA<sup>1</sup>, Mallah A<sup>2</sup>, Nada A<sup>3</sup>

<sup>1</sup>Department of Pharmaceutics, Alexandria University, Faculty of Pharmacy; <sup>2</sup>Department of Pharmacology, Alexandria University, Faculty of Pharmacy; <sup>3</sup>Department of Pharmaceutics, Kuwait University, Faculty of Pharmacy.

**Introduction:**

Calcium dobesilate is used to improve symptoms of chronic venous insufficiency (heaviness, swelling, etc) as well as symptoms of diabetic retinopathy (area of retinal hemorrhage, blood viscosity, visual field). New generic product should therefore be bioequivalent to innovator and other similar product in the market to avoid possible therapeutic failure or toxicity.

**Methods:**

Bioavailability/bioequivalence of Bekcium Capsules (Alexandria Co., Egypt) relative to a reference product (Doxium Capsules, Memphis Company under License of Om Laboratories, Meyrin, Switzerland) was investigated. A single oral dose (500 mg.) of each of Bekcium and Doxium Capsules was administered to 24 healthy male volunteers in a two-way crossover design. Analysis of plasma samples was performed using a validated reversed phase HPLC method. The criteria used to assess bioequivalence were  $AUC_{0-24}$ ,  $AU_{0-\infty}$ ,  $C_{max}$ ,  $T_{max}$ .

**Results:**

The observed mean  $C_{max}$  of calcium dobesilate was found to be 11.79  $\mu\text{g/ml}$  and 12.28  $\mu\text{g/ml}$  for Bekcium and Doxium Capsules, respectively. The mean calculated  $T_{max}$ , of the drug was 4.54 h and 5.6 h for the test and the reference products respectively. Based on ( $AUC_{0-24}$ ), the percentage relative bioavailability of Bekcium capsules was found to be 99.55 % relative to the reference standard Doxium capsules.

**Conclusions:**

Analysis of variance indicated statistically insignificant differences between the test and reference products. The results demonstrate that Bekcium and Doxium capsules are bioequivalent, i. e. they deliver equivalent amount of calcium dobesilate at equivalent rates to the systemic circulation.

*Key Words: Calcium dobesilate; Capsules; Bioequivalence*

*Funding Agency: None*



**Pharmacy**

Category: Basic Sciences

202

**Salbutamol in situ Gelling Nasal Inserts.**

Etman MA<sup>1</sup>, Farid RM<sup>1</sup>, Ebian AR<sup>1</sup>, \*Nada AH<sup>2</sup>

<sup>1</sup>Department of Pharmaceutics, Faculty of Pharmacy, Alexandria University, Alexandria, Egypt;

<sup>2</sup>Department of Pharmaceutics, Faculty of Pharmacy, Kuwait University, Kuwait

**Introduction:**

Bioadhesive nasal inserts, based on in-situ gel release-controlling polymers, have a high potential as nasal drug delivery, bypassing the first pass metabolism.

**Methods:**

In-situ gelling bioadhesive inserts for systemic drug delivery of salbutamol sulfate (SS, 1.4%) were prepared by film casting method of aqueous solutions of the drug and different bioadhesive polymers (2%) namely; hydroxypropylmethylcellulose (HPMC), carboxymethyl cellulose sodium (CMC Na), sodium alginate and chitosan. The inserts were investigated for their physicochemical properties including content uniformity, thickness, surface pH and weight uniformity, water and water vapor uptake, in-vitro drug release. In-vitro bioadhesion was tested by modified balance method, displacement method, and differential scanning calorimeter.

**Results:**

Surface pH of inserts was between 5-7 and hence should not cause any irritation. Cumulative drug released from the inserts exhibited extended-release for more than 10 hours with the order of chitosan > sodium alginate > CMC Na > HPMC. The drug was released from CMC Na and sodium alginate inserts according to zero-order kinetics while HPMC and chitosan inserts followed non-Fickian diffusion mechanism. The inserts exhibited high water and vapor uptake with the smallest values for chitosan. The bioadhesion force was in the rank of sodium alginate = CMC Na > HPMC > chitosan.

**Conclusions:**

The bioadhesive in-situ gelling inserts have shown satisfactory bioadhesive characteristics, water uptake and extended drug release. The inserts could be used for nasal delivery of SS over about 12 hours; bypassing the hepatic first pass metabolism.

*Key Words: Salbutamol sulphate; Nasal Inserts; Sustained Release*

*Funding Agency: None*



**Pharmacy**

Category: Basic Sciences

203

**Isolation of Bioactive Compounds from *Centaurea alexandrina* Alcoholic Extract.**

\*Sary HG<sup>1</sup>, Ayoub NA<sup>2</sup>, Singab AB<sup>2</sup>, Orabi KY<sup>1</sup>

<sup>1</sup>Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Kuwait University; <sup>2</sup>Department of Pharmacognosy, Faculty of Pharmacy, Ain-Shams University, Egypt

**Introduction:**

In a previous study, the alcoholic extract of *Centaurea alexandrina* has shown potential and selective cytotoxic activity against breast, cervix, and colon carcinoma cell lines. However, the most potent cytotoxic effect was against liver and larynx carcinoma cell lines. The aim of this study is to isolate the compound(s) that may be responsible for the potent biological activity of *Centaurea Alexandrina* extract.

**Methods:**

The shade-dried aerial parts of *Centaurea alexandrina* were coarsely powdered and extracted with ethanol (96%). The alcoholic extract was subjected to chromatographic separation on a flash silica gel column gradually eluted with an increasing ratio of methanol in chloroform. Four compounds were isolated and analyzed using different spectroscopic methods. Moreover the cytotoxic activity of one of these compounds was evaluated against liver and larynx carcinoma cell lines according to Skehan et al., 1990 method. IC<sub>50</sub> (µgram/150 µliter) of the compound was determined using doxorubicin as a standard cytotoxic agent.

**Results:**

Four compounds, a sesquiterpene lactone, a flavonoid, a sterol glycoside and a phenolic acid, were isolated and characterized from the alcoholic extract of *Centaurea alexandrina*. The sesquiterpene lactone exhibited potential cytotoxic activity against larynx carcinoma cell line with IC<sub>50</sub> of 0.743 µgram/150 µliter.

**Conclusions:**

Chemical investigation of *centaurea alexandrina* alcoholic extract led to the isolation and identification of various compounds including sesquiterpene lactone, flavonoid, sterol glycoside and phenolic acid. However sesquiterpene lactone may have been responsible for the potential and selective cytotoxic activity of *Centaurea alexandrina* alcoholic extract against larynx carcinoma cell line.

*Key Words: Centaurea alexandrina; Cytotoxicity; Sesquiterpene lactone*

*Funding Agency: None*



**Pharmacy**

Category: Basic Sciences

204

**Unwanted Medications: Practices and Attitudes of Pharmacists Towards Disposal in Kuwait.**

\*Abahussain EA, Waheedi M, Koshy S

Department of Pharmacy Practice, Faculty of Pharmacy, Kuwait University

**Introduction:**

The improper disposal of unwanted medications contributes to accidental poisoning and environmental pollution. Several countries have implemented programs that involve pharmacies as sites for collection of unwanted medications. Information regarding pharmacists' involvement with unwanted medications in Kuwait is not available. This research explores pharmacists' current practices, awareness and attitudes toward the problem of disposal of unwanted medications. This study will allow us to determine the extent of preparedness of pharmacists to be part of future take back programs.

**Methods:**

A random sample of 102 pharmacists from the six main governmental hospitals in Kuwait were selected to fill a self-administered survey questionnaire. Data was analyzed using descriptive statistics.

**Results:**

Ninety seven percent of the pharmacists disposed their personal unwanted medications that accumulated at their homes, while 73% of the pharmacists disposed the returned medications by patients at their place of work. The main disposal method by pharmacists was placing medications in the trash (at home:80%, at work:71%). A majority of the respondents (82%) believed that inappropriate disposal of unwanted medications, causes damage to the environment and about 97% agreed that it is their responsibility to protect the environment. With regard to the location for future take back programs for unwanted medications, 87% of the respondents indicated that such programs could be started in the pharmacies within the governmental hospitals or health centers.

**Conclusions:**

Pharmacists dispose of unwanted medications by the common route as the household wastes. This highlights the need for a public program to take back and appropriately disposed unwanted medications. This study reveals that pharmacists are aware of the problem, have a sense of responsibility and agree to have their pharmacies as collection points for unwanted medications. Therefore pharmacists should be placed at the forefront for future programs for proper disposal of unwanted medications.

*Key Words: Pharmacist; Unwanted Medication; Kuwait*

*Funding Agency: None*



**Pharmacy**

Category: Clinical

205

**Population Pharmacokinetics of Digoxin: Prediction of Blood Concentration in Patients with Congestive Heart Failure at Al-Amiri hospital - Kuwait.**

\*<sup>1</sup>Shehab A, <sup>1</sup>Al-lanqawi Y, <sup>2</sup>Abudlmalek K, <sup>3</sup>Awade A, <sup>3</sup>Thusu A

<sup>1</sup>Pharmacy Department, Drug and Poison Information & Research Unit; <sup>2</sup>Intensive Care; <sup>3</sup>Medicine AL-Amiri Hospital, Ministry of Health, Kuwait.

**Introduction:**

Digoxin is a cardiac glycoside widely used for the treatment of congestive heart failure. It has a very narrow therapeutic index (0.5–2.0 ng/ml) and displays large inter- and intra-patient pharmacokinetics variability. Several population methods (Paulson, Williams, Bauer, Hori and hyperbolic) have been developed for determining the digoxin dose. The aim of this study was to: (a) compare different methods for predicting digoxin level; (b) examine the effect of creatinine clearance (Clcr) and spironolacton on the disposition of digoxin.

**Methods:**

169 inpatients were identified for whom a measured concentration (MC) was available. Clcr was calculated using Jellif, Cockcroft, Hull, Mawer, and Salazar equations. Based on Clcr, each method was used to predict digoxin Concentration (PC), which was compared with MC. Degree of agreement between PC and MC was assessed by the mean of difference between the PC and MC (mean prediction error, ME) and the mean of absolute deviation between the PC and MC (mean absolute prediction error, MAE). The MC/daily dose (D) ratio was determined, and the effect of Clcr and spironolacton on MC/D was examined.

**Results:**

The MC/D ratios of the patients with Clcr<50 ml/min were significantly higher than those of the patients with Clcr>50 ml/min. In contrast, there were no significant differences in the MC/D ratios between the spironolacton-treated patients and the non-treated patients. The ME (measures of bias) and the MAE (measures of precision) for the methods ranged from -0.923 to 0.002 and 0.187 to 1.486 ng/ml respectively. Using Jelliffe Clcr, the hyperbolic method gave the smallest values of ME and MAE which were 0.002 and 0.228 ng/ml respectively.

**Conclusions:**

Hyperbolic equation was the most reliable of those evaluated and could be applied initially in Kuwaiti hospital. However, a large number of patients PC were well above the MC, therefore, individualization of digoxin dose based on MC is of great need.

*Key Words: Congestive heart failure; Digoxin; Pharmacokinetics*

*Funding Agency: None*



**Pharmacy**

Category: Clinical

206

**Stereoselective Pharmacokinetic Interaction between Carvedilol and Fluoxetine in Humans.**

\*Hedaya MA<sup>1</sup>, El-Kasaby Z<sup>2</sup>, Mabrouk M<sup>3</sup>

<sup>1</sup>Department of Pharmaceutics, Kuwait University Faculty of Pharmacy; <sup>2</sup>Department of Clinical Pharmacy, Tanta University Faculty of Pharmacy; <sup>3</sup>Department of Analytical Chemistry, Tanta University Faculty of Pharmacy.

**Introduction:**

Carvedilol is a drug with  $\beta$ - and  $\alpha_1$ -receptor blocking activity. It has one chiral center and is mainly metabolized by CYP2D6 and CYP2C9. The purpose of the study was to investigate the stereoselectivity of the interaction between carvedilol and the CYP2D6 inhibitor, fluoxetine.

**Methods:**

Twelve male healthy volunteers received a single oral dose of carvedilol 50 mg alone and after pretreatment with 2 doses of 20 mg fluoxetine in a crossover experimental design. Plasma samples were obtained after carvedilol administration and were analyzed for the individual carvedilol enantiomers using HPLC method. Chiral separation of the enantiomers was achieved by using  $\beta$ -cyclodextrin as a mobile phase additive.

**Results:**

After administration of a single dose of (1:1) racemic mixture of carvedilol, the resulting  $C_{max}$  were  $50.7 \pm 5.8$  ug/L and  $18.0 \pm 1.8$  ug/L, and the AUC were  $131.9 \pm 13.1$  ug-hr/L and  $162.7 \pm 13.5$  ug-hr/L, for R(+)-carvedilol and S(-)-carvedilol, respectively. This is due to the difference in the presystemic elimination of the individual enantiomers since the MRT and the half life of the different enantiomers were not significantly different. Coadministration of fluoxetine with carvedilol resulted in significant increase in the  $C_{max}$  and the AUC of the two enantiomers. However there was 2.2 folds increase in the  $C_{max}$  of R(+)-carvedilol and 1.7 folds increase in the  $C_{max}$  of S(-)-carvedilol. Also, the AUC of R(+)-carvedilol increased by 2.6 folds while the AUC of S(-)-carvedilol increased by 1.7 folds due to fluoxetine coadministration.

**Conclusions:**

It is clear that the metabolic disposition of carvedilol is stereoselective resulting in different pharmacokinetic behavior for its two enantiomers. Also, the effect of fluoxetine coadministration on carvedilol pharmacokinetic behavior is stereoselective and affecting the R(+)-enantiomer more than the S(-)-enantiomer.

*Key Words: Pharmacokinetics; Drug Interaction; Stereoselective*

*Funding Agency: None*



**Physiology**

*Category: Basic Sciences*

**207**

**Effect of the Fasting Month of Ramadan on Selected Physiological Profiles of Fencing Athletes.**

\*Ramadan J<sup>1</sup>, Mohammad S<sup>2</sup>

<sup>1</sup>Department of Physiology, Faculty of Medicine, Kuwait University; <sup>2</sup>Department of Physical Education, College of Basic Science, The Public Authority of Applied Education and Training.

**Introduction:**

The fasting month of Ramadan do not prevent Muslim athletes from continuing to participate in sport training and competition. Assessing physiological responses in fasting athletes is essential for providing information and knowledge on proper training methods during the fasting month of Ramadan. The purpose of our study was to measure the effect of Ramadan fasting on aerobic and anaerobic powers, flexibility, and grip strength.

**Methods:**

Nine fencing athletes and six control individuals healthy male volunteers preformed VO<sub>2</sub> max test, Wingate anaerobic power test, handgrip strength test, and sit-and-reach flexibility test, one week before and after Ramadan fasting.

**Results:**

Peak power output, average power, grip strength, and flexibility were significantly higher in post Ramadan than pre Ramadan in fencing group. The control group had significantly higher flexibility only in post Ramadan than pre Ramadan test. Fencing athletes had higher values than control subjects in all variables in both pre and post tests.

**Conclusions:**

It appears that Ramadan day time fasting month did not show adverse effect on the athlete's ability to adapt to aerobic and anaerobic powers, flexibility, and strength training. Moreover, Athletic conditioning responses and adaptations during Ramadan fasting appears to reveal similar response to that of a none fasting month. In control subjects, Ramadan month has beneficial effect on improving flexibility.

*Key Words: Maximal Oxygen Consumption; Ramadan Fasting; Fencing athletes*

*Funding Agency: None*



**Physiology**

Category: Graduate MSc (Basic Science)

208

**Expression of p53 Gene and Protein in Fetal Rat Brain during Development.**

\*Al-khaldi AT<sup>1</sup>, Al-Bader MD<sup>2</sup>

<sup>1</sup>College of Graduate Studies, Molecular Biology MSc Program; <sup>2</sup>Department of Physiology, Faculty of Medicine, Kuwait University

**Introduction:**

In rats, at 18 days gestation (dg), there is a peak in testosterone production in male fetuses. This testosterone is aromatized in the brain to estradiol which mediates the development of neural sex differences through estrogen receptors (ER). It has been suggested that estrogen and ER may increase the activity of p53. Thus, we hypothesize that from 19 dg male fetuses will have higher p53 levels compared to female fetuses. Thus, we aim to study the levels of p53 mRNA and protein in the rat brain of both sexes at 16, 19 and 21 dg.

**Methods:**

p53 mRNA expression was measured by real-time PCR (ReT-PCR). The 2- $\Delta\Delta C_t$  method was used to analyze the results. For protein analysis, Western blotting followed by immunodetection was used to verify the presence of the p53 protein. Data were tested for statistical significance and a p value of < 0.05 was taken as the minimum level of significance.

**Results:**

The ReT-PCR results showed a significant decrease in p53 mRNA in male brains. As for p53 protein a band was detected at approximately 53 kDa and there was a decrease in expression of p53 protein in male fetuses between 16 and 19 and 16 and 21 dg with no changes in female p53 protein expression. Interestingly, the expression of p53 protein in females at both 19 and 21 dg was significantly higher than that of males.

**Conclusions:**

Contrary to our hypothesis that in male brains we would expect higher p53 due to higher estradiol and ER, our results show that the differences in p53 expression in both males and females may not be linked directly to ER expression only. So, further studies need to be conducted to measure the ER expression in fetal brains and their association with p53 expression during brain development.

*Key Words: p53; Fetal Brain; Estrogen*

*Funding Agency: YM19/07*



**Physiology**

Category: Graduate MSc (Basic Science)

209

**Regulation of Placental p21 and p27 proteins by Estrogens and their Receptors during pregnancy.**

\*Al-Zaibe WH<sup>1</sup>, Al-Bader MD<sup>2</sup>, El-Abdallah AA<sup>3</sup>

<sup>1</sup>College of Graduate Studies, Molecular Biology MSc Program; <sup>2</sup>Department of Physiology, Faculty of Medicine, Kuwait University; <sup>3</sup>Department of Pathology, Faculty of Medicine, Kuwait University

**Introduction:**

During pregnancy, there are high levels of circulating maternal estrogens(E2). Investigators have shown that unexplained miscarriages and /or fetal deaths can occur due to high levels of estrogens. The increase in sex steroid hormone levels, leads to down-regulation of the estrogen receptor (ER). However, there has to be a control mechanism that allows placental proliferation regardless of the inhibitory effects of E2 and possibly independent of ER down regulation. The central regulator of this process is the cell cycle apparatus, which is catalyzed by cyclin-dependent kinases (CDKs) and is negatively controlled by CDK inhibitors (CDIs) p21 and p27. Therefore, we hypothesize that reduced expression of ER detected in the placenta is accompanied by reduced functional p21 and p27, which promote placental development .

**Methods:**

The gene and protein expression of p21 and p27 were studied in rat placenta at 16, 19 and 21 days gestation (dg). P21 and p27 gene expression was assessed using Real-Time PCR; Taqman probes specific for p21, p27and for the housekeeping gene 18S were used. P21 and p27 protein expression were studied in the homogenate, cytosolic and nuclear fractions using Western blotting followed by immunodetection.

**Results:**

Placental weight increased between 16dg and 19dg and 16dg and 21dg. Although not significant, there was a trend for p21 and p27 gene expression to decrease by 19 dg and increase by 21 dg. As for p27 protein expression, the only difference in expression was seen in the cytosolic fraction between 16 and 19 dg where expression was higher at 19 dg (p<0.05). P21 protein was not detected in any of the fractions or dg.

**Conclusions:**

we conclude that the observed decrease in p21 and p27 gene expression at 19 dg allows placental growth and that the increase in p27 protein in the cytosolic fraction at 19 dg arrests further placental growth.

*Key Words: Placenta; p21; p27*

*Funding Agency: College of Graduate Studies and Research Administration Grant #YM03/08*



**Physiology**

Category: Basic Sciences

210

**Expression of Estrogen Receptor  $\alpha$  and  $\beta$  in Rat Astrocytes in Primary Culture: Effects of Hypoxia and Glucose Deprivation.**

\*Al-Bader MD, Redzic ZB, Malatiali SA

Department of Physiology, Kuwait University, Faculty of Medicine

**Introduction:**

Neuroprotective role of estrogen in cerebral ischemia could be partially associated to increased expression of glutamate transporter in astrocytes following estrogen application, an effect that could be protective against deleterious effects of increased glutamate concentration during ischemia. Estrogen regulates gene expression through interaction with its nuclear receptors: estrogen receptors  $\alpha$  (Era) and  $\beta$  (Erb). This study explored expression of Era and Erb in rat astrocytes in primary culture and effects of hypoxia and glucose deprivation (HGD), alone or followed by 1h recovery, on that expression.

**Methods:**

Primary cultures were produced and were: a) exposed to 5% CO<sub>2</sub> in air (control group-CG); b) deprived from glucose and exposed to 2%O<sub>2</sub>, 5%CO<sub>2</sub> in N<sub>2</sub> for 1h (HGD group-HGDG); c) exposed to the same protocol as explained for the HGDG and then exposed to the same protocol as for the CG for 1h (recovery group-RG). Expression of Era and Erb at the transcript level and at the protein level was explored by real-time polymerase chain reaction and by immunoblotting, respectively; p<0.05 was taken as a level of significance.

**Results:**

Both Era and Erb were expressed in astrocytes at transcript and protein levels. The amount of Era mRNA in the HGDG was significantly lower when compared to the CG, but no significant change in the expression of Era protein was detected. The amount of Era mRNA in the RG was significantly higher when compared to the CG, but a significant decrease in expression of Era protein was revealed. The amounts of Erb mRNA and Erb protein in the HGDG and RG did not differ from the corresponding amounts in the CG.

**Conclusions:**

HGD and recovery protocols did not alter expression of ERb. HGD caused a decrease in the amount of ERa mRNA. The amount of ERa protein decreased after 1h recovery, which may change the cell ERa/ERb ratio and alter estrogen signalling in astrocytes.

*Key Words: Astrocyte; Estrogen receptor; Hypoxia*

*Funding Agency: KU Research Administration MY 01 / 08*



**Physiology**

Category: Basic Sciences

211

**Prenatal Exposure to Pathogens Reprograms Neuroimmune Responses.**

\*Mouihate A<sup>1</sup>, Pittman QJ<sup>2</sup>

<sup>1</sup>Department of Physiology, Faculty of Medicine, Kuwait University, Kuwait; <sup>2</sup>Department of Physiology and Pharmacology, Hotchkiss Brain Institute, Faculty of Medicine University of Calgary, Canada

**Introduction:**

Postnatal exposure to bacterial lipopolysaccharide (LPS; the outer coat of Gram negative bacteria) induces permanent changes in many physiological outcomes such as heightened stress responsiveness, attenuated febrile response and altered cognitive functions. We previously gave evidence that such programming effects occur only when rats were given LPS during a critical window spanning from the 1st to the 3rd week of postnatal period. Whether prenatal immune challenge alters adult febrile response is not known.

**Methods:**

Pregnant rats were given LPS (i. p., 100µg/kg) on gestation day 12 (GD12), GD15 and GD19. Offspring were left to grow undisturbed until the age of 70 day old and their hypothalamic COX-2 and febrile responses to LPS (i. p., 50 µg/kg) were assessed.

**Results:**

Exposure to LPS during prenatal period dampens adult febrile response. Interestingly, this programming effect takes place only when rat pregnant mothers were exposed to the bacterial pathogen at gestation day 15 (GD15) and was absent in adult rats born to mothers injected with LPS on either GD12 or GD19. Furthermore, the expression of the inducible form of cyclooxygenase (COX-2; the rate limiting enzyme for the pyrogenic prostaglandin PGE2) in fever controlling areas of the brain was reduced in adult offspring born to mothers-immune challenged on GD15.

**Conclusions:**

Our data suggest that there is a critical window during pregnancy for reprogramming some aspects of neuroimmune responses.

*Key Words: Prenatal infection; LPS; Neuroimmune*

*Funding Agency: Canadian Institute of Health Research*



**Physiology**

Category: Basic Sciences

212

**Long Term Protection and Mechanism of Pacing-induced Postconditioning in the Heart.**

\*Babiker FA<sup>1</sup>, Lorenzen-Schmidt I<sup>2</sup>, Mokolke<sup>2</sup>, Vanagt WY<sup>3,4</sup>, Delhaas T<sup>3,4</sup>, Waltenberger J<sup>5</sup>,  
Cleutjens JP<sup>6</sup>, Prinzen FW<sup>3</sup>

<sup>1</sup>Department of Physiology, Faculty of Medicine, Kuwait University, Kuwait;

<sup>2</sup>Boston Scientific Corp., St. Paul, USA; <sup>3</sup>Physiology; <sup>4</sup>Pediatric (Division of Pediatric Cardiology),  
Cardiology, and Pathology, Cardiovascular Research Institute Maastricht, Maastricht, the Netherlands

**Introduction:**

Brief periods of ventricular pacing during the early reperfusion phase (pacing-induced postconditioning, PPC) have been shown to reduce infarct size as measured after 2 hours of reperfusion. We investigated whether PPC leads to maintained reduction in infarct size and which signaling pathways are involved in PPC.

**Methods:**

Isolated ejecting rabbit hearts were subjected to 30 minutes coronary occlusion and 2 hours reperfusion. PPC consisted of 10 30-sec intervals of ventricular pacing alternated with atrial pacing during early reperfusion. Drugs were infused 5 minutes before reperfusion and continued till the end of pacing. In vivo studies in rabbit and pigs were done following the same protocol with some modifications. Area at risk, and infarct size were determined with blue dye and TTC staining, respectively.

**Results:**

PPC significantly reduced infarct size normalized to area at risk compared to control ( $p=0.006$ ). Replacing LV pacing by BiV pacing abolished the protective effect of PPC compared to control and paced hearts. Ten 30-sec periods of high preload during atrial pacing provided a protective effect similar to PPC. The protective effect of PPC was not affected by application of the adenosine receptor blocker 8-SPT or the angiotensin I receptor blocker Candesartan, but the microtubule disruption agent colchicine abrogated the protection. Blockers of the mitochondrial KATP channel (5HD), PKC (chelerythrine) and PI3-kinase (wortmannin) all blocked the protection provided by PPC. In the in situ pig heart PPC significantly reduced the infarct size ( $p=0.05$ ), a protection which was abolished by the stretch-activated channel blocker gadolinium. No infarct size reduction was achieved when PPC application was delayed by 5 min or when only 5 pacing cycles were used.

**Conclusions:**

PPC permanently reduces myocardial injury. Abnormal mechanical loading, and not electrical stimulation or G-coupled receptor stimulation, is a likely trigger for PPC. PPC shares downstream pathways with other modes of cardioprotection.

