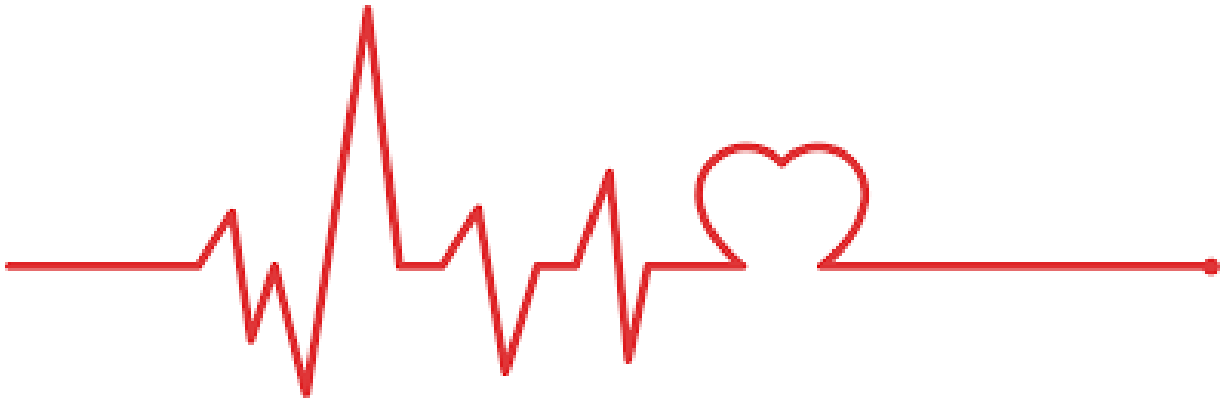
HEALTH SCIENCES CENTER POSTER CONFERENCE

Abstract Book



24th HSC POSTER CONFERENCE 2019

Under the Patronage of the President of Kuwait University

12-14 March 2019

Health Sciences Center Auditorium; Jabriya; Kuwait University

Table of Contents

Organizing Committee

- Prof. Rajaa Al-Attiyah, Vice Dean Research & Postgraduate Studies, FOM
- Prof. Kusum Kapila, Chairperson, Department of Pathology, FOM
- Prof. Yunus Luqmani, Department of Pharmaceutical Chemistry, FOP
- Prof. Suhail Ahmad, Department of Microbiology, FOM
- Dr. Muddanna Rao, Department of Anatomy, FOM
- Dr. Aisha Al-Jarallah, Department of Biochemistry, FOM
- Dr. Abdullah Al-Taiar, Department of Community Medicine, FOM
- Dr. Reem Al-Sabah, Department of Community Medicine, FOM
- Dr. Shaima M. Karam, Department of Pharmacology, FOM
- Dr. Waleed Al-Jassar, Department of Obse & Gyne, FOM
- Dr. Tariq Al-Fahad, Department of Medicine, FOM
- Dr. Jassem Al-Hashel, Department of Medicine, FOM
- Dr. Saud Al-Enezi, Department of Nuclear Medicine, FOM
- Dr. Abeer Al-Abdullah, Department of Pathology, FOM
- Dr. Mayra AlSaeid, Department of Pediatrics, FOM
- Dr. Slava Adel Malatiali, Department of Physiology, FOM
- Dr. Mohammad Jamal, Department of Surgery, FOM
- Dr. Ali Esmaeel, Department of Surgery, FOM
- Dr. Rana Al-Awadhi, Department of MLS, FOAH
- Dr. Bobby Joseph, Department of Diagnostics Sciences, FOD
- Prof. Syed Al Junid, Department of Health Economics, Policy and Management, FOPH
- Dr. Dheya Abu Hassan, Acting Administrative Manager, FOM
- Mr. Al-Tabtabaei Hussein, Acting Finance Chairman, FOM

24TH HEALTH SCIENCES CENTER POSTER CONFERENCE 2019

12-14 March, 2019

Health Sciences Auditorium, Jabriya

Kuwait University

Inaugural Ceremony: Tuesday, 12th March 2019

Venue: HSC Auditorium, Health Sciences Centre, Jabriya

Moderator: Dr. Waleed Al-Jassar

9:00 AM	***National Anthem, Recitation of Holy Quran: Mr. Salah Al-Kandari***
9:10 AM	***Welcome Address: Professor Rajaa Al-Attiyah*** *Vice-Dean for Research & Postgraduate Studies, Faculty of Medicine*
9:15 AM	***Introduction of Keynote Speaker: Professor Kusum Kapila*** *Chairperson of Organizing Committee*
9:25 AM	***Keynote Lecture:* "What does it take to become an academic surgeon"** **Prof. Sami Asfar** *Professor of Surgery, Faculty of Medicine* *Kuwait University, Kuwait*
10:30 AM	***Opening of Poster Conference*** *Vice President for Research, Assistant Vice President for Research, HSC Deans and Vice-Deans, All Participants*
10:35 AM	***Poster Viewing: Faculty of Medicine Lobby***

Closing Ceremony: Thursday 14th March 2019

Moderator: Dr. Abeer Abdullah

12:30 PM	***Welcome Address: Dr. Abeer Abdullah***
12:35 PM	***Announcement of Awards by Chief Judge*** *Presentation of Awards to the Winners by Dean of FOM and Chairman of Committee*
12:35 – 2.35 PM	***Oral Presentations of Award Winners – 10 minutes each presentation (12 presentations)***
2:40 PM	***Vote of Thanks: Dr. Abeer Abdullah***

Online Registration for CME Credits: www.hsc.edu.kw/poster

Contact: Centre for Research Support and Conferences; Office of the Vice Dean for Research and Post Graduate Studies; Faculty of Medicine,

Kuwait University; Tel: +965 246 36418/+965 246 34569; Fax: +965 253 18455; Email: poster@hsc.edu.kw;

Photograph of Organizing Committee

Prof. Rajaa Al-Attiyah, Vice Dean for Research & Postgraduate Studies, FOM

Prof Kusum Kapila, Chairperson Pathology

Prof. Yunus Luqmani, Pharmaceutical Chemistry

Prof. Suhail Ahmad, Microbiology

Prof. Syed Al Junid, Health Economics, Policy & Managment

Dr. Mudanna Rao, Anatomy

Dr. Aisha Al-Jarallah, Biochemistry

Dr. Abdullah Al-Taiar, Community Medicine

Dr. Reem Al-Sabah, Community Medicine

Dr. Shaima Karam, Pharmacology

Dr. Waleed Al-Jassar, Obs & Gynae

Dr. Tariq Al-Fahad, Medicine

Dr. Jassem Al-Hashel, Medicine

 *Dr. Saud Al-Enezi, Nuclear Medicine*	 *Dr. Abeer Al-Abdullah, Pathology*
 *Dr. Mayra Al-Saeid, Paediatrics*	 *Dr. Slava Malatiali, Physiology*
 *Dr. Mohammad Jamal, Surgery*	 *Dr. Ali Esmaeel, Surgery*
 *Dr. Rana Al-Awadhi, Medical Laboratory Sciences*	 *Dr. Bobby Joseph, Diagnostic Sciences*
 *Mr. Dheya Abu Al-Hassan, Administrative Manager*	 *Mr. Hussain Al-Tabtabaei* *Acting Chairman, Finance & Purchasing*

Centre for Research Support & Conferences

Dr. Nada Madi, Director

Ms. Teena Sadan
Senior Technician

Ms. Mariam Saleh Al-Najadah
Senior Medical Secretary

Ms. Leya Sara Jacob
Senior Computer Engineer

Online Registration for CME Credits: www.hsc.edu.kw/poster

Message from the Vice-Dean for Research and Post-Graduate Studies, Faculty of Medicine

The first Poster Conference was introduced in April 1996 in the Faculty of Medicine. We have since then held this conference annually with great success with staff and students of all the faculties of Health Sciences Centre participating and presenting their research. Strong research is a prerequisite for academic excellence, and this concept was clearly understood when the First Poster Day was held 23 years ago, in April 1996, in the Faculty of Medicine. The founders of Poster Day started this event with a premise that scientific progress depends on investigation, critical analysis and exchange of ideas. The Poster Day started with an aim of stimulating communication between scientists in various health-related specialties and has grown progressively to involve diverse scientific fields in all the faculties of the Health Sciences Center (HSC).

In continuing the tradition of inviting internationally recognized Scientists whose work has great impact upon the Health Sciences, this year we would like to welcome Professor. Sami Asfar, Professor of Surgery, Faculty of Medicine, Kuwait University who will give the keynote speech on "What does it take to become an academic surgeon". This year we have 213 poster abstracts and I have no doubt that the 24th HSC Poster Conference will be a great success. I thank Kuwait University for the continuing support and sponsorship of the Poster Conference and Prof. Sami Asfar for accepting our invitation as a keynote speaker in this year's Poster Conference at a short notice. I would like also to express my appreciation to the Vice-President Health Sciences Centre, Deans of different Faculties of HSC for their encouragement and support and to all HSC technical and support staff who assisted in the organization and implementation of this meeting. I am especially very grateful to the Chairman and the members of the Organizing Committee for their commitment and efforts to make this a very successful event.

Prof. Raja'a Al-Attiyah
Vice-Dean for Research & Postgraduate Studies
Faculty of Medicine

Message from the Chairperson; 24th HSC Conference Committee

On behalf of the Organizing Committee of the 24th Health Science Center Poster Conference I would like to welcome all participants to this scientific forum. From its inception the Poster Conference became a forum for exchanging ideas, establishing collaborations and communicating scientific advancement. Started as a Poster Day, to meet the need for sharing information among basic and clinical scientists, residents, graduates and undergraduate students, the Poster Conference progressed to become an important venue for presentation of health-related research. The past keynote speakers have included several Nobel Laureates, prominent academicians, scientists and clinicians from around the world speaking on a diverse range of subjects. This year we are honored to have Professor. Sami Asfar, Professor of Surgery, Faculty of Medicine, Kuwait University. Professor Sami Asfar address titled "What does it take to become an academic surgeon" promises to be an exciting way to start the poster conference. We look forward to the continuing enthusiastic participation of researchers from the faculties of the Health Sciences Center and others of Kuwait University as well as other institutions and hospital departments in Kuwait and abroad.

I believe that the 24th Health Science Center Poster Conference will build upon the successes of the previous meetings. I invite you all to join in making this year's poster conference a memorable one.

Prof. Kusum Kapila

Chairperson of 24th HSC poster Conference

Keynote Speaker

Prof. Sami Asfar, M.B., Ch.B., MD (UK), FRCS, FRCSED, FACS
Liver and Vascular Surgery
Professor of Surgery, Faculty of Medicine Kuwait University

Sami Asfar graduated from the School of Medicine, Baghdad University in 1968. He did his internship in Baghdad teaching hospitals. In 1972, he started his career in general surgery in Kuwait in Sabah hospital then Ameri hospital. In 1978 obtained his FRCS (ED) and in 1981 He moved to Scotland as lecturer in surgery, Professorial Surgical Unit, Faculty of Medicine, Aberdeen, where he was trained in general, vascular and kidney transplantation surgery. In addition to these busy clinical commitments he finished his research on pregnancy-induced Fc-receptor blocking antibodies and was granted the MD thesis with commendations from Aberdeen University for his thesis: "The effect of pregnancy on renal allograft survival". Then moved to Canada in1990 to join the Multi-Organ Transplant Unit, London University Hospital, London, Ontario, as a clinical fellow then as a consultant. In this unit he was trained by Prof. William Wall and Prof. David Grant on Liver and small bowel transplantation and on Liver surgery. Since 1998, he is Professor of Vascular and Hepato-Pancreato-Biliary Surgery, Faculty of Medicine, Kuwait University.

He published in high-impact international journals in the fields of general, transplant and vascular surgery (see link http://scholar.google.com/citations?user=s3VRPS4AAAAJ&hl=en). His publications are highly cited by others, as of to date, his total citations are 2032, his h-index is 24, and i10-index is 52. He modified some procedures and just published his own technique in repairing post-haemorrhoidectomy anal stricture (online ahead of publication). His passion to green tea research is non-ending, he studied the effect of green tea on the intestinal mucosa looking at the changes at the cellular level (cytokines, antioxidants and growth factors). He remains committed to his students, clinical surgery and research.

Keynote Abstract

What it takes to become an academic surgeon

George Bernard Shaw (1856-1950) once said: “You see things; and you say Why? But I dream things that never were, and say Why NOT”

This is the essence of academic career, an academician always says Why Not? and spends the rest his life trying to answer this very simple question.

This presentation is aimed to take the audience through “PEEP-CT” an acronym that I gave to explain what it takes to become an academician.

Best Poster Award Winners: 23rd HSC Poster Conference 2018

Award Winners HSC Poster Conference 2018

1. Undergraduate (Dr. Nael Al-Naqeeb Award)

A) Lutein modulates transcription dysregulation of adhesion molecules and spermatogenesis transcription factors induced by testicular ischemia reperfusion injury: it could be SAFE

Al-Somali, *Botras MS, Qadhi IQ, Al-Maghrebi M, Renno WM

Department of Biochemistry, Faculty of Medicine, Kuwait University

B) Foreign body induced appendicitis

Qassim S, Lairy A

Department of Surgery, Mubarak Al-Kabeer Hospital

C) Can bacteria become resistant to photodynamic inactivation?