*Key Words: Ischemia; Postconditioning; Dyssynchrony*

*Funding Agency: Boston Scientific Corp., St. Paul*



**Physiology**

Category: Graduate PhD (Basic Science)

213

**Physical Activity Assessment in Kuwaiti Adult Population using IPAQ: Pilot Study.**

\*Mohammed N<sup>1</sup>, Ramadan J<sup>1</sup>, Hamdy H<sup>2</sup>, Barac-Nieto M<sup>1</sup>

<sup>1</sup>Department of Physiology, Faculty of Medicine, Kuwait University;

<sup>2</sup>Dept of Quantitative Methods and Information Systems, Faculty of Administrative Sciences, Kuwait University

**Introduction:**

Most of the chronic diseases are caused by unhealthy diet and lack of physical activity (PA), Therefore, Physical inactivity is a worldwide as well as a local concern. Monitoring physical activity levels is increasingly becoming a public health priority. This is a pilot study to assess PA profile of Kuwaitis aged 17-65 years, using the International Physical Activity Questionnaire (IPAQ) as the PA measuring tool.

**Methods:**

The short-version, self-administered-format of IPAQ was translated from English to Arabic and back-translated to check the language barriers, and then culturally adapted. The instrument asks for times spent in walking, moderate- and vigorous-intensity PA of at least 10 minute duration, in the last 7 days. International standards for duration and intensity of PA were used to define criteria for low, moderate, and high (health enhancing) PA levels. Further information gathered include demographics; health status; practice, attitude and knowledge pertaining to PA. The sample consisted of 145 Kuwaitis (between 17 and 65 years of age), randomly sampled in public and private sectors.

**Results:**

The final sample size was 145 subjects, with females comprising 65% of the respondents. 34.5% were considered inactive. 47.6% met criteria for being moderately active, of which females were 61%. More than 82% of the sample did not meet criteria for high PA level. Activity levels were higher among those who exercise regularly, and this result was statistically significant ( $p < .005$ ). No significant relationships were found between PA levels with and other factors, such as demographics, health status etc.

**Conclusions:**

The data suggest that, while almost half of the sample were moderately active, only a minority (18%) satisfied the criteria for health-enhancing PA. Efforts are needed to increase the proportion of those who engage in health-enhancing PA.

*Key Words: Physical activity; IPAQ; Kuwait*

*Funding Agency: None*



**Physiology**

Category: Basic Sciences

214

**(-)-Epigallocatechin-3-Gallate (EGCG) Promotes Functional and Sensory Recovery in Crushed Rat Sciatic Nerve.**

\*Renno WM, Al-Maghrebi M, George P, Mathur A

Departments of Anatomy and Biochemistry, Faculty of Medicine, Kuwait University

**Introduction:**

(-)-epigallocatechin-3-gallate (EGCG), the most abundant polyphenol in green tea (GT), has been shown to protect several brain functions. Recently, we have shown that GT consumption improves both reflexes and sensation which are often affected in the course of peripheral neuropathy in unilateral chronic constriction injury to the sciatic nerve. Considering the substantial neuroprotective properties of GT polyphenols, we sought to investigate whether EGCG could improve motor and sensory impairments induced by crushing the sciatic nerve.

**Methods:**

Wistar male rats (n= 8) were randomly assigned to three groups as follows: control sham group, experimental control group with sciatic nerve crush treated with saline (i. p.) and experimental group with sciatic nerve crush treated with 50mg/ml EGCG (i. p.) (1-2 hours, 1 day and 2 day after the crush injury). The duration and magnitude of functional, thermal and behavioral hyperalgesia recovery were monitored. Proprioceptive integrity was evaluated by assessing the response to tactile placing and the hopping response. Extensor postural thrust (EPT) was assessed on a digital balance.

**Results:**

EGCG-treated axonotomized group showed significant improvement in the toe spread and foot positioning analysis compared to the experimental control group. Moreover, EGCG treatment resulted in an earlier and significant gain of hindlimb extension force as evaluated by the EPT and derived percentage motor deficit. Likewise, the proprioceptive and motor function expressed by the hopping response was fully restored 2-3 weeks earlier in EGCG treated group compared to saline treated controls. In addition, EGCG significantly reduced the axonotmesis-induced thermal and mechanical hyperalgesia as well as mechanical allodynia compared to saline treated animals.

**Conclusions:**

Our results demonstrate that EGCG enhances functional and sensory recovery of peripheral nerve injuries in rat and thus improves nerve regeneration.

*Key Words: Green tea; Axonotmesis; Neurobehavioral tests*

*Funding Agency: Kuwait University, Department of Anatomy*



**Physiology**

Category: Basic Sciences

215

**Prevention of Kainate-Induced Hippocampal Neuronal Damage by Magnesium.**

\*Pavlik A<sup>1</sup>, Mohammadi S<sup>2</sup>, Alexander G<sup>1</sup>

<sup>1</sup>Department of Physiology, Kuwait University, Faculty of Medicine; <sup>2</sup>Department of Microbiology, Kuwait University, Faculty of Medicine

**Introduction:**

Magnesium as a natural blocker of NMDA channel was recently used for the prevention of neuronal damage (ND) both in experimental and clinical studies. Kainic acid (KA) induces well characterized ND in hippocampal CA3 region that's why it was used as a model for our experiments. Since magnesium also interferes with calcium entry, we elucidated protective effects of magnesium in KA-induced excitotoxic neurodegeneration.

**Methods:**

Female rats were anesthetized with urethane throughout the experiments. KA (0.15 µg) and MgCl<sub>2</sub> (50-250 µg) were injected together intracerebroventricularly (icv) while antagonists of NMDA-subtype (MK-801: 2.5 mg/kg) and AMPA/KA subtype (CNQX: 15 µg) of glutamate receptors were injected 20 min before KA. Vibratome sections (40 µm) were processed for Hsp70 and c-Fos immunohistochemistry or stained by thionin. Quantitative image analysis with Anova statistics for c-Fos expression and volume of neuronal damage was used.

**Results:**

KA injection inflicted fast excitotoxic damage to CA3a sub region where the pyramidal neurons attenuated or even lost c-Fos protein expression during cell death process. Interestingly, there was no induction of major stress protein HSP 70 in the damaged CA3a pyramidal neurons. Neither MK-801 nor CNQX protected significantly against ND or c-Fos attenuation at 4 hrs after KA. However, MgCl<sub>2</sub> (250 µg) completely rescued CA3a neurons morphology and also maintained their c-Fos expression. Reducing MgCl<sub>2</sub> dose attenuated neuroprotection and c-Fos expression which was lost at doses between 100 and 50 µg. NaCl (same tonicity as MgCl<sub>2</sub>) and ZnCl<sub>2</sub> (blocker of calcium entry) were not protective. Blockade of NMDA receptor channel with MK-801 did not alleviate MgCl<sub>2</sub> neuroprotection.

**Conclusions:**

Icv injection of MgCl<sub>2</sub> completely protected against KA-induced neurodegeneration and attenuation of c-Fos protein expression. We suggest that magnesium may rescue CA3a neurons by interfering with calcium entry through depolarization-induced non-NMDA channel(s).

*Key Words: Kainate excitotoxic damage; Hippocampal CA3a neurons; Magnesium neuroprotection*  
*Funding Agency: Kuwait University*



**Psychiatry**

Category: Clinical

216

**Relationship of Posttraumatic Stress Disorder (PTSD) with Thyroid Functions  
Among Injured Kuwaiti First Gulf War Veterans.**

\*Al-Hammadi A<sup>1</sup>, McFarlane A<sup>2</sup>, Behbehani J<sup>3</sup>, Ohaeri JU<sup>1</sup>

<sup>1</sup>Psychological Medicine Hospital Kuwait; <sup>2</sup>Department of Psychiatry, University of Adelaide, Australia; <sup>3</sup>Department of Community Health, Kuwait University

**Introduction:**

The noted high prevalence of PTSD among Kuwait First Gulf War veterans (FGWV) has necessitated the search for the biological correlates of the disorder. The objectives of this study were to : (i) to assess PTSD, depression and anxiety among a representative sample of injured Kuwaiti FGWV at two intervals; (ii) to assess thyroid function levels (fT3, fT4 and TSH) among the veterans at follow up and correlate thyroid function with psychopathological indices at follow up.

**Methods:**

A representative sample of injured Kuwaiti FGWV (N=123; 121 men) were assessed in face-to-face interviews for PTSD, depression and anxiety and blood samples were collected for fT3, fT4 and TSH. Thyroid hormones were measured using standard radioimmunoassay technique.

**Results:**

Twelve years after the FGW 37(30.1%) veterans had PTSD by DSM-IV criteria. When the subjects were grouped by clinical thyroid status using thyroid levels, 4(3.3% males) had clinically pathological thyroid conditions (3 with subclinical hypothyroidism, 1 with biochemical hyperthyroidism), compared with 1% of Kuwaiti males in the general population. Among those with PTSD, fT3 was negatively correlated with age ( $r = -0.20$ ,  $p= 0.025$ ). TSH level was significantly correlated with positive symptom distress index ( $r = 0.20$ ,  $p=0.004$ ) and negatively correlated with PTSD avoidance scores ( $r = 0.41$ ,  $p=0.011$ ).

**Conclusions:**

These findings widen the cross-cultural base of evidence of possible enduring thyroid system alterations in chronic combat –related PTSD, and call for sustained clinical interventions for these veterans.

*Key Words: PTSD; Thyroid; Gulf -war-veterans*

*Funding Agency: None*



**Psychiatry**

*Category: Clinical*

217

**Quality of Life in People with Epilepsy and their Family Caregivers: An Arab Experience Using the Short Version of WHO Quality of Life Instrument.**

\*Ohaeri JU<sup>1</sup>, Awadalla AW<sup>2</sup>, Farah AA<sup>3</sup>

<sup>1</sup>Department of Psychiatry, Psychological Medicine Hospital, Kuwait; <sup>2</sup>Department of Psychiatry, College of Medicine, King Faisal University, Dammam, Saudi Arabia; <sup>3</sup>Department of Psychology, College of Education, Sudan University of Science & Technology, Khartoum, Sudan

**Introduction:**

The objectives of the study were, to assess the subjective quality of life (QOL) of Sudanese epilepsy patients with generalized tonic clonic seizures and their family caregivers, using the World Health Organization's 26-item QOL Instrument, compared with the general population and previous Sudanese data for chronic conditions; and examine the predictors of QOL.

**Methods:**

Consecutive government hospital neurology clinic attendees, who fulfilled the study's inclusion criteria, and their family caregivers, were assessed in a cross-sectional design in Khartoum, Wad Medani and Atbara.

**Results:**

There were 276 patients (56.5%men; mean age 29.5 yrs). Patients' QOL scores were significantly lower (physical health domain, 57.1%; psychological, 60.1%; social relations, 58.4%; environment, 50.6%; and general facet 60.8%), than the control group. They scored lower than WHO 23-country patients for social relations and environment domains, and had lower environment domain scores than Sudanese diabetes patients. Caregivers had significantly higher scores (57.4 -73.7%) than patients and control group. Patients' higher QOL was associated with marriage, education, employment, no side effects and caregiver occupation. Caregivers had lower QOL if they were female, patients' own children, and less educated. The predictors of QOL included caregiver's proxy rating of the patient's QOL and drug side effects.

**Conclusions:**

Poor QOL in epilepsy reflects social underachievement and calls for programs to remedy their psychosocial circumstance and improve service provisions. Vulnerable caregivers need to be identified for assistance, to enhance their role.

*Key Words: Quality of life; Epilepsy-tonic-clonic-seizure; Arab*

*Funding Agency: None*



**Psychiatry**

*Category: Clinical*

**218**

**The Tripartite Model of Anxiety and Depression in a Sample of Arab College Students Using the Hopkins Symptoms Checklist - 25**

\*Al-Turkait FA<sup>1</sup>, Ohaeri JU<sup>2</sup>, Naguy A<sup>2</sup>, El-Abasi AM<sup>3</sup>

<sup>1</sup>Department of Psychology, College of Education, Public Authority for Applied Education and Training, Kuwait; <sup>2</sup>Department of Psychiatry, Psychological Medicine Hospital, Kuwait; <sup>3</sup>Statistics Division, Civil Service Commission, Kuwait

**Introduction:**

The tripartite model of anxiety and depression (TMAD) posits that, although these disorders are related, their combined symptoms can be differentiated on the basis of factor analysis (FA) into: symptoms specific to anxiety, symptoms specific to depression, and non-specific symptoms of general distress which the two disorders share. The objectives of the study were: (i) using exploratory FA (EFA), to examine whether the factor structure of the Hopkins Symptom Checklist (HSCL-25) is consistent with the TMAD; (ii) using confirmatory FA (CFA), to compare the goodness-of-fit (GOF) indices of the resulting models, the original two-factor model (2-FM), the bifactor model (BFM) (a general factor and uncorrelated anxiety/depression factors), the one-factor model (1-FM) and higher order model (HOM) (a higher order factor above uncorrelated anxiety/depression subfactors).

**Methods:**

Participants (N = 624) were Kuwaiti national college students, who completed the HSCL-25 in class. EFA was done by principal component analysis with varimax rotation. CFA was done by AMOS, version 16. Models were compared in CFA, using eight "fit" indices.

**Results:**

The five factors from EFA were similar to the subscales of the Mood and Anxiety Symptom Questionnaire (MASQ) on which the TMAD was validated (core depression, core anxiety, general distress mixed- GDM -, general distress anxiety, general distress depression). In CFA, the BFM (RMSEA = 0.059) and the model characterized by correlation of these factors (RMSEA = 0.068) were best at meeting the fit indices. In line with theory, the correlation between the specific anxiety/depression factors was lower than that between each of them and GDM factor.

**Conclusions:**

Although the data supported the TMAD, the indication was that alternative models were feasible and merit attention, especially the BFM. However, the TMAD has cross-cultural validity and therefore warrants more work with a variety of instruments in diverse populations.

*Key Words: Tripartite model; Anxiety-Depression; Arab -students*

*Funding Agency: None*



**Psychiatry**

Category: Clinical

219

**Schizophrenia Psychopathology in a Kuwaiti Arab Sample.**

\*Zahid MA<sup>1</sup>, Ohaeri JU<sup>2</sup>

<sup>1</sup>Department of Psychiatry, Faculty of Medicine, Kuwait University; <sup>2</sup>Department of Psychiatry, Psychological Medicine Hospital, Kuwait

**Introduction:**

The heterogeneity of schizophrenia psychopathology has led to a search for symptom clusters that could be related to broad features of the disease. The objectives of the study were to: (i) highlight the pattern of symptoms among Kuwaiti subjects with schizophrenia, using the ICD-10 symptom checklist; (ii) assess the factor structure of the BPRS-18 and BPRS-24; and (iii) assess the relationship of the resulting factors with socio-demographic characteristics, age at onset of illness, family history of mental illness, indices of quality of care and psychological well-being.

**Methods:**

Consecutive outpatients in stable condition were assessed with the Brief Psychiatric Rating Scale and ICD-10 symptom Checklist, as well as measures of quality of care.

**Results:**

There were 130 patients (66.1% male, mean age 36.8, duration of illness 12.9 yrs). Of the ICD-10 symptoms, the commonest positive symptoms were hallucinations (58.5%) and delusions (72%). Catatonic symptoms were rare (2.9%). About one-quarter of subjects experienced four of the negative symptoms. In exploratory factor analysis, we broadly replicated the known syndromes for BPRS-24 (disorganization, positive, activation, manic, negative and depression) and BPRS-18 (negative, positive, activation and affect). In regression analyses, the variables independently associated with psychopathology were family income, negative affect, self-esteem, duration of illness, age, lack of money for enjoyment, met needs for care, and caregiver tension. The negative syndrome had more significant associations with the variables investigated than the positive syndrome. Psychopathological scores were separable from indices of psychological well being.

**Conclusions:**

In this first study of schizophrenia psychopathology from the Arab world, the clinical manifestations were similar to the data from the developed countries. The persistence of psychotic symptoms despite freely available antipsychotic treatment, and the impact on caregiver burden, call for attention to the perennial issue of treatment-resistance, and underscore the need for continued interaction with family members.

*Key Words: Schizophrenia; Psychopathology; Arab*

*Funding Agency: KU Grant Number: MQ01/05*



**Psychiatry**

*Category: Clinical*

**220**

**Factors Associated with Hospital Service Satisfaction in a Sample of Arab Subjects with Schizophrenia.**

\*Zahid MA<sup>1</sup>, Ohaeri JU<sup>2</sup>, Alzayed AA<sup>1</sup>

<sup>1</sup>Department of Psychiatry, Faculty of Medicine, Kuwait University; <sup>2</sup>Department of Psychiatry, Psychological Medicine Hospital, Kuwait.

**Introduction:**

Assessment of patients' satisfaction with health care services could help to identify the strengths and weaknesses of the system and provide guidance for further development. The study's objectives were: (i) to assess a sample of Kuwaiti subjects with schizophrenia, using the Verona Service Satisfaction Scale (VSSS-EU), in order to highlight the pattern of satisfaction with services provided at the national psychiatric hospital, in comparison with data from the five-nation European study (EPSILON); (ii) to assess the association of seven domains of service satisfaction with indices of quality of care, psychopathology, socio-demographic characteristics, and psychological well-being.

**Methods:**

Consecutive outpatients in stable condition and their family caregivers were interviewed with the VSSS-EU and measures of needs for care, caregiver burden, quality of life and psychopathology.

**Results:**

There were 130 patients (66.1% male, mean age 36.8). While 67.7%-76.2% expressed satisfaction with the domains of "overall satisfaction", "professionals' skills", "access", "efficacy", and "relatives' involvement", only about one-third were satisfied with the domains of "information" and "types of intervention". The latter two domains were the areas in which the European patients had better satisfaction than our patients, while our patients expressed better satisfaction than the Europeans in the domain of "relatives' involvement". In multiple regression analyses, self-esteem, positive and negative affect were the most important correlates of service satisfaction, while clinical severity, caregiver burden and health unmet needs for care played relatively minor roles.

**Conclusions:**

Patients' attitudes towards psychiatric care involve a complex relationship between clinical, personal and socio-cultural characteristics. Many of the factors that impact on satisfaction with service are external to the care experience. The weaknesses in the system highlighted by the participants indicate that mental health care reforms in the country should include the provision of public mental health education and a linkage of the hospital service with community – based resources.

*Key Words: Schizophrenia; Service satisfaction; Arab*

*Funding Agency: KU Grant Number: MQ01/05*



### ***Surgery and Transplantation***

*Category: Clinical*

**221**

#### **Renal Transplantation in Lupus Nephritis- Kuwait Experience.**

\*Nawas KM, Al-Otaibi T, Nampoory MRN, Nair MP, Biju MV, Balaha MA, Gheith O, Awadain WH, Zakaria, El-Sayed A

Department of Nephrology, Hamed Al Essa Organ, Transplantation Center, Ibn Sina Hospital

#### **Introduction:**

The major cause of morbidity and mortality in Systemic Lupus Erythematosus(SLE) is Lupus Nephritis(LN). The objective of this retrospective study is to determine the outcome of the renal transplantation in LN, especially with regard to the recurrence of the disease in the graft kidney(6-20% in different centers) .

#### **Methods:**

Amongst 884 renal transplantations done in our center, between the year 1993 and 2008; 27 candidates (3%) were with LN. The clinical and laboratory data of these patients were reviewed for an average follow up period of 5 years and compared with age, sex matched controls.

#### **Results:**

13 patients(48%) received grafts from Cadaveric donors and the rest 14 (52%) from live donors. 15 patients(55%) were having more than 3 HLA mismatches with the donor. 16 patients(60%) received Anti Thymocyte Globulin, 5(18%)Thymoglobulin-Rabbit and 1 (3.5%) received Basiliximab as induction. The commonest maintenance immuno suppression was Steroid and Mycophenolate (25 patients-92%), to which the third drug added was Cyclosporine (13 patients-48%) or Tacrolimus (12 patients-44%). On follow up, 19 patients (70%) enjoy normal graft function and 5(18%) have chronic graft dysfunction(mean creatinine 180 $\mu$ mol/L). Three patients (11%) lost graft due to reasons unrelated to SLE. 3 cases (11%) developed histological evidence of recurrent Lupus Nephritis. Out of these, only 1 showed significant renal pathology (WHO class III). The other 2 have got normal renal function with class I changes. Two patients (7%) had significant proteinuria but none had haematuria. All patients are alive now. Serological flares of Lupus activity was noted in 2 patients (7%) but no one developed non renal clinical manifestations of SLE, after transplant.

#### **Conclusions:**

The overall outcome of renal transplantation in Lupus Nephritis is encouraging. Recurrent LN is rare and the graft and patient survival are excellent.

*Key Words: Lupus nephritis (LN); Renal Transplantation; Recurrent disease*

*Funding Agency: None*



***Surgery and Transplantation***

*Category: Clinical*

222

**Hematolymphoid Tumours of the Nose and Sinuses: Signs in the Sinus and Sinus in the Signs.**

\*Brook A<sup>1</sup>, Rifat M<sup>2</sup>, Al Qattan F<sup>1</sup>, Alwael A<sup>1</sup>, Ahmed A<sup>1</sup>, Rifat M<sup>2</sup>, Hamid T<sup>1</sup>, Ibrahim H<sup>3</sup>  
<sup>1</sup>Department of Otorhinolaryngology, <sup>2</sup> Department of Pathology, <sup>3</sup> Department of Radiology, Al-Jahra Hospital, Kuwait

**Introduction:**

Primary, extranodal hematolymphoid tumours (HLT) of the nose and sinuses are the second most common nose-sinus malignancies. The lack of specific symptoms complicates the diagnosis. Non-Hodgkin Lymphoma (NHL), in particular the diffuse large-cell B-cell Lymphomas (DLCL) are more common in the sinuses while T-cell and NK/T-cell lymphomas are more common in the nasal cavity. Objective: The present retrospective study is undertaken to evaluate the clinical picture and diagnosis of HLT and report our experience.

**Methods:**

Records of patients with HLT treated at Al-Jahra Hospital between 1996 and 2009 were reviewed. The standard demographic data, clinical, radiologic and endoscopic evidences as well as the surgical procedures were noted.

**Results:**

Total patients=9 (M=7, F=2). The age distribution was between 44 and 71 years. All the patients presented with chronic nasal obstruction and other nonspecific symptoms. The latter included nasal discharge, nasal swelling and pain. C-T scan of nose-sinus, endoscopy and biopsy were carried out in all cases. The maxillary sinus was the most commonly involved. There was a considerable mid-facial destruction with orbital and intracranial extension in one case. This patient died in the ICU due to massive extension and multi-organ failure. Histology revealed one case of extramedullary plasmacytoma and one T/NK-cell Lymphoma. The remainder were all B-cell lymphomas. C-T scan-MRI findings were not specific. Endoscopic features included polypoid, soft to rubbery, locally destructive and ulcerative mass. None of the patients had haemophagocytic syndrome.

**Conclusions:**

Nose-sinus hematolymphoid tumours remain a difficult diagnostic and therapeutic challenge despite various imaging modalities. There appears to be an overall improvement in their management. Surgery is limited to biopsy, a key to the diagnosis. Early diagnosis yields a good therapeutic result. The presence of cervical lymph node carries a poorer prognosis.

*Key Words: Hematolymphoid tumours; Nose-sinus; Biopsy*

*Funding Agency: None*



***Surgery and Transplantation***

*Category: Clinical*

**223**

**Endoscopy-Assisted Adenoidectomy: From Adenoid Curette to Endoscopes and Surgical Powered Instruments.**

\*Brook A, Al Qattan F, Varkki Z, Alwael A, Hatim, Ashraf M

Department of Otorhinolaryngology, Al-Jahra Hospital, Kuwait

**Introduction:**

Adenoidectomy remains the mainstay of treatment for adenoid hypertrophy (AH). It is one of the most commonly performed surgeries in ENT. Recent interest has focused on less invasive technique using endoscopes to avoid the potential complications of traditional adenoidectomy. The objective of this study is to assess the outcome of endoscopy-assisted adenoidectomy (EAA) and report our experience.

**Methods:**

471 patients underwent EAA for AH at Al-Jahra Hospital, between 2001 and 2009. Demographic data, endoscopic and surgical findings were noted. All patients were subjected to plain x-ray of the postnasal space. The AH was graded according to the Wang grading system. The adenoids were removed under direct vision.

**Results:**

Total patients=471 (M=230, F=241). The age distribution was between 1 and 38 years. All the patients presented with chronic nasal obstruction. 37% had obstructive sleep apnea, 52% chronic ear infections and 14% sinus infections. 31 patients had submucosal cleft (SMC). The adenoidectomies were all EAA. Instruments for adenoidectomy ranged from adenoid curette to coblation. 71% of the patients had grade III AH. Powered instruments were used in all patients with SMC. 9% of patients were above 18 years. All patients were examined with flexible endoscopes 2 weeks after surgery. There were no complications apart from 4.7% recurrences. Mean follow-up period was 7 weeks.

**Conclusions:**

Endoscopy-assisted adenoidectomy is safe and effective. It appears to have augmented the therapeutic options to treat efficiently patients with SMC and choanal polyp. Hemostasis is under direct vision. "Collateral" damage to torus tubarius and vomer is easily avoided. It is associated with low morbidity and reduced hospital stay. It's a creative teaching for trainees. However, the operating time is slightly longer. The relative frequency of adenoids in adults may be due to the widespread use of endoscopes in the postnasal space.

*Key Words: Adenoid; Endoscopy; Curettage*

*Funding Agency: None*



***Surgery and Transplantation***

*Category: Clinical*

**224**

**Modification of Mustache Technique: Gluteal Auto-augmentation in Post Massive Weight Loss Patients.**

\*Burezq H, Zakariya Y

Al-Babtain Center for burns and Plastic Surgery

**Introduction:**

Bariatric surgery is considered to be one of the commonest procedures done in Kuwait by general surgeons. Consequently, plastic surgeons have recently an increased demand to perform belt lipectomy for post massive weight loss patients. Gluteal augmentation is an important part of this procedure especially in those patients who lost more than 30 Kg.

Objectives: Modification of the original mustache technique was presented and described in a series of 12 patients.

**Methods:**

Twelve post massive weight loss female patients (age 24-42 years) had belt lipectomy and gluteal auto-augmentation using modified mustache technique. Patients were followed up for a period of 4-6 months. Preoperative, intra-operative and postoperative photos were taken and analyzed.

**Results:**

All patients tolerated the procedure well with no major complications. Three patients had localized wound dehiscences which were treated conservatively by daily dressing without any surgical intervention. Most of the flap mass was found to be maintained providing a good aesthetic result.

**Conclusions:**

Mustache technique is a reliable, reproducible and an easy procedure to augment the gluteal area. The technique utilizes the maximum amount of tissue to reshape the area and to improve the lateral fullness being an important beauty sign in our geographical area.

*Key Words: Gluteal; Augmentation; Mustache*

*Funding Agency: None*



***Surgery and Transplantation***

*Category: Clinical*

**225**

**Treating Difficult Proliferative Hemangiomas with Propranolol. First report from Middle East.**

Burezq H<sup>1</sup>, \*Alterkait A<sup>2</sup>

<sup>1</sup>AlBabtain center for burns and Plastic surgery, <sup>2</sup>Pediatric Department, Mubarak Alkabeer Hospital

**Introduction:**

Hemangiomas are the most common vascular tumors of childhood. Despite the self-limiting course of most these lesions, some can impair vital or sensory functions or cause disfigurement. Systemic or local steroids, interferon  $\alpha$ 2A and 2B and vicristine therapy are considered to be the goal standard methods to treat difficult and symptomatic Hemangiomas. Propranolol has been used lately by a number of pediatric centers in Europe to treat proliferative Hemangiomas with good results.

**Methods:**

A protocol was designed to introduce propranolol in a gradual increasing dose over a period of 5 days. Inderal was given orally on four children with difficult proliferative hemangioma lesions in the head and neck area. All children were between the age of 3-6 months except for onewas 8 months old. Children were followed up on weekly bases and their response was documented by clinical examination, digital photography and MRI imaging.

**Results:**

We have observed a change in all four hemangioma cases 48 hour after initiation of treatment in terms of size. All children tolerated the medication well and had a continues reduction in the size of the hemangioma without any complications. The 8 month old child had the least effect on his lesion.

**Conclusions:**

This is a preliminary report from Middle East on a small number of patient but with favorable results. Propranolol is now considered to be a safe and effective method in treating difficult and symptomatic hemangiomas especially those involving the head and neck area. Effect seems to be maximum in the first 6 months of life during the hemangioma's proliferative stage. More studies need to be conducted at the molecular level to define the exact mechanism of action.

*Key Words: Hemangioma; Propranolol; Proliferative*

*Funding Agency: None*



***Surgery and Transplantation***

*Category: Clinical*

**226**

**Correlation Between the Hounsfield Density and the Chemical Composition of Urinary Stones.**

\*Ibrahim HM<sup>1</sup>, Abdel Wahab MA<sup>2</sup>, Nagwa WM<sup>3</sup>, Abdel Rahman T<sup>3</sup>, Hasnien O<sup>3</sup>, Shaaban HA<sup>1</sup>, El Shebini YH<sup>1</sup>

<sup>1</sup>Departments of Urology, <sup>2</sup>Clinical Pathology, <sup>3</sup>Radiology, Adan Hospital, MOH, Kuwait

**Introduction:**

The aim of the study is to compare between the urinary stones of different chemical composition to their radiodensities (CT attenuation values, HU). The prediction of the stone type will in turn lead to better selection of the interventional modalities.

**Methods:**

A retrospective review was performed for patients underwent pretreatment CT scan for urinary stones. When measuring stone density in Hounsfield unit (HU) on CT, a SD is calculated for the measured area of interest that contains several pixels and we used a standardized area of interest of 0.026 cm<sup>2</sup>, equivalent to 25 pixels. The determination of chemical constituents of stones/fragments was done by using FT-IR spectra (NICOLET AVATAR STONE ANALYSER). Our laboratory report indicated stones of mixed composition by listing the components in rank order with quantification of their presence and we compared the Hounsfield density of the stones with the chemical findings.

**Results:**

The chemical composition of uric acid, mixed oxalate and calcium oxalate monohydrate stones was accurately identified based on the absolute CT value. The mean HU density for uric acid stone was 427±88, which was considerably lower than those of other stones. Mixed oxalate calculi could be distinguished from uric acid, calcium oxalate monohydrate and apatite stones by the absolute CT value (the mean HU density was 629±177). Moreover, calcium oxalate monohydrate stones were easily distinguished from all stones using the absolute CT value (the mean HU density was 1102±167) except when compared to brushite calculi which are not commonly encountered. The difference of CT value among the above mentioned calculi was statistically significant (F=49.3824, p<0.001)

**Conclusions:**

This study demonstrates that the chemical composition of urinary stones can be accurately predicted by CT scanning. The Hounsfield density is a convenient radiographic measure which correlates well with the chemical composition.

*Key Words: Stones; HU density; Chemical*

*Funding Agency: None*



## ***Surgery and Transplantation***

*Category: Clinical*

**227**

### **Burns Among Children, Adults and Aged in Kuwait: Do they Differ?**

\*Sharma PN<sup>1</sup>, Bang RL<sup>2,3</sup>, Al-Fadhli AN<sup>2</sup>, Sharma P<sup>4</sup>, Bang S<sup>5</sup>

<sup>1</sup>Office of Vice President Health Sciences, Kuwait University; <sup>2</sup>Al-Babtain Centre for Plastic Surgery and Burns; <sup>3</sup>Department of Surgery, Faculty of Medicine; <sup>4</sup>Office of the Vice-President Research, Kuwait University; <sup>5</sup>Al-Bahar Eye Centre, Ibn Sina Hospital, Kuwait

#### **Introduction:**

Burns cause a major health problem around the world, including in Kuwait. To understand and tackle the problem, it becomes imperative to know its distribution among various population groups with respect to different clinical features. A study was, therefore, conducted to unravel this aspect of burns among patients admitted at Al-Babtain Burn Center, Kuwait, during the period 1994 to 2007.

#### **Methods:**

The study was based on a total of 3, 210 burn patients admitted at Al-Babtain Burn Center during the period of 14 years, and the data was recorded for age, gender, nationality, cause of burn, total body surface area (TBSA%), duration of hospital stay and patient's outcome. The age groups: <14, 15-44, 45-59 and >60 years were defined as children, young adults, adults and aged, respectively. The statistical software, SPSS (17.0), was used for analysis and presentation of significant findings.

#### **Results:**

The median age for children, young adults, adults and aged was 3, 30, 48 and 66 years, respectively. Burns due to flame was the most vulnerable cause among young adults (71%), adults (66%) and aged (61%), while scalds in children (67%). Dunnett T3 revealed TBSA% and hospital stay, both were significantly lower among children ( $p < 0.001$ ) as compared to patients of any other population group. Spearman's (rho) test showed a strong (+ve) correlation ( $r = 0.491$ ,  $p < 0.001$ ) between TBSA% and duration of hospital stay. Mortality among 45 years & above was 2.8 times as compared to <45 years of age group (OR = 2.74;  $p < 0.001$ ), highest (19.1%) being among aged and lowest (1.3%) in children.

#### **Conclusions:**

The study indicate some significant differences in pattern of burn patients of different age groups, and a micro analysis of such differentials can lead to important policy decisions in treatment modalities, and eventually avoiding some disabilities and fatalities in Kuwait.

*Key Words: Burns; Population-Groups; Causes*

*Funding Agency: None*



***Surgery and Transplantation***

*Category: Basic Sciences*

**228**

**Green Tea Protects the Intestinal Mucosa from Ischemia Reperfusion Injury via Inducing Cellular Proliferation and Modulating Oxidative Stress.**

\*Abdeen SM<sup>1</sup>, Mathew TC<sup>2</sup>, Dashti H<sup>3</sup>, Asfar S<sup>3</sup>

<sup>1</sup>Department of Pathology, Faculty of Medicine; <sup>3</sup>Department of Surgery, Faculty of Medicine, Faculty of Medicine; <sup>2</sup>Department of Medical Laboratory Sciences, Faculty of Allied Health, Kuwait University.

**Introduction:**

The intestinal mucosa is known to be adversely affected by ischemia/reperfusion (I/R). Previously, we have shown that green tea protects the intestinal mucosa from fasting-induced damage and I/R. The focus of the current study was to understand the underlying cellular mechanisms that lead to the protection of intestinal mucosa from I/R injury using green tea.

**Methods:**

Three groups of male rats were used in this study. Group I (I/R) underwent I/R of the intestine (half an hour ischaemia followed by one hour reperfusion). Group II (green tea + I/R) were given green tea for 2 weeks prior to inducing I/R and Group III (sham-control). At the end of the experiment the animals were sacrificed under anesthesia and the jejunum was removed and processed for histopathological and immunohistochemical analysis. The expression of antioxidant enzymes (SOD and Catalase) and the markers of cell proliferation (PCNA and Ki-67) were monitored using immunohistochemistry.

**Results:**

The intestinal mucosa in Group II was preserved compared group I. The expression of cellular proliferation markers (PCNA and Ki-67) and the cellular antioxidants (SOD and Catalase) in group II was similar to that of the sham group III and was much less than group I, reflecting the protective effects of green tea in group II animals.

**Conclusions:**

In this animal model, administration of green tea prior to inducing I/R protects the intestinal mucosa from injury by inducing cellular proliferation and modulating the expression of antioxidant enzymes such as SOD and catalase.

*Key Words: Ischaemia Reperfusion; Green Tea; Antioxidants*

*Funding Agency: None*



***Surgery and Transplantation***

*Category: Clinical*

**229**

**Conversion to Sirolimus as Rescue Therapy after Acute Rejection in Renal Transplant Recipients Longterm Follow up.**

\*Halim MA, Al-Otaibi T, Johny KV, Hamid MH, Gheith O, Hasaneen H, Nawas KM  
Department of Nephrology, Hamed Al-essa Organ Transplantation Center

**Introduction:**

Conversion from calcineurine inhibitors (CNIs) to sirolimus (SRL) is proved to be effective in improving long-term graft outcome. SRL treatment of high risk renal transplant recipient (RTR) is still under investigation.

Aim: We studied the long-term effects of conversion from CNI to SRL as rescue therapy on RTR after treatment of biopsy proven acute rejections (BPAR).

**Methods:**

RTR converted from CNI, mycophenolate mofetil (MMF) as 2gm daily and steroid to SRL, MMF and steroid after treatment of BPAR were studied.

**Results:**

Thirty candidates were maintained on CNIs (24 were on cyclosporine-A and 6 on tacrolimus) after receiving ATG (80%) or basiliximab (13.3%) induction therapy. Mean follow-up period post-SRL was 43.46±17.9 months. The overall mean age was 35.1±13.5 years, including pediatric and geriatric age groups and patients with multiple co-morbid conditions. Black patients were 63.3%. Mean body mass index (BMI) was 27.8±8 and 33.3% had a BMI >30. Pre-conversion steroid-resistant rejection incidence was 16.7%. Mean time to convert to SRL was 10±18.8 months post-transplantation. Post-SRL rejection episodes were reported in 19.9% with 10% resistance to steroid treatment. Leucopenia, hypercholesterolemia and hypertriglyceridemia increased significantly post-SRL (p 0.031, 0.0001 and 0.007 respectively). Graft and patient survival were 100 % each. There were significant improvements in estimated creatinine clearance from 58±22.1 to 69.6±22.2 ml/min/1.72 (MDRD formula) at one year (p 0.001) and to 72.9 ±21.9 ml/min/1.72 by the end of the study (p <0.0001). SRL had to be discontinued in 33.1% of candidates mainly due to its side effects/complications (16.7%) or planning pregnancy (10%).

**Conclusions:**

Conversion to SRL as rescue therapy after treatment of BPAR is proved to be effective as a CNI free regimen for high risk RTR during long-term follow up.

*Key Words: Acute rejection; Renal transplant; Sirolimus*

*Funding Agency: None*



***Surgery and Transplantation***

*Category: Clinical*

**230**

**Ligasure Hemorrhoidectomy Versus Stapled Hemorrhoidopexy: A  
Prospective Randomized Clinical Trial.**

\*Sakr MF, Moussa MM  
Ahmadi Hospital (KOC)

**Introduction:**

Objective. To compare the outcome of Ligasure hemorrhoidectomy (LH) and stapled hemorrhoidopexy (SH) for prolapsed hemorrhoids.

**Methods:**

Sixty eight patients with Grades III and IV hemorrhoids were randomized into 2 groups of 34 patients each; Group 1 patients underwent LH whereas group 2 patients underwent SH. Patient demographics, operative details, postoperative pain score, number of Parenteral analgesic injections, hospital stay, and time to return to work were all prospectively collected. Postoperative complications and recurrence of prolapse were also recorded. Patients were regularly followed-up a total period of 12 months.

**Results:**

Patient demographics and clinical characteristics were similar between both groups. The mean operating time, postoperative pain score, Parenteral analgesics, hospital stay and time off work were not statistically significant between both groups. Likewise, both groups had similar postoperative complications except for a residual prolapse that was observed, at 4 weeks postoperatively, in eight patients (23.53%) in the SH group as compared to two patients (5.89%) in the LH group (P=0.040). Although prolapse recurrence, at one year, was also higher among the SH group as compared to the LH group (11.76% vs 2.94%, respectively), yet the difference was not statistically significant (P=0.163).

**Conclusions:**

Both LH and SH yield comparable good results and minimal side effects for treatment of Grades III and IV hemorrhoids, with less residual prolapses observed with LH. Further, owing to their low postoperative pain, short hospital stay and rapid return to work, both procedures offer an excellent therapeutic option for prolapsed Grades III and IV hemorrhoids.

*Key Words: LigaSure; Hemorrhoidectomy; Stapled Hemorrhoidopexy*

*Funding Agency: Ahmadi Hospital*



***Surgery and Transplantation***

*Category: Clinical*

**231**

**Ligasure Versus Milligan-Morgan Hemorrhoidectomy: A Prospective Randomized Clinical Trial.**

\*Sakr MF

Ahmadi Hospital (KOC)

**Introduction:**

The present study was conducted to compare operative time, postoperative course and outcome of Ligasure hemorrhoidectomy (LH) and conventional open hemorrhoidectomy (OH) for prolapsed hemorrhoids.

**Methods:**

Eighty four patients with Grades III and IV hemorrhoids were randomized into 2 groups of 42 patients each; Group 1 patients underwent LH whereas group 2 patients underwent OH. Data regarding patient demographics, operative details, postoperative pain score, number of Parenteral analgesic injections, hospital stay, and time to return to work or normal physical activity were all prospectively collected. Postoperative complications and recurrence of prolapse were also recorded. All patients were regularly followed-up every two weeks for the first eight weeks postoperatively, and at two-month intervals thereafter for a total period of 12 months.

**Results:**

Patient demographics, clinical characteristics, and hospital stay were similar between both groups ( $P > 0.05$ ). The mean operating time, postoperative pain score (up to 48 hours), number of Parenteral analgesics, time off work, and time for complete wound healing were significantly less in patients undergoing LH ( $P < 0.001$ ). Both groups had similar postoperative complications except for delayed wound healing that was observed, at 4 weeks postoperatively, in seven patients (16.679%) in the LH group as compared to 17 patients (40.48.89%) in the OH group ( $X^2 = 5.83$ ,  $P = 0.016$ ). Although hemorrhoid recurrence, at one year, was also lower among the LH group as compared to the OH group (2.38% vs 9.14%, respectively), yet the difference was not statistically significant ( $P = 0.167$ ).

**Conclusions:**

LH provides a superior alternative to conventional OH in treating prolapsed hemorrhoids (Grades III & IV) by reducing operating time, postoperative pain, and time off work, and allowing faster complete wound healing with minimal comparable side effects and low recurrence rate.

*Key Words: LigaSure; Milligan-Morgan; Hemorrhoidectomy*

*Funding Agency: Ahmadi Hospital (KOC)*



***Surgery and Transplantation***

*Category: Clinical*

**232**

**Reconstruction of Soft Tissue Defects of the Foot Dorsum in Children by Latissimus Dorsi Muscle Flap: 4 Year Experience.**

\*Zakaria Y, Burezq H

Al-Babtain Centre for Burns & Plastic Surgery, Ministry of Health, Kuwait

**Introduction:**

Soft tissue construction of extensive defects of the foot dorsum represents a challenging problem to the plastic surgeon because of the poor vascularity and limited mobility of the skin in this region. Free tissue transfers have been adopted as the preferred option for reconstruction of the foot defects in the pediatric age because they are capable of providing different tissue types needed for composite defects in one single transfer and their ability to provide tissues enough for big defects coverage.

**Methods:**

From March 2006 to February 2010, 9 patients aged from 3.5 to 15 years with post traumatic soft tissue defects of the foot dorsum were treated by free latissimus dorsi muscle flap with skin graft.

**Results:**

The operative time ranged between 7-9 hours. Eight flaps survived completely and in 1 case there was partial flap loss. Two cases required exploration of the vascular anastomoses on the same day of surgery due to venous congestion. There was no case with total flap loss. Full ambulation was achieved in all cases. Good aesthetic outcome was achieved in 7 cases.

**Conclusions:**

Free latissimus dorsi muscle flap with skin graft is safe and reliable in reconstruction of extensive soft tissue defects of the foot dorsum in children. It provides well vascularized tissue for coverage of the exposed bones and tendons and has a good aesthetic outcome.

*Key Words: Foot; Children; Latissimus dorsi*

*Funding Agency: None*



***Surgery and Transplantation***

*Category: Clinical*

233

**Does Daflon® (Diosomin/Flavonoids) have an Effect on the Amount of Drained Fluid After Abdominoplasty?**

Burizq H, Al Fadhli A, Al Bader A, \*Khashaba HA  
Al Babbain Plastic and Reconstructive Centre

**Introduction:**

Seroma formation is an annoying complication for both surgeons and patients following abdominoplasty. Hypothesis tested: Pathophysiology of seroma is still unclear. There are several postulates in literature discussing the etiology of seroma. Lymphatic, venous causes and inflammatory etiology have been all described. Daflon® acts on veins, lymphatics and microcirculation increasing the venous tone, improving lymphatic drainage and decreasing capillary permeability. Effect of Daflon® on the amount of fluid drained after abdominoplasty is the aim of this study.

**Methods:**

A prospective review was conducted on 28 patients who underwent abdominoplasty with or without liposuction from Aug. 2009 to Feb. 2010. Patients were stratified into 3 groups. Group I and II started Daflon® on the 1st and 3rd postoperative days respectively and continued until 2 weeks after drain removal. The 3rd group was the control group who did not receive Daflon®. Data regarding patient's age, body mass index, and the amount of fluid drained was collected and analyzed.

**Results:**

Utilizing the IBM SPSS® program v18, the data collected from 28 patients was analyzed. In Group I (n=9) the mean of total fluid collected was 415cc, while it was 688cc in the control Group (n=8), a 39% decrease in drained fluid was documented when using Daflon®. The average number of drain days was 24% less in Group I than the control Group. All Groups were almost symmetrically distributed regarding age, sex and BMI.

**Conclusions:**

Daflon® has shown a favorable effect on decreasing amount of fluid drained and consequently seroma formation post tarsoplasty surgery. Data collected, number of patients and available literature is still scarce and more data is needed to confirm the effect of Daflon® on seroma formation.

*Key Words: Abdominoplasty; Daflon; Seroma*

*Funding Agency: None*



**Original Research Case Report**  
**By Subject Area**



**Allied Health**

*Category: Clinical*

**234**

**Physical Therapy Rehabilitation for a Patient with Injury of the Left Femoral Nerve Associated with Total Hip Replacement**

\*Mahomed S, Al-Bader N, Wall JC

<sup>1</sup>Department of Physical Therapy, Faculty of Allied Health Sciences, Kuwait University, Kuwait; <sup>2</sup>Al-Razi Hospital; <sup>3</sup>University of Alabama, USA.

**CASE REPORT**

**Background:**

The physical therapy rehabilitation of a patient with total hip replacement (THR) is straight forward. However, rehabilitation becomes rather difficult when a patient who has THR with a femoral nerve involvement. The purpose of the research is to describe the change in functional activities as presented by ‘Timed Get-Up and Go Test’ (TGUG) and time taken to ascend and descend stairs for a patient who has femoral nerve involvement associated with left THR.

**Case summary:**

A 43-year-old female patient presented with left THR with femoral nerve involvement. She received physical therapy with the use of hydrotherapy and interferential therapy to address the pain and catching of the hip adductor muscles while walking. In the TGUG test, the patient is timed in seconds, starting from a seated position, to stand up, walk 3 meters, turn, walk back, and sit down again. The time taken by the patient to climb up and down the stairs was also taken. Physical therapy rehabilitation of this patient did not do much to increase range of motion of the affected hip or to decrease pain, nor to increase the muscle power of denervated hip muscles. However, the patient showed improvement in speed of performing functional activities. The time taken to perform the TGUG test decreased with each treatment session. This was also observed in the time taken to ascend and descend stair cases of 4 and 8 steps.

**Conclusion:**

A patient who has a left THR with femoral nerve involvement can improve their functional ability although there was no improvement in the underlying impairments. The TGUG and the speed to ascend and descend stairs can be used as an outcome measure to demonstrate improvement in functional ability.

*Key Words: Total hip replacement; Femoral nerve involvement; Physical therapy*



**Anaesthesiology**

Category: Clinical

235

**Pneumothorax Following Emergency Caesarean Delivery**

Senthilnathan TA<sup>1</sup>, Singh RKA<sup>1</sup>, Ammar MH<sup>1</sup>, Anwar SAE<sup>1</sup>, Philip G<sup>1</sup>, Aziz AA<sup>2</sup>

<sup>1</sup>Department of Anaesthesiology, Al Jahra Hospital; <sup>2</sup>Department of Obstetrics & Gynecology, Al Jahra Hospital

**CASE REPORT**

**Background:**

Pneumothorax during anaesthesia is an uncommon but potentially fatal complication if not diagnosed early and treated. We report here a healthy parturient who developed a collapse of right lung during general anaesthesia as a result of pneumothorax.

**Case summary:**

Our patient is a 33year old female, gravida 2, para 1 for an emergency caesarean section due to foetal distress. Her preoperative evaluation revealed she is an asthmatic and on treatment with seretide inhaler. After uneventful surgery patient was extubated but developed respiratory distress and saturation was ranging from 88-90% with normal blood pressure, but decreased air entry in the right side of the chest. An urgent chest X-ray revealed pneumothorax with complete collapse of the right lung. A thoracostomy tube was inserted in the 5th right intercostal space and connected to an underwater seal drain. Air entry to the right side of the chest improved and a repeat chest X-ray was taken which showed expanded right lung with minimal right basal collapse. She was treated with antibiotics, mucolytics, nebulisation, and chest physiotherapy and incentive spirometry. Over a period of 5 days her chest condition improved and chest drain was removed.

**Conclusion:**

Pneumothorax can occur due to intrapulmonary alveolar rupture, rupture of emphysematous bullae, injury to visceral pleura, and injury to parietal pleura. Bucking on the tracheal tube at the end of surgery can lead to very high airway pressure and may be responsible for the leak of air or gas into the pleural space. This in combination with intermittent positive pressure ventilation during anaesthesia can lead to pneumothorax. Deteriorating general condition inspite of ventilation with 100% oxygen in the postoperative period after general anaesthesia should alert the anesthetist to the possibility of pneumothorax. The standard treatment in these cases is immediate tube thoracostomy.

*Key Words: Pneumothorax; Caesarean delivery*



**Dentistry**

Category: Clinical

236

**Ameloblastoma of the Mandible-Report of a Rare Variant.**

Andersson L<sup>1</sup>, Joseph BK<sup>2</sup>, Kullman L<sup>2</sup>, \*Devipriya B<sup>2</sup>

<sup>1</sup>Department of Surgical Sciences, Kuwait University, Faculty of Dentistry; <sup>2</sup>Department of Diagnostic Sciences, Kuwait University, Faculty of Dentistry.

**CASE REPORT**

**Background:**

Ameloblastoma is a rare odontogenic jaw tumour that shows wide morphological spectra and may pose diagnostic difficulties. Of the many types encountered, acanthomatous ameloblastoma (AA) is a rare variant that possesses distinctive histopathological features. Here, we present a clinical, radiographic and histopathologic report of a case of acanthomatous ameloblastoma.

**Case summary:**

A 32-year old Indian male presented to the university dental center with the complaint of a painless, progressive and slow-growing swelling on the left side of his lower jaw. On clinical examination, a large expansile mass was seen in the left side of the mandible in the premolar area. Radiographic examination revealed a multilocular radiolucency extending from the midline to the first molar in the left side of the mandible. Teeth #33, #34 and #35 were displaced and the roots of 35 and 36 were resorbed. An incisional biopsy was done and the tissues submitted for microscopy showed features consistent with a solid-type ameloblastoma (acanthomatous variant). To ensure complete removal and to avoid recurrence, surgical resection with 1cm normal bone was done.

**Conclusion:**

Ameloblastoma is a benign, epithelial odontogenic neoplasm that is a challenge to pathologists because of its diverse histological features as well as to surgeons because of its recurrence potential. Although it is histologically benign, it has an invasive and aggressive clinical behavior with a high propensity to recur and failure to provide adequate treatment often results in multiple recurrences.

*Key Words: Odontogenic tumours; Ameloblastoma; Acanthomatous*



**Dermatology**

Category: Clinical

237

**A Case Report: Unilesional Nodular Mycosis**

\*Ahmed A<sup>1</sup>, Kadyan RS<sup>2</sup>, Razzaq AHA<sup>2</sup>, Zadeh VB<sup>2</sup>, Joneja M<sup>2</sup>

<sup>1</sup>Department of Accident & Emergency; <sup>2</sup>Department of Dermatology  
Al-Adan Hospital, MOH, Kuwait

**CASE REPORT**

**Background:**

Mycoses fungoides is the most common variant of primary cutaneous T-cell lymphoma with an indolent clinic course and characterized by well defined clinico-pathological features. The etiology of MF is not yet established. And association with HTLV-1 has been suggested but extensive in investigation have failed to identify any of the currently recognised HTLV associated viruses in MF. Classical MF is characterized by typical cutaneous stages of disease consisting of patches and plaques. Nodular form of the disease presenting denovo without the preceding patches and plaques is uncommon. Single nodular legion of MF is still more uncommon.

**Case summary:**

A 51 year old Chinese male patient presented with a brownish red swelling over the right forearm of two weeks duration. There was no history of trauma, pain or discharge from the lesion. Clinically, an indurated, non tender, fixed nodular swelling of firm consistency was felt on flexor surface of the right forearm giving appearance of an early abscess formation. Systemic examination and routine investigations were normal. On incision, a gelatinous like material was observed. The lesion was completely excised and sent for histopathology examination that revealed mycosis fungoides. Further Tcell studies confirmed the same. We report this case because of atypical unilesional nodular presentation of mycosis fungoides. Any atypical lesion needs to be examined histopathologically to clinch the diagnosis and further management. Patient was referred to Asad Al-Ahmed Dermatology Centre for further management as part of the policy for treatment of mycoses fungoides. .

**Conclusion:**

Unilesional nodular form of mycoses fungoides is a rare presentation. Any atypical looking nodular lesion must be biopsied for proper diagnosis and management.

*Key Words: Mycosis fungoides; Unilesional nodule*



**Dermatology**

Category: Clinical

238

**A Case Report: Kimura Disease**

\*Ahmed A<sup>1</sup>, Kadyan RS<sup>2</sup>, Abdul Razzaq A H<sup>3</sup>, Joneja M<sup>4</sup>

<sup>1</sup>Accident & Emergency; <sup>2,3</sup>Dermatology; <sup>4</sup> Histopathology; Al-Adan Hospital, Kuwait

**CASE REPORT**

**Background:**

Kimura Disease is a chronic inflammatory disorder that involves subcutaneous tissues as well as regional lymph node and is characterized by angiolymphoid proliferation and eosinophilia. The disease is endemic in Far East Asia and sporadic in other geographical regions. The disease was described by Kimura and co-workers in 1948. The age range is 27 to 40 years and male-female ratio is 3:1 with an insidious onset. The manifestations are enlarging nodular masses in the head and neck areas, frequently infra or retroauricular. The lesion is single in 60% and multiple and symmetric in the rest of the patients. The peripheral blood eosinophilia and elevated serum IgE levels are constant features and the disease has a benign course.