AL-Mutairi R, Benov L

Departments of Biochemistry, Faculty of Medicine, Kuwait University

2. Award for Distinguished Graduate Research (MSc)

A) A comparison of Multiplex PCR, ERIC-PCR, 16S rDNA sequencing, and Whole Genome sequencing for identification and/or typing of clinical Acinetobacter baumannii strains isolated in two major hospitals in Kuwait

*Nasser K[1], Khan MW[2], Purohit P[3], Al-Obaid I[3], Dhar R[4], Al-Fouzan W[4], Mustafa AS[1]

[1]Department of Microbiology; [2]OMICS Research Unit, Research Core Facility, Faculty of Medicine, Kuwait University; [3]Department of Medical Microbiology, Al-Sabah Hospital, Kuwait; [4]Department of Medical Microbiology, Farwaniya Hospital, Kuwait

B) Molecular basis of resistance to echinocandins in clinical Candida glabrate isolates in Kuwait

*Al-Baqsami Z, Ahmad S, Khan Z

Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait

3. Award for Distinguished Graduate Research (PhD)

A) Molecular characterization and epidemiology of multidrug-resistant Mycobacterium tuberculosis (MDR-TB) and identification of possible cases of local transmission of MDR-TB in Kuwait

Al-Mutairi N*, Ahmad S, Mokaddas EM

Department of Microbiology, Faculty of Medicine, Kuwait University

4. Award for Graduate Resident

A) Molecular alterations in gastrointestinal stromal tumors (GISTs) using targeted next-generation sequencing

*Alrushaidan S1, Mohieldin A2, Mehdawi H3, Alabdallah A3, Elenezi F2, Bahzad S4, Ali RH3,4

1 Histopathology Laboratory, Kuwait Cancer Control Center; 2Medical Oncology, Kuwait Cancer Control Center; 3Department of Pathology, Faculty of Medicine, Kuwait University; 4 Molecular Laboratory, Kuwait Cancer Control Center.

5. Young Researcher Award for Basic Sciences

A) Dysregulated heat shock and unfolded protein responses in obese humans and their modulation through physical exercise

Sina Kavalakatt, Dhanya Madhu, Maha Hammad, Abdelkrim Khadir, Ali Tiss
Dasman Diabetes Institute, Kuwait

6. Young Researcher for Clinical Sciences

Linear Psoriasis: A Rare Presentation of Psoriasis

Zahraa Al-Hashemi[1], Lulwa Ahmad[2]

[1]Department of Medicine/Dermatology, [2] Department of Pediatrics, Mubarak Hospital, Kuwait

Past Poster day Keynote Speakers and Lectures

2018

The internal exposome – a global approach to a better understanding of human disease.
Professor Paolo Vineis, Chair in Environmental Epidemiology, Imperial College London, UK

2017

Vascular stiffness and systolic hypertension; Prof. Pierre Moreau, B. Pharm., Ph.D
Dean and Professor, Faculty of Pharmacy - Health Sciences Center, Kuwait University

2016

Chemokines: Key players in immune surveillance and agingProf. Bernhard Moser; Chair (Infection & Immunity), Institute of Infection and Immunity, Cardiff University, Heath Park, Cardiff, UK

2015

The Future Healthcare: Personalized Medicine for Cancer Patients; Prof. Ramzi M. Mohammad, Ph.D., Director, GI-Cancer Research, Karmanos Cancer Institute, Michigan, Department of Immunology and Microbiology, Barbara Ann Karmanos Cancer Institute, Wayne State University, MI

2014

Image-guided surgery – from bench to bedside; Professor Samuel Achilefu; Professor of Radiology, Mallinckrodt Institute of Radiology, Washington University School of Medicine

2013

Stem Cells: Building and Rebuilding the Nervous System; Professor Freda Miller; Senior Scientist, Research Institute, Developmental & Stem Cell Biology, University of Toronto

2012

Cardiovascular health in the 21stcentury; Professor Barry McGrath, Professor of Vascular Medicine & Medicine, Southern Clinical School, Monash University, Australia

2011

Cardiovascular Outcome Trials in Diabetes.; Prof. Rury Holman, Director of the University of Oxford Diabetes Trials Unit, University of Oxford, Canada

2010

New mycobacterial vaccine candidates: from lab to clinical trials.
Prof. Abu Salim Mustafa, PhD, FRC Path. Department of Microbiology, Faculty of Medicine, Kuwait University

2009

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

2008

What Ails The World? How Do We Respond?
Prof. Abdallah S Daar, D.Phil (Oxon), FRSC, FRCP (Lon), FRCS (Eng), FRCS (Ed), FRCS (C), Director of Ethics and Policy, McLaughlin Centre for Molecular Medicine, Professor of Public Health Sciences and

Professor of Surgery, Senior scientist and Co-director, Program on Life Sciences, Ethics and Policy, McLaughlin Rotman Centre for Global Health, University of Toronto, Ontario, Canada

2007

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

2006

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

2005

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

2004

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

2003

The Post-Genomic Era: Global Impact on Medicine and Health Care Delivery Prof. Seyed E. Hasnain, Director, Centre for DNA Fingerprinting & Diagnostics (CDFD) Hyderabad, India

2002

Genetics and World Health: Fact or Fantasy Prof.(Sir) David J Weatherall, Emeritus Professor, Weatherall Institute of Molecular Medicien, 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 Enviornmental 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

Allied Health

1

Alnaser M, *Aljadi S: Physical Therapists with Work-Related Musculoskeletal Disorders in the State of Kuwait- A Comparison across Countries and Health Care Professions

Anatomy

2

*Al-Arbeed TA, Renno WM, Al-Hassan JM: Anti-apoptotic and Neuroregenerative Effects of Soluble Protein Fraction of the Epidermal Secretion from the Arabian Gulf Catfish following Sciatic Nerve Crush Injury in Rats

3

Al-Onaizi MA, Al-Sarraf A, Kilarkaje N: Determining the Long-term Consequences of Type 2 Diabetes on Hippocampal Neuroinflammation and Synaptic Integrity: Implications for Alzheimer's Disease

Behavioral Sciences

4

Alhashemi MH, Johny SJ, *Al-Hilal MA, Al-duwaisan HA: The effect of a structured diabetes self-management education (DSME) on A1C level in diabetic patients at Al-Yarmouk primary health care Centre (work in progress)

5

Al-Sayegh N, Al-Qurba T, Al-Enezi K, Mohammad N, Al-Obaidi S, Dean E: A Three Year Analysis to Discover the Healthy Lifestyle Behaviors amongst Staff and Students of the Health Science Center of Kuwait University

Biochemistry

6

*AL-Habeeb M, Craik J, Benov L: Effect of Zn(II) N-alkylpyridylporphyrin Structural Modifications on NADH Photo-Oxidation and Anticancer Activity

7

Alrefaee S: Total vitamin D and diabetic index

8

*Al-Saleh F, Al-Maghrebi M, Pattillath S: Oxidative Stress-induced Germ Cell Apoptosis: The NOX-ER Stress Connection.

9

*AlSharekh N, Al-Qarbah M, Al-Mojil K, Al-Maghrebi M, Al-Saleh F, Patillath S, Al-Maghrebi M: Germ Cell Apoptosis and Oxidative DNA Damage: Survivin' the Lipoxygenases

10

Faid E*, Rostum M, Devassy A, Verghese L, Babiker F, Al-Jarallah A: High Density Lipoprotein Protects Spontaneously Hypertensive Rats Against Cardiac Ischemia/Reperfusion Injury by Reducing Autophagy and Inflammation

11

*Khashab F, Al-Maghrebi M, Patillath S: Deciding on the life and Death of Germ Cells by the DNA Damage Response (DDR) Signalling Pathways.

Biochemistry and Inorganic chemistry

12

*laziz D, Beghidja C, Beghidja A: Synthesis, Structural Characterizations, Biological Properties of Novel Acetylacetonebis(salicyloylhydrazone) Complexes of Ni

Biomedical Engineering

13

Shuaib A, Bourisly AK, Al-Azmi E: Photobiomodulation Therapy (PBMT): The Effect of Weight of Rat on the Delivered Fluence Spinal Cord Injury Rat Model- Computational Study

Cell biology and Genetics

14

Nandakumaran M, Al-Shammari M, George S, Nair RA, Al-Saleh E: Maternal-fetal Transport of Arachidonic Acid in Pre-Eclampsia Model Placental Lobule: In Vitro Study

Community Medicine

15

*Aldousari L, AlFailakawi M, AlHamdan F, AlOuda H, AlQuloushi M, Malhas Z, Al-Sabah R: Child Safety Seats: Knowledge, Attitude, and Practice among parents in Kuwait

16

*Al-Abdulrazzaq S, Al-Sharbati M: A five-year retrospective study of occupational back injuries among the health-insured private workers in Kuwait.

17

*AlAwadhi K, AlWasmi A, AlAdsani K, AlDabbous N, AlBraikan D, AlYousef A, AlMerjah F, AlBassam T, AlHanyan G, Al-Taiar A: Hand Hygiene among Senior Medical Students: Knowledge, Attitude and Practice

18

*AlFraih M, AlHamar A, Marafie N, Majidi N, Buhamad Y, Akrouf Z, Ziyab AH: Prevalence of Respiratory Symptoms and Diseases among Petroleum Refinery Workers: A Cross-Sectional Study

19

*Al-Abdali N, Al-Rashidi A, Al-Saqobi A, Al-Ajmi D, Al-Sayegh H, Al-Azimi M, Al-Taiar A: Women's Preference on Birthplace and Mode of Delivery in Kuwait

20

*Akrama A, Alhamar M, Aleinati R, Alsaeid R, Al-Mutawa M, Al-Mutairi A, Meshal H, Alrajhi K, Al-Tammar M, Tadros N, Longenecker JC: Knowledge, Attitudes and Practices Regarding Colorectal Cancer Screening in Patients Attending Kuwait Ministry of Health Primary Care Centers

21

AlSabah S, AlHaddad E, AlSaleh F: Stop the Bleed Campaign: Our Experience from the Middle East

22

AlHamly H, AlSomali H, Mohiyaldeen I, AlSaidan L, Kenawy M, Younes S, Zeyab A: Knowledge, Attitude, Practice, and Barriers of Evidence-Based Medicine among Physicians in General Hospitals in Kuwait: A Cross-Sectional Study

23

*Ashkanani H, Al-Ali N, Asery R, Bokubar F, Mubarak Sh, Mallah H, Buabbas A: Online Health Information Seeking Among Kuwait University Students

24

*Al-Sobaie M, Aburezq M, Al-Fadhli M, Al-Sheridah M, Al-Alban F, Al-Abdulrazzaq M, Badr H: Aggressive behavior among university students in Kuwait: The role of anabolic steroids and socio-demographic factors

25

Aljunid SS, Aljunid SM, Mohd Taib MZ, Abu Samah Z: Factors Influencing Users' Satisfaction on Interior Design Quality Of Public Hospitals In Malaysia

26
*Aljunid SM, Tolma E, Amrizal MN, Longenecker JC, Mahmoud A, Al-Wotayan R: Knowledge, Attitude and Practices of Colorectal Cancer Screening among Primary Physicians in Kuwait

27
*Al-Mutairi B, Al-Bader D, Al-Yaseen D, Khalaf J, Alkandari M, Irschied S, Awad S, Adullah Z, Akhtar S: Prevalence and Factors Associated with Self-Reported Physical Inactivity in the Working Population in Kuwait

28
*Al-Mutairi MF, Imtiaz A, Al-Musaileem SF, Al-Ibrahim YA, Bulbanat MB, Mitra AK: Factors influencing knowledge and practice of self-medication among college students of health and non-health professions

29
*Alshammari N, Almodahka A, Alansari E, Alkandari M, Ibrahim K, Alsanea J, Albatineh A: Prevalence of Depression and Anxiety and their Association among End Stage Renal Disease Patients undergoing Hemodialysis in Kuwait: A Multi-Center Study

30
*Al-Taiar A, Al-Quood N, Hammoud MS: Can Infant and Young Child Feeding Indicators Predict Stunting or Overweight? Findings of Kuwait Nutritional Surveillance System (2015-2017)

31
Alterki F, Alshatti K, Kayali N, Al-Kandari A, Al-Othman M, Al-Azmi E, Al-Mutawa N: Breastfeeding: Knowledge, Attitude, and Practice among Female Ministry Workers in Kuwait

32
Junaidah K*, Yahya NM, Adlina S, Zafirah SA, Aljunid SM: Leadership Styles Of Managers and Its Contributing Factors In A Military Hospital in Malaysia

33
Kabli A, Al-Aly A, Redha M, Alshawaf S, Al Ostad T, Owayed F, Tadros N, Longenecker JC: Blood Pressure and Body Building Supplement Use Among Gym Attendees in Kuwait

34
Kholoud M*, Aljunid SM: Assessing Patient Safety Culture and Related Barriers in the Public Hospitals in Kuwait

35
Qureshi M, Imtiaz A, Sadeq A, Al-Awadhi K, Al-Ali M, Khudair S, Ali A, Al-Mutawa N: Patient Satisfaction in Public Hospitals of Kuwait: A Comparison of Four Major Hospitals.