**Case summary:**

A 39 year old Bangladeshi male patient presented to emergency minor surgery unit with history of asymptomatic swelling over the right mastoid area of one month duration. Cutaneous examination showed fleshy colored firm swelling measuring about one cm. Differential diagnosis of sebaceous cyst and lymph node enlargement were considered. The swelling was excised and sent for histopathology examination that revealed lymphnode with Kimura disease. While awaiting biopsy result, patient developed similar swelling over the left mastoid area and excision biopsy was done the result of which was Kimura disease. Other routine investigations were normal. We report this case of bilateral retroauricular Kimura disease because of rarity of this condition in this region.

**Conclusion:**

Diagnosis of Kimura disease is essentially based on histopathology. Hence such swelling as appeared in our patient, must be excised and sent for histopathological examination for proper management of the patient

*Key Words: Kimura; Bilateral post auricular region*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

239

**Appendicitis Caused by Accidentally Ingested Metallic Pin: A Case Report**

\*Al-Sarraf L<sup>1</sup>, Keluth Chavan VG<sup>1</sup>, Gupta R<sup>2</sup>

<sup>1</sup>Radiology Department, Mubarak Al-Kabir Hospital, Kuwait;

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

**CASE REPORT**

**Background:**

Foreign bodies are rare cause of appendicitis. Incidence of foreign body appendicitis has been reported to be 0.0005% in a large review of 13,228 appendectomies. Most swallowed foreign bodies such as pins, coins, dental material, whether intentional or accidental, eventually pass without any complications. These objects differ in their potential for complications like perforation as well as their translucency. Long, sharp, pointed objects are more prone for perforation. The radiological investigations have to be tailored accordingly.

**Case summary:**

A 29 year old healthy female patient presents to the emergency department with accidental swallowing of a pin while wearing head scarf (hijab). She was asymptomatic but anxious and concerned about the swallowed foreign body. Abdominal radiograph showed metallic pin in the left upper quadrant, probably in the jejunal loops. She was sent home with reassurance as most of the swallowed foreign bodies eventually pass without intervention. She came to emergency department a week later with intermittent right sided abdominal pain. Repeated abdominal radiograph showed the pin in the right lower quadrant, possibly in the distal small bowel or the caecum. A small bowel follow through examination was unremarkable. Colonoscopic retrieval failed. Further evaluation by CT scan with 3D reformatting in the coronal and sagittal planes revealed the pin lying in appendix. Appendicectomy revealed a the pin intraluminally. Histopathological examination showed acute appendicitis in the form of ulceration and neutrophilic infiltration at the point of pin contact and diagnosis of foreign body appendicitis was made. The patient had an uneventful post operative period.

**Conclusion:**

Foreign bodies are rare cause of appendicitis. Pre-operative CT scan with 3D reformatting helps in accurate localization of the foreign body as well as identification of complications for deciding appropriate patient management

*Key Words: Foreign body; CT scan; Appendicitis*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

240

**Incidental Finding of Congenital Lobar Emphysema in Premature Infant:  
Current State of Imaging: Conventional Radiographs and MD-CT**

\*Atyani SMA<sup>1</sup>, Hamed IMA<sup>2</sup>, Al-Adwani M<sup>2</sup>, Al-Saad S<sup>2</sup>

<sup>1</sup>Mubarak Al-Kabeer Hospital; <sup>2</sup>Al-Jahra Hospital

**CASE REPORT**

**Background:**

Congenital lobar emphysema (CLE) is characterized by progressive over distension of a lobe or occasionally two lobes, with emphysema being a misnomer, as there is no alveolar wall destruction. The aetiology is unknown in 50% of cases, but is probably related to destruction of the bronchus by a ball-valve mechanism. TLE may appear as opacity on chest radiograph owing to retention of fetal lung fluid after birth. Chest computed tomography (CT) can reveal hyper-inflated lobe with attenuating and displaced pulmonary vessels.

**Case summary:**

A premature male baby was delivered at 29 weeks gestation with a birth weight of 1300 grams. He was intubated soon at birth and managed according to Neonatal Intensive Care Unit (NICU) protocol then extubated and reintubated in the third day because of respiratory deterioration. The baby remained intubated for three months. At the age of 6 weeks he was diagnosed to have CLE based on a plain chest radiograph and CT scan of the chest. They revealed an evidence of emphysema causing shift of the mediastinum to the right side with marked distortion of the pleural reflections to the right side of the midline.

**Conclusion:**

CLE may result from abnormal bronchial cartilage deficiency, inflammatory changes, inspissated mucus, mucosal folds or webs, bronchial stenosis and extrinsic compression. Histological examination of the 'emphysematous' lobes reveals distended alveoli with thin septae, which may be associated with an increase in the alveoli number. During the first few days of life, the lung fluid may become trapped in the involved lobe, giving an opaque enlarged hemi-thorax. This gradually clears via vascular and lymphatic re-absorption resulting in the classical emphysematous radiographic appearance. Chest CT scan is a useful imaging modality in diagnosing multi-lobe involvement and mass effect on the remaining adjacent ipsilateral lung and mediastinal structures.

*Key Words: Congenital Lobar Overinflation; Congenital Lobar Emphysema; Pulmonary Developmental Anomaly*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

241

**Persistent Hyperplastic Primary Vitreous (PHPV) in Premature Infant: Current state of imaging: MRI and MD-CT**

\*Al-Adwani M, Hamed IMA, Fathy AH, Al-Saad S.

Al-Jahra Hospital

**CASE REPORT**

**Background:**

Persistent Hyperplastic Primary Vitreous (PHPV) is a rare condition with persistence and proliferation of embryonic hyaloid vascular system of primary vitreous due to arrest of normal regression. The condition presented with unilateral leukokoria, cataract, micro-ophthalmia or retinal detachment. Ophthalmoscopy may S-shaped tubular mass extending between posterior surface of lens and region of optic nerve head. Lens opacity may preclude the diagnosis.

**Case summary:**

A premature baby girl (28 weeks-second twin) presented with respiratory distress syndrome (RDS) grade three. She was ventilated since birth and given two doses of surfactant at birth and at 7 hours of age. She was kept on nasal continuous positive airway pressure (CPAP) for 4 days and nasal cannula for 8 days. She was re-intubated at 2 weeks old due to sepsis with apnea and pulmonary hemorrhage. Blood culture was positive for candidemia, and she was started on amphotericin-B and fluconazole was added after 2 weeks. Both Orbits magnetic resonance imaging (MRI) and complementary computed tomography (CT) scanning revealed: evident left microphthalmia, shallow anterior chamber, small irregular lens with no definite calcifications (on CT) and increased attenuation of the vitreous. Right eye globe and optic nerve were within normal limits. So, PHPV with micro-ophthalmia was the likely diagnosis. A follow up MRI after 15 days showed no evident interval changes.

**Conclusion:**

Micro-ophthalmia can be the result of primary ocular hypoplasia, PHPV, congenital infections and inborn errors of metabolism. PHPV is a malformation that is caused by a failure of regression of the fibrovascular tissue of the primary vitreous and of the hyaloid artery, which delivers blood to the primary vitreous and the developing lens.

*Key Words: Persistent Hyperplastic Primary Vitreous; Microphthalmia; Leukokoria*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

242

**Vertebral Osteomyelitis Without Disc Involvement**

\*Al-Adwani M, Hamed IMA, Atyani SMA, Al-Sharnoby J  
Al-Jahra Hospital

**CASE REPORT**

**Background:**

Vertebral osteomyelitis (VO) is typically associated with involvement of the intervertebral disc and adjacent vertebral bodies. Moreover, the definition includes involvement of any of the osseous or soft tissue extradural elements of the spine, including the neural arch, epidural space and paravertebral soft tissues. VO can be pyogenic or non-pyogenic (granulomatous).

**Case summary:**

An 11 year old child presented with pain of the neck and left upper limb. Clinical examination revealed weakness of the left upper limb on extension, absent triceps reflex, and preserved sensation. Investigations showed positive Tuberculin skin test. Plain radiograph of cervical spine (c-spine) showed widened intervertebral foramina at levels of sixth and seventh cervical and first dorsal vertebrae. Pre- and post-contrast computed tomography (CT) scan of c-spine revealed pre- and left para-vertebral soft tissue density mass lesion extending through the left intervertebral foramen to form intra-spinal component compressing the left antro-lateral aspect of the cord with homogenous enhancement and small locules of break down area. Magnetic resonance imaging (MRI) of c-spine confirmed the above-described lesion. There was no evidence of discitis. A diagnosis of tuberculous vertebral osteomyelitis without disc involvement was made. This was confirmed by biopsy. Anti-tuberculous treatment was started and the condition improved dramatically.

**Conclusion:**

VO can be pyogenic or non-pyogenic. Irrespective of the etiology, the vertebral body may rarely be involved with sparing of the adjacent disc, resulting in diagnostic difficulty. In addition to infective causes of VO, the spine may be involved in related conditions such as chronic recurrent multifocal osteomyelitis (CRMO) and SAPHO-syndrome (Synovitis, Acne, Pustulosis, Hyperostosis, and Osteitis).

*Key Words: Vertebral Osteomyelitis Without Disc Involvement; Vertebral Osteomyelitis; T. B. Spine*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

243

**CT Angiography for Brain Death Diagnosis**

\*Hamed IMA, Al-Adwani M, Gab-Alla MH

Al-Jahra Hospital

**CASE REPORT**

**Background:**

The diagnosis of the brain death (BD) relies on clinical documentation that the patient is in a coma, has no brain stem reflexes, and is apneic following maximal stimulation of respiratory centers. Many countries require a clinical diagnosis of BD to be confirmed by demonstration of lack of brain cerebral function or circulation. The methods accepted for such demonstrations include electroencephalography (EEG), transcranial Doppler (TCD), and conventional angiography. Although conventional angiography remains the reference standard method for demonstrating lack of cerebral circulation, computed tomography angiography (CTA) is emerging as a viable alternative.

**Case summary:**

A 21 years old male patient was involved in a road traffic accident (RTA) and admitted to intensive care unit (ICU). A plain computed tomography (CT) scan of the brain was done and showed right high parietal subdural haematoma, and generalized brain edema. The patient was in irreversible deep unresponsive coma with no brain stem function and no spontaneous respiration. He was diagnosed as BD clinically. He was referred to our department for confirmatory CTA. CTA revealed lack of opacification of both internal carotid arteries (ICAs). Both vertebral arteries as well as the proximal parts of the basilar artery were delineated with contrast yet its distal part could not be delineated (i. e. not opacified).

**Conclusion:**

Lack of cerebral circulation is an important confirmatory test for BD. The CTA is emerging as an alternative test. France accepts BD diagnosis relying on a score based on lack of opacification of the 7 intracranial vessels in CTA images. The nonopacification of cortical segments of the middle cerebral arteries (MCAs) and the intra-cerebral vessels (ICVs) appears highly sensitive for confirming brain death, maintaining a specificity of 100%. Absence of opacification of ICVs is the most sensitive sign. Compared with other ancillary tests for BD, CTA is reliable, standerdised, and widely accessible and can examine the whole body.

*Key Words: Brain Death; Coma; CT-Angiography*



***Imaging (Nuclear Medicine and Radiology)***

*Category: Clinical*

**244**

**Case Report: Paroxysmal Nocturnal Haemoglobinuria (PNH) presented as an Acute Abdomen**

\*Hamed IMA, Ryiad MN, Al-Adwani M, Negem Hamed S.  
Al-Jahra Hospital

**CASE REPORT**

**Background:**

Paroxysmal Nocturnal Hemoglobinuria (PNH) is a hematologic disorder characterized by a defect in Glycosyl Phosphatidyl Inositol (GPI) anchor due to a genetic abnormality. The clinical manifestations of PNH include hemolytic anemia, a hyper-coagulable state, and diminished hemopoiesis. Intramural hematoma is rare and often associated with trauma, bleeding diathesis, anticoagulant therapy intake, and other underlying pathologies such as leukemia, lymphoma or purpura.

**Case summary:**

A 32 year old male patient, who is known to have PNH and is kept on Warfarin due to previous ischemic brain stroke, presented with fever and acute abdominal pain, guarding, and tenderness at the right hypochondrium. Ultrasound (US) study of the abdomen revealed segmental circumferential small bowel wall thickening with hypo-echoic pattern and echo-genic lumen, giving a Target sign on transverse scan. Computed tomography (CT) scan of the abdomen showed the extent of small bowel mural thickening that was enhanced after contrast administration with no direct or indirect signs of ischemia.

**Conclusion:**

PNH is a chronic disease with significant morbidity and mortality. Hemolytic anemia is a constant feature of PNH. All patients will require blood support and aggressive management of infection. The curative treatment of young PNH patients is allogenic bone marrow transplantation. Like CT, technical advances over the last decade have pushed US evaluation of small-bowel disease to the forefront of modern gastrointestinal tract imaging. Bowel interrogation using US relies heavily on graded compression to assess mobility.

*Key Words: Paroxysmal Nocturnal Haemoglobinuria; Aplastic Anaemia; Bowel Wall Haematoma*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

245

**Large Vessel Vasculitis: Case of Fever of Unknown Origin diagnosed with whole body 18F-FDG PET/CT**

\*Marafi F<sup>1</sup>, Esmail A<sup>1</sup>, Al-Awadi E<sup>2</sup>, Al-Mohannadi S<sup>1</sup>

<sup>1</sup>Department of Nuclear Medicine, PET/CT Unit, Faisal Sultan Bin Issa for Diagnostic and Radiotherapy, Kuwait; <sup>2</sup>Department of Nuclear Medicine, Farwania Hospital, Kuwait

**CASE REPORT**

**Background:**

67-Galium citrate (Ga-67) was previously performed in cases of Fever of Unknown Origin (FUO), however, 18F-Fluro-deoxy-glucose (F18-FDG) PET/CT has been recently a standard imaging modality for cases of FUO.

**Case summary:**

A 56-year-old male patient presented with FUO for last six weeks with mild cough. All the blood workup and radiological studies were inconclusive. He was injected with 9 mCi of F18-FDG and waited for 60 minutes for the uptake period. The patient underwent whole body (head to toes) F18-FDG PET/CT scan that revealed diffuse FDG activity within the walls of large vessels including carotids, subclavians whole aorta and iliac vessels. The findings were proved by immunological work-up and clinical response to medical treatment.

**Conclusion:**

F18-FDG PET/CT is replacing 67-Galium citrate (Ga-67) study because of superior image resolution, short acquisition time and accurate anatomical localization using fused CT-Scan images.

*Key Words: FUO; PET/CT; Vasculitis*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

246

**Dermatomyositis: A Case of Specific Pattern of F-18 FDG Muscle Uptake on PET/CT Study**

\*Al-Awadi E<sup>1</sup>, Marafi F<sup>2</sup>, Esmail A<sup>2</sup>, Al-Mohannadi S<sup>2</sup>.

<sup>1</sup>Department of Nuclear Medicine, Farwania Hospital; <sup>2</sup>Department of Nuclear Medicine, KCCC.

**CASE REPORT**

**Background:**

Dermatomyositis is an idiopathic inflammatory myopathy with characteristic cutaneous manifestations. An increased risk of underlying malignancy has been found in patients with dermatomyositis. A sort of dermatomyositis is thought to be paraneoplastic syndrome and the disease may follow clinical course of malignancy. There have been several reports of exaggerated physiological muscle uptake of F18-FDG during PET/CT study, mostly as a result of muscle activity shortly before the F18-FDG injection or during the uptake phase, or as a result of insulin administration in hyperglycemic patients. Inflammation is another recognized cause of F18-FDG uptake in the muscle. And in the presence of gross F18-FDG uptake by different muscle groups, the possibility of myositis should be considered.

**Case summary:**

A 32 year-old woman with right breast malignant mass was referred to the Nuclear Medicine Department for an F18-FDG PET/CT study for an initial staging. She was recently diagnosed with dermatomyositis for which she required treatment with prednisolone. The whole-body PET/CT images demonstrated hypermetabolic lesions in the right breast as well as the right axillary lymph nodes consistent with the clinical history of breast cancer. In addition, extensive bilateral diffuse muscular uptake was present in certain major muscle groups, including those of the scapula, pelvis, and the extremities. There were no obvious morphologic changes in these muscles on CT portion of the study. There was no history of hyperglycemia, insulin administration, or noticeable muscle activity before imaging.

**Conclusion:**

This case illustrates a specific pattern of F18-FDG muscle uptake in a patient with breast cancer with concomitant dermatomyositis. Different causes of F18-FDG muscle uptake were reviewed. Whole body PET/CT imaging may offer clinicians a functional tool to evaluate the extent of dermatomyositis and monitoring the response to therapy.

*Key Words: Dermatomyositis; F18-FDG PET/CT study; Muscle Uptake*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

247

**False-positive In-111 pentetreotide uptake in Helicobacter pylori Associated Gastritis.**

\*Usmani S<sup>1</sup>, Alshammari A<sup>2</sup>

<sup>1</sup>Department of Nuclear Medicine, Hussain Makki Al Jumma Centre for Specialized Surgery, Kuwait;

<sup>2</sup>Department of Nuclear Medicine, Mubarak Al-Kabeer Hospital, Kuwait

**CASE REPORT**

**Background:**

<sup>111</sup>In-pentetreotide [<sup>111</sup>In- octreoscan] is the most widely used radiolabeled somatostatin analog for evaluating neuroendocrine tumors. False-positives studies of somatostatin receptor scintigraphy have been reported and often the cause is unexplained but assumed to be due to high number of somatostatin receptors in other pathologies. Causes of false positives include visualization of the gallbladder, nasal mucosa, pulmonary hilar areas in respiratory infections, thyroid abnormalities, accessory spleens, recent CVAs and activity at the site of a recent surgical incision. In inflammation the cause of false positive Uptake is probably due to tracer binding by somatostatin receptors on the inflammatory leukocytes.

**Case summary:**

44 years male was admitted in March 2009 with a history of a right axillary swelling associated with pain. Needle core biopsy suggested metastatic rather than a primary tumor and that the degree of neuroendocrine differentiation seen may suggest primary lung or GI origin. Patient was referred to nuclear medicine department for <sup>111</sup> indium- pentetreotide scan. The scan images revealed a large focal area of increased tracer uptake at the right axilla. Diffuse increased tracer uptake seen at the left upper abdomen in the region of the stomach was also noted. Patient had an endoscopy and five biopsies were taken from suspicious areas in the gastric antrum and gastric body. The biopsies revealed chronic active Helicobacter Pylori associated gastritis.

**Conclusion:**

Awareness of gastritis as a cause of false positive of <sup>111</sup> indium- pentetreotide scan is important for better interpretation of the scan and should be investigated before further management decisions.

*Key Words: <sup>111</sup>In-pentetreotide; Neuroendocrine tumors; False-positives*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

248

**Pyomyositis Mimicking Osteomyelitis on Bone Scan: Clinical Usefulness of Single Photon Emission Computerized Tomography-Computed Tomography (SPECT-CT)**

\*Khan MU<sup>1</sup>, Abdullah ZS<sup>1</sup>, Kumar KS<sup>1</sup>, Javaid A<sup>2</sup>, Habib E<sup>1</sup>, Dafalla AB<sup>1</sup>

<sup>1</sup>Department of Nuclear Medicine, Al-Jahra Hospital, Kuwait; <sup>2</sup>Department of Nuclear Medicine, Farwaniya Hospital, Kuwait

**CASE REPORT**

**Background:**

Pyomyositis (Tropical Pyomyositis) is bacterial infection occurring in muscles. Being resistant muscle is rarely infected by bacteria however in poorly- controlled-diabetics one should have a high clinical index of suspicion for this rare complication. Many advocate CT/MRI for diagnostic imaging whereas some suggest ultrasonography and scintigraphy. With hybrid SPECT-CT imaging system, scintigraphy provides more functional and anatomical information to tailor management in such scenarios. SPECT-CT in the following case proved decisive and assisted the attending physicians to reach a diagnosis and decide subsequent management.

**Case summary:**

45-year-old man having type-II-diabetes with poor control was admitted through ER with acute left calf pain, swelling and fever; having evident signs of acute inflammation. Ultrasound was unremarkable for DVT. Patient was referred to Nuclear Medicine department with clinical query to distinguish cellulitis from osteomyelitis. Initial routine 3-phase planar images with Tc-99m MDP showed scintigraphic features suggestive of soft tissue inflammation and osteomyelitis along the shaft of left fibula. However, SPECT-CT images performed as departmental protocol for localized abnormalities, revealed low attenuation lesions in the calf muscles and the abnormal uptake was anatomically localized to lateral compartment muscles of the calf rather than the bone. MRI imaging was recommended on the basis of the SPECT-CT results. These showed multiple, discrete small inter and intra-muscular collections. In view of clinical information diagnosis of pyomyositis was made. Clinically in Stage II, he underwent prompt multiple incision and drainage procedures with isolation of Staphalococcus aureus on pus C/S. With IV and later oral antibiotics; strict diabetic control, he eventually improved and was discharged after six weeks of hospitalization.

**Conclusion:**

SPECT-CT acquisition appears vital to provide decisive information in poorly-controlled type-II diabetics presenting with limb pain and swelling, thus aiding in diagnosis and subsequent prompt patient management as evident in this case of pyomyositis.

*Key Words: Pyomyositis; Type II diabetes; SPECT CT*



**Imaging (Nuclear Medicine and Radiology)**

Category: Graduate (Resident)

249

**Detection of Extra-Intestinal Manifestation of Ulcerative Colitis Using Technetium-99m-Dimercaptosuccinic Acid (Tc-99m DMSA-V) Imaging: A Case Report**

\*Ashkanani R, Loutfi I, Mehdi SA

Department of Nuclear Medicine, Faculty of Medicine, Kuwait University, Kuwait

**CASE REPORT**

**Background:**

Ulcerative colitis (UC) is a chronic inflammatory disease confined primarily to the colon yet can be associated with a variety of extraintestinal manifestation (EIMs) in up to 30%. Isolated sacroiliitis is one of these manifestations (estimated prevalence of 42% when only sensitive diagnostic tools are used). Consequently, the condition is often missed or inappropriately treated. Tc-99m DMSA-V, a tumor-seeking agent, has been increasingly used in the assessment of patients with UC since it was found to localize in various inflammatory sites. We report this case in which Tc-99m DMSA-V showed uptake at the site of disease activity in the colon in addition to the extra-intestinal involvement in the SI joint.

**Case summary:**

A 35 years old male was admitted to Amiri hospital with severe left-sided low back pain of sudden onset radiating to the left thigh. He also complained of lower abdominal pain and bouts of diarrhea (1-3 times a day) associated with streaks of blood. His past medical history included ulcerative colitis since 2003. Investigations showed elevated CRP and ESR. Stool tests were negative. A pentavalent Tc-99m DMSA-V scan including dynamic (0-30 minutes), 2 hours and 24 hours images post iv administration of 20 mCi (740 MBq) Tc-99m DMSA-V showed increased radiotracer localization to the left colon and left sacroiliac joint. MRI confirmed active left sided sacroiliitis.

**Conclusion:**

The usefulness of Tc-99m DMSA-V imaging in the detection of intestinal and extra-intestinal pathology in UC is illustrated. The routine use of this new non-invasive method in similar conditions may be warranted.

*Key Words: DMSA pentavalent; Ulcerative colitis; Sacroiliitis*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

250

**Introducing Selective Internal Radiation Therapy (SIRT) for Metastatic Colorectal Cancer to Kuwait: New Therapeutic Option.**

Esmail A<sup>1</sup>, Marafi F<sup>1</sup>, Nemej J<sup>2</sup>, Al-Ali A<sup>3</sup>, Al-Nafisi N<sup>1</sup>, Al-Mohannadi S<sup>1</sup>

<sup>1</sup>Department of Nuclear Medicine, PET/CT Unit, Faisal Sultan Bin Issa for Diagnostic and Radiotherapy; <sup>2</sup>Department of Medical Oncology, Kuwait Cancer Control Center; <sup>3</sup>Department of Interventional Radiology, Mubarak Al-Kabeer Hospital, Kuwait

**CASE REPORT**

**Background:**

Resection of solitary liver metastases is the best treatment, however only 10–20% of patients are reasonable surgical candidates due to medical co-morbidities or presence of multiple metastases. Alternative therapies include radiofrequency ablation, transcatheter arterial embolization and chemoembolization. SIRT is a method that delivers radiolabelled particles depending on a beta emitting Yttrium-90 (Y90) radionuclide with effective radiation to the metastatic liver lesions, without giving unacceptable doses to the normal liver tissue. SIRT procedure requires the need for working in a multimodality team (Medical Oncologist, Surgeon, Interventional Radiologist, Radiation Protection Officer and Nuclear Medicine Physician). Currently, two products are available worldwide (TheraSphere, Canada) and (SIR-Spheres, Australia).

**Case summary:**

We describe the approach to treat the first case of metastatic colorectal cancer to the liver with SIRT using TheraSphere. A 70 years old male patient was selected because of two liver lesions no longer amenable for any conventional treatment with either chemotherapy or surgery. Biochemical and blood investigations were done. A pretreatment planning was done with visceral angiography included a selective coil embolization and technetium-99m macro aggregated albumin (MAA) injection. The patient shunt study showed acceptable lung shunting. Two weeks later, a second visceral angiography was performed to deliver the calculated dosage of TheraSphere into the arterial system supplying the tumor. Tri-phasic CT studies and FDG PET/CT done before and after therapy used to assess response to SIRT. Tumor marker levels were used. The patient showed no response to administered therapy.

**Conclusion:**

This case illustrates the pertinent steps required for SIRT. This is a promising therapeutic option that needs careful selection of patients through the combined expertise of the team.

*Key Words: SIRT; Multi-modality; Liver metastasis*



**Imaging (Nuclear Medicine and Radiology)**

Category: Clinical

251

**Management of Radiation Retinopathy Exacerbated by Pregnancy in a Young Patient with Choroidal Melanoma**

\*Bouhaimed M<sup>1</sup>, Alalai A<sup>2</sup>

<sup>1</sup>Departments of Community Medicine and Surgery, Kuwait University Faculty of Medicine;

<sup>2</sup>Maternity Hospital, Kuwait

**CASE REPORT**

**Background:**

Ocular damage from radiation treatment is a well established phenomenon. The incidence of radiation retinopathy is influenced by; radiation dose, radiation fractions, total time of treatment, radioisotope used, tumor size and tumor location. The presence of systemic diseases like diabetes and hypertension, history of chemotherapy treatment, and pregnancy have all been shown to exacerbate the development of radiation retinopathy. Radiation retinopathy is a slow delayed-onset progressive vaso-occlusive retinal disorder which needs to be correctly diagnosed and managed to ensure maintenance of functional visual acuity and quality of life.

**Case summary:**

A 39 years old woman diagnosed with right eye Choroidal Melanoma (9x7x4. 5 mm) while 32 weeks pregnant, was treated with Iodine (125I) radioactive plaque in the USA two months after giving birth in 2004. The plaque delivered doses of 17,200 cGy to the tumor base at 1. 0mm depth and 8,000 cGy to its apex at 5. 5mm depth. The estimated dose to the optic disc was approximately 2,380 cGy and to the macula approximately 4,686 cGy. Two years later and while pregnant with her second child, she started experiencing blurred vision secondary to subretinal fluid and was diagnosed with radiation retinopathy. She received two Bevacizumab (Avastin) intra vitreal injections and sectorial laser treatment. She maintained 20/20 vision in this eye with inactive tumor. In 2009, she re-experienced the ocular symptoms and received intra vitreal injection of Triamcinolone 2mg. The patient condition stabilized with evidence of improvement with serial Optical Coherence Tomography (OCT) testing.

**Conclusion:**

Although it may be impossible to eliminate the risk of radiation retinopathy, healthcare professionals should be aware of the factors that potentiate the effects of radiation and aim to minimize such factors. Patients should also be educated regarding the possible development of retinopathy associated with their disease and/or treatment and the need for appropriate follow-up.

*Key Words: Radiation Retinopathy; Choroidal Melanoma; Bevacizumab (Avastin)*



**Medicine**

*Category: Clinical*

**252**

**Endoscopic Removal of Intra-gastric Penetrated Adjustable Gastric Band  
Post-Bariatric Surgery: The Kuwait Experience**

\*Al Ali J<sup>1</sup>, Mohammad A<sup>2</sup>, Alsumait B<sup>2</sup>

<sup>1</sup>Department of Medicine, University of Kuwait, Faculty of Medicine; <sup>2</sup> Department of Surgery,  
Mubarak Al-Kabeer Hospital, Kuwait.

**CASE REPORT**

**Background:**

Penetration of the laparoscopically implanted adjustable gastric band into the stomach is one of the late complications of the procedure. The majority of these cases require invasive surgical intervention. We report a series of cases with penetrated adjustable gastric bands that were successfully managed endoscopically.

**Case summary:**

Five female patients underwent laparoscopic implantation of adjustable gastric band for morbid obesity approximately two years before presentation. All patients presented with nausea, vomiting, epigastric pain and weight gain. Gastroscopy in all five cases revealed partial migration of the adjustable gastric band greater than thirty percent inside the gastric lumen. All patients elected an initial endoscopic approach to remove the band, with the surgical team standby. Endoscopic band removal was successful in all cases with no complications. Hospital stay was two days and feeding was re-started 24 hours post band removal.

**Conclusion:**

Penetration of adjustable gastric band is a rare late complication. Endoscopic removal is viable, safe and less invasive treatment option in highly selected patients presenting with migrated intra-gastric implanted adjustable gastric band. This novel technique offers a low risk procedure and a safer option.

*Key Words: Adjustable gastric band; Penetration; Endoscopic removal*



**Medicine**

Category: Clinical

253

**Gastrointestinal lipomatosis from Anemia to Intussusception**

\*Al Ali J<sup>1</sup>, Aldahham A<sup>3</sup>, Soliman MO<sup>3</sup>, Asfar S<sup>2,3</sup>

<sup>1</sup>Department of Medicine, University of Kuwait, Faculty of Medicine; <sup>2</sup>General Surgery, University of Kuwait, Faculty of Medicine; <sup>3</sup> Department of Surgery, Mubarak Al-Kabeer Hospital, Kuwait.

**CASE REPORT**

**Background:**

Gastrointestinal lipomas are rare benign tumors. They typically occur as solitary submucosal lesion in the colon, ileum and jejunum and rarely in the stomach or esophagus . We report a lady suffering from iron deficiency anaemia and recurrent abdominal pain which later was shown to be caused by multiple gastrointestinal lipomata involving the stomach and small bowel.

**Case summary:**

A 59 year-old women presented with history of lethargy, weakness, and severe attacks of colicky upper abdominal pain. Physical examination was unremarkable. Initial laboratory investigation revealed hemoglobin of 67 g/L, with MCV of 76 f/L, and a positive fecal occult blood test. Colonoscopy was normal. CT-Scan showed multiple, different sizes lesions in the stomach, duodenum. One lesion in the proximal jejunum showed the target sign typical of intussusception of the bowel with no obstruction. Push enteroscopy showed multiple large submucosal lesions in the second part of the duodenum . A large pedunculated lesion was also found at the proximal jejunum partially obstructing the lumen with some ulceration on its tip. Laparotomy showed pedunculated submucosal polyp in the second part of duodenum which was excised, the big polyp in the proximal jejunum was excised likewise. There was a bunch of smaller polyps distal to this area these were excised by resecting a segment of 8 cm of the upper jejunum. Histopathology of all the specimens showed benign submucosal lipomata.

**Conclusion:**

Multiple lipomatosis of the GI tract are rare, this case is unique as it presented with iron deficiency anaemia necessitating repeated blood transfusions in addition to recurrent colicky abdominal pain which turned up to be due to chronic intussusception cause by a pedunculated lipoms in the upper jejunum.

*Key Words: Gastrointestinal; Lipomas; Intussusception*



**Medicine**

Category: Clinical

254

**A Case of Dengue Fever**

\*Al Tarrah MY<sup>1</sup>, Al Shalfan FH<sup>2</sup>, Abdulsalam SM<sup>3</sup>

<sup>1</sup>Amiri Hospital, MOH; <sup>2</sup>Virology Department, Kuwait University; <sup>3</sup>Mubarak Al Kabeer Hospital, MOH

**CASE REPORT**

**Background:**

Dengue fever is an acute life threatening febrile illness, which occurs in tropical areas. The absence of vector (Aedes mosquitoes) appears to be responsible for the absence of local viral transmission. For that reason, majority of cases are of non-Kuwaiti residents or people travelling to tropical epidemic countries.

**Case summary:**

A 63-year-old Canadian male from a Pakistani origin presented with three days history of high fever, vomiting, diarrhea and altered mental status for one day. He is known diabetic, hypertensive and asthmatic. Patient has recently come back one week ago from Pakistan. He is a non smoker and non alcohol consumer. On presentation, his temperature was 39. 6°C, blood pressure was 153/85 mm Hg, respiratory and heart rates were normal. He was alert, but not oriented, but was able to follow simple commands. On examination, patient was jaundiced and abdomen was distended, mild right upper quadrant tenderness with hepatosplenomegaly. A diffuse, non-blanching, confluent rash was present on his upper and lower limbs, in addition bruises mainly at venipuncture sites. The rest of his exam was unremarkable. His laboratory work up revealed mild anemia, severe thrombocytopenia and a prolonged coagulation profile. During the patients stay he developed worsening of all his laboratory workup. An Enzyme-Linked Immunosorbent Assay tests were performed to detect viral causes showing positive results for Dengue Virus Immunoglobulin M (IgM) and for Dengue Virus Immunoglobulin G (IgG), otherwise, his serum was negative for Hepatitis A virus Immunoglobulin M (HAV AB IgM), Hepatitis B virus surface Antigen (HBsAg), and Hepatitis C virus Antibodies (Anti-HCV).

**Conclusion:**

Although Dengue fever virus is uncommon to be transmitted in Kuwait, the possibility to have such a case with its complications is not unlikely. Dengue hemorrhagic fever is a self-limiting disease and it is treated by supportive measures, but severe complications should be suspected.

*Key Words: Dengue Fever; Acute Hepatitis; Tropical Diseases*



**Medicine**

Category: Clinical

255

**Moyamoya in Adult Down Syndrome**

\*Al-Tarrah MY<sup>1</sup>, Al-Jamaan EH<sup>2</sup>

<sup>1</sup>Amiri Hospital, MOH; <sup>2</sup>Mubarak AL Kabeer Hospital, MOH

**CASE REPORT**

**Background:**

Moyamoya disease is a progressive occlusive disease of the cerebral vasculature with particular involvement of the circle of Willis and the arteries that feed it. It is characterized by the appearance on angiography of abnormal vascular collateral networks that develop adjacent to the stenotic vessels. The steno-occlusive areas are usually bilateral, but unilateral involvement does not exclude the diagnosis. The exact etiology of moyamoya disease is unknown. The incidence of moyamoya disease is highest in Japan. With regard to sex, the female-to-male ratio is 1.8:1.

**Case summary:**

Miss Z. A is a twenty five years old patient with Down syndrome presented to us with one day history of left sided weakness. On physical examination: The patient was conscious, oriented, and difficult to engage in conversation. Her blood pressure was 110/72, heart rate was 76 and regular and temperature was 37.3°C. Her central nervous examination revealed a power deficit of 4/5 of both upper and lower left limbs. No cranial nerve affection. Chest, abdomen and cardiovascular system were all within normal limits. Her CT brain revealed: acute vascular infarct versus demyelization. We proceeded to MRI and MRA brain finding were consistent with moyamoya. We further investigated her with a Carotid Doppler which was normal, and immunology work up was negative. Echo was done to rule out congenital abnormality, the study was normal.

**Conclusion:**

Moyamoya is a chronic cerebrovascular disorder characterized by progressive stenosis of the internal carotid artery and its branches. In adult Down syndrome moyamoya is not very common but has been described in pediatric patients. The association between Moya moya and Down syndrome is not well understood yet, with the possibility of the autoimmune hypothesis and protein deficiency could explain the occurrence.

*Key Words: Down Syndrome; Adult; Moya Moya*



**Medicine**

*Category: Clinical*

**256**

**Erythema-Nodosum in Renal Transplant Recipients: Multiple Cases and Review of Literature**

\*Gheith O, Al Otaibi T, Abd-el-tawab K, Balaha MA, Abdelhalim M, Nampoory MRN  
Hamed Al-essa organ Transplant Center, Ibn Sina, Sabah Area

**CASE REPORT**

**Background:**

Erythema nodosum is a cutaneous inflammatory reaction located on the anterior aspects of the lower extremities. A review of the literature reveals a long list of etiologic factors like infections, sarcoidosis, rheumatologic diseases, inflammatory bowel diseases, medications, autoimmune disorders, pregnancy, and malignancies. Histopathologically, it showed septal panniculitis with no vasculitis and the inflammatory infiltrate in the septa varies with age of the lesion. In early lesions edema, hemorrhage, and neutrophils are responsible for the septal thickening, whereas fibrosis, peri-septal granulation tissue, lymphocytes, and multinucleated giant cells are the main findings in late stage. There are no reports of classical erythema nodosum in renal transplant recipients in English medical journals.

**Case summary:**

We here in report four renal transplant recipients presented with classical erythema nodosum with different etiologies. In all cases, primary immunosuppression was tailored without induction and maintained by cyclosporine and MMF. Also, all cases were subjected to the following investigations to rule out autoimmune disorders: anti-ds-DNA, rheumatoid factor, antistreptolysin O (ASO), (c&p) ANCA, ANA, C3 and C4, anti-cardiolipin, and B-glycoprotein. Also, we investigated for infections especially HBV, HCV, CMV, HIV, EBV and antibodies against legionella, mycoplasma and brucella. Also, T-spot test, blood and urine cultures were performed for bacteria and fungi.

**Conclusion:**

\*\* Erythema nodosum can develop in renal transplant patients who did not receive induction therapy, non-rejecters and those with steroid free protocols. \*\* Management of erythema nodosum should be directed to the underlying associated condition which could be TB, IBD or drug induced.

*Key Words: Erythema nodosa; Kidney; Transplant*



**Microbiology and Immunology**

Category: Clinical

257

**Invasive Pulmonary Aspergillosis due to Amphotericin B-resistant Aspergillus Terreus Diagnosed by Detection of Galactomannan, (1-3)-B-D-Glucan, and DNA in Serum Samples**

\*Burhamah MHA<sup>1</sup>, Mokaddas E<sup>2</sup>, Khan ZU<sup>2</sup>, Ahmad S<sup>2</sup>

<sup>1</sup>NBK Cancer Ward, Al-Sabah Hospital; <sup>2</sup>Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait

**CASE REPORT**

**Background:**

Invasive pulmonary aspergillosis (IPA) remains a significant cause of morbidity and mortality in immunocompromised patients. Timely and accurate diagnosis is essential but challenging because of non-specific clinical and radiologic findings. Moreover, the yield of positive cultures from respiratory specimens is low and may be non-specific. To overcome these limitations, there has been a need to develop alternative diagnostic strategies. This case report highlights the value of detection galactomannan (GM), (1→3)-β-D-glucan (BDG), and *Aspergillus terreus*-specific DNA in serum samples as an adjunct to the conventional diagnostic methods.

**Case summary:**

A 9-year-old child with acute lymphocytic leukemia was presented in March 2008 with complaints of bony pain, pallor, fatigability, loss of weight, nose bleeding and fever of 3-week duration. His hemogram revealed WBC 68 x10<sup>9</sup>/L (Blast 90%), and platelet 77 x 10<sup>9</sup>/L leading to suspicion of acute lymphoblastic leukemia (ALL), which was subsequently confirmed by bone marrow examination. Induction chemotherapy as per UK-MRC-ALL protocol was started. While on maintenance therapy, he developed hematologic relapse with complex cytogenetics along with positive Philadelphia chromosome. Since the patient became febrile with respiratory manifestations, a CT chest was performed revealing multiple cavitory lesions in both the lung fields. The sputum culture yielded *A. terreus* resistant to amphotericin B and susceptible to voriconazole by Etest. The diagnosis of IPA was established by the detection of GM, BDG, and *A. terreus*-specific DNA in serum samples. The patient was treated with voriconazole, but succumbed to infection despite treatment.

**Conclusion:**

To the best of our knowledge, this is the first report of invasive *A. terreus* lung infection in an ALL pediatric patient from Kuwait. The report underscores the usefulness of detection of biomarkers as surrogates for the diagnosis of invasive aspergillosis.

*Key Words: Invasive aspergillosis; Galactomannan, (1→3)-β-D-glucan; Aspergillus terreus-specific DNA*



**Obstetrics and Gynecology**

Category: Clinical

258

**Cavernous Hemangioma of the Uterine Cervix, A Case Report Complicating LEEP Surgery.**

\*Al-Jassar W<sup>1</sup>, Al-Safi R<sup>2</sup>

<sup>1</sup>Department of Obstetrics & Gynecology, Faculty of Medicine, Kuwait University; <sup>2</sup>Department of Laboratory Medicine, Histopathology Unit, Maternity Hospital, Kuwait.

**CASE REPORT**

**Background:**

Cavernous hemangioma is a benign vascular tumor that can rarely occur in the uterine cervix. It is usually asymptomatic. However, it may cause an abnormal vaginal bleeding with cervical irritation or injury.

**Case summary:**

We present a case of cavernous hemangioma of the uterine cervix in a 41 year-old women who developed heavy vaginal bleeding after loop electroexcision procedure (LEEP) done for moderate cervical intraepithelial neoplasia. Simple hysterectomy was done to control her bleeding after failure of the conservative and surgical management. Pathologic evaluation of her uterus demonstrated an incidental cavernous hemangioma in the endocervical stroma as a cause of her bleeding.

**Conclusion:**

Hemangiomas of the uterine cervix are rare. Although most of the reported cases were asymptomatic, they may cause an abnormal vaginal bleeding which may require further surgical intervention.

*Key Words: Cavernous hemangioma; Cervical dysplasia; LEEP*



**Pathology**

Category: Clinical

259

**Ovarian Dermoid Cyst Associated with Pelvi-abdominal Tuberculosis: A Rare Case Report Mimicking Ovarian Cancer**

\*Al-Safi R<sup>1</sup>, Al-Jassar W<sup>2</sup>, Anvarsadath S<sup>3</sup>, Raina A<sup>1</sup>

<sup>1</sup>Department of Laboratory Medicine, Histopathology Unit, Maternity Hospital, Kuwait; <sup>2</sup>Department of Obstetrics & Gynecology, Faculty of Medicine, Kuwait University; <sup>3</sup>Department of Obstetrics & Gynecology, Maternity Hospital, Kuwait.

**CASE REPORT**

**Background:**

Peritoneal tuberculosis (TB) is similar to ovarian cancer with respect to the clinical, radiological and laboratory findings. Very few cases of ovarian dermoid cyst associated with silent tuberculosis were described in the literature. We present a rare case of ovarian dermoid cyst associated with tuberculosis and mimic ovarian cancer clinically.

**Case summary:**

A 32-YEAR-OLD Indonesian woman referred to the gynecology department with suspected ovarian malignancy. She had history of abdominal pain and distension of two months duration. Her serum CA-125 and CA-19 was elevated. A left pelvic mass with ascitis and mesenteric lymphadenopathy were identified by abdominopelvic CT-scan. The patient underwent staging laparotomy during which left cystic ovarian mass was noted along with multiple fine seedlings and small nodules studded to its outer surface as well as to the peritoneum, uterus, fallopian tubes and right ovary. Left salpingo-oophorectomy was performed and sent for intra-operative evaluation followed by partial omentectomy. Macroscopic examination revealed an ovarian dermoid cyst measuring 11X8X6cm and filled with cheesy material and hair. Multiple small white nodules were found on the outer surface of the cyst and the overlying fallopian tube. Frozen section was performed followed by further examination of the paraffin sections. Both frozen and permanent sections confirm the presence of the ovarian dermoid cyst along with multiple tuberculous necrotizing granulomas seen in the dermoid cyst wall, left fallopian tube and omentum. Acid-fast bacilli were demonstrated by ziehl-Nelson histochemical stain. The patient was started on anti-tuberculous treatment and had uneventful postoperative period.

**Conclusion:**

Pelvic tuberculosis can remain silent and diagnosed incidentally due to the presence of another pelvic pathology. Pelvic tuberculosis should be considered in the differential diagnosis of clinically suspected ovarian malignancies and frozen section evaluation of the lesion is crucial to avoid further unnecessary extensive surgery

*Key Words: Tuberculosis; Dermoid cyst; Ovarian cancer*



**Pathology**

*Category: Clinical*

**260**

**Tonsilar Kaposi's Sarcoma in a Patient with Membranous Glomerulonephritis on Immunosuppressive Therapy**

\*Al-Brahim N, Zaki AH, El-Merhi K, Ahmad MS

Department of Pathology, Farwaniya Hospital

**CASE REPORT**

**Background:**

Kaposi's sarcoma is a malignant vascular neoplasm uncommonly seen in immunosuppressed and Mediterranean patients. Herein we report an unusual case of tonsilar kaposi's sarcoma in a patient with membranous glomerulonephritis treated with prednisolone and cyclosporine.

**Case summary:**

A thirty year old male presented after ten months of starting immunosuppressive therapy for nephrotic syndrome with a tonsilar mass. Histological examination was typical of monomorphic spindle cell proliferation with slit-like vascular channels. The tumor cells expressed CD34, D2-40 and positive nuclear stain for HHV-8.

**Conclusion:**

Kaposi's sarcoma is rarely associated with glomerulonephritis and rarely occurred in the tonsil and the clinicians should be aware of it.

*Key Words: Glomerulonephritis; Immunosuppression; Kaposi's sarcoma*



**Pathology**

Category: Clinical

261

**Cutaneous Angiolymphoid Hyperplasia with Eosinophilia-Case Report**

\*Arora R, Abou Bakr A  
Farwania Hospital, Kuwait

**CASE REPORT**

**Background:**

Angiolymphoid hyperplasia with eosinophilia ( ALHE ) also known as histiocytoid hemangioma and epithelioid hemangioma clinically present as cutaneous inflammatory-looking nodule mostly on head and neck region. Histologically it is the benign member of a family of vascular proliferations characterized by presence of epithelioid ( histiocytoid ) endothelial cells. It needs to be distinguished from the borderline and malignant lesions belonging to this group as well as from a lymph node disease called Kimura based on clinical and pathological features.

**Case summary:**

A 35 year old man presented with a well defined subcutaneous painful nodule in the scalp. It was gradually increasing in size for past 3 month. An excision was done with a clinical diagnosis of inflammatory nodule. Histopathology revealed classical features comprising of central area of proliferating blood vessels lined by epithelioid endothelial cells. These were infiltrated and surrounded by heavy inflammatory infiltrate rich in eosinophils and containing lymphoid follicles. There was no significant mitosis or atypia. Immunostains for endothelial cells ( Factor VIII and CD34 ) were positive. No eosinophilic abscesses or lymph node architecture was observed. Diagnosis of ALHE was rendered.

**Conclusion:**

Diagnosis of ALHE is possible in majority of cases based on location and pathologic features. However exceptions to these rules and overlaps are common. Hence knowledge of this entity is important in order to avoid misdiagnosis as epithelioid hemangioendothelioma, angiosarcoma or Kimura disease which can have serious therapeutic implications.

*Key Words: Vascular tumor; Angiolymphoid hyperplasia; Epithelioid hemangioma*



**Pathology**

Category: Clinical

262

**Angiomyofibroblastoma of Vulva-A Rare Distinct Entity**

\*Arora R, Abou Bakr A, Sayed M  
Farwania Hospital

**CASE REPORT**

**Background:**

Angiomyofibroblastoma (AMFB) is a rare but distinct benign tumor which arises from stroma of the lower female genital tract and belongs to a group of relatively site specific mesenchymal tumors. Other well characterized members of this group include aggressive angiomyxoma (AAM), mesodermal (fibroepithelial) stromal polyp (MSP), cellular angiofibroma (CA) and superficial cervicovaginal myofibroblastoma (SCVM). AMFB needs to be distinguished from others since it has potential therapeutic implication.

**Case summary:**

A 45 year old Bangladeshi lady presented with a painless gradually enlarging lesion on the left labia. Local examination revealed soft, freely mobile mass with the clinical diagnosis of lipoma. The lesion was completely excised. The specimen consisted of well circumscribed globular mass measuring 3x2.5 cm with solid homogenous and glistening cut surface. Microscopy showed well demarcated tumor characterized by alternating hypocellular and hypercellular areas associated with prominent vessels throughout. Tumor cells were spindle shaped to oval with relatively uniform, bland nuclei and eosinophilic ill defined cytoplasm. The cells were intimately associated with thin strands of collagen and tended to concentrate around blood vessels. The morphologic and immunohistochemical features were consistent with the diagnosis of angiomyofibroblastoma. Key points regarding pathogenesis and biological properties of this tumor are also discussed.

**Conclusion:**

Vulval AMFB has characteristic histology, benign behavior and can be adequately treated with simple excision. It is important to recognize this entity with respect to other mesenchymal tumors of this region which may have more aggressive behavior as they can be locally infiltrative and recur after excision.

*Key Words: Angiomyofibroblastoma; Vulva; Mesenchymal tumor*



**Pathology**

Category: Clinical

263

**Follicular Thyroid Carcinoma with Clear Cell Change: Diagnostic Dilemma in Fine Needle Aspiration Cytology**

\*Sheikh ZA<sup>1</sup>, Mohammad J<sup>1</sup>, Ibrahim B<sup>1</sup>, Ramadan BAA<sup>1</sup>, Das DK<sup>12</sup>

<sup>1</sup>Cytology Unit, Mubarak Al-Kabeer Hospital; <sup>2</sup>Department of Pathology, Faculty of Medicine, Kuwait University, Kuwait.

**CASE REPORT**

**Background:**

Clear cell change has been reported in a number of thyroid tumors including follicular carcinoma, papillary carcinoma and medullary carcinoma as well as metastatic malignancies in thyroid such as from renal cell carcinoma and carcinomas from organs like breast, lung, liver, ovary, uterus, cervix and salivary gland. This unusual feature may be a reason for diagnostic pitfall in tissue diagnosis, especially when immunostaining for thyroglobulin is negative. We report a case of follicular carcinoma of thyroid with clear cell change, in which follicular neoplasm with clear cell change was one of the possibilities considered during initial examination of fine needle aspiration (FNA) smears.

**Case summary:**

A 35-year-old man presented with an ill-defined swelling in the right lobe of thyroid. FNA smears from the lesion were very cellular and contained cells with very fragile and granular to finely vacuolated cytoplasm, round and regular nuclei with prominent nucleoli. A few cells with intact cytoplasm had a cuboidal to columnar or polyhedral shape, which formed acini at places. Besides follicular neoplasm (clear cell type), other possibilities considered were medullary carcinoma and granular cell tumor. However, the latter two possibilities were ruled out when immunocytochemical staining for thyroglobulin yielded positive reaction. Total thyroidectomy was performed in an European hospital. The specimen showed a mass measuring 6 centimeters in the right lobe, which was diagnosed as adenocarcinoma with clear cells. The patient presented with bilateral cervical swellings after 5 years, which were subjected to fine needle aspiration. FNA smears showed a metastatic lesion having cytomorphology similar to the primary tumor. FNA cytodiagnosis was metastatic follicular carcinoma-clear cell variant.

**Conclusion:**

The cytopathologist should be aware of the existence of this unusual variant of follicular carcinoma in order to avoid a diagnosis of metastatic malignancies.

*Key Words: Follicular thyroid carcinoma; Clear cell change; Fine needle aspiration cytology*



**Pathology**

Category: Clinical

264

**Jejunal Perforation Caused by Schistosomiasis**

\*Singh NG<sup>1</sup>, Rifat Mannan AAS<sup>1</sup>, Kahvic M<sup>1</sup>, Rifaat AA<sup>1</sup>, Alanzi FMN<sup>2</sup>

<sup>1</sup>Department of Pathology, Al Jahra Hospital, Kuwait; <sup>2</sup>Department of Surgery, Al Jahra Hospital, Kuwait.

**CASE REPORT**

**Background:**

Parasitic infections of the intestine remain an important public health problem in tropical countries. However, in countries not endemic for such infections, imported forms can be encountered in migrant populations or travelers. Although the majority of the infected individuals do not reveal overt morbidity, such infections are known to result in severe manifestation in certain circumstances. Intestinal perforation is a relatively rare complication in parasitic diseases. However it can be caused by a variety of helminthic infections such as ascariasis, trichuriasis, enterobiasis, strongyloidiasis, angiostrongyliasis costaricensis, schistosomiasis and taeniasis.

**Case summary:**

We report an extremely unusual case of jejunal perforation caused by adult schistosoma worm. A 49-year-old South Korean man presented with acute abdominal pain and vomiting that developed over four days. His condition rapidly deteriorated and an emergency exploratory laparotomy was performed. There was a 3 mm perforation at the mesenteric border of jejunum, covered with infiltrated, friable and irregular edges. The diseased segment was excised. Microscopic examination revealed many adult worms of schistosoma, bordering the perforation site as well as in healthy looking parts of mucosa. Schistosomiasis frequently involves various parts of intestine, but perforation is an extremely unusual complication. Our review of literature revealed only 3 recorded cases of colon perforation associated with schistosoma infection. To our knowledge, this is the first case of jejunal perforation associated with adult worm of schistosoma in English literature.

**Conclusion:**

In conclusion, we present a very unusual case of schistosomiasis presenting as acute abdomen due to small bowel perforation. The current case serves as a reminder to the clinicians about the varied presentations of schistosomiasis, which should be borne in mind while evaluating a case of acute abdomen.