36
Othman N, Gheith O, Al-Otaib T, Mahmoud T, Al-Refaei F, Mahmoud F, Abduo H, Nampoory N, Halim MA, Maher A: Diabetes Knowledge among Renal Transplant Recipients with Post-Transplant Diabetes Mellitus

Community medicine and obstetrics and gynecology

37
*Miskin B, Almutairi A, Abdulsalam N, Alrubaiah R, Elabd R, Mansour R, Shah N: Factors Associated with Adverse Outcomes of Delivery in Government Hospitals in Kuwait

Critical Care

38
*Abulhasan YB, Abdullah A, Shetty S, Ramadan M, Rajan R, Mokaddas E: Healthcare-associated Infections in a Tertiary-care Neurocritical Care Unit in Kuwait

Cytopathology

39

Das DK, Al-Ayanti M, Mallik MK, Inamdar N, George SA, John B, Al-Kanderi MG, Pathan SK: Limitations in Fine Needle Aspiration Cytodiagnosis of Anaplastic Large Cell Lymphoma (ALCL): Contribution of Overlapping Cytomorphological Features between ALCL and Hodgkin Lymphoma.

Dentistry

40

*Alanzi A, Alkheder M, Qudeimat M: Oral Health in Children with History of Chronic Liver Disease

41

Albaghdadi SZ, Taher JB, Drobiova H, Karched M: In vitro characterization of biofilm formation in Prevotella species

42

Alduraie A, Behbehani Z, Alasfour A, Alzoubi F: Clinical Factors Influencing Implant Stability Quotient Values: Implant-Related Factors

43

Alhamadi M, Al-Azmi A, Pauline EM, Karched M: Oral Prevalence of Candida albicans in smokers and non-smokers

44

Alhandal H, Almesaileikh E, Bhardwaj RG, Al-Khabbaz A, Karched M: Effect of Benzyl Isothiocyanate on the expression of genes encoding NADH oxidase and Fibronectin binding protein in oral streptococci

45

Alkandari S, Bhardwaj RG, Al-Khabbaz A, Ellepola A, Karched M: Isolation and characterization of extracellular vesicles from Granulicatella spp.

46

Al-Khabbaz AK, Goerge S, Abdul-Rasoul M: The Effect of non-surgical Periodontal Therapy on Metabolic Control in Children

47

Behbehani Z, Alduraie A, Alasfour A, Alzoubi F: Clinical Factors Influencing Implant Stability Quotient Values: Patient-Related Factors

48

Hanif A, Bhardwaj RG, Ellepola A, Karched M: Effect of drug-resistance or susceptibility of Candida species on their ability to coaggregate and form biofilms with oral streptococci

49

*Joseph BK, Ali MA, Dashti H, Sundaram D: An analysis of oral and maxillofacial pathology lesions over an 18-year period diagnosed at Kuwait University

50

Marafie D, Alrasheed L, Pauline EM, Drobiova H, Karched M: Antimicrobial effect of silver diammine fluoride and sodium fluoride on in vitro biofilms of Streptococcus mutans and Lactobacillus casei

51

*Shyama M, Al-Mutawa SA, Honkala S, Honkala E: Perceptions of oral health among parents and teachers of special needs schoolchildren in Kuwait

Genetics

52
Al-Awadhi AM, *Haider MZ, Sukumaran J, Hasan EAH, Bartella YA: Role of protein tyrosine phosphatase non-receptor type 22 gene functional variant [C1858T] in genetic susceptibility of psoriatic arthritis in Kuwaiti Arabs

53
Al Kandari HM, Thomas D, Chandy B, Melhem M, Al-Mulla F: Monogenic Diabetes (MODY) study in Kuwait

54
*Al-Mutairi DA, Alsabah BH, Alkhaledi B, Pennekamp P, Omran H: Identification of a splice site mutation in ARMC4 gene in Multiplex Kuwaiti family with severe chronic respiratory symptoms and randomization of left or right body asymmetry.

55
Al-Serri A, Al-Temaimi R, Abdur Rahman, Al-Taiar A, Shaban L, Al-Sabah R: An association between the common FTO gene polymorphism and obesity in Kuwaiti children: A cross-sectional study

56
Jahromi M, T Al-Otaibi, Gheith O, Othman O, Nair P, Said T, Halim M, Nampoory N, Ahmed A, Ebaa Al-Ozari: T cells commands chief orchestras for Post-transplant diabetes

Genomics

57
*Khan MW, Shuaib W, Mustafa AS: Comparative genome analysis of Brucella melitensis isolates from Kuwait

Health Policy and Management

58
*Shaban F, Al-Matrouk J, Al-Tourah M, Aljunid S: Management Styles and Challenges in Providing Speech Therapy Services in Kuwait: A Case Study of Sheikh Salem Al-Ali Center of Audiology and Speech Therapy

Hematology

59
*AlDallala SM, Jenab N: Prevalence of anemia in type 2 diabetic patients

Human genetics

60
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61
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Medical Education

62
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63
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64
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Medical Education - Psychiatry

65

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66

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Medicinal Chemistry

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68

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69

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70

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72

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73

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76

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84
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85
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89
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90
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91
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92
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95
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96
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98
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99
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100
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101
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102
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103
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104
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105
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106
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107
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108
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109
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Neurology

110
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111
Ahmed SF, Almuteri ML, Al-Hashel JY, Alroughani R: Pregnancy outcome in Multiple sclerosis patients exposed to disease modifying therapies.

112
Alroughani R, Ahmed SF, Elsherbeny DA, Al-Hashel JY: The use natalizumab in multiple sclerosis patients during pregnancy is safe and prevents disease reactivation.

Nuclear Medicine and Radiology

113
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114
Alhajeri M, Abdalreda I, Fahad M: Nuclear medicine Practice: Assessment of physician and their awareness of nuclear medicine practice in Kuwait main Hospitals.

115
*Almaateeq B, AlHaddad SK, Loutfi I: Joint/Bone Ratio as an Indicator of Arthritis on the Tc-99m HDP Bone Scan

116
*Asbeutah AM, AlMajran A, Adekile A: Pattern of cerebral blood flow and the interrelationship of vascular parameters of transcranial Doppler imaging in children with sickle cell disease

117
Ashkanani H, Aql AA, Loutfi I: Patterns of F-18 Fluorodeoxyglucose (FDG) PET/CT Uptake in Ocular Tissues and Muscles

118
Dannoon SF, Alenezi SA, Alnafisi NS, Asa'ad SM, Osman MM, Elgazzar AH: Effect of Brown Adipose Tissue Activation on Myocardial [18F]FDG Uptake

119
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120
Sdeeg M: Estimated Dose from Diagnostic Nuclear Medicine Patient to Workers and People outside N M department

Nutrition and food science

121
Jallad R, Rao MS, Al-Taiar A, Shaban L, Al-Sabah R, Rahman A: Prevalence of microminerals deficiencies among adolescent school children in Kuwait

Obstetrics and Gynecology

122
Alaa B, Yahya MY, Malalla A, Omu AE: Tractocile in the management of preterm labour in Kuwait

123
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124
Al-Qahtani JS, Malalla Y MYA, George S, Pariyani S, Nair A, Omu AE, Mohammad A: Significance of oxytocin receptors in pregnancy.

125
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Oncology

126
Albarrak N, Khajah M, Luqmani Y: Influence of hypoxia on proliferative and migratory capacity of endocrine sensitive and resistant breast cancer cells

127
Jahanbani I, Al-Abdallah A, Mehdawi H, Ali R, Al-Brahim N, Mojiminiyi S: Contribution of elevated miR-146b-5p to papillary thyroid cancer diagnosis and development

Oral cancer

128
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Pathology

129
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130
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131
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133
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Pediatrics

134
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135
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136
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137
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138
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139
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140
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141
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142
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143
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144
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145
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146
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147
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Pharmacy education

148
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Physical Medicine and Rehabilitation

149
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150
Ramakrishna S, Zeljic V, Kobal F, Al Khandari S: Outcome of Injection of Botulinum toxin (BoNT –A) in Children with Cerebral Palsy- Spastic Diplegia- Kuwait Experience

Physiology

151
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152
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153
Malatiali S Al- Bader M: Impairment of renal function in male rats exposed to maternal dexamethasone in utero

Psychiatry

154
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Psychology

155
Alansari BM, Alali TB: Gender Differences in 15 Facet Scales for the Second Big Five Inventory among Kuwait University Students

156
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Public Health

157

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158

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159

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Public Health and Epidemiology

160

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Surgery

161

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162

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163

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164

Alsharqawi N, Al Haddad E: The Aftermath of the Kuwait Mosque Bombing:
A retrospective cohort analysis and lessons learned

165

Bohamed F, Edward M, Shuaib A: Synchronous acute appendicitis and acute cholecystitis: a literature review

166

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167

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168

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169

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Survey

170

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Trauma

171

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172

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Case Report Abstracts List by Subject Area

Clinical Ophthalmology

173

Alrabah F, Albaghli A, Asad H, Bouhaimed M: Ethical, and Legal Issues Related to Presentation of Child Abuse Cases to Ophthalmic Care in Kuwait: A Case Report

Dentistry

174

Tin Y: Lower lip numbness due to the periapical infection

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175

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ENT (otolaryngology)

176

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Genetics

177

Alabdulrazaq M, Al-balool HH, Aladwani A, Alaqeel AA: First case of 2q13 microduplication in Kuwait: unusual presentation of already a rare syndrome

178

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179

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Hematology

180

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Medicine

181

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182

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183

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184
Torki A, Ayman MN, Osama A G, Mohammed D, Mohammed A, Zakaria ZE, Nair P: Pure Red Cell Aplasia In Renal Transplant Recipient: Case Report And Review Of Literature.

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185
*AlFailakawi M, Khan N, Bouhaimed M: I Am My Own Doctor

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186
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187
AL-Haqqan A, *AL-Otaibi H, AL-Sweih N: The First Report of Neonatal Outbreak of Ralstoniamannitolilytica Associated with the use of Commercial Irrigation Solution in Maternity Hospital NICU Kuwait

188
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189
Sher A, Latif SA: Congenital malaria: first case report in Kuwait

Nuclear Medicine and Radiology

190
*Rafaa EA, Dalia MF, Hanaa LS, Renno WM: A Rare case of a Double posterior cerebral artery

191
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192
Sinan T, Buric J, Sheikh M: Disc Herniation and Myofascial Syndrome: Possible Diagnostic Errors. Case Report.

Ophthalmology- Medical Education

193
Ashkanani H, Abdelkarim A, Bouhaimed M: Bilateral Medial Canthal Lesions: How Knowledge of Basic Anatomy and Age-related Anatomical Changes can Save the Vision of a Patients

Pathology

194
Alath P, ElShazy N, Al Jassar A, El-Kabany M, AlmoghazyS, George SS, Kapila K: Follicular variant of papillary thyroid carcinoma with bone metastases - report of two cases and review of literature.

195
Ameerah A, Al-Kandari I, Al-Mutairi A, Al-Kandari M, Al-Brahim N: Rare Cases of Primary Hyperparathyroidism: Carcinoma, Cyst, Oncocytic, and Lipoadenoma

196
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197
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198
*Sharfudeen, Amir T, Eskaf W, El-Sayed MG, Al-Jassar A Kapila K: Rare Case Of Collison Tumor Of Thyroid With Parathyroid Adenoma- A Case Report.

Pediatrics

199
BinNakhi HA, AlSaleh A, Abdulgawi NA, Qabazard Z: Intracerebral cysticercosis: A case report from Kuwait

200
Gouda WA, Badawey AN, Adel Y: Isolated Retroclival Hematoma: Commonly Overlooked finding in Pediatric Head Trauma

201
Noor AlAli, Mohammed F, Ashkanani H, Hanafy H: Sanjat Sakati Syndrome: The Effect of Consanguinity on The Future Generation

Physical Medicine and Rehabilitation

202
*Alsairafy M, Abdulsalam AJ, Al-Mejalhem AY, Alyaseen E, Aloraify M, Alkandari SA, Özçakar L: Ultrasound guided cosmetic filler injections: Why the(y) wait?

203
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204
Al-Ajmi S, Sallam S, Al-Amad E, Al-Zaid S, Al-Bader B, Ameer A, Asad M, Al-Ozairi O: Failure of Non-operative management of Splenic Injury Resulting in Paraplegia, Gastric Necrosis, Pancreatic Necrosis and Splenic Abscess as a complication of Embolization

205
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206
AlHasan Y, Safar A, AlNajem H, Burhamah T, Asfar S: An Unexpected Diagnosis: Multiple intra-abdominal abscesses secondary to Actinomycosis from an intrauterine contraceptive device

207
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208
*Al-Otaibi H, Bastaki J, Al-Terki A: Bleeding nasal hemangioma in a pregnant patient: A case report and literature review

209
Al-Otaibi H, Al-Mutairi M: Break down of tracheostomy tube in a 3-year-old girl: A case report

210

Boushehry M, Khadadah I, Marafie H, Ali Y, Alzaid S, Albader B: Damage Control Airway: Establishing a Supra-Epiglottic Surgical Airway in a Cannot Intubate, Cannot Ventilate Blunt Polytrauma with Combined Cervical Spine Injury, Vertebral Artery Injury, Obstructing Tracheal Hematoma and no clearly defined Anatomy.