*Key Words: Intestinal perforation; Jejunum; Schistosomiasis*



**Pediatrics**

*Category: Clinical*

**265**

**Distinct Features of a Carbohydrate-deficient Glycoprotein Syndrome Type 2 Patient in Kuwait**

\*Makhseed N<sup>1</sup>, \*Dhaunsi GS<sup>2</sup>, Jaeken J<sup>3</sup>

<sup>1</sup>Departments of Pediatrics, Jahra Hospital, Ministry of Health, Kuwait; <sup>2</sup>Faculty of Medicine, Kuwait University, Kuwait, <sup>3</sup>Center for Metabolic Disease, University Hospital Gasthuisberg, Leuven, Belgium.

**CASE REPORT**

**Background:**

Congenital disorders of Glycosylation (CDG) are relatively a new group of inherited metabolic disorders with their incidence reported from various parts of the world. While prevalence of various autosomal recessive disorders is common in the Middle East, cases of CDG have been rarely documented from Gulf countries. We report for the first time a CDG patient from Kuwait that has some distinct clinical characteristics.

**Case summary:**

This patient brought to the clinic by her mother with complain of motor delay was found to have hepatomegaly (5cm below right coastal margin) and microcephaly (3rd centile). Serum levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST) and alkaline phosphatase (AP) were 125 IU/L (normal 10–60), 316 IU/L (normal 10-42) and 1296 IU/L (normal 44-147) respectively. Serum levels of gamma glutamyl transpeptidase ( $\gamma$ -GT) were also markedly elevated (84 IU/L, normal 9-35). Patient had normal spleen and there were no signs of jaundice or pallor. Isoelectric focusing (IEF) was performed on serum sample of this patient to analyze sialo-transferrin isoforms and it was observed that this patient has CDG type 2 IEF pattern. Abdominal ultrasound revealed the presence of multiple nodules and Magnetic Resonance Imaging (MRI) showed diffuse involution changes with partial atrophy of corpus callosum.

**Conclusion:**

This is the first report on prevalence of CDG syndrome in Kuwait and distinct features of our patient such as liver cirrhosis with multiple nodules, corpus callosum atrophy, left hydronephrosis and microcephaly indicate wide variations in clinical phenotype of CDG type 2 syndrome.

*Key Words: Pediatrics; CDG; Transferrin*



**Pediatrics**

Category: Graduate (Resident)

266

**Non-resolving Pneumonia in a Female Child: Rare Presentation**

\*Atyani SM, Al-Khabbaz AM, Al-Hajeri MH

Mubarak Al-Kabeer Hospital

**CASE REPORT**

**Background:**

Chronic granulomatous disease (CGD) is a rare inherited immunodeficiency disorder resulting from a defect of NADPH-oxidase complex of phagocytic cells. Consequently, patients with CGD are prone to serious and recurrent infections caused by microorganisms with catalase activity; fungal infection is of note.

**Case summary:**

This paper describes a female child with CGD presenting as fungal pneumonia. The diagnosis of CGD in this patient was established by demonstration of a reduced oxidase activity of phagocytes on nitroblue tetrazolium (NBT) test and flow cytometry assay. In the meantime, fungal infection was suggested by a positive glucan test. She received voriconazole, a second generation azole, as treatment for her acute infection and was commenced on antimicrobial prophylaxis.

**Conclusion:**

Approach to non-resolving or unusual pneumonia in children should include assessment of the immunity status of the host, notably phagocytes function. Early suspicion and diagnosis of CGD is worthwhile as it reduces morbidity and mortality and affects effectiveness of management.

*Key Words: Chronic Granulomatous Disease; Pneumonia; Fungal Infection*



**Pediatrics**

*Category: Clinical*

**267**

**Congenital Cystic Adenomatoid Malformations**

Alsaad AS, \*Aleem AA

Neonatal Intensive Care Unit, Pediatric Department, Jahra Hospital, MOH

**CASE REPORT**

**Background:**

The development of the respiratory system begins at 3 weeks of gestation, and aberrations in developmental processes may give rise to a group of structural abnormalities collectively referred to as bronchopulmonary foregut malformations. CCAM is a rare congenital pulmonary lesion, with a reported incidence of 1 in 25,000–35,000 pregnancies, involving maldevelopment of terminal branches, as a consequence of abnormal embryogenesis during the first 6–7 weeks of pregnancy.

**Case summary:**

A male infant was born at 30 weeks of gestation, a part of quadruplets, received one dose of surfactant at birth, the baby was kept on mechanical ventilation for the first 24 hours then weaned off oxygen by the third day. At the age of 21 days the baby developed unexplained tachycardia without evidence of respiratory distress or sepsis. On Investigating the baby for the unexplained tachycardia, Echo revealed no PDA or other structural anomalies, repeated CXR showed a cystic lesion of the left lung. CT chest was done to define the lesion and the differential diagnosis of a cystic pulmonary mass was considered. The baby was operated upon where a left upper lobectomy was done and proved to be a CCAM, the baby was perfectly well and discharged home with no residual lung disease.

**Conclusion:**

In our case the disease was not only rare, but the presentation was unusual, RDS was masking the picture in the first few days and the presentation in the form of unexplained tachycardia due to the anatomical site of the lesion. CT scan provides a morphological assessment of the lung cavities, but it is inadequate to differentiate CCAM from other cystic lung diseases with similar imaging features. Surgical resection is the treatment of choice in all cases of CCAM and in order to perform a histological examination and to prevent infection and the potential neoplastic transformation.

*Key Words: Cystic adenomatoid malformation; Newborn; Respiratory distress*



**Physical therapy**

Category: Clinical

268

**CT Guided Physical Therapy Program in Arthrogenic Muscle Inhibition**

\*Soliman AS, Youssef AH, Alshami NS

Physiotherapy Department, Al-Jahra Hospital, Ministry of Health

**CASE REPORT**

**Background:**

Arthrogenic muscle inhibition (AMI) is an ongoing reflex inhibition of musculature surrounding a joint following distension or damage to structures of that joint. In practice, it is a common sequel after knee injuries, thus among all cases of knee injuries referred to physiotherapy outpatient clinic Jahrah hospital, the patients had atrophied quadriceps muscle and clinical physiotherapist used to measure the girth measurement of the whole thigh using tape measurement that could not reflect the real changes in atrophied quadriceps in addition to that measurement error could not be detected. Thus, CT may be a useful measurement to be used in physiotherapy practice.

**Case summary:**

One subject participated in this study diagnosed with LSLC injury of LT knee, the cross sectional area (CSA) measurement using CTS at mid thigh. The measurement is done to the sound side prior to the treatment and to the affected side pre and post treatment. Pain and distance of walking measured by visual analogue scale and treadmill respectively pre and post treatment. The treatment included resistive exercises, proprioceptive training, electrical muscle stimulation, ultrasound and hot pack for four weeks. Results (1) the change of pain scores between baseline and post treatment using 2 standard deviation band were significant (2) Significant difference in walking distance after treatment (from 150 to 170m) (3) The CTS revealed that in pretreatment, affected side CSA (76 cm<sup>2</sup>) is smaller 8% than the sound side (82 cm<sup>2</sup>) while in post treatment, the affected side CSA is (79 cm<sup>2</sup>, 3%).

**Conclusion:**

The evaluation of CSA of quadriceps as an indicator for the improvement in patient status and efficacy of physical therapy program in AMI could be detected by CTS as the girth measurement of the thigh is not related to the quadriceps muscle strength. The CT image could be used in physical therapy practice to reflect improvement in patient status after knee injuries.

*Key Words: Arthrogenic muscle inhibition; CT; Cross sectional area*



***Surgery and Transplantation***

*Category: Clinical*

**269**

**Complete Laparoscopic Excision of Giant Mesenteric Cyst: A Case Report  
and Review of the Literature**

\*Muneera BN<sup>1</sup>, Ahmad AM<sup>1</sup>, Fahad AA<sup>12</sup>

<sup>1</sup>Department of Surgery, Al-Adan hospital, Kuwait; <sup>2</sup>Department of Surgery, Faculty of Medicine,  
Kuwait University

**CASE REPORT**

**Background:**

Mesenteric cysts (MCs) are defined as cystic masses located in the mesentery. Different treatment modalities have been discussed in the literature of which total cystectomy is the therapeutic method of choice. The first successful surgical resection was performed by Tillaux in 1880, while Mackenzie et al. described the first case of laparoscopic excision of a mesenteric cyst in 1993.

**Case summary:**

A 25 years old Kuwaiti married lady was referred from Gynecologist with 5 month history of abdominal mass. On examination, there was a firm pelvi-abdominal mass of 20 X 15 cm. CT abdomen and pelvis showed a large intra-abdominal, multi-locular cyst sized 19X10X13 cm extending from pelvis upward to right hypochondral area and causing displacement of adjacent bowel loops and indentation of urinary bladder. the mass was successfully excised completely by laparoscopy and was removed from the same 12mm port without extending the wound. She had uneventful post operative period and was discharged on the third post operative day. The final histopathology report was consistent with multilobular mesenteric cyst. Patient was followed in surgical outpatient clinic with no complaint till one year post-operatively.

**Conclusion:**

Complete laparoscopic cyst excision can be performed without any complications in appropriately selected patients performed by well trained laparoscopic surgeons. Possible drawbacks of laparoscopic treatment are (a) the reported 3% incidence of malignancy and (b) the uncertainty of preoperative diagnosis.

*Key Words: Giant mesenteric cyst; laparoscopic excision*



***Surgery and Transplantation***

*Category: Clinical*

**270**

**Angioid Streaks: A Very Rare Ocular Problem with Very Serious Clinical and Ethical Challenges.**

Bouhaimed M<sup>1,2,3</sup>

<sup>1</sup>Department of Community Medicine and Behavioural Sciences, Kuwait University, Faculty of Medicine; <sup>2</sup>Department of Surgery, Kuwait University, Faculty of Medicine; Al-Baher Eye center, Ibn Sina Hospital, Ministry of Health, Kuwait

**CASE REPORT**

**Background:**

Angioid streaks are fractures in Bruch's membrane, which allows for ingrowth of abnormal Choroidal Neovascular membranes (CNVM) into the subretinal space. CNVM secondary to angioid streaks tends to leak and are associated with poor visual prognosis when the macula is affected.

**Case summary:**

A 38 years old otherwise healthy gentleman, presented with sudden blurring of vision and metamorphopsia (irregularities in seeing straight lines) in one eye. He was referred to the Retina Unit and was diagnosed with Angioid Streaks in both eyes with evidence of bilateral macular hemorrhages. Optical Coherence Tomography(OCT), Fluorescein Angiograph(FA), and Indocyanine Green Angiography (ICGA) confirmed the diagnosis and delineated the CNVM. The major challenge in managing this case is assuring patient's understanding of treatment options and their limitations. Firstly, Laser photocoagulation has been used to treat CNVM secondary to angioid streaks; however, high recurrence rates and functional problems related to the progression of CNVM or laser-induced scars are problematic and not appropriate in this case because of the central foveal location. Secondly, Photodynamic Therapy (PDT) use for maintaining macular function seems to be a valid option but short-lived due to frequent reported recurrence and subsequent chorioretinal atrophy. Finally, favorable short-term results in the treatment of CNVM secondary to angioid streaks have been reported with the use of multiple intravitreal injections of the angiogenesis inhibitor Bevacizumab(Avastin) with unknown effectiveness over the long-term.

**Conclusion:**

Avastin hasn't yet been proven effective for any ocular disease in a controlled clinical trial. 'We don't know if the dose is correct, who will respond? And we don't know when to stop it, It's all seat-of-the-pants'. Communicating this to the patient is a clinical and ethical challenge to say the least.

*Key Words: Angioid Streaks; Choroidal Neovascular membrane; Bevacizumab (Avastin)*



***Surgery and Transplantation***

*Category: Clinical*

271

**Avastin Use in Ophthalmology: Clinical and Ethical Considerations**

Bouhaimed M<sup>1,2,3</sup>, Dhiab F<sup>3</sup>

<sup>1</sup>Department of Community Medicine and Behavioural Sciences, Kuwait University Faculty of Medicine; <sup>2</sup>Department of Surgery, Kuwait University, Faculty of Medicine; <sup>3</sup>Al-Bahar Eye Center, Ibn Sina Hospital, Ministry of Health

**CASE REPORT**

**Background:**

'Bevacizumab(Avastin), a humanized monoclonal antibody that inhibits vascular endothelial growth factor, is one of the most closely watched drugs in the world today. Ophthalmologists are both enthused to have it in their armamentarium and concerned that its "miracle drug" reputation is too optimistic'. This case presentation present with clinical evidence the hopes and hesitations associated with its use for patients with ocular pathologies and focuses on a rare but serious side effect with devastating results.

**Case summary:**

A 55 year old diabetic patient was treated abroad for his 'Diabetic Retinopathy (DR) and Macular edema' with a single Intra Vitreal Avastin injection to the right eye(R) in October 2009. His Visual Acuity(VA) before injection was 0. 2 in the (R) eye and 1. 0 in the Left. The patient reported that within 24 hours after the injection a significant loss of vision had occurred. There is no information about the immediate post injection ocular status. He presented to our unit 10 days post injection and was found to have very poor VA of counting fingers in the R eye, IOP of 28 mmHg, evidence of corneal edema, and poor visualization of the retina. The patient was treated with anti inflammatory drops, Antibiotics and Anti glaucoma drops to control the high IOP and was followed up for a month before he decided to consult his original medical team abroad. Cataract surgery was performed in that eye abroad and VA did not improve. Better visualization of the retina at this stage revealed that there is a central retinal vein occlusion with no evidence of DR in either eye!

**Conclusion:**

Patients with no previous diagnosis of glaucoma or ocular hypertension might experience significant and persistent ocular hypertension after intravitreal Avastin injection and therefore pre and post injection IOP reading is a must in all patients and should be included as an item in the clinical protocol of anti-VEGF injections.

*Key Words: Bevacizumab (Avastin); Diabetic Retinopathy; Increased Intra Ocular Pressure*



***Surgery and Transplantation***

*Category: Clinical*

**272**

**Scoliosis as a Rare Risk Factor for Colon Perforation During Colonoscopy: A Case Report**

\*AlHarbi O, AlOsaimi S, AlKandari I

Department of Surgery, Farwanyia Hospital, Kuwait

**CASE REPORT**

**Background:**

Colonoscopy has been used for the diagnosis and treatment of a wide range of diseases. A variety of complications are associated with colonoscopy, the most serious one is perforation of the colon, which is more frequently after therapeutic procedures. It's rare complication but, a life threatening and may require surgical intervention, or conservative treatment in selected cases. There are some risk factors associated with iatrogenic colonoscopic perforation (CP) such as diverticular disease and previous intra-abdominal surgery. Knowing factors influencing CP is important to avoid or minimize it. We are describing an unreported risk factor for iatrogenic CP.

**Case summary:**

A 59 year old female, underwent colonoscopy screening for chronic anemia. She well prepared, the procedure went smoothly, with perfect tolerance and sedation. No abnormalities detected upto the cecum, but the endoscopist noted a small tear in the sigmoid colon upon pulling the scope against her bony structures. Few hours later she developed fever and lower abdominal pain which gradually increased. Abdominal X-Ray showed severe scoliotic deformity of the lumbar spine with left convexity and pneumo-retroperitoneum. CT Scan detected thickened wall of sigmoid colon with mild amount of air and fluid collection in the pelvis, mainly perisigmoid in location. Clinically, she was stable, having tender lower abdomen. The case was successfully managed conservatively and follow up CT scan showed reduction of that collection. The mechanism of CP in our case is related to the bony deformity which precipitated the injury.

**Conclusion:**

Patients with severe scoliosis and skeletal deformity undergoing colonoscopy, have a higher risk of CP as the scope is pushed/pulled against unexpectedly, abnormally located bony structures. Symptoms of abdominal pain or peritonitis following colonoscopy in this group of patients should be highly suspected for colon injury and should be managed accordingly.

*Key Words: Colon Perforation; Iatrogenic Perforation*



***Surgery and Transplantation***

*Category: Clinical*

273

**Laparoscopic Excision of Pedunculated Hepatic Haemangioma**

\*Al. Dawood A, Labib HA, Asfar S

Surgical Department, Al. Adan Hospital, MOH, Kuwait

**CASE REPORT**

**Background:**

Haemangioma, is the most common benign tumor of the liver, it is found in approximately 2% of all autopsies. Haemangioma is the most common solid benign hepatic lesion, with a reported prevalence of 0.4 to 7.3% in western countries. Liver haemangioma is a vascular malformation (not a neoplasm) and becomes enlarged by vascular ectasia. Giant cavernous hemangiomas are those larger than 4 cm, and the only ones of clinical importance hepatic venous hemangioma is common benign tumor, most of haemangiomas are asymptomatic, and only few cases were presented by non specific symptoms such as abdominal pain, distension or palpable mass. Diagnosis based mainly on sophisticated radiological studies such as U/S, CT scan, MRI and angiography. We report a case of Giant hepatic haemangioma which was excised laparoscopically

**Case summary:**

A 30 years-old lady, presented with vague left side abdominal pain with no associated symptoms. Her past history was medically not significant. Her laboratory tests were within normal value. U/S and CT abdomen showed 15 cm x 15 cm cystic lesion located in lateral to stomach fundus, below left diaphragm, and above spleen with line of cleavage. Selective angiography was done showed no relation between celiac axis with the mass. Laparoscopy was done showed pedunculated mass attached to the tip of left lobe with avascular plane. Endo GIA was applied and cyst was removed from the umbilical port after extension of the wound. Postoperative period was uneventful.

**Conclusion:**

Treatment for giant haemangioma is always surgical to eliminate the symptoms and to avoid complication such as bleeding. Selective embolisation was consider an effective treatment by interventional radiologist.

*Key Words: Hepatic; Haemangioma; Giant*



***Surgery and Transplantation***

*Category: Clinical*

**274**

**A Case Report: Primary Subcutaneous Hydatid Cysts of the Thigh**

\*Dawood AL<sup>1</sup>, Ahmed A<sup>2</sup>

<sup>1</sup>Department of Surgery, Adan Hospital, Kuwait; <sup>2</sup>Department of Accident & Emergency Kuwait

**CASE REPORT**

**Background:**

Hydatid cyst that is caused by *Echinococcus granulosus* occurs more commonly in lung, liver, bone and brain. Its occurrence in soft tissue is rare.

**Case summary:**

A 26 year old Indian male presented with 6 months' history of a painful swelling in thigh. It had started oozing for a few days. Examination revealed a 12 x 8 cm elongated, erythematous and tender swelling with a small necrotic area discharging yellowish turbid fluid from its lower part.

With the clinical diagnosis of abscess, it was incised. It discharged turbid fluid and revealed a multilocular bed underneath. Histopathology showed infected hydatid cyst leading to the diagnosis of Primary subcutaneous (soft tissue) hydatid cyst of thigh. Although rare at this site, it should be considered in the differential diagnosis.

**Conclusion:**

Primary subcutaneous hydatid cyst of the thigh that is extremely rare. It should be considered in differential diagnosis of a soft tissue swelling among immigrant from endemic area.

*Key Words: Hydatid cyst; Subcutaneous tissue; Kuwait*



***Surgery and Transplantation***

*Category: Clinical*

**275**

**A Solitary Hamartomatous Polyp of the Ileum Causing Adult Intussusception:  
A Case Report**

\*AlOsaimi S, AlHarbi O, Saad E

Department of Surgery, Farwanyia Hospital, Kuwait

**CASE REPORT**

**Background:**

Intestinal intussusception in adults is rare and almost always associated with pathological lead point, such as carcinomas, Meckel's diverticulum, and polyps, the later commonly associated with Peutz-Jeghers syndrome. The clinical presentation in adult intussusception varies but often chronic, and most patients present with nonspecific symptoms that are suggestive of intestinal obstruction. Abdominal pain is the most common symptom followed by vomiting and nausea.

**Case summary:**

A 22 year old single woman, presented with sudden colicky abdominal pain, nausea and vomiting of one day duration. She reported similar attacks in the last one year and absent menstruation since 2 months. Clinically she was pale, dehydrated, abdomen was mildly distended with tender central abdominal mass. Blood test showed iron deficiency anemia, and negative pregnancy test. Abdominal X-Ray unremarkable. Initially she was evaluated by a gynecologist, investigated her using ultrasonography which showed a mass related to small bowel, this was followed by CT Scan that detected an extensive ileo-ileal intussusception with gangrenous wall and complete obstruction. Upon exploratory laparotomy ileo-ileal intussusception was found with a lead point of an intra-lumen polypoid lesion, the ileal lumen was obstructed with a gangrenous segment of 70 cm, the rest of the bowel were normal and free of polyps. Resection and end-to-end anastomosis were performed. Pathological study revealed a benign Hamartomatous polyp. Since neither family history of intestinal polyposis nor mucocutaneous pigmentation existed, we labeled her as incomplete type Peutz-Jeghers syndrome.

**Conclusion:**

The clinical presentation of adult intestinal intussusception is nonspecific which may lead to delayed diagnosis. Small bowel obstruction secondary to intussusception with a polyp as a lead point should be suspected in adult patient with iron deficiency anemia and a long history of recurrent abdominal pain.

*Key Words: Adult Intussusception; Ileo-ileal intussusception*



***Surgery and Transplantation***

*Category: Clinical*

276

**Double Layer Repair for Huge Irreducible Incisional Hernia Under  
Ultrasound-Guided Bilateral Transversus Abdominis Plane (TAP) Block.**

\*Singh RKA<sup>1</sup>, Senthilnathan TA<sup>1</sup>, Ammar MH<sup>1</sup>, Ayman FE<sup>2</sup>, Tamam TF<sup>1</sup>, Jagia M<sup>1</sup>

<sup>1</sup>Department of Anaesthesia & ICU, Al Jahra Hospital. Kuwait; <sup>2</sup>Department of Surgery, Al Jahra Hospital, Kuwait.

**CASE REPORT**

**Background:**

The objective of this case report is to describe the feasibility of abdominal double layer repair for huge irreducible incisional hernia under ultrasound –guided bilateral transversus abdominis plane block for an ASA IV/ E patient.

**Case summary:**

An 46-year old male, a known case of IHD, hypertension with dilated cardiomyopathy, post CABG and double valves replacement, peripheral vascular disease, DM with nephropathy and neuropathy, Budd Chiari syndrome with significant ascitis, bed ridden, bed sores with past history of failed aorto-femoral bypass, was admitted for huge irreducible incisional hernia. He was conscious and oriented but dyspnoeic and tachypnoeic. He was categorized as ASA IV/E. Considering his multi-medical problems and high risk grade, the emergency operation was planned under regional anaesthesia rather than general anaesthesia. A 100mm 20 Gauge needle was inserted in plane with a linear ultrasound probe positioned oblique and parallel to subcostal margin. The local anesthetic solution of 20 ml of 0.125% bupivacaine + 20ml of 0.5% lidocaine + 0.2mg of adrenaline was deposited within the TAP, neurovascular fascial between internal oblique muscle and transversus abdominis muscle in each side. The patient was given inj Midazolam 1mg i/v and sufentanil 5microg i/v. After 25min the abdomen was opened, the content of hernial sac i. e. the loop of bowel was viable. The double layer repair for irreducible incisional hernia was started and completed with aspiration of 4litres of ascitis fluids in 1.30 hrs. The patient was shifted to ICU and was pain free for about 33 hours. VAS pain score (0-10cm) was used to monitor the pain.

**Conclusion:**

Though the TAP block is mostly used for post operative analgesia in first 24 hrs, it can be used as a sole anesthetic for abdominal surgery for a very high risk patient avoiding the undesirable complications of GA in such high risk patient with multi-medical problems.

*Key Words: Ultrasound-guided transversus abdominis plane; (TAP) block-regional; Irreducible hernia*



***Surgery and Transplantation***

*Category: Clinical*

277

**Liver Mucormycosis in Renal Transplant Recipient**

\*Balaha MA, Said T, Hasanen H, Biju MV, Awadain WH, Zakaria Z, Nampoory MRN  
Hamed Al-Essa Organ Transplant Organ

**CASE REPORT**

**Background:**

Zygomycosis, is an aggressive, opportunistic, life threatening fungal infection in immunocompromised patients. Individuals who are immunocompromised are at the greatest risk of developing mucormycosis. Diabetes mellitus, metabolic acralosis and iron chelctomy agents are associated with increased risk for infection.

**Case summary:**

A 53 year old Kuwaiti gentleman with end stage renal disease who was stable on haemodialysis underwent cadaver renal transplant on 10/03/09. He received induction immunosuppression with Thymoglobulin and maintenance with steroids, mycophenolate and tacrolimus. He had delayed graft function following the transplant. His renal function improved and he was discharged with a stable graft function. He was admitted with new onset diabetic mellitus and diabetic ketoacidosis (DKA). During the investigations for possible course for DKA, he was found to be have elevated liver enzymes. Ultrasound and CT scan of the abdomen revealed a mass in the right lobe of the liver. Percutaneous biopsy of this hepatic lesion revealed mucormycosis and treatment was started with Liposomal Amphotericin B and Caspofungin, along with discontinuation of all immunosuppressive agents, except Prednisolone 5 mg daily. CT of head including rhino-orbital area and CT chest were negative for any mucormycosis lesions. Surgery was found to carry a very high risk with his impaired liver function and immunosuppressed state. Over the next few days his liver function deteriorated jaundice, increasing ascites and coagulopathy. His renal graft function started deteriorating due to biopsy proven rejection which he was not treated due to the risk of spreading the infection. Patient deteriorated further inspite of continued antifungal therapy and he died.

**Conclusion:**

Mucormycosis is a live threatening infection. Good outcome is unpredictable specially in case of infection in vital organs.

*Key Words: Mucormycosis; Renal transplantation; Immunosuppression*



***Surgery and Transplantation***

*Category: Clinical*

**278**

**Renal Transplantation in Nephropathic Cystinosis**

\*Nair MP, Said T, Halim MA, Vareed B, Moneim MA, Nawas KM, Elsayed A  
Hamed Al-Essa, Organ Transplant Center, Kuwait

**CASE REPORT**

**Background:**

Nephropathic cystinosis is a rare autosomal recessive storage disease with abnormal cystine accumulation, primarily manifesting as kidney disease, progressing to end stage renal failure (ESRF). Renal transplantation corrects renal failure and prolongs survival but the disease may develop in the allograft and continue to progress in nonrenal organs.

**Case summary:**

We present 4 patients with nephropathic cystinosis who received 5 renal transplants during the period from 1977 to 2006. Patient number one lost his first graft due to chronic rejection after 9 years and has a functioning second graft for the last 25 years. Patient number two underwent graft nephrectomy immediately post renal transplant due to bleeding. The other 2 patients have well functioning transplants. Of the five renal transplants in four patients with cystinosis, three were from live related donors and two were from deceased donors. There was only one episode of acute rejection which responded to steroid treatment and the mean serum creatinine of the three functioning transplants on last follow up is 124 $\mu$ mol/L. Mean follow up period is 106 months with patient survival of 100% and graft survival of 80% at five years. Patient number one who did not receive the cystine depleting agent cysteamine during childhood and several years post transplant has all the systemic complications of cystinosis with stunted growth whereas the other three who received cysteamine from the time of diagnosis and continues post transplant are free from cystine deposition related complications and have normal growth.

**Conclusion:**

Renal transplantation is a successful treatment for patients with nephropathic cystinosis and ESRF and complications related to cystinosis are much less in those patients receiving the cystine depleting agent cysteamine.

*Key Words: Cystinosis; Renal Transplant; Immunosuppression*



***Surgery and Transplantation***

*Category: Clinical*

**279**

**Combined Liver and Kidney Transplantation in Primary Hyperoxaluria**

\*Nair MP, Al-Otaibi T, Said T, Halim MA, Moneim MA, Vareed B, Gheith O, Elsayed A, Nawas KM, Nampoory MRN  
Organ Transplant, Hamad Al Essa

**CASE REPORT**

**Background:**

Primary hyperoxaluria type 1 (PH1) is a rare autosomal recessive metabolic disorder in which there is overproduction of plasma oxalate. There is increased urinary excretion of oxalate leading to recurrent urolithiasis, nephrocalcinosis with renal failure and accumulation of insoluble oxalate throughout the body. The preferred mode of treatment in PH1 patients with or approaching end stage renal failure (ESRF) is combined liver-kidney transplantation (LKT) whereby the former replaces the enzyme deficient organ while the latter replaces the functionally affected organ.

**Case summary:**

We report on 3 patients with PH1 who underwent LKT and are followed up in Kuwait. Patient number 1 was diagnosed to have PH1 at the age of 4 and had hemodialysis for 1 year before having LKT at the age of 5 years. The renal allograft failed after 7 years due to chronic rejection and calcineurin toxicity. He received a second renal transplant 6 months after being on hemodialysis and underwent left native nephrectomy for renal cell carcinoma. He is currently doing well with normal liver function and a serum creatinine of 110umol/L. Patient number 2 was diagnosed with PH1 at the age of 1 year and underwent LKT at the age of 4 years and is doing well 4 years post transplant with normal growth, liver function and serum creatinine of 35 umol/L. Patient number 3 with PH1 gave history of recurrent renal stones and urinary infection followed by development of renal failure and hemodialysis before undergoing LKT at the age of 9 years. He is stable 18 months post transplant with normal liver and renal function with serum creatinine of 65umol/L. All 3 patients were born to consanguineous parents and 1 patient had family history of renal stone disease.

**Conclusion:**

Combined liver and kidney transplantation is the treatment of choice for patients with primary hyperoxaluria type 1 and end stage renal failure and the metabolic defect is corrected with liver transplant.

*Key Words: Primary hyperoxaluria; Combined liver and kidney transplant; Immunosuppression*



***Surgery and Transplantation***

*Category: Clinical*

**280**

**Ureteroscopic Laser Lithotripsy for Treatment of Stones in Crossed Ectopic  
Kidney**

\*Ibrahim HM

Adan Hospital, MOH

**CASE REPORT**

**Background:**

Stones in kidneys with complex or anomalous anatomy pose a particular challenge for the urologist. Because of aberrant anatomy, abnormal kidneys may not be amenable to the same approaches currently employed for stone disintegration or extraction in normal renal units.

**Case summary:**

A 25 year-old man presented with left loin pain and mild lower urinary tract symptoms (LUTS). Physical examination revealed mild tenderness in the right iliac fossa. All Laboratory tests were within normal range, Ultrasonography revealed a normal right kidney and the left kidney could not be located in its normal position but it was present in the pelvis and a large stone was seen in the renal pelvis. IVU showed the left kidney present at the right sacroiliac joint and its ureter passed across the middle line to drain into the left side of the bladder. Cystoscopy showed normal left ureteric orifice regarding the shape and position, then a retrograde study showed the left ureter crossing the middle line to the right side. The flexible ureteroscope has been introduced over a wire to the left kidney; the stone was seen in the renal pelvis. Laser lithotripsy at a setting of 10 pulses/sec. and energy of 0.8 joule has been performed. At the end of the procedure, DJ stent was fixed which lasted for two weeks. Postoperative period passed smooth and the follow-up plain radiography (KUB) showed no residual fragments.

**Conclusion:**

Retrograde ureteropyeloscopic holmium laser lithotripsy is considered a safe and an effective treatment option for stones in crossed ectopic kidneys.

*Key Words: Stones; Ectopic; Ureteroscopy*



***Surgery and Transplantation***

*Category: Clinical*

**281**

**Late Acute Antibody Mediated Rejection on Top of Denovo  
Membranoproliferative Glomerulonephritis After 9 years of Renal  
Transplantation**

\*Halim MA<sup>1</sup>, Al-Otaibi T<sup>1</sup>, Al-Waheeb S<sup>2</sup>, Tawab KA<sup>1</sup>, El-Kholy O<sup>1</sup>, Nampoory MRN<sup>1</sup>

<sup>1</sup>Department of Nephrology, Hamed Al-essa OTC, Ibn Sina hospital, Kuwait; <sup>2</sup>Department of Histopathology, Mubark Al-Kabeer Hospital, Kuwait

**CASE REPORT**

**Background:**

Acute antibody mediated rejection (AMR) is rarely reported as a long term complication of renal transplantation which can present on top of another chronic pathology affecting the graft.

**Case summary:**

A 45 years old gentleman with chronic kidney disease due to unknown etiology. He had history of hypertension and hepatitis B infection with mild non-specific reactive hepatitis before transplantation. He received renal transplantation from his sister with 4 HLA mismatches. He received antithymocyte globulin induction therapy and was maintained on steroids, azathioprine (AZA) and cyclosporine A (CsA). Up to eight years post-transplantation he was clinically and biochemically stable. He lost follow up for about one year, and then presented with nephritic nephrotic state and rise of serum creatinine to 210umol/l. He had no evidence of active hepatitis, cryoglobulinemia or significant radiological or serological abnormality. Graft biopsy revealed picture suggestive of acute AMR on top of denovo membranoproliferative glomerulonephritis (MPGN) with focal crescent formation, diffuse immune complex deposition and peri-tubular capillaries C4d positivity. Anti-HLA donor specific antibodies were highly positive for B and T cells class I and class II. He was treated with intravenous immunoglobulin, plasma exchange, and anti-CD20 (rituximab). AZA was changed to mycophenolate mofetil and CsA to tacrolimus. He had partial response and s. creatinine continued at 220 umol/l.

**Conclusion:**

This patient developed late acute AMR on top of denovo MPGN 9 years post-renal transplant which is a rare complication. He received aggressive anti-rejection treatment and his condition could be stabilized.

*Key Words: Acute rejection; Renal transplant; Glomerulonephritis*



***Surgery and Transplantation***

*Category: Clinical*

**282**

**Odontogenic Necrotizing Fasciitis of Neck and Upper Chest**

\*Schütz P<sup>1</sup>, Hamed HH<sup>1</sup>, Joshi RM<sup>2</sup>

<sup>1</sup>Oral&Maxillofacial Surgery Unit, Al-Adan Dental Center;

<sup>2</sup>Microbiology Unit, RNMLC Yiacco Medical Co., Al-Adan Hospital

**CASE REPORT**

**Background:**

Necrotizing fasciitis (NF) is rapidly progressing, life threatening bacterial infection spreading along the deep fascial planes. One of the NF's characteristic features is the presence of subcutaneous gas.

**Case summary:**

A 23 years female was admitted with painful right neck and upper chest swelling. She had a trismus, swollen sublingual area and right anterior palatal arc. Extraction wound after tooth 37 was discharging sero-sanguinolent exudate. CT scan with contrast revealed enhancing swelling of soft tissues on right side of neck and upper chest with loss of all muscle planes and presence of gas. Patient was empirically put on clindamycin and metronidazole. Seven hours after admission, she was operated under general anaesthesia. Submandibular, submental, sublingual, parapharyngeal, pterygomandibular, submasseteric, suprasternal and subclavicular spaces contained thin seropurulent exudate and gas with putrid smell. Exudate culture grew *S. viridans*, *A. lwoffii* and *P. aeruginosa* but blood culture grew only *S. viridans*. Anaerobic culture was negative. Meropenem and gentamicin were added to ongoing antibiotic therapy but clindamycin was replaced by ciprofloxacin. On post admission day 12, exudation from neck spaces receded but copious purulent secretions from subcutaneous pocket in upper chest persisted. Another incision was done lower on the lateral chest under local anaesthesia and vacuum drain was applied. Subsequent aerobic and anaerobic cultures were all negative. Discharge ceased on post operative day 20. Follow up CT scan revealed significant resolution of inflammation and patient was discharged on 25th day of hospital stay and is well on further follow up.

**Conclusion:**

NF is rare but extremely serious complication of odontogenic infection. The mortality rate for the group with thoracic extension may be as high as 40%. Early aggressive surgical debridement is most important factor for favourable prognosis.

*Key Words: Necrotizing fasciitis; Odontogenic infection; Surgical debridement*



***Surgery and Transplantation***

*Category: Clinical*

**283**

**Abdominoplasty Without the Use of Suction Drain; Our Experience in Kuwait**

\*Mousa A, Burezq H.

AlBabtain Centre of Burn & Plastic Surgery

**CASE REPORT**

**Background:**

Abdominoplasty is considered to be one of the commonest body-contouring procedures among patients with deformity resulting from massive weight loss or repeated pregnancies. Closed suction drainage system is a common practice to reduce the incidence of seromas and hematomas. The formation of seromas after abdominoplasty is a highly prevalent complication that disturbs both the patient and the surgeon. This study evaluates the evolving concept of no drains use after abdominoplasty, with preservation of lymphatic drainage of the lower abdominal during dissection.

**Case summary:**

Four healthy young females were chosen between the age of 30-40 years and with a BMI of less than 30. All had a standard abdominoplasty and liposuction, then quilting sutures without the use of drains using this new technique. Follow up was done by clinical and radiologic (abdominal U/S) investigations to exclude complication(s) such as seroma, hematoma, . ets.

**Background:**

No drain principle is considered an acceptable and evolving new method in body contouring aesthetic surgery showing encouraging results when used in selected cases. Further randomised trials are required before definite conclusions can be made.

*Key Words: Abdominoplasty; No drain; Seroma*



## **AUTHOR INDEX**



Health Sciences Centre Poster Conference, Kuwait University: April 20-22, 2010

---



Al-Rasheedi A 43	Abdullah ZS 248
Abahussain EA 195, 204	Abdul-Malek K 194
Abaza MS 158	AbdulRahem HA 34
Abbas A 29	Abdulsalam SM 254
Abbas AB 30	Abo Diba F 150
Abbas M 4	Aboqrais NA 195
Abd-Allah FI 200	Abou Bakr A 261, 262
Abdallah M 63	Abraham PK 106
Abd-Alsalam M 61	Abraham RE 199
Abdeen SM 174, 228	Abudlmalek K 205
Abdel Rahman T 226	Abul M 33
Abdel Wahab MA 226	Abushaban L 180
Abdelalim AM 28	Adekile A 181
Abdelhalim M 256	Ahmad AM 269
Abdel-Hamid ME 182, 198, 199	Ahmad MS 260
Abdelkhalek A 138	Ahmad S 111, 119, 120, 125, 257
Abdella NA 95, 102, 127	Ahmed A 222, 237, 238, 274
Abd-el-tawab K 256	Ahmed N 85
Abdul Razzaq A H 238	Ajaj NI 28
Abdul Salem F 138	Ajrawi F 42
Abdulla AIMousawi F 175	Akanji AO 98, 99, 100, 168, 169, 170
Abdulla F 175	Akbar J 56
Abdullah A 45	Akbar M 105
Abdullah AA 117, 118	Akhtar S 29, 42, 184, 188, 190
Abdullah I 88	Akpata ES 56
Abdullah KA 89	Al Ali J 252, 253



Al Bader A 233	Al-Abbasi S 29
AL Baker O 26	Al-Adsani A 106
Al Fadhli A 233	Al-Adsani AMS 89, 90
Al Fadhli R 6	Al-Adwani A 44
Al Haddad M 26	Al-Adwani M 240, 241, 242, 243, 244
Al Harmi J 6, 7	Al-Ajmi AH 34
Al Helal B 91, 110	Alalal A 251
Al Homoud E 110	Al-Alawi A 102
Al Jafar H 72	Al-Ali A 250
Al Jassar W 6	Al-Ali FM 126
Al Jazzaf S 26	Al-Ali I 142
Al Mulla F 1, 95, 157, 161	Al-Amin Z 25
Al Muttari M 100	Al-Amiri E 27
Al Otaibi T 96, 256	Alanbaei M 180
Al Qattan F 222, 223	Alansari BM 101
Al Qodmani L 26	Al-Ansari J 58
Al Rammah T 166, 171	Al-Ansari TA 164
Al Rumaih H 166, 171	Alanzi FMN 264
Al Saleh S 157	Al-Aradi T 29
Al Sane M 68	Al-Arouj A 45
Al Sayed Amr 98, 100	Al-Arouj M 127
AL Shalfan FH 254	Al-Assousi E 44
Al Shatty D 26	Alateeqi N 93
AL Tarrah MY 254	Alath P 163
Al Waheeb S 110	Al-Attiyah R 136
Ala'a Abul 27	Al-Awadhi A 92



Al-Awadhi AM 107	Al-Fadhli AN 227
Al-Awadhi S 161	AlFadhli SM 72, 107
Al-Awadi E 77, 245, 246	Al-Fadli H 11
Al-Awadi M 37	Al-Faraj D 38
Alawadi SA 104	Al-Farhan L 43
Al-Azemi MK 151, 152, 153, 154	Al-Farsi OA 184
Alazmi WM 93, 94	Alfarsi S 81
Al-Bader MD 208, 209, 210	Al-Feeli M 77
Al-Bader N 234	Alfoudri H 14
Al-Bahhar M 87	Al-Fouzan W 122
Al-Baker O 105	Al-Gharib F 36
Albert MJ 128, 129	Al-Haddad A 122
Al-Bloushi S 33	Al-Hajeri MH 266
Al-Brahim N 260	Al-Hajri S 114, 139
Aldahham A 253	Alhamdan R 105
Al-Dahi W 95	Al-Hammadi A 216
AlDawood A 273	AlHarbi O 272, 275
Al-Duaij L 37	Al-Harmi J 155
Al-Duwairi Y 59	Al-Hashem GM 117
Aleem AA 267	Al-Hashim G 145
Alenezi F 105	Al-Hassan A 180
Al-Enezi H 32	Al-Hay A 180
Al-Enezy NA 126	Alhazri F 73
Al-Enzi A 37	Al-Herz W 87
Alexander G 215	Al-Humaidi G 80
Al-Fadhli A 19	Al-Hussaini AJ 86



- Ali AH 71  
Ali MA 55  
Ali Sher 137  
AliAlansary T 178  
Al-Isa AN 168, 169  
Al-Jabri R 45  
Al-Jamaan EH 255  
Al-Janaee A 47  
Al-Jarallah K 92  
Al-Jassar W 159, 258, 259  
Al-Johar WY 30  
Al-Juwaiser A 176  
Al-Kandari F 153  
AlKandari I 272  
Alkandari L 73  
Al-Kandari N 33  
Al-Kandary MN 165  
Al-Kandery M 36  
AL-Khabbaz A 58  
Al-Khabbaz AM 266  
Al-Khalaf A 37  
Al-khaldi AT 208  
Al-Khalidi DA 107  
AL-Khalifa S 38  
Al-Khars R 150  
Al-Khawari HA 78, 79  
Al-Khayat H 87  
Al-lanqawi Y 194, 205  
Al-Maghrebi M 214  
Al-Mahmoud SY 34  
Al-Mandeel M 8  
Al-Manfouhi HA 78, 79  
Al-Mass A 20, 70  
Al-Mass AB 25  
Almatouq S 14  
Al-Mekhaizeem K 94  
Al-Mohammedi H 95  
Al-Mohannadi S 77, 245, 246, 250  
Al-Mohannadi SS 76  
Almorsy M 75  
Al-Mou'men F 43  
Al-Mouqati S 142  
Almuaili T 127  
Al-Mufti S 137  
Al-Mufti SA 30  
Al-Mutairi A 39, 40  
Al-Mutairi B 44  
Al-Mutairi NM 111  
Al-Mutairi O 127  
AL-Mutairi SS 102  
Al-Mutawa SA 59, 67  
Al-Nafisi N 76, 77, 250



Al-Nagi MN 86	Al-Rashaidan SA 28
Al-Nakib W 1, 127	Al-Rashed F 29
Al-Naqeeb N 183	AL-Rashedi D 38
Alnaser MZ 46	Al-Rashidi B 25
Al-Obaid I 114	Al-Rashidi R 12
Al-Obaidi SM 86	Alrefaei A 14
Alomari QD 55	Al-Reshidi R 8
AlOsaimi S 272, 275	Al-Rifae Y 36
Al-Otaibi H 4	Al-Rushaid RA 34
Al-Otaibi HJ 188	Al-Rustom M 25
Al-Otaibi JA 86	Al-Ruwaiyh A 179
Al-Otaibi M 36	Alsaad AS 267
Alotaibi N 2, 3	Al-Saad S 240, 241
Al-Otaibi S 123	Al-Sabah RN 34
Al-Otaibi T 103, 140, 221, 229, 279, 281	Al-Sabah S 185
Al-Othman D 35	Al-Saeed O 5
Al-Owaish RA 30, 137	Al-Saeed OO 75
Al-Owayesh R 159	Al-Saeedi F 74
Al-Qahtani J 35	Al-Saffar A 126
Al-Qallaf A 11	Al-Safi R 258, 259
Al-Qattan SI 173	Al-Said A 76
Al-Qbandi M 180	Al-Saigh F 97
Al-Quhtani N 43	Al-Saleh E 6, 155
Al-Rabah F 32	Al-Saleh S 70
Al-Rammah T 95	Alsammeri H 81
AL-Ramyan A 88	Alsane' M 61, 62, 63, 64



AL-Saqabi M 45	Al-Sweih N 121, 139, 145
Al-Saqer F 44	Al-Taiair A 27, 32, 44, 88
Al-Sarraf L 239	Al-Tarrah MY 255
Al-Senafy A 36	Alterkait A 225
Al-Shaikh A 119	Al-Tmimy AM 28
Al-Shamary T 189	Al-Turkait FA 218
Alshami NS 268	Al-Turki A 32, 39, 40
Al-Shami NS 13	Al-Turki M 32
Alshammari A 247	Alwael A 222, 223
Al-Shammari A 83, 84	Al-Waheeb S 178, 281
Al-Shammari H 83	Al-Waheed SKM 177
Al-Shammari K 53, 58	Al-Wazzan B 27
Al-Shammari M 155	Alyousefi MK 28
Al-Shammri S 98, 99, 100	Al-Zaibe WH 209
Al-Sharah S 8	Alzayed AA 220
Al-Sharhan LA 34	Al-Zinnati N 179
Al-Sharnoby J 242	Amanguno HG 85
Al-Sharrah S 11, 12	Ammar MH 17, 235, 276
Al-Shati H 45	Amoudy H 131, 132
Alshatti TS 31	Andersson L 236
Al-Shemmary BS 162	Andonegui G 149
Al-Shoumer KAS 71	Anim JT 151, 152, 154
Al-Souri H 179	Anooj R 57
Al-Sumaie M 97	Anvarsadath S 259
Alsumait B 252	Anwar SAE 235
Al-Suraia A 63	Archer CR 185



- Arora R 261, 262  
Asbeutah AM 86  
Asfar S 228, 253, 273  
Asfoor F 126  
Ashkanani F 62  
Ashkanani R 249  
Ashraf M 223  
Asiri F 97  
Athyal R 5  
Attur S 187, 189  
Atyani SM 266  
Atyani SMA 240, 242  
Awadain WH 140, 221, 277  
Awadalla AW 217  
Awade A 205  
Awadeen W 96  
Ayman FE 276  
Ayoub NA 203  
Aziz AA 235  
Babiker FA 212  
Babua A 198  
Badr HE 41  
Badran BMF 78, 79  
Bajwa H 39, 40  
Bakry MHM 15  
Balaha MA 103, 141, 221, 256, 277  
Bandarkar FS 197  
Bang RL 73, 227  
Bang S 227  
Barac-Nieto M 213  
Barrieshi-Nusair KM 55  
Basmy A 156  
Behbehani AI 1  
Behbehani F 60  
Behbehani J 216  
Behbehani JM 50  
Behbehani M 39, 40  
Behbehani MJ 56  
Ben-Nakhi A 127  
Benov L 20, 22, 23, 24, 70  
Benter IF 184, 188, 190  
Bharadwaj S 176  
Bhattacharya A 98, 99, 100  
Bihzad S 186  
Biju 96  
Biju MV 140, 221, 277  
Bin-Shaibah ME 34  
Borhama M 107  
Borusly M 107  
Bosch X 159  
Bouhaimed M 35, 45, 47, 251, 270, 271  
Brook A 222, 223



Brown MV A 78	De Sanjose 159
Buhaimed D 37	Delhaas T 212
Buhaimed W 94	Devipriya B 66, 236
Bulbanat B 105	Dhar R 122
Burezq H 224, 225, 232, 283	Dhaunsi GS 265
Burhamah MHA 124, 257	Dhiab F 271
Burizq H 233	Diejomaoh FME 150, 166, 171
Carr RI 148	Doi SAR 99
Cerna M 96	Doi S 35
Chadha G 98, 99, 100	Draghijeva E 115
Chandy R 65, 114, 139	Duerden BI 130
Chehadeh W 127	Ebian AR 202
Cherian A 186	Ebrahim B 32
Cherian T 183	Ebrahimi B 132
Chibber R 6, 7	Edafiogho IO 196
Cleutjens JP 212	Egbase P 115
Craik J 22	Eissa A 147
Dafalla AB 248	El Shebini YH 226
Das DK 164, 176, 177, 178, 263	El-Abasi AM 218
Dashti A 1	El-Abdallah AA 209
Dashti AA 9	El-Barky EM 160
Dashti F 12	El-Desouky M 135
Dashti H 228	Elfawal MA 165, 173
Dawaba HM 200	Elgazzar AH 80, 81, 82, 83, 84
Dawas A 39, 40	El-Kasaby Z 206
Dawood AL 274	El-Kholy O 281



- Ellepola AN 65, 66  
Ellis E 185  
El-Merhi K 260  
Elnagar AY 158  
El-Said E 199  
El-Saleh E 7  
Elsayed A 278, 279  
El-Sayed A 103, 221  
Elsayed AF 181  
ElSayed KA 158  
Eltaher EA 15  
Elzeini MN 15  
Esmail A 76, 77, 245, 246, 250  
Etman MA 201, 202  
Ezeamuzie CI 196  
Fahad AA 269  
Farah AA 217  
Farhat D 114, 139  
Farid RM 202  
Fathy AH 241  
Fatinikun T 154  
Francis I 162  
Francis IM 161, 163  
Froughi E 64  
Gab-Alla MH 243  
George P 214  
George SS 161, 164, 177, 178  
Ghani AA 91, 109, 110  
Ghanim M 77  
Gheith O 96, 103, 221, 229, 256, 279  
Gholoum M 25  
Girgis M 98, 100  
Gomez JE 43  
Guleri R 158  
Gupta R 73, 175, 239  
Habeeb M 79  
Habib E 248  
Hadi M 72  
Hadlaq O 42  
Haider HH 87  
Haider MZ 71, 92  
Haji BE 164, 175, 178  
Haji BI 177  
Halim MA 140, 141, 229, 278, 279, 281  
Hamdy H 213  
Hamed HH 282  
Hamed IMA 240, 241, 242, 243, 244  
Hamid MH 229  
Hamid T 222  
Hamoud E 106  
Hanif SNM 116, 136  
Haridas S 128



Hasaneen H 229	Jacob S 47
Hasanen H 277	Jacob SS 187, 189
Hasnien O 226	Jadaon MM 9
Hassan L 150	Jaeken J 265
Hassan N 11, 12	Jagia M 276
Hatim 223	Jamal W 130, 143, 144, 145
Hedaya MA 206	Jaragh M 175, 178
Hira PR 126	Jassar A 163
Honkala E 1, 49, 50, 51, 52	Jassim A 64
Honkala S 49, 50, 51, 52	Javaid A 248
Houria N 146	Javed A 85
Huda FA 85	Jawdat J 43
Husain E 35	Jayanthi E 25
Husain EH 181	Jayathilake JA 66
Husain M 123	Jelliffe R 194
Hussain N 91, 109, 110	John S 131
Hussein HA 34	Johny KV 229
Hussein N 38	Joneja M 237, 238
Hussein S 160	Joseph B 65, 66
Ibrahim B 263	Joseph BK 236
Ibrahim H 222	Joseph L 114, 139
Ibrahim HM 226, 280	Joshi R 134
Iqbal J 126, 146	Joshi RM 135, 282
Islam A 129	Junaid TA 162
Isma'eeli H 88	Kabad R 180
Jackob S 45	Kadyan RS 237, 238



Kahvic M 172, 264	Koerber A 61
Kaiyu Wu 108	Kombar OR 75
Kalakh S 12	Kombian SB 1, 191, 193
Kalandar A 29	Koshy S 204
Kalifa 97	Kovacs A 79
Kamber F 69	Krasel C 185
Kannas L 49	Kullman L 68, 236
Kapila K 161, 163, 164, 175, 178	Kumar KS 248
Kara E 185	Kumar R 167
Kazem N 81	Labib HA 273
Kehinde EO 151, 152, 154, 198	Laire A 11
Keluth Chavan VG 239	Lasheen I 100
Khajah M 108, 149	Latif SA 137
Khalid A 15	Lewis HL 9
Khalid N 126	Lorenzen-Schmidt I 212
Khalifa N 156	Loutfi I 74, 249
Khalifa S 156	Luqmani YA 70, 157
Khalik D 141	M Elsaied M 82
Khan HA 85	Mabrouk M 206
Khan I 187, 189	Madda JP 78, 79
Khan KM 187, 189	Mahmood K 183
Khan MU 248	Mahmood M 106
Khan ZU 113, 114, 119, 140, 257	Mahmoud S 39, 40
Khanafer R 25	Mahomed S 234
Khashaba HA 233	Majdalawieh AF 148
Khattab IS 197	Makhseed N 265



Makinen K 51	Mohammadi S 215
Malatiali SA 210	Mohammed N 213
Mallah A 201	Mohannadi al S 85
Mallick PN 17	Mojiminiyi OA 95, 102, 166, 171
Mallik MK 177, 178	Mokaddas E 116, 117, 118, 124, 125, 257
Mandkar Y 137	Mokelke 212
Manee FS 10	Molla Abdul M 179
Marafi F 76, 77, 85, 245, 246, 250	Molla AM 4, 179
Matar K 194	Mona AH 121
Mathai S 115	Moneim MA 278, 279
Mathew B 122	Moneir Ata MM 4
Mathew R 170	Montazeri SM 126
Mathew TC 151, 152, 228	Montero-Fayad M 61
Mathews B 138	Mothafar F 175
Mathur A 214	Mouihate A 211
McCafferty DM 108, 149	Moulton CM 185
McFarlane A 216	Mousa A 283
Mehdawi H 25	Mousa AMA 19
Mehdi SA 249	Moussa M 33
Mini Abraham 92	Moussa MA 26, 43
Mittal R 156	Moussa MM 230
Mlechkova L 14	Mubarak M 22
Mohamed NA 16	Muhammad S 67
Mohammad A 252	Mullah-Ali AM 181
Mohammad J 263	Muncera BN 269
Mohammad S 207	Mursal B 21