211

Rawan Alshemali, Noor Alhamdan, Rania danan, Mashael alkandery, Maged Edward, Ahmed Taqi: Perforated retroperitoneal appendicitis presented with right thigh abscess: Case report and literature review

Surgery-Medical Education

212

*AlFailakawi M, AlJuwaihel H, AlAbduljaleel A, AlWadani M, Dashti M, Bouhaimed M: Incarcerated Umbilical Hernia: Can It Be Something Else?

Vascular Surgery

213

Al-Ali J, Ghanem HM, Kamal E, Hanbal I, Sestic H, Al-Bader M, Asfar S: Anterolateral (Supra-iliac) Extra-Anatomic Ilio-femoral Bypass for an Infected Prosthetic Femoral Graft: A Case Report

Original Abstracts

Allied Health

1

Physical Therapists with Work-Related Musculoskeletal Disorders in the State of Kuwait- A Comparison across Countries and Health Care Professions

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Introduction:
In the US, as the demands for rehabilitation services increase, work-related musculoskeletal disorders (WMSDs) have increased among rehabilitation practitioners. This trend has been noticed among physical therapists (PTs) in the State of Kuwait. The purpose of this study was to determine the prevalence and risk factors associated with WMSDs among PTs in Kuwait over a 12-month period. In addition, the result compared across countries and health care professions.

Methods:
A descriptive cross-sectional design was used in this study. A self-administered questionnaire was distributed to the PT departments at Kuwait government hospitals and schools. A total of 312 returned questionnaires (69.3% response rate) were received.

Results:
Results showed that 149 (48%) PT respondents experienced WMSDs. The lower back and muscle spasm were the most common area of the body injured and type of injury, respectively. Manual therapy techniques and patient transfers were most common activities associated with injuries.

Conclusions:
The prevalence of PTs with WMSDs in Kuwait was high and similar to other studies of PTs with WMSDs working in other countries. The performance of work activities was the leading risk factor for WMSDs, and WMSDs were prevalent among industrialized, industrially developing, and underdeveloped countries. Education of PTs regarding ergonomic and biomechanical principles as well as hands-on training of patient handling are the key tools to help prevent WMSDs.

Key Words: Musculoskeletal Injuries; Occupational Injuries; Work Incidence;

Funding Agency: None

Anatomy

2

Anti-apoptotic and Neuroregenerative Effects of Soluble Protein Fraction of the Epidermal Secretion from the Arabian Gulf Catfish following Sciatic Nerve Crush Injury in Rats

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Introduction:
Crush injuries occur from a traumatic compression of the nerve resulting in different degrees of neural damage. Significant cell death and axon degeneration occur as a result of this damage, leading to permanent functional deficits. Previous clinical trials showed that catfish skin preparations (CSP) have potent effects on chronic back pain and other neurological disorders. This study was designed to investigate the anti-apoptotic and neuroprotective effects of soluble protein fraction (SPF)-Fraction C (FC) derived from CSP on the sciatic nerve crush injury.

Methods:
Adult male Wistar rats were randomly assigned into five groups (n=8/group): SHAM, CRUSH, CRUSH+1.5mg/kg SPF-FC, CRUSH+3mg/kg SPF-FC, and CRUSH+4.5mg/kg SPF-FC. Rats underwent sciatic nerve crush surgery, followed by treatment with SPF-FC administered intraperitoneally (IP) for two weeks, and sacrificed at the end of the fourth week. All animals were assessed for sensory and motor neurobehavioral tests throughout the four weeks. Peripheral axonal regeneration was assessed through whole mount staining of sciatic nerve using axonal markers. The neuroprotective properties of the treatment on the spinal cord neurons were assessed using Cresyl violet staining, while the apoptotic pathway was assessed using Western blot, immunohistochemistry, and TUNEL techniques.

Results:
The results of this study showed that IP administration of different SPF doses significantly ($p<0.05$-0.001) improved the neurobehavioral functional recovery of the nerve-injured groups. Visualization of sciatic nerve through whole mount staining revealed an increase in the axonal regeneration recovery with SPF-FC treatments. Moreover, SPF-FC treatments have neuroprotective effects on spinal cord neurons.

Conclusions:
Our results for the apoptotic pathway revealed that SPF-FC treatments reduce neuronal cell death resulting from sciatic nerve crush injury. The data suggest that SPF-FC reduces sensory and motor neurobehavioral deficits and enhances axonal regeneration.

Key Words: Neuroregeneration; Nerve injury; Catfish;

Funding Agency: College of Graduate Studies

Anatomy

3

Determining the Long-term Consequences of Type 2 Diabetes on Hippocampal Neuroinflammation and Synaptic Integrity: Implications for Alzheimer's Disease

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Introduction:
Type 2 diabetes mellitus (T2DM) affects 14.7% of the Kuwaiti population. Recent research shows that diabetes is associated with an increased risk for developing Alzheimer's disease (AD)- a neurodegenerative disorder- characterized by hippocampal inflammation and synaptic loss. However, the mechanisms through which diabetes may mediate these pathological changes remain unclear. This study investigated putative long-term effects of T2DM on oxidative stress, inflammation and synaptic integrity in the hippocampus.

Methods:
The T2DM db/db (leptin receptor knockout obese mice) and lean control mice were segregated into: young (3-4 months old), and aged (9-11 months old) groups. Hippocampus was assayed for PSD95, a marker of synaptic integrity. A cytokine array was used to estimate the inflammatory cytokines in the hippocampus. Hippocampal microglial count was also performed by immunolabeling IBA1. The oxidative stress status was assessed by 8-oxo-dG immunohistochemistry.

Results:
PSD95 expression levels were unaltered in young T2DM mice, but decreased in aged T2DM mice compared to that in control mice ($P<0.05$). The levels of proinflammatory cytokines- IL-1α and IL-1β were increased and anti-inflammatory cytokines- IL-10 and IL-13) were decreased in aged T2DM mice ($P<0.05$). Aged T2DM mice also showed a significantly higher microglial count in the hippocampus than in controls. The 8-oxo-dG expression was also increased in aged T2DM mice.

Conclusions:
T2DM in aged mouse hippocampus causes post-synaptic degeneration as indicated by reduced PSD95, and these findings are consistent with that seen in AD patients. Only prolonged T2DM causes these changes as young diabetic mice do not show post-synaptic degeneration. These findings appear in the hippocampus in association with increased oxidative stress, inflammation and microgliosis. These results provide evidence of age-dependent propagation of AD-like pathology in the hippocampus of T2DM mice.

Key Words: Diabetes; Alzheimer's Disease; Neuroinflammation;

Funding Agency: ZM03/16 SRUL02/13

Behavioral Sciences

4

The effect of a structured diabetes self-management education (DSME) on A1C level in diabetic patients at Al-Yarmouk primary health care Centre (work in progress)

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Introduction:
Kuwait is a low TB incidence country and only 1% of Mycobacterium tuberculosis (MTB) isolates are resistant to rifampicin and isoniazid (MDR-TB). This study evaluated GeneXpert MTB/RIF Ultra (Xpert) and BBD Max MDR-TB (BBD-Max) for rapid detection of MTB and its resistance to rifampicin and isoniazid in comparison with culture and clinical diagnosis.

Methods:
A total of 51 pulmonary (sputum, n=35; bronchoalveolar lavage, 15; endotracheal aspirate, n=1) and 30 extrapulmonary (cavitary fluids, n=24; fine needle aspirate/pus, n=6) specimens collected from 81 consecutive patients presenting with TB-like symptoms were processed for Zhiel-Nielsen smear microscopy, culture in MGIT 960 system, Xpert (Cepheid) and BBD-Max (Beckton and Dickinson) assay.

Results:
Fifteen specimens were MGIT culture-positive including ten smear-positive for acid-fast bacilli. Of those, 87% were positive for MTB by both Xpert and BBD-Max, one was negative by both tests and one specimen contained nontuberculous mycobacteria. Of 67 smear-negative and culture-negative specimens, 12% were MTB-positive by Xpert only, 1% were positive by BBD-Max only while 87% were MTB-negative by both tests. In Xpert-positive specimens 75% were from patients with a clinical diagnosis of TB. All MTB-positive specimens (n=13) were rifampicin-susceptible by MGIT and Xpert while 15% yielded indeterminate results by BBD-Max. Although two of 13 MTB isolates were isoniazid-resistant by MGIT, BBD-Max detected resistance in only one, 11 were isoniazid-susceptible while one yielded indeterminate result.

Conclusions:
Our data show that Xpert is more useful than BBD-Max for rapid diagnosis of active TB disease. Detection of isoniazid resistance by BBD-Max does not offer much advantage over Xpert assay in settings of low prevalence of MDR-TB as the latter performed better in low bacterial load specimens from patients with clinical disease but were smear-negative and culture-negative.

Key Words: Diabetes; Education; HbA1C;

Funding Agency: None

Behavioral Sciences

5

A Three Year Analysis to Discover the Healthy Lifestyle Behaviors amongst Staff and Students of the Health Science Center of Kuwait University

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Introduction:
Healthy health professionals are more likely to promote healthy lifestyle to their patients. Therefore, the objectives were to benchmark the health status of students and staff in the Health Sciences Center.

Methods:
We extracted data on the health behavior profiles related to smoking, physical activity, stress and sleep and objective measures, such as systolic and diastolic blood pressure (SBP & DBP), heart rate (HR), random blood sugar (RBS), Body mass index (BMI), and waist-to-hip ratio (WHR).

Results:
The study consisted of 204 participants (107 staff, 97 students), ageing 18-75 years (SD=13.6), who attended 2015-16, 2016-17 and 2017-18 academic years. Initial sample size of 420 was randomly selected which was reduced to 204 as many dropped out. Pairwise analysis showed significant changes from unhealthy in 2015-16 to healthy in 2016-17 amongst all participants in the hours of sleep (2.5%, $p<0.001$); OR (95% CI) 0.141 (0.06-0.32), and stress (3.5%, $p<0.001$); OR (95% CI) 0.076 (0.02-0.29). The WHR (6.9%), and SBP (2.5%) values showed an increase in the unhealthy values. Male participants throughout the study remained unhealthy for stress (80.6%), hours of sleep (77.6%), and physical activity (34.3%), and changed from healthy to unhealthy in SBP (55.5%) and hours of sleep (17.4%). Amongst female participants, changes from healthy to unhealthy were observed in HR (40.9%) and physical activity (49.6%). The mean RBS levels for both staff and students were within normal levels and a slight improvement in BMI was observed. Nearly 55.2% males and 58.4% females had their blood pressure under control. Students had higher stress levels than staffs ($p<0.01$).

Conclusions:
Overall trends are promising but room for improvement is present in men for blood pressure and hours of sleep and females for physical activity levels. Findings from this longitudinal analysis can help guide individuals in the Health Sciences Center to focus on specific needs for optimum health.

Key Words: Health promotion; Lifestyle behavior; Health sciences students, Kuwait;

Funding Agency: Kuwait University, NP02/14

Biochemistry

6

Effect of Zn (II) N-alkylpyridylporphyrin Structural Modifications on NADH Photo-Oxidation and Anticancer Activity

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Introduction:
Photodynamic therapy (PDT) is a promising treatment for malignant and non-malignant disorders. Generation of singlet oxygen ($^1O_2$) (type II reaction) or radicals (type I processes) by a photosensitizer (PS) are considered prominent mechanisms generating cell-damaging species. Because such species are short-lived, efficacy of PDT depends on reactive species quantum yields and cellular location of the PS. NADH plays a key role in cell metabolism and its photo-oxidation will have deleterious consequences for cells targeted by PDT. The aim of this study was to investigate how structural modification of Zn (II) N-alkylpyridylporphyrins (ZnP) would affect photo-oxidation of NADH and PDT efficiency.

Methods:
Hydrophilic and amphiphilic ZnP-based PSs with different 3D shapes were used as model compounds. Rate of $^1O_2$ generation, NADH photo-oxidation, and photo-degradation of ZnP were determined by UV-VIS spectroscopy. PDT efficacy of ZnP was assessed on cancer cell cultures. Viability and cell proliferation were determined using MTT and SRB assays, respectively. Experiments were repeated at least twice, with data expressed as mean ±S.E.

Results:
Despite similarity in $^1O_2$ yields, ZnPs differed with respect to NADH oxidation. Histidine, a $^1O_2$ scavenger, accelerated NADH oxidation. Highest photo-cytotoxicity displayed by amphiphilic ZnPs. PDT efficiency increased with shifting the position of the attached substituents in the order: para 0.65 ±0.01 > meta 0.63 ±0.01 > ortho 0.51 ±0.01 (mean ±S.E. compared to untreated cells; $p < 0.05$)

Conclusions:
ZnPs are highly efficient in causing NADH oxidation. Photo-modification of coenzymes should be investigated as a critical target for PDT. Anticancer activity of ZnP depends on lipophilicity and 3D shape of PS molecule, which determines its ability to reach and damage critical cellular components.

Key Words: Photodynamic therapy; Zn-porphyrins; NADH photo-oxidation;

Funding Agency: Kuwait University College of Graduate Studies

Biochemistry

7

Total vitamin D and diabetic index

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Introduction:
Vitamin D is one of the most important vitamins for our overall health since it is essential for keeping muscles, lungs, and heart healthy. It is an important factor in maintaining strong bones, helping body fight infections, improves mood and reduces risk of diabetes, multiple sclerosis, colonic, prostate and breast cancers. Vitamin D deficiency appears to be related to the development of diabetes mellitus type 2 and the metabolic syndrome, however, using vitamin d as diabetic index is still controversial.

Methods:
We studied results documented from the hospital records for 2152 patients (1476 females, 676 males) attending j.A. armed forces hospital during the period 2015-2018 retrospectively. Tests ordered by one clinic attended by these patients were studied: ferritin, FT4, TSH,, glycemic control (HbA1c) vitamin B12 and total vitamin D. Patients were divided into two groups according to the HbA1c values: good glycemic control (HbA1c< 7%) and poor glycemic control (HbA1c≥ 7%). The collected parameters were compared between these groups. All the analyses were performed using the SPSS for Windows.

Results:
Medians of each tests were as follows: total vitamin D 35.3 nmol/l, b12 298.3 pg/ml, ferritin 30.3 ng/ml, fT4 14.7 pg/l, TSH 2.1 uIu/ml & hba1c 5.6%. HbA1c correlated (Spearman) significantly only with total vitamin D (p = 0.002; r=0.122), vitamin d correlated with B12 (p = 0.00; r=0.296), TSH (p = 0.00; r=-0.172) & HBA1c only. The distribution of vitamin D was different between the two groups of glycemic control (p = 0.0; krussel wallis tets) & sex (p = 0.0). Roc curve (vitamin D & good glycemic control) showed AUC 0.63; p = 0.29 .

Conclusions:
Although vitamin D was associated with glycemic control there is inadequate evidence of the useful effect in recommending vitamin D supplementation as a means of improving glycaemia.

Key Words: Vitamin D; Diabetic index; hba1c;

Funding Agency: None

Biochemistry

8

Oxidative Stress-induced Germ Cell Apoptosis: The NOX-ER Stress Connection.

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Introduction:
Testicular torsion and detorsion (DTT) can seriously damage the testes and cause infertility if left untreated. In animal models, it is represented as an ischemia reperfusion injury (tIRI) to the testis. During tIRI, excessive generation of oxygen reactive species (ROS) induces DNA damage leading to germ cell apoptosis (GCA). The aim is to study the role of NADPH oxidase (NOX), a source of cellular ROS, in inducing GCA and DNA damage during tIRI and its association with endoplasmic reticulum (ER) stress.

Methods:
Male Sprague-Dawley rats (n=36) were divided into three groups: sham, tIRI only and tIRI+apocynin (50 mg/kg), a NOX inhibitor. The tIRI rats underwent ischemia for 1 hour followed by 4 hours of reperfusion prior to rat sacrifice. The drug was administered intraperitoneally 30 minutes' post ischemia. Harvested testes were evaluated for spermatogenic damage by histological analysis, while biochemical and molecular alterations were assessed using real time PCR, biochemical assays, Western blot, ELISA and immunofluorescence staining.

Results:
Spermatogenic arrest was associated with increased lipid and protein peroxidation and decreased superoxide dismutase activity as a result of tIRI. The tIRI-induced DNA damage was indicated by a significant increase in DNA strand breaks, 8-OHdG formation, ph-H2AX and ph-ATM. The ASK1/survivin/JNK apoptosis pathway was significantly activated in response to tIRI. Finally, a significant increase in the immunoexpression of the unfolded protein response pathway components like CHOP, GRP78, caspase 12 and ph-eIF2-alpha1 supported the occurrence of ER stress during tIRI. NOX inhibition protected against GCA and ER stress.

Conclusions:
Our results indicate that NOX-mediated ROS generation contributes to the tIRI-induced GCA and DNA damage. In addition, inhibition of NOX suggested the influence of NOX on inducing ER stress during tIRI.

Key Words: NADPH Oxidase; Testicular Ischemia Reperfusion Injury; ER Stress;

Funding Agency: CGS Grant YM 16/17 and KU-RA Grant SRUL02/13.

Biochemistry

9

Germ Cell Apoptosis and Oxidative DNA Damage: Survivin' the Lipoxygenases

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Introduction:
Testicular ischemia reperfusion injury (tIRI) is widely accepted as the underlying mechanism for the pathophysiology of testicular torsion and detrorsion (TTD) in young children that could increase the risk of male infertility. The aim of this study is to examine the role of the pro-oxidative lipoxygenases (LOXs)-induced testicular oxidative stress in the etiology of tIRI-induced germ cell apoptosis (GCA) and oxidative DNA damage using its potent selective inhibitor nordihydroguaiaretic acid (NDGA).

Methods:
Sprague-Dawley male rats (n = 36) were assigned to three groups: Sham, unilateral tIRI and tIRI+NDGA (25 mg/kg). Rats underwent 1 hour ischemia followed by 4 hours reperfusion. Harvested testes were evaluated for spermatogenic damage by H&E staining, oxidative DNA damage by biochemical assays, GCA, and tissue immunoexpression of the three LOXs (LOX-5, -12 and -15). The induction of GCA and the involvement of the apoptosis pathway ASK1/ JNK/survivin was investigated by immunofluorescence staining.

Results:
Our data showed that tIRI caused significant disorganization of the seminiferous tubules layers and spermatogenic arrest. LOXs immunoexpression but not mRNA expression was significantly increased as a result of tIRI. LOX-induced oxidative damage to proteins, lipids, and DNA were significantly augmented during tIRI. In addition, tIRI activated the ASK1/JNK signaling pathway, which was associated with significant down regulation of survivin, an inhibitor of apoptosis. Selective inhibition of LOXs by NDGA diminished the above tIRI-induced changes.

Conclusions:
The study outcomes implicate the role of LOXs in the generation of reactive oxygen species, which partly contributed to the tIRI-induced oxidative damage that also led to spermatogenic damage, oxidative DNA damage and induction of the apoptosis pathway ASK1/JNK/survivin. This new finding provides a good understanding to the tIRI/TTD mechanism in the field of translational medicine worldwide.

Key Words: Lipoxygenases; Germ Cell Apoptosis; ASK1/JNK pathway;

Funding Agency: KFAS Grant P116-13MB-01 and KU-RA Grant SRUL02/13

Biochemistry

10

High Density Lipoprotein Protects Spontaneously Hypertensive Rats Against Cardiac Ischemia/Reperfusion Injury by Reducing Autophagy and Inflammation

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Introduction:
Hypertension is a key risk factor in the development of cardiovascular disease and represents a major healthcare problem in Kuwait and the Gulf region. Elevation in blood pressure has been linked to alterations in high density lipoprotein (HDL) function and composition. The exact role of HDL in cardiac and vascular complications observed in hypertension is however not clearly understood. HDL protected against ischemia/reperfusion (I/R) injury in hearts isolated from normotensive rats. It's not clear however if restoration of HDL function and composition can protect against I/R injury in hearts isolated from spontaneously hypertensive rats (SHR). In this project we aim to test the in vivo effects of HDL on cardiac I/R injury in SHR.

Methods:
Eleven week old male SHR and WKY were used in the study. HDL (400 ng/kg/min) or PBS was continuously administered using Alzet osmotic mini pumps. A week later, hearts were isolated and subjected to I/R injury using a modified Langendorff system. Cardiac hemodynamics were assessed and cardiac enzymes levels were measured. Total plasma cholesterol (TC) and HDL-cholesterol (HDL-C) were enzymatically assayed. Markers of autophagy and inflammation were detected by immunoblotting and ELISA respectively.

Results:
HDL treatment did not increase TC or HDL-C levels or decrease heart to body weight ratios in SHR or WKY. Preconditioning with HDL protected SHR but not WKY against I/R ex vivo as indicated by improved LV functions, cardiac hemodynamics and reduced release of cardiac enzymes. SHR treated with HDL expressed significantly ($P<0.05$) higher levels of the HDL receptor, SR-BI and significantly ($P<0.05$)lower levels of autophagy markers Beclin and Atg12 and the proinflammatory mediator TNF-a.

Conclusions:
We demonstrate a novel cardioprotective effect of HDL against I/R injury in SHR. Mechanistically, the observed protection was accompanied by increased cardiac SR-BI and reduced autophagy and inflammation in SHR.

Key Words: High density lipoprotein; Ischemia reperfusion injury; Autophagy Inflammation;

Funding Agency: Research Sector, Kuwait University ID: MB03/16

Biochemistry

11

Deciding on the life and Death of Germ Cells by the DNA Damage Response (DDR) Signaling Pathways.

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Introduction:
Testicular torsion and detorsion is a urological emergency caused by the obstruction and re-flow of blood due to the twisting and untwisting of the spermatic cord explained as a testicular ischemia reperfusion injury (tIRI). Such pathological event causes oxidative stress-induced DNA damage leading to germ cell apoptosis (GCA). The aim is to investigate the internal mechanism linking the JAK/STAT signaling pathway with the DNA damage response (DDR) signaling pathways and their effect on tIRI-induced oxidative DNA damages.

Methods:
Male Sprague-Dawley rats (n=36) were divided into 3 groups: sham, unilateral tIRI and tIRI+AG490 (40 mg/kg), a JAK inhibitor. The tIRI was induced by the obstruction of the spermatic cord using a surgical clamp. Spermatogenesis was evaluated using histological analysis. Apurinic/apyrimidinic sites (AP) and 8-OHdG formation were estimated using DNA damage quantification kits. Expression of the JAK/STAT pathway was assessed using immunohistochemistry and the activation of the DDR signaling pathways was detected by Western blot.

Results:
Spermatogenesis arrest was indicated by the presence of spermatocytes but few early spermatids were clear during tIRI. There was also a significant increase in the tIRI-induced oxidative DNA damage in the form of DNA strand breaks, formation of AP sites and 8-OHdG formation. Moreover, tIRI-induced DNA damage caused significant rise in the phosphorylation levels of the JAK2/STAT1/STAT3 proteins. Both DDR signalling pathways: ATM/CHECK2 and ATR/ CHEK1 were activated as judged by the significant overexpression of their phosphorylated forms. The tIRI-induced GCA and DNA damage was blocked by inhibition of JAK activity.

Conclusions:
Our findings suggest that tIRI-induced GCA and DNA damage was prompted by activation of the JAK/STAT signaling pathway, which directed the apoptosis decision by the activation of the ATM/CHEK2 and ATR/CHEK1 DDR signaling pathways.

Key Words: DDR pathways; Germ Cell Apoptosis; JAK/STAT pathway;

Funding Agency: CGS-RA Grant YM 06/17 and KU-RA Grant SRUL02/13.

Biochemistry and Inorganic chemistry

12

Synthesis, Structural Characterizations, Biological Properties of Novel Acetylacetonebis (salicyloylhydrazone) Complexes of Ni

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Introduction:
Schiff base ligands represent an important class of chelating in coordination chemistry. Due to their importance in human life, basic schiff complexes are exploited in various fields, among which we mention their uses in the treatment of some diseases such as copper accumulation in the liver, brain and kidneys or certain forms of cancer.

Methods:
The molecular structures of these complexes have been determined by single-crystal X-ray diffraction, In vitro antioxidant activities of these compounds were evaluated against DPPH radical and hydrogen peroxide and were compared with standard antioxidant, ascorbic acid.

Results:
The resulting structures show that they are symmetrical Schiff-based complexes, antioxidant activities of Schiff base compounds are attributed to their multifunctional properties, These results indicated that tested compounds have a noticeable effect on scavenging DPPH free radical. Structure-activity relationship studies revealed that the electron donating group in the phenolic ring increases the antioxidant activity of schif base compounds showed that the active compounds of the series bear an -OH group on the ring and activity pattern is such that, the more the -OH groups, activity will be higher, the di-OH group containing derivatives were found to be more active than mono-OH, the Compounds that it contains two phenol rings were the most active compounds of this series, The measurement of hydrogen peroxide scavenging activity is known to be a useful method in determining the ability of antioxidant to decrease the level of prooxidants such as hydrogen peroxide, Among the synthesizedcompound1, which are having pyridineon the phenyl ring exhibiting good activity with maximum scavenging free radical

Conclusions:
Based on the result, it is clear that these compounds can be used as good antioxidants in the field of medicinal and food industry.

Key Words: Nickel complexes, acetylacetonebis (salycilhydraz; Crystal structure, biological

Funding Agency: None

Biomedical Engineering

13

Photobiomodulation Therapy (PBMT): The Effect of Weight of Rat on the Delivered Fluence Spinal Cord Injury Rat Model- Computational Study

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Introduction:
Spinal cord injury (SCI) occurs due to the damage of neurons in the spinal cord which causes an interruption of neural signal conduction along the axonal tracts. SCI can result in complete or partial paralysis. Several studies have been demonstrated that photobiomodulation therapy (PBMT), also known as low-level laser (light) therapy (LLLT), has the ability to repair nerve and enhance functionality. Various research experiments on contusion spinal cord injury in rat showed that the weight of laboratory rats is significantly decreased during the period of the experiment. Therefore, the purpose of this work was to evaluate whether the body weight of rat model and irradiation parameter will affect delivered fluence to the SCI site.

Methods:
The study employed four computational rat models of the same age (11-weeks) with 4 different weights (250g, 270g, 290g, and 310g) and different irradiation parameters (3 wavelengths: 660, 810, and 980 nm; 15 beam diameters: 0.02 - 24 mm; 2 beam shapes: Gaussian and Tophat beam) to study their effect in the delivery of the fluence on the SCI site using Monte Carlo eXtreme (MCX) simulation.

Results:
As the weight of the rat during the period of the experiment decreases, more fluence is delivered to the SCI site. The percentage increase of the delivered fluence to the SCI site was highest for the 660 nm broader beams than the other parameters.

Conclusions:
We found that the irradiation parameters such as wavelength, diameter, and shape of the beam are of paramount importance to have accurate assessment of dosage to be delivered to the SCI of rat model and they are correlated with the body weight of the rat.

Key Words: Spinal cord injury; Photobiomodulation; Monte Carlo simulation;

Funding Agency: None

Cell biology and Genetics

14

Maternal-fetal Transport of Arachidonic Acid in Pre-Eclampsia Model Placental Lobule: In Vitro Study

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Introduction:
Paucity of data in literature prompted us to explore whether maternal-fetal transport of an essential fatty acid, arachidonic acid was altered in the "pre-eclampsia (blood flow) model" placental perfusions.

Methods:
Placentae were collected post-partum. 14-C labelled Arachidonic Acid (Amersham, UK) along with tritiated water (Amersham,UK) as reference marker were injected as a single bolus (100 µl) into the maternal arterial circulation of perfused placental lobules & serial perfusate samples collected from maternal & fetal circulations over period of 5 minutes. National Culture & Tissue Collection medium was used as perfusate. In "pre-eclampsia flow model" perfusions, maternal perfusate flow rate was artificially reduced to 50% of control phase, to mimic a severe pre-eclampsia like situation than control phase. Concentration of labelled substances in perfusate samples was assessed by scintillation spectrometry (LKB Wallac Scintillation Spectrometer, Denmark). Transport parameters of fatty acid & reference were computed using established permeation parameters.

Results:
Differential Transport Rates of arachidonic & tritiated water differed significantly (Student's t-test; $p<0.05$) for all transport fractions studied in control phase & experimental pre-eclampsia model perfusions. (n=8) TR 50 indices of arachidonic acid compared to reference marker averaged 0.8 & 1.01 in control phase & pre-eclampsia flow model perfusions respectively implying compromised fatty acid transport in pre-eclamptic model state. Indices of transport fraction & pharmacokinetic parameters such as area under the curve, absorption rate, elimination rate of the fatty acid compared to reference marker were significantly different ($p<0.05$) between two groups.

Conclusions:
We conclude that transport parameters of essential fatty acid like arachidonic acid could be seriously compromised in pre-eclamptic pregnancy, implying serious foetal & neonatal sequelae in such cases.

Key Words: Pre-eclampsia model perfusions; Arachidonic acid; Maternal fetal exchange;

Funding Agency: Kuwait university research grant #MO001

Community Medicine

15

Child Safety Seats: Knowledge, Attitude, and Practice among parents in Kuwait

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Introduction:
In light of the high numbers of road traffic accidents involving child passengers in Kuwait, we aimed to assess parental knowledge, attitudes, and current practice of child safety seats (CSS) and investigated their relationship with child and parent sociodemographic characteristics.

Methods:
The survey was conducted at vaccination centers in five governorates in Kuwait. Three hundred and forty-five parents of children aged 0-5 years completed a self-administered questionnaire after providing written informed consent. The questionnaire consisted of 43 questions divided into 3 sections (socio-demographics, knowledge and attitude of CSS, and the extent of its practice). Descriptive analysis was used to obtain frequencies and estimate proportions. Chi-square test was used to assess significant relationships between categorical variables and the dependent variables. Univariate and multivariate logistic regression analyses were used to detect which individual variables were independently associated with knowledge, attitude, and practice of CSS among the parents.

Results:
Parental nationality (p-value < .001), education level (p-value < .001), total monthly income (p-value < .001), satisfaction with one's income (p-value = .012), and number of children (p-value = .031) were significantly associated with ownership of a CSS. The same sociodemographic factors were also significantly associated with the knowledge of CSSs, except for the number of children.

Conclusions:
This study showed that parents in Kuwait did not have complete knowledge and awareness on the necessity of CSSs. Effective interventions and laws are needed to increase parental knowledge and use of CSSs.

Key Words: Child; Safety seats; Kuwait ;

Funding Agency: None

Community Medicine

16

A five-year retrospective study of occupational back injuries among the health-insured private workers in Kuwait.

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Introduction:
Occupational injuries are common worldwide, accounting for 270 million injured workers annually, with > 2.78 million deaths per year. Head, hands and back are most affected parts, by slips and falls. Construction and manufacturing workers are susceptible to high rates of injury. Occupational injuries lead to financial and health consequences, for both workers and companies, affecting productivity and quality of life negatively.

Methods:
A retrospective descriptive study of occupational back injuries among health-insured private workers in Kuwait for five years (2013-2017), in the Department of Occupational Medicine in Ministry of Health. Case record forms were generated to collect and transfer data from patient files.

Results:
The medical records of a total of 537 workers were analyzed, constituting 3.9% of 13,543 injured workers. Fifty-five workers were excluded due to missing information. The majority of the back-injured workers were males (93%), aged 31-50 years (62.6%), and earned < 400 KD/month (77.6%). Arabs constituted (58.3%) of injured workers, followed by Asians (29.5%) and Kuwaitis (11.6%). The majority of injured workers (73%) worked at heavy-duty companies, had fallen from heights (48.3%), had fractures "only" (64%), and had lumbar vertebrae injuries (45.9%). There was a negative correlation between type of injury and duration of work experience before the injury (- 0.832; P=0.01). Logistic regression analysis showed that "fracture" injury was significantly associated with nationality (p=0.001), salary (p=0.01), company type (p=0.02) and cause of injury (p=0.001) after adjusting for potential confounders

Conclusions:
Occupational Back injuries are common among private workers in Kuwait. Males, Arabs, workers with low salary constitute majority of injured workers. The main cause of injury was falling from heights that caused fracture in the lumbar region.

Key Words: Occupational injuries; Back injuries; Fall from height;

Funding Agency: None

Community Medicine

17

Hand Hygiene among Senior Medical Students: Knowledge, Attitude and Practice

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Introduction:
Health-care associated infections (HCAIs) are a major challenge in modern medicine. Hand hygiene (HH) is the most effective preventive measure against HCAIs. Good knowledge of and positive attitude towards HH among medical students are prerequisites to improve compliance with HH among future doctors. This study aimed to describe the knowledge of and attitude towards HH among senior medical students at Kuwait University and estimate their compliance with HH through direct observation.

Methods:
We conducted a cross-sectional study on sixth and seventh year medical students using a self-administered questionnaire that was developed based on WHO's HH Knowledge Questionnaire. Self-reported compliance was evaluated by four patient care scenarios based on WHO's five moments for HH. During clinical rotations in training hospitals, compliance with HH was objectively estimated using direct observation by two independent observers using WHO's Observation Form.

Results:
All students who attended their lectures on medical school days were approached (178 students), three of whom refused to participate (response 98%). Approximately 60% of the participants have not heard about WHO's 'My Five Moments for HH', while only 66.5% of the participants recognized that contaminated health-care workers' hands are the main route of transmission of harmful germs in health-care facilities. Self-reported compliance was found to be 54.3% (95%CI:46.6-61.8). By direct observation in training hospitals, around half of the students were compliant with HH (48.3% and 51.1% according to observer (1) and observer (2), respectively).

Conclusions:
Knowledge of and compliance with HH among senior medical students at Kuwait University are not optimal. Therefore, formal training on HH should be included in the medical curriculum along with role-model teaching that promotes optimal HH practices during clinical rotations.

Key Words: Hand Hygiene; Medical Students; Kuwait;

Funding Agency: None

Community Medicine

18

Prevalence of Respiratory Symptoms and Diseases among Petroleum Refinery Workers: A Cross-Sectional Study

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Introduction:
Background and Objectives: Exposure to petroleum refinery hazardous emissions is speculated to adversely impact workers' health and wellbeing; however, globally, there is limited empirical knowledge on this vulnerable workforce. Since the petroleum industry is the largest in Kuwait, this study sought to (i) estimate the prevalence of respiratory symptoms and diseases among petroleum refinery workers and (ii) examine associations between occupation type (refinery workers vs. office workers) and smoking status with adverse respiratory outcomes.

Methods:
Methods: A cross-sectional study was conducted by enrolling 674 male participants (358 refinery workers and 316 office workers) employed at a petroleum company. Participants completed a questionnaire on relevant exposures and history of respiratory symptoms and diseases. Associations were evaluated using multivariable logistic regression.

Results:
The 12-month prevalence of wheezing, dry cough at night, asthma, and rhinitis were estimated to be 16.8%, 34.1%, 10.0%, and 21.1%, respectively. Higher prevalence of respiratory symptoms and diseases were observed among refinery workers compared to office workers and current smokers compared to never/ex-smokers. However, stratified analysis showed that in the absence of smoking, being a refinery worker is not strongly associated with reporting respiratory symptoms and diseases. In contrast, in the absence of refinery exposure (i.e., among office workers), smoking tended to be associated with some respiratory outcomes. Whereas, refinery workers who are current smokers compared to office workers who are never/ex-smokers had substantially increased prevalence of respiratory symptoms and diseases.

Conclusions:
This study demonstrated that the joint effects of being a refinery worker and current smoker associated with elevated prevalence of adverse respiratory symptoms and diseases. Hence, emphasizing the importance of both exposures in the development of respiratory outcomes.

Key Words: Respiratory diseases; Occupational Epidemiology; Smoking;

Funding Agency: None

Community Medicine

19

Women's Preference on Birthplace and Mode of Delivery in Kuwait

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Introduction:
Delivery by cesarean section (CS) is increasing worldwide. No obvious clinical indications can explain this increase. Pregnant women's preference and request for CS has been proposed to be a major cause for the increase in CS. No study in Arab countries has assessed the preference of CS among pregnant women. This study aims to assess the preference of pregnant women in Kuwait in relation to mode of delivery and birthplace, in addition to investigate factors associated with these preferences.

Methods:
A cross-sectional study was carried out on 460 Arabic-speaking pregnant women attending antenatal care clinics in both public and private hospitals in Kuwait. We used a face-to-face interview with a structured questionnaire to collect data on preference of mode of delivery, birthplace, and associated factors. Factors associated with the preference of CS were assessed using multiple logistic regression.

Results:
The preference of pregnant women for CS was 12% (95%CI: 9.1-15.3%), and the main reason for this choice was fear of labor pain. If they could choose, 68% (95%CI: 63.6%-72.3%) of pregnant women preferred delivery at private hospitals, and the commonest reason for their preference was the care and attention provided. Factors that were significantly associated with preference of CS in multivariate analysis are delivery of the last child in a public hospital or having previous CS ($p=0.008$ and $p<0.001$, respectively), having type 1 or 2 diabetes ($p=0.023$), and perceptions of pregnant women on the safety of CS for mothers and children.

Conclusions:
Approximately, one in every ten pregnant women in Kuwait prefer delivery by CS if they could choose. Fear of labor pain should be addressed among pregnant women to reduce preference of CS. Efforts should be made to rationalize the first CS in women because it perpetuates CS in subsequent pregnancies.

Key Words: Cesarean Section; Birthplace; Preference;

Funding Agency: None

Community Medicine

20

Knowledge, Attitudes and Practices Regarding Colorectal Cancer Screening in Patients Attending Kuwait Ministry of Health Primary Care Centers

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Introduction:
In 2015, the Kuwait Ministry of Health (MOH) implemented a colorectal cancer (CRC) screening program in its Primary Healthcare (PHC) clinics. This study aimed to assess the knowledge, attitudes, and practices regarding CRC screening among screening-eligible adults.

Methods:
This cross-sectional study enrolled 1130 PHC clinic attendees aged 45-75 years from 40 randomly selected clinics. A questionnaire was used to collect data. Colorectal cancer screening, the primary outcome of the study, was defined as a history of any CRC screening procedure. Multivariate logistic regression was used to adjust associations of independent variables and potential confounders with CRC screening status.

Results:
The mean age was 53.7±7.3 years, 62.1% were males, and 75% were Kuwaiti nationals. The prevalence of CRC screening was 5.4% [95% confidence interval, 4.2-6.9%]. After adjustment, CRC screening was significantly associated with age>60 years (OR=1.96; p=0.048), Kuwaiti nationality (OR=3.53; p=0.004), living in Al-Asimah or Hawalli (OR=2.20, p=0.019), education less than high school diploma (OR=2.05; p=0.046), household income<500KWD (OR=3.82; p=0.003), blood pressure measured in the past two years (OR=4.41, p=0.042) and a history of any type of cancer (OR=4.94, p=0.001). Screening was significantly associated with knowledge regarding two symptoms (blood in stool and change in bowel habits) and obesity as a risk factor. The most common reasons for not screening were doctors not recommending it (58%) and belief that screening is painful/uncomfortable/unpleasant (45%). Additionally, 67.7% of participants were willing to undergo CRC screening in the next five years.

Conclusions:
CRC screening practice was low among screening-eligible adults at Kuwait MOH PHC clinics, but willingness to undergo the procedure was relatively high. These data can be used to inform public health programs and policies to improve CRC screening uptake in this population.

Key Words: Knowledge, Attitudes and Practices; Colorectal Cancer Screening; MOH

Funding Agency: None

Community Medicine

21

Stop the Bleed Campaign: Our Experience from the Middle East

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Introduction:
Bleeding due to unintentional injuries are a leading cause of death in the younger population. The immediate involvement of lay bystanders has been proven to be imperative in outcomes, however, there still is less than 30% of out-of-hospital resuscitation attempts initiated by them. The objective of our study was to introduce the Stop the Bleed campaign to the general public of Kuwait and train them in emergency situations.

Methods:
The Stop the Bleed campaign was initiated in Kuwait in September-2017, with the aim to raise awareness and train the general public on emergency situations. A survey questionnaire was distributed to a sample of 150 participants to assess their comprehension.

Results:
A total of 1531 participants were trained by the campaign. More than half of the participants have had no previous training of any sort for emergency situations, with the majority (86%) of those queered expressing desire to learn about how to deal with trauma and bleeding cases. After training, a survey was distributed to 150 randomly chosen participants which showed that most participants were able to demonstrate knowledge of how to deal with unstoppable bleeding, know where and when to place a tourniquet, knew how to respond to epistaxis, and the ability to recognize signs of internal bleeding, with 89% expressing that the 'Stop the Bleed' campaign was useful for promoting health and raising awareness on safety of individuals.

Conclusions:
With the appropriate first-aid training and skill retention, lay members of the public can potentially contribute to a positive and important post-trauma medical response.

Key Words: Stop the Bleed; bystander; emergency;

Funding Agency: None

Community Medicine

22

Knowledge, Attitude, Practice, and Barriers of Evidence-Based Medicine among Physicians in General Hospitals in Kuwait: A Cross-Sectional Study

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Introduction:
Evidence-based medicine (EBM) is emerging as the standard and basis of clinical judgment and practice. As general governmental hospitals are at the forefront of health-care in Kuwait, this study sought to assess the knowledge, attitude, practice, and barriers of EBM among physicians practicing in general hospitals in Kuwait.

Methods:
A cross-sectional study was conducted among physicians (n = 439) practising in general governmental hospitals in Kuwait. Participants, enrolled using convenience sampling, were asked to complete a questionnaire consisting of different EBM-related components that was adopted from published literature. Median and interquartile range (IQR) of knowledge scores were reported, and associations with socio-demographic variables were evaluated using non-parametric tests.

Results:
The knowledge of EBM amongst physicians was considerably low with a median knowledge score of 13 out of 20. Overall female physicians, undergraduates from Kuwait and Ireland, and those that received formal EBM training scored higher knowledge scores. Most respondents were unaware of well-known EBM resources, however more than half (69.3%) were aware of 'Up-to-date' database and used it for clinical decisions. Most of the respondents had a positive attitude toward EBM: 88.2% either 'strongly welcomed' or 'welcomed' the promotion of EBM; 88.5% found EBM 'extremely useful' or 'useful' in their daily practices. In addition, 52.1% feel that a majority (51-75%) of their clinical practice is currently evidence-based, and most respondents used clinical practice guidelines (44.9%) as the basis for their clinical decisions. A lack of investment by health-care authorities was the main perceived barrier to
EBM.

Conclusions:
Overall, even though participants were not well-informed in regards to EBM, it can be said that half of them claim that their practice is EBM-based and use EBM resources to support their clinical decisions. Formal EBM training and integration of EBM in undergraduate programs may considerably promotes EBM practice.

Key Words: Evidence-based medicine (EBM); knowledge, attitude, practice, and barriers;

Funding Agency: None

Community Medicine

23

Online Health Information Seeking Among Kuwait University Students

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Introduction:

Background: Due to the revolution in technology, the internet has become an important aspect in the lives of people. Modern technology is enabling people from different educational levels to use the internet for several purposes, one of which is health information seeking. Recently, online health information has become more popular among patients all over the world, as well as the general public.

Aim: This study aims to investigate the use of online health resources, defined as information found using online resources, such as search engines, as well as health informing applications, among undergraduate students in Kuwait University. The study also aimed to assess whether the students had the tools to identify the parameters that make the information found reliable.

Methods:

The study employed a cross-sectional design with students selected from eight faculties of Kuwait University. Data was collected using structured questionnaires, and analysis was done using chi-square test and binary logistic regression to determine the factors associated with seeking health information online.

Results:

Overall, The sample size obtained was 1132 with a response rate of 90% the prevalence of students seeking online health information was 86.2%. The most significant factors associated with seeking health information online were age, gender, faculty, year of study, primary source of internet, and level of experience with internet use. Ninety percent of students who are more
than 21 years old, used online health information compared to 83% of those who are 18 years old. Also, Female students showed a higher prevalence (88.8%) of online health information
seeking than males (77.8%).

Conclusions:

A large number of people use the internet for seeking health information online. Socio-demographic factors have a significant association to online health information seeking. Therefore, education has to be provided by the doctors to the public about the websites that the people can trust.

Key Words: Community medicine; Online information seeking; Healthcare;

Funding Agency: None

Community Medicine

24

Aggressive behavior among university students in Kuwait: The role of anabolic steroids and socio-demographic factors

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Introduction:
Data on aggressive behaviors among adolescents and young adults (aged 18-25) in Kuwait are scarce. Moreover, the association between anabolic androgenic steroid (AAS) use and aggression among this age group requires assessment and understanding. Objectives: This study aimed to assess the level of aggression, the prevalence of AAS and performance enhancing supplements (PES) use among university students in Kuwait, in addition to determine the association between socio-demographic factors, AAS, and PES use with aggression.

Methods:
A cross-sectional study was conducted among university students in Kuwait using a self-administered anonymous questionnaire, which inquired about participants' basic socio-demographic factors, AAS and PES use and their characteristics. Buss-Perry aggression scale and Godin Leisure-Time Exercise validated questionnaires were used. Statistical analysis involved t-test, ANOVA test, Spearman's correlation, and logistic regression.

Results:
The mean of total aggression score was 78.3/100 with no gender differences. The prevalence of AAS and PES use were 4.8% (7.3% of males and 1.4% of females) and 40.3% (46.6% of males and 31.9% of females), respectively. AAS use (OR=3.6), low GPA (<2.5) (OR=1.34), paternal educational level (OR=3.3) and being non-national (OR=1.45) were significant correlates associated with higher level of aggression among university students.

Conclusions:
The level of aggression was relatively high among university students in Kuwait. Sociodemographic factors, and AAS use correlated to high levels of aggression. Future cohort studies are needed to further understand the temporal causality of aggression based on gender among this age group.

Key Words: Aggression; Anabolic steroids; Adolescence;

Funding Agency: None

Community Medicine

25

Factors Influencing Users' Satisfaction on Interior Design Quality of Public Hospitals in Malaysia

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Introduction:
Being in a hospital can be a stressful experience to the users. The importance of design quality as a trigger to users' satisfaction is becoming a topic of significant relevance as it impacts the building operation. This study aims to determine the factors influencing the users' satisfaction towards the interior design quality of inpatient units at public hospitals in Malaysia.

Methods:
A combination of both qualitative and quantitative methods was employed in the study. Self-administered questionnaires were distributed among 1,500 users including patients, staff and visitors from 5 Obstetric and Gynaecology wards at public hospitals in Klang Valley region. However, only 1,373 samples were usable for analysis, which gives 92% of valid respond rate. Semi-structured interviews were also conducted among 6 respective users to support the quantitative data.

Results:
The respondents were least satisfied with the way-finding system (mean score=3.38, sd=0.88) and colour (mean score=3.59, sd=0.73), while the lighting (mean score=3.84, sd=0.61) is the most satisfying aspect. Although the respondents seemed to be fairly satisfied with the accessibility (mean score=3.74, sd=0.64), the qualitative data proved otherwise. Multivariate analysis revealed that furniture ($\beta = 0.409$), space planning ($\beta = 0.199$), lighting ($\beta = 0.133$) and safety ($\beta = 0.101$) have significant effect on the users' satisfaction level towards the interior design quality.

Conclusions:
The interior design quality of the inpatient units at the public hospitals needs careful consideration especially in the terms of way-finding system, colour selection, furniture, space planning lighting and safety. This study provides input to help hospital planners to evaluate their priorities in planning and designing better hospitals in the future.

Key Words: User Satisfaction; Design Quality; Hospital;

Funding Agency: None

Community Medicine

26

Knowledge, Attitude and Practices of Colorectal Cancer Screening among Primary Physicians in Kuwait

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Introduction:
Colorectal cancer (CRC) is the most common cancer among men and second most common cancer among women in Kuwait. Specifically, the age- adjusted incidence rate in 2012 was 89.8/100,000 among men and 123.3/100,000 among women. The objective of this study is to assess the knowledge, attitude and practice of Primary Care Physicians (PCP) on CRC screening in Kuwait.

Methods:
Self-administered questionnaires were sent to all PCPs working in 97 primary care centres in six governorates in Kuwait. The questionnaire covered six types of CRC screening: Colonoscopy, Faecal Occult Blood Test, Flexible Sigmoidoscopy, Barium Enema, Virtual Colonoscopy and Faecal DNA Test. The study took place from December 2015 until December 2017.

Results:
255 out of 564 questionnaires distributed were returned and analysed. Most of the respondents were females (52.0%), non-Kuwaiti (79%), and worked as Registrars (62.7%). 72 % of the respondents have attended the Ministry of Health (MOH) training modules on CRC screening. Most respondents believed that colonoscopy is the most effective screening tool for both asymptomatic cases and average risk patients. The non-invasive faecal occult blood test was only preferred for patients aged more than 50 years with co-morbidities when colonoscopy is contraindicated. American Cancer Society Guidelines and MOH policies were the two most important factors that influenced the PCPs' choice of screening modality for their patients. The physicians faced with the difficulties to obtain screen test results from the gastroenterologist (61.4%), ordering follow-up test after positive screening test (50.6%) and lack of trained staff to manage the screening programme (44.2%).

Conclusions:
PCPs in Kuwait are actively carrying out CRC screening. Colonoscopy and FOBT are the most common types of screening modalities. The screening programme can be strengthened by improving communications between the PCP and the clinical specialists in hospitals.

Key Words: Colorectal Cancer; Knowledge, Attitude and Practice; Primary Care Physicians;

Funding Agency: None

Community Medicine

27

Prevalence and Factors Associated with Self-Reported Physical Inactivity in the Working Population in Kuwait

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Introduction:
This study aimed to i) to identify the burden of self-reported physical inactivity within the working population in Kuwait; ii) to identify the physical and social factors associated with physical inactivity and iii) enlist the self-reported morbidities in this study population

Methods:
During October 2018, we conducted this cross-sectional study among the working population in Kuwait. Employees of any gender, 21 years old or older were selected from different ministries as a sample of convenience. A structured questionnaire was used to collected data on sociodemographic and potential factors affecting the physical activity. Global Physical Activity Questionnaire was used to assess the physical activity level. Each participant was classified either as a physically active or inactive. Prevalence of physical inactivity was computed. Multivariable logistic regression was used to identify the factors associated with physical inactivity.

Results:
Of 1086 participants, 68.3% were female, 85.8% Kuwaiti, and 75.5% aged between 21 and 40 years. Prevalence of self-reported physical inactivity was 24% (n=232), which was significantly higher among women (27.6%) than men (16.3%). The variables significantly ($p < 0.05$) and independently associated with the participants status of being physically inactive were gender, governorate of residence, monthly income (Kuwaiti dinars), high blood sugar, gym non-membership and concurrent medical ailment.

Conclusions:
High prevalence of physical inactivity was recorded. More women than men tend to be physically inactive. Gender, area of residence, monthly income, gym non-membership and concurrent morbidities were significantly related of being physical inactive status. These identified barriers to physical activity may provide the basis for evidence-based designing and implementation of health-promotion programs. Such programs if implemented, future studies may look at the impact such interventions.

Key Words: Physical inactivity; Prevalence; Working population;

Funding Agency: None

Community Medicine

28

Factors influencing knowledge and practice of self-medication among college students of health and non-health professions

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Introduction:
Self-medication is commonly practiced throughout the world. The aim of this study was to ascertain the use prevalence and knowledge of harmful effects of self-medication among college students of health professions and non-health professions. Self-medication was defined as the usage of non-prescription medication for self-treatment.

Methods:
A cross-sectional study was performed among 1,167 students from 12 faculties of a public university and two private universities in Kuwait. Data was collected using convenience sampling via a self- administered questionnaire. English and Arabic surveys were given depending on the participant's preference.

Results:
The life time prevalence of self-medication usage was 70.4%, and 1-month period prevalence was 22%. The prevalence of self-medication was significantly higher among students of non-health professions compared with those of health professions (35.9% vs. 25.9%). Pain killers (52.9%) were the most commonly used non-prescription medications. Older age, non-Kuwaiti national, and students of 5th to 7th year of study were significant predictors of self-medication. From the knowledge test out of 50, the mean score was 29, with 53% of the population having a knowledge score below the mean. However, 54% of the population subjectively claimed to have more knowledge about the side effects of non-prescription medication. Knowledge scores of harmful effects of self-medication were about two-fold higher among females than males. Students of higher years of study (5th to 7th year) had higher knowledge scores compared with others.

Conclusions:
The prevalence of self-medication was high among young adults in Kuwait when comparing objective and subjective knowledge results. Since studies have shown that younger aged users are more likely to abuse and develop dependence on non-prescription medication, people should be informed about adverse effects of self-medication through mass and social media campaigns.

Key Words: Self-medication; Knowledge; Practice ;

Funding Agency: None

Community Medicine

29

Prevalence of Depression and Anxiety and their Association among End Stage Renal Disease Patients undergoing Hemodialysis in Kuwait: A Multi-Center Study

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Introduction:
Background and objectives. Previous studies showed that depression and anxiety affect many End Stage Renal Disease (ESRD) patients undergoing dialysis. The aims of this study are (1) estimate the prevalence of depression and anxiety among ESRD patients undergoing hemodialysis (HD) in Kuwait (2) estimate and test the association between depression or anxiety with several socio-demographic factors and disease profile characteristics (3) provide recommendations for future interventions that may alleviate the burden of depression and anxiety on HD patients.

Methods:
A cross-sectional study was conducted across six governmental dialysis centers covering all governorates in Kuwait. Data from 457 patients undergoing HD were collected using a structured questionnaire. A score for depression and anxiety was estimated using Hospital Anxiety and Depression Scale (HADS), which is a widely used instrument to screen for anxiety and depression among ESRD patients.

Results:
The average age of patients was 53.1 ± 14.6 years. The prevalence of depression and anxiety among HD patients were 21.7% and 21.4%, respectively. Approximately, 12.6% of HD patients had both depression and anxiety. Multivariate logistic regression was used to model the relationship between depression or anxiety and several covariates. Several factors were significantly associated with the risk of depression and anxiety among HD patients, such as gender, educational level, family income, duration on dialysis, and primary cause of ESRD.

Conclusions:
Results of this study indicate that depression and anxiety are prevalent among ESRD patients undergoing HD in Kuwait. These mental problems may negatively affect the quality of life of ESRD patients and this requires continuous screening for signs and symptoms of anxiety and depression. Future interventions should target females, low- income patients, patients on dialysis between one and three years, and those with glomerulonephritis as their primary cause of ESRD.

Key Words: Depression; Anxiety; Hemodialysis;

Funding Agency: None

Community Medicine

30

Can Infant and Young Child Feeding Indicators Predict Stunting or Overweight? Findings of Kuwait Nutritional Surveillance System (2015-2017)

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Introduction:
Little is known on infant and young child feeding (IYCF) practices in the oil-rich countries in the Gulf Region. Kuwait Nutritional Surveillance System (KNSS) was reviewed to collect data on important IYCF indicators as per World Health Organization (WHO) guidelines. This study aimed to report the IYCF indicators from Kuwait and investigate the association between these indicators and anthropometric measurements.

Methods:
Data were collected on infants and young children aged 0-23 months (i.e. <730 days) at vaccination centres. A face-to-face interview with mothers or child guardians was used to collect the data using a structured questionnaire that was developed based on WHO IYCF indicators. Weight and length of infants and children were measured using digital scale in standardized manner. All indicators were calculated as per WHO guidelines and logistic regression was used to investigate the crude and adjusted association between various indicators and anthropometric measurements.

Results:
We collected data on 5,839 Kuwaiti children, of which 50.2% were males. Exclusive breastfeeding and age appropriate breastfeeding were 8.0% and 7.4%, respectively. Minimum dietary diversity was 41.6%. The prevalence of stunting and wasting was 7.5% and 2.4%, respectively while the prevalence of overweight/obesity was 8.1%. In multivariate analysis, exclusive breastfeeding (p=0.013) and age appropriate breastfeeding (p=0.021) was positively associated with stunting while introduction of solid/semisolid or soft foods (p=0.020) was negatively associated with stunting. Only age appropriate breastfeeding was negatively associated with overweight/obesity (p=0.023).

Conclusions:
The inverse association between age appropriate breastfeeding and overweight/obesity has huge public health significance in Kuwait and highlights the need to scale up interventions to improve IYCF practices in Kuwait based on locally generated evidence.

Key Words: Infant, young children; Breastfeeding; Overweight;

Funding Agency: None

Community Medicine

31

Breastfeeding: Knowledge, Attitude, and Practice among Female Ministry Workers in Kuwait

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Introduction:
A majority of children in the world are not breastfed as recommended, missing out on the vital benefits breastfeeding offers. Although every mother decides how to feed her infant, this decision is strongly influenced by economic, environmental, social, and political factors. This study aimed to evaluate the awareness and knowledge of breastfeeding among working women, and to identify barriers and factors that influence breastfeeding practice.

Methods:
A cross sectional study was conducted in the period between 29th March 2018 and 14th April 2018 using a self-administered questionnaire in females working in the ministries complex in Kuwait aged 21 years and above. The study addressed socio-demographic characteristics of the participants, their knowledge of benefits of breastfeeding and feeding practices, and mothers' practices of breastfeeding. Independent samples t-test and one-way analysis of variance (ANOVA) were carried out to assess association between IIFAS scores and socio-demographic factors. The non-parametric Kruskal-Wallis test was used to assess if there is significant difference between the duration of the maternity leave and the duration of breastfeeding for the youngest child. A p-value of <0.05 was considered significant. A written consent form was attached in the beginning of each questionnaire.

Results:
Out of 849 approached, 746 completed the questionnaire. The vast majority were Kuwaitis with diploma or university degree. Around two-thirds of the participants were ever married, with 421 of them having children. The average score of the Iowa Infant Feeding Attitudes Scale (IIFAS) demonstrated neutral perceived attitude and knowledge regarding breastfeeding in 80.2% with 15% positive towards formula feeding. Among mothers, 56.3% agreed that mothers can manage practicing breastfeeding along with working outside home.

Conclusions:
The study showed that the main barriers to breastfeeding were formula availability and time consumption.

Key Words: Breastfeeding; Knowledge; Barriers

Funding Agency: None

Community Medicine

32

Leadership Styles Of Managers and Its Contributing Factors in a Military Hospital in Malaysia

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Introduction:
A good quality of leader is vital in ensuring a good quality of service is rendered to patients. Positive leadership style of managers can drive positive outcome of hospital performance. However, as to date, little is known on the leadership style of managers in Military Hospitals in Malaysia and the region. The aim of this study is to assess the leadership style and identify factors that influence it, among managers in a Military Hospital in Malaysia.

Methods:
This is a crosssectional study involving military and nonmilitary managers serving in a 282bed Military Hospital in Malaysia. A 20item questionnaire to assess the leadership style of hospital managers was developed, pretested and distributed to 100 managers in the Military Hospital. Based on the total score, the leadership style of managers was classified into transformational (TS) and nontransformational style).

Results:
Among the 91 respondents, 56 (61.5%) of them were nonmilitary managers and 35 (38.5%) of them were military managers. Most (54.2%) of the managers with military background practiced TS while only 30.4% of nonmilitary managers has TS (X2 =5.158; p = 0.023). It was found that managers aged 40 and above are more likely to practice TS compared younger managers (48.9% vs.28.5%; X2 =3.394 p=0.047). The managers in military service scheme were more likely to practice TS compared to medical and other schemes (62.6%; 34.4%; 25.0%; X2 =9.382; p = 0.009). Analysis using multiple logistic regressions found that older managers are more likely to practice TS leadership than younger managers.

Conclusions:
The Military Hospital has the benefit of being managed by managers with TS. It is important the senior managers provide guidance to the younger ones to mould them to improve their leadership style.

Key Words: Leadership style; Military Hospital; transformational;

Funding Agency: None

Community Medicine

33

Blood Pressure and Body Building Supplement Use Among Gym Attendees in Kuwait

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Introduction:
Anabolic steroid (AS) usage is common among men gym attendees, and has been shown to be associated with some harmful cardiovascular effects. The objectives of this study among male gym attendees in Kuwait are to assess the association between blood pressure (BP) and AS use, and other associated factors, and to assess the prevalence of AS use and its associated factors.

Methods:
This cross-sectional study enrolled 392 gym attendees from 20 randomly selected gyms in all Kuwait's six governorates. A self-administered questionnaire was used to assess the use of anabolic steroids and other body building supplements including their perception of use and the reason for using them. The BP was measured twice before and after completing the questionnaire using approved automated blood pressure machines, and the second BP measurement was used for analysis.

Results:
Anabolic steroid use was significantly associated with both the SBP and DBP. After adjustment for age, the current use of AS was associated with a +6.4 mmHg higher SBP (p=0.002) and a +4.5 mmHg higher DBP compared to non-users (P=0.033) After adjustment for age, non-current use of AS was associated with a +6.0 mmHg higher SBP (p=0.003) and a +2.6 mmHg higher DBP compared to non-users (p=0.09). The prevalence of anabolic steroid use in the gym attendee's population was 26.9% [95% C.I.,22.5-32.5]. The use of AS was also associated with lower education level.

Conclusions:
The significant association between blood pressure and the use of AS along with the high prevalence of their use among gym attendees poses a significant public health burden in this population. These data can be used to inform public health authorities in regulating these substances, and planning health promotion programs to increase awareness and decrease AS use among this population.

Key Words: Community medicine; Steroids; Prevalence;

Funding Agency: None

Community Medicine

34

Assessing Patient Safety Culture and Related Barriers in the Public Hospitals in Kuwait

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Introduction:
As healthcare organizations strive to improve, there will be a growing need for establishing a culture of patient safety (PS). This study aims to assess the PS culture and its determinants in selected MOH hospitals in Kuwait.

Methods:
Three secondary and two tertiary hospitals study were selected in this study that employs both quantitative and qualitative methods. A total of 1,500 validated self-administered questionnaire that measures 12 dimensions of PS culture were distributed to respondents. Two focus group discussions were conducted in order to explore the PS obstacles encountered in MOH hospitals.

Results:
A total of 867 questionnaires were returned and analysed giving the overall response rate of 57.8%. The majority of respondents were females (62.7%), Asian nationalities (51.5%), work as nurses (53.3%) and from secondary hospitals (67.2%). The dimension with the most positive scores on PS culture is "Teamwork Within Units " (89.0%), while the least were for "Non-punitive Response to Error " (29.6%). Although 76.8% of respondents gave very good and excellent patient safety grades to their organizations, 43.4% revealed that they did not report any incidents during the last 12 months. Positive PS cultures were significantly associated with respondents in tertiary hospitals, nurses, older age groups, working for 11 years or more and those who received PS education. The focus group discussions identified that obstacles faced by the staff were lack of trained staff, ineffective communication and teamwork between different units and lack of comfortable work environment that guarantees non-fear, non-punitive event reporting and poor relationships with leaders.

Conclusions:
Conducive work environment that promotes teamwork, non-punitive approach in handling reporting of events and availability of trained human resource are important requirements to cultivate the positive patient safety culture in public hospitals of Kuwait.

Key Words: Patient Safety; Public Hospitals; Survey;

Funding Agency: None

Community Medicine

35

Patient Satisfaction in Public Hospitals of Kuwait: A Comparison of Four Major Hospitals.

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Introduction:
Patient satisfaction with healthcare is essential, and increasing satisfaction is linked with better outcomes. We assessed satisfaction in outpatient departments (OPDs) in four public hospitals of Kuwait.

Methods:
This cross-sectional study was conducted in medical and surgical OPDs of four public hospitals, namely Mubarak Al-Kabeer (MAK), Al-Adan (A), Al-Farwaniya (F), and Al-Amiri (AM). Self-administered questionnaires were used for data collection using convenience sampling. Questionnaires consisted of socio-demographic factors and short form of the standardized Patient Satisfaction Questionnaire (PSQ-18) which measures patient satisfaction across seven aspects. Mean satisfaction scores were compared using the Analysis of Variance test. Post hoc analysis was done by Least Significance Difference test.

Results:
426 patients were approached and 348 (81.7%) agreed to participate. There was a significant difference ($p < 0.05$) between mean scores in three out of seven