Mustafa A 44	Omar AM 81
Mustafa AS 112, 131, 132, 136	Omar S 26
Muzafar Gani AW 183	Omu AE 151, 152, 153, 154
Muzairai I 96	Omu FE 151, 152, 153, 154
Nada A 201	Oommen M 135
Nada AH 202	Orabi KY 158, 203
Nadar M 3	Oriowo MA 152, 154, 191
Nafisi Al N 85	Pacsa AS 141
Naguy A 218	Pariyani S 25
Nagwa WM 226	Pathan SK 164, 176, 178
Nair MP 96, 103, 140, 221, 278, 279	Pavlik A 215
Nair S 135	Philip G 235
Nair VS 71	Philip L 53, 54, 65
Nampoory MRN 96, 103, 221, 256, 279, 281	Phillips OA 182, 193, 198, 199
Nandakumaran M 155	Pinto C 95
Narayana K 19, 192	Pittman QJ 211
Nashawi H 191	Prinzen FW 212
Nawas KM 103, 141, 221, 229, 278, 279	Qabazard Z 123
Negem Hamed S 244	Qaddoumi MG 195
Nemec J 250	Qasem JA 142
Noronha B 138	Qassab G 33
Nummela R 51	Qudeimat MA 60
Ohaeri JU 104, 216, 217, 218, 219, 220	Raecess MG 78
Olak J 51	Raghupathy R 129, 146
Olusi SO 174	Rahman A 187, 189
Omani M 42	Raina A 259



Ramadan BAA 263	Safar F 97
Ramadan J 207, 213	Safar FH 166, 171
Rao MS 18	Safi Y 42
Rashed W 105	Said T 96, 140, 141, 277, 278, 279
Rawdhan H 134	Sakr MF 230, 231
Razzaq AHA 237	Salako NO 53, 54
Redzic ZB 210	Saleh al N 85
Reed K 3	Saleh M 45
Renno WM 214	Saleh R 159
Ridha M 105	Salem M 12
Rifaat AA 172, 264	Salmeen Y 27
Rifat M 222, 222	Samhan M 141
Rifat Mannan AAS 172, 264	Samy A 200
Rimpelä A 52	Sarkhoo EM 133
Roberts OM 73, 175	Sary HG 203
Rodriguez-Martin I 185	Sathar SA 176
Rotimi VO 121, 130, 143, 144, 145	Sawy M 96
Ryiad MN 244	Sayed A 13
Saad E 275	Sayed M 262
Saad Eldeen H 116	Schütz P 282
Saad ZS 153	Selvan JP 180
Saag M 51	Senthilnathan TA 17, 235, 276
Sadeq A 87	Sequeira F 25
Sadeq K 21	Shaaban HA 226
Saeed M 42	Shaban F 112, 131, 132
Saeed R 5	Shaban K 131



Shah MA 41	Soliman MO 253
Shah N 37	Soparkar P 59
Shah NM 41	Sreejith M 167
Shaheen M 143, 144, 145	Srikumar TS 25
Shamali I Mohd A 150	Subramanian S 135
Shamsah M 134	Suresh A 35, 45
Sharaf LH 182, 198	Susan G 155
Sharma P 66, 227	SY Ng 57
Sharma PN 4, 227	Tammam TF 276
Shehab A 205	Taqi S 17
Shehab D 92	Tasneem AM 6, 7
Shehab F 82	Tawab KA 103, 281
Sheikh M 75, 126	Thakkar J 25
Sheikh ZA 178, 263	Thalib L 39, 40, 56, 168, 169
Shelahi F 126	Thomas A 48
Sherif WRA 17	Thomas M 23, 24
Shetty SA 117, 118	Thusu A 205
Shubair M 25	Tynjälä J 49
Shukur M 35	Uboweja AK 183
Shyama M 59, 67	Udo EE 122, 133, 138, 199
Siddique I 93, 94	Usmani S 85, 247
Singab AB 203	Uthaman B 180
Singh NG 172, 264	Välimaa R 49
Singh RKA 17, 235, 276	Vanagt WY 212
Soja 196	Vareed B 278, 279
Soliman AS 268	Varghese R 165, 199



Varghese SJ 167	Zadeh VB 237
Varkki Z 223	Zaghloul A 200
Varughese S 188	Zahid MA 219, 220
Vergheese L 25	Zakareya Z 96
Vurghese T 172	Zakaria 221
Waheedi M 204	Zakaria Y 232
Wais M 38	Zakaria Z 277
Wall JC 234	Zakariya Y 224
Waltenberger J 212	Zaki AH 260
Wani VB 183	Zaki M 100
Wughalter EH 46	Zamil HA 196
Yadav C 5	Zamoon J 21
Yount K 41	Ziyab A 42
Yousif MHM 184, 186, 190	Zubaid M 105
Youssef AH 268	Zubair S 105



## **KEYWORD INDEX**



Health Sciences Centre Poster Conference, Kuwait University: April 20-22, 2010

---



- Abdominal cancer pain 17  
Abdominoplasty 233, 283  
Academic performance 44  
Acanthomatous 236  
Acinetobacter baumannii 121  
Acute hepatitis 254  
Acute myocardial infarction 105  
Acute rejection 229, 281  
Acute renal failure 109  
Acute stage of diarrhoea 179  
Adaptation 10  
Adenocarcinoma 162  
Adenoid 223  
Adiponectin 95, 102  
Adjustable gastric band 252  
Adolescent 49, 52, 150, 168, 169  
Adolescents aggression 38  
Adrenal hyperplasia 71  
Adult 255  
Adult intussusception 275  
Aspergillus flavus 114  
Age estimation 68, 173  
Alanine aminotransferase 166  
Alcohol 17, 39  
Ameloblastoma 236  
Amikacin 194  
AmpC 117  
Amplatz devices 180  
Anesthesia 14  
Angiolymphoid hyperplasia 261  
Angiomyofibroblastoma 262  
Angiotensin 188  
Angiotensin-(1-7) 184  
Angoid streaks 270  
Antibacterial 22  
Antibacterial activity 199  
Antibiotic resistance 115, 138  
Antibiotics 147  
Antibody mediated 103  
Anticancer activity 20  
Anticancer drugs 192  
Anticancer effect 70  
Antifungal susceptibility 65, 139  
Anti-inflammatory 196  
Antimicrobial agents 193  
Antioxidant activity 154  
Antioxidants 151, 152, 228  
Anxiety 36  
Anxiety-depression 218  
Aplastic anaemia 244  
Apoptosis 20  
Apparent diffusion coefficient (ADC) 78  
Appendicitis 239  
Arab 9, 217, 219, 220  
Arab-students 218  
Artherosclerotic disease 169  
Arthrogenic muscle inhibition 268  
Ascitic fluid 176  
Aspergillus terreus-specific DNA 257  
Assessment 3  
Associated factors to I.D.A 97  
Astrocyte 210  
Asymptomatic 80  
Attachment loss 69  
Attitudes 66  
Augmentation 224  
Awareness 195  
Awareness of STDs 29  
Axonotmesis 214  
Bacteria 134  
Barriers 48  
B-cells 16



- BCG 131  
 Behavior management techniques 67  
 Beta-thalassemia major 107  
 Bevacizumab (Avastin) 251, 270, 271  
 Bilateral post auricular region 238  
 Bioequivalence 201  
 Biopsy 222  
 Bla genes 145  
 Bladder cancer 160  
 Bleeding tendency 167  
 Blood donation 43  
 Blood transfusion 107  
 Body image modifying substances 45  
 Bone scan 81  
 Bowel wall haematoma 244  
 Brain death 243  
 Breast aspirates 161  
 Breast augmentation 73  
 Breast cancer 70, 79, 104, 157, 195  
 Breast carcinoma 175  
 Breast feeding 32  
 Bromocriptine 153  
 Bronchiectasis 123  
 Burns 118, 227  
 Cadmium 23  
 Cadmium toxicity 154  
 Caesarean delivery 235  
 Calcium dobesilate 201  
 Calorie intake 179  
 Campylobacter jejuni 128, 129  
 Cancer 148  
 Cancer patients 109  
 Candida colonization 124  
 Candida DNA 124  
 Candida dubliniensis 120  
 Candida mannan 124  
 Candida parapsilosis-complex 113  
 Candida species 139  
 Candidemia 139  
 Capsules 201  
 Carbapenem resistance 121  
 Carcinoma breast 85  
 Care givers 62  
 Caries 63  
 Carotid artery calcification 57  
 Causes 227  
 Cautery 88  
 Cavernous hemangioma 258  
 Cd count 96  
 CDG 265  
 Celiac artery 86  
 Cellular and molecular center 1  
 Centaurea alexandrina 203  
 Cervical cancer 159  
 Cervical dysplasia 258  
 Cesarean 14  
 C-factor 55  
 Characterization and stability 200  
 Chemical 226  
 Chemotaxis 149  
 Chemotherapy 156  
 Childhood 28  
 Childhood cancers 156  
 Children 60, 232  
 Cholelithiasis 72  
 Choroidal melanoma 251  
 Choroidal neovascular membrane 270  
 Chromatography 30  
 Chronic granulomatous disease 266  
 Chronological age 68  
 Cica-beta-test 144  
 Clear cell change 263



- Clinical association 122  
Clinical staff 47  
Clostridium difficile 130, 143  
Colon perforation 272  
Colonization 134  
Color analysis 30  
Coma 243  
Combined liver and kidney transplant 279  
Commiphora myrrha (Myrrh) 20, 70  
Community-acquired MRSA 133  
Complications 127  
Compression syndrome 86  
Congenital lobar emphysema 240  
Congenital lobar overinflation 240  
Congestive heart failure 205  
Consumption 56  
Cow's milk 138  
Cross sectional area 268  
Cross-cultural adaptation 2  
Cross-cultural occupational therapy 2  
CSF 98  
CT 268  
CT Diagnosis 75  
CT scan 239  
CT Ultrasound guided 163  
CT-Angiography 243  
Curettage 223  
Curing mode 55  
CVVH 91, 109  
Cystic adenomatoid malformation 267  
Cysticercosis 126  
Cystinosis 278  
Cytohistological correlation 175  
Cytokine profile 146  
Cytotoxicity 203  
Daflon 233  
Dates 53  
Dementia 191  
Demirjian 60  
Dengue fever 254  
Dental 57  
Dental age 60  
Dental caries 51  
Dental visit 52  
Dentate gyrus 18  
Dentin 173  
Depression 31  
Depth of anesthesia 15  
Dermatomyositis 246  
Dermoid cyst 259  
Desensitization 185  
Detection 111  
Diabetes 89, 90, 188, 190  
Diabetes knowledge 101  
Diabetes mellitus 58, 140  
Diabetes-induced vascular dysfunction 184  
Diabetic retinopathy 271  
Diagnosis 119  
Diffusion-weighted imaging (DWI) 78  
Digoxin 205  
Display modes 81  
DMSA pentavalent 249  
DNA damage 192  
Donation 37  
Down syndrome 255  
Drug interaction 206  
Drug resistance 128  
DTH 136  
Dyslipidemia 170  
Dyspepsia 93  
Dyssynchrony 212  
Escherichia coli 145



- Early childhood caries 59, 61, 62  
 Ectopic 280  
 Ectopic eruptions 64  
 Eczema 42  
 Embryotoxicity 19  
 Endocrine resistance 157  
 Endoscopic removal 252  
 Endoscopy 223  
 Enhydrazones 196  
 Enterobacteriaceae 117  
 Enterococcus species 138  
 Entropy 15  
 Environmental pollutant 24  
 EORTC QLQ-C30 104  
 Epidemiology 51, 115, 130  
 Epidermal growth factor receptor 184  
 Epilepsy-tonic-clonic-seizure 217  
 Epithelioid hemangioma 261  
 Epstein-Barr virus 162  
 Erect (kidney-ureter-bladder) radiograph 5  
 Ergonomics 46  
 Erythema nodosa 256  
 ESBL 117, 144  
 Estrogen 208  
 Estrogen receptor 210  
 ETROS 183  
 European & Canadian guidelines 170  
 Evaluation 116  
 Expanded disability status scale 98  
 Expectant mothers 61  
 F18-FDG 77  
 F18-FDG PET/CT study 246  
 Factor V Leiden 9  
 Faculty of Medicine 47  
 False-positives 247  
 Family culture 49  
 Family social support 41  
 Female circumcision 7  
 Femoral nerve involvement 234  
 Fencing athletes 207  
 Fetal Brain 208  
 Fibrosis scores 174  
 Fine needle aspirates 178  
 Fine needle aspiration cytology 177, 263  
 First permanent molars 64  
 FISH 161  
 Fluid 56  
 FNAC 163, 164  
 Folate & vitamin B12 168  
 Follicular thyroid carcinoma 263  
 Foot 232  
 Foreign body 239  
 Framingham heart study 33  
 FRET 185  
 FT 44  
 Fungal infection 266  
 Fungal rhinosinusitis 114  
 FUO 245  
 Galactomannan 257  
 Gastrointestinal 253  
 GeneXpert MTB/RIF 116  
 Genetic analysis 121  
 GeneXpert 143  
 Genomics research 1  
 Genotoxicity 192  
 Genotypes 120  
 Genotyping 71  
 GI bleed 75  
 Giant 273  
 Giant mesenteric cyst 269  
 Gliclazide 197  
 Glomerulonephritis 260, 281



- Gluteal 224  
GPCR 185  
Gram negative bacilli 135  
Gram-negative bacteria 144  
Green tea 214, 228  
Group IV PTK 108  
Growth and development 64  
Guinea pigs 136  
Gulf-war-veterans 216  
H1N1 106  
Haemangioma 273  
Halimeter 54  
Hand hygiene 27  
Hass classification 110  
Health education 195  
Health status 36  
Healthy children 181  
Heart 190  
Heavy metal 19  
Helicobacter 93, 94  
Hemangioma 225  
Hematolymphoid tumours 222  
Hemoglobinopathy 72  
Hemorrhoidectomy 230, 231  
Hepatic 273  
Hepatitis C 127  
Hepatobiliary 74  
HER-2/neu 161  
Herbal medicine 148  
Hippocampal CA3a neurons 215  
Hippocampus 18, 189, 191  
Histology 16  
HIV/AIDS 66  
Homicide 165  
Homocysteine 168  
Hospital 27  
Hospitalization 89  
HPV 159  
HPV vaccine 159  
HU density 226  
Hydatid cyst 274  
Hyperparathyroidism 84  
Hyperprolactinaemia 153  
Hypertension 33  
Hypogastric artery ligation 6  
Hypoxia 210  
IBD 108  
ICDAS 51  
ICU 194  
IgM Deficiency 123  
Ileo-ileal intussusception 275  
Illicit drug use 40  
Imaging 175  
Immunization 131, 132  
Immunochromatographic test 137  
Immunocytochemistry 177  
Immunohistochemistry 16  
Immunomodulation 148  
Immunophenotyping 107  
Immunosuppression 141, 260, 277, 278, 2  
111 In-pentetreotide 247  
In silico molecular modeling 158  
Increased intra ocular pressure 271  
Infant oral health 61, 63  
Infection 147  
Influenza 106  
Inhalation model 119  
Inherited metabolic disorders 182  
In-hospital stroke 105  
Integron 128  
Intestinal perforation 264  
Intrauterine growth retardation 19



- Intravenous contrast 91  
 Intravenous urography 5  
 Intussusception 253  
 Invasive aspergillosis 257  
 Invasive ductal carcinoma 76  
 Invasive pulmonary aspergillosis 119  
 In-vitro susceptibility 135  
 IPAQ 213  
 Iron deficiency anaemia 97  
 Irreducible hernia 276  
 Ischaemia reperfusion 228  
 Ischemia 190, 212  
 Jejunum 264  
 Job satisfaction 35  
 Job stability 35  
 Kainate excitotoxic damage 215  
 Kaposi's sarcoma 260  
 Kidney 256  
 Kidney transplantation 140, 141  
 Kikuchi-Fujimoto disease 172  
 Kimura 238  
 Kindergarten schoolchildren 59  
 Knee osteoarthritis 92  
 Knowledge 34, 43, 58, 66  
 Kuwait 8, 26, 31, 34, 36, 37, 38, 40, 50, 56,  
 59, 89, 90, 92, 93, 94, 97, 101, 114, 120,  
 126, 130, 204, 213  
 Kuwait health science students 25  
 Kuwait University students 29  
 Kuwaiti 71  
 Kuwaitis 33  
 Laboratory investigation 25  
 Laparoscopic excision 269  
 Latissimus dorsi 232  
 Latrogenic perforation 272  
 LC-MS/MS 182  
 Lead 173  
 Lead toxicity 187  
 learning and memory 187  
 Learning performance 25  
 LEEP 258  
 Leptin 171  
 Leukokoria 241  
 LigaSure 230, 231  
 Linezolid 199  
 Lipomas 253  
 Lithium 154  
 Liver lesions 163  
 Liver metastasis 250  
 Liver scan 74  
 Living arrangements 41  
 Lodderomyces elongisporus 113  
 Low back pain 12, 13  
 LPS 211  
 Lupus nephritis (LN) 221  
 Lymph nodes 164  
 Lymphoscintigraphy 85  
 Magnesium neuroprotection 215  
 Major outer membrane protein 129  
 Malaria 137  
 Male university students 39, 40  
 Malodor 53, 54  
 Mammography 73  
 Maternal-fetal exchange 155  
 Maximal oxygen consumption 207  
 MDCT 75  
 Mesenchymal tumor 262  
 Mesenteric bed 186  
 Mesenteric vessels 86  
 Metabolic bone disease 84  
 Metabolic phenotypes 171  
 Metabolic study 198



- Metavir activity 174  
Microemulsion 200  
Microleakage 55  
Microphthalmia 241  
Microscopy 137  
Milligan-Morgan 231  
Misconceptions 32  
MLST 133  
Mobile phones 134  
MoyaMoya 255  
MRI Breast 73, 78, 79  
MRSA 118  
Mucormycosis 277  
Multidrug resistance 111  
Multi-modality 250  
Multiple authorship 87  
Multiple Sclerosis 98  
Multiplex PCR 125  
Mupirocin resistance 133  
Muscle uptake 246  
Musculoskeletal 46  
Mustache 224  
Mycobacterial culture 178  
Mycobacterial identification 125  
Mycobacterium tuberculosis 111, 112, 116  
Mycobacterium vaccae 132  
Mycoplasma gallisepticum 142  
Mycoplasmosis 142  
Mycosis fungoides 237  
Nasal inserts 202  
NCEP-ATP III 170  
Necrotizing fasciitis 282  
Necrotizing histiocytic lymphadenopathy  
172  
Nephropathy 90  
Nephroptosis 5  
Neurobehavioral tests 214  
Neuroblastoma 156  
Neurogenesis 18  
Neuroimmune 211  
Neurolytic technique-bupivacaine 17  
Neurotoxicity 189, 193  
Neutropenia 181  
Neutrophil 108, 149  
Newborn 267  
Nitric oxide 186  
NMR 21  
No drain 283  
Nodular disease 82  
Nose-sinus 222  
Neuroendocrine tumors 247  
Nurses 27  
Nursing Staff 13  
Obesity 28, 102  
Obstructive sleep apnea 102  
Occupation-based practice 3  
Occurrence 113  
Odontogenic infection 282  
Odontogenic tumours 236  
Oil sector employees 48  
Oncology 77  
Oral bacteria 53  
Oral bioavailability 197  
Oral Candida 65  
Oral Chroma 54  
Organ 37  
Outcome 150  
Outcome measure 2  
Ovarian cancer 259  
Oxidative stress 23, 24, 151  
p21 209  
p27 209



- p38 MAPK & PI3K 149  
 p53 208  
 Paediatric 164  
 Palmitic acid 155  
 Panoramic radiography 57  
 Panton-Valentine Leukocidin 122  
 Papillary thyroid carcinoma 177  
 Parathyroid adenoma 83  
 Parathyroid scintigraphy 83  
 Parental attitudes 67  
 Paroxysmal nocturnal haemoglobinuria 244  
 Patient safety culture 47  
 Pattern 76  
 PCOS 166  
 PCR 142  
 Pediatrics 265  
 Pelvic girdle pain 12  
 Penetration 252  
 Peptidylarginine deiminase enzyme 174  
 Performance 28  
 Periodontal disease 58, 69  
 Persistent hyperplastic primary vitreous 241  
 PET/CT 76, 77, 245  
 Phagocytic/RES 74  
 Pharmacist 204  
 Pharmacokinetic study 198  
 Pharmacokinetics 205, 206  
 Phenotypes 166  
 Photodynamic therapy 22  
 Photosensitizer 22  
 Physical activity 213  
 Physical therapists 13  
 Physical therapy 8, 234  
 Pinhole 82  
 Piroxicam 200  
 Placenta 209  
 Placental perfusion 155  
 Platelet aggregation 167  
 Platelet functional disorder 167  
 Pleural effusion 176  
 Pneumonia 96, 106, 266  
 Pneumothorax 235  
 Poloxamer 407 197  
 Polycystic ovaries syndrome 171  
 Polyoma virus 141  
 Population pharmacokinetics 194  
 Population-groups 227  
 Postconditioning 212  
 Practice 43  
 Pregnancy 150  
 Pregnancy complications 7  
 Pregnancy related 12  
 Prenatal infection 211  
 Prevalence 11, 42  
 Prevention 62, 63  
 Preventive dental care 48  
 Primary hyperoxalluria 279  
 Primary school 44  
 Proliferative 225  
 Promiscuous epitopes 112  
 Prooxidant 24  
 Propranolol 225  
 Proteasome inhibitor 158  
 Protein expression 21  
 Protein phosphatases 187, 189  
 Proteinuria 110  
 Proton magnetic imaging Sspectroscopy 79  
 Psychiatric sequelae 7  
 Psychopathology 219  
 PTSD 216  
 Pulmonary developmental anomaly 240  
 Pyomyositis 248



- QOL 10  
Qualitative methodology 45  
Quality of life 104, 217  
Radiation retinopathy 251  
Radionuclide 81  
RAGE 21  
Ramadan fasting 207  
Ranking disability scale 100  
Ranking scale 99  
Reactive lymphadenitis 172  
Real author 87  
Real-time PCR 9  
Recovery stage after diarrhoea 179  
Recurrent disease 221  
Recurrent infections 123  
Regional 14  
Registry 105  
Rejection 103  
Renal biopsy 110  
Renal functions 91  
Renal transplant 96, 229, 278, 281  
Renal transplantation 103, 221, 277  
Residential patterns 41  
Resistance 153  
Respiratory distress 267  
Retinol binding protein 4 95  
Retinopathy of prematurity 183  
Risk factors 6, 26, 42, 99, 100  
Rv1980c 112  
Sacroiliitis 249  
Saffron adulteration 30  
Salbutamol sulphate 202  
Salmonella 147  
Satisfaction 8  
Schistosomiasis 264  
Schizophrenia 219, 220  
Schoolchildren 50, 67  
SCI 10  
Second look 160  
Senior medical staff 35  
Sentinel lymph node 85  
Septicemia 118  
Sequence 145  
Seroma 233, 283  
Service satisfaction 220  
Sesquiterpene lactone 203  
Signal transduction 188  
Silent ischemia 80  
Sirolimus 229  
SIRT 250  
16S-23S ITS DNA sequencing 125  
Smoking 39, 50, 69  
SPECT CT 248  
Sperm quality 151  
Stable isotope dilution 182  
Staphylococcus aureus 122  
Stapled hemorrhoidopexy 230  
STDs among teenagers 29  
Stereoselective 206  
Stomach 162  
Stones 226, 280  
Stool specimens 143  
Stress incontinence 11  
Stroke 26, 100  
Stroke subtribe 99  
Structure activity relationship 193  
Subcutaneous tissue 274  
Suicide 165  
Superoxide 23  
Surgical debridement 282  
Sustained release 202  
Sweets 49



- Swine flu 34  
 Synaptic plasticity 191  
 Synthesis 196  
 Syringic acid 158  
 (TAP) block-regional 276  
 TB Spine 242  
 Taenia solium 126  
<sup>99m</sup>Tc MIBI 83, 84  
 Testicular function 152  
 Therapeutic 88  
 Third molar 68  
 Thrombogenic factors 169  
 Thyroid 216  
 Thyroid scintigraphy 82  
 Tigecycline 135  
 Time 46  
 Tissue pathology 146  
 Tooth brushing 52  
 Total hip replacement 234  
 Toxoplasmosis 146  
 Traditional 88  
 Transcatheter closure 180  
 Transferrin 265  
 Transplant 256  
 Transurethral resection 160  
 Triazolyl-oxazolidinones 198, 199  
 Tripartite model 218  
 Triple therapy 94  
 Tropical diseases 254  
 TSH 4  
 Tuberculosis 131, 132, 136, 176, 178, 259  
 Type 2 diabetes 80, 127  
 Type 2 diabetes mellitus 95  
 Type 2 diabetes-related symptom 31  
 Type II diabetes 248  
 Tyrosine kinase inhibitors 157  
 UGT1A1 72  
 Ulcerative colitis 249  
 Ultrasound-guided transversus abdominis plane 276  
 Undiagnosed diagnosed diabetes 101  
 Unilesional nodule 237  
 University students 32  
 Unjustified authorship 87  
 Un-natural death 165  
 Unwanted medication 204  
 Ureteroscopy 280  
 Urinary incontinence 11  
 Uterine rupture 6  
 Vaccine 129  
 Vaginal pathogens 115  
 Vascular tumor 261  
 Vasculitis 245  
 Vasodilation 186  
 Ventricular septal defect 180  
 Vertebral osteomyelitis 242  
 Violent media 38  
 Viral infection 181  
 Visual 44  
 Vitamin D 92  
 Vitamin D 4  
 Vulva 262  
 Young adults 45  
 Zinc deficiency 152  
 Zygomycosis 140



## **ACKNOWLEDGEMENTS**

### **Major Sponsors:**

- Kuwait University
- Kuwait Foundation for the Advancement of Science (KFAS)

### **The Organising Committee would like to thank the following for their support:**

- Centre for Research Support and Conferences
- Technical Support Administration
- Medical Illustration and Photography Unit
- MDL Facilities

### **Special thanks to the following staff for their contribution:**

- Mrs. Teena Sadan
- Mrs. Abhaya Krishnan
- Ms. Nada Renno
- Mrs. Mariam Al-Najadah
- Ms. Rania Okasha
- Mrs. Alice Ninan

*Designed & Printed by*  
**Badra International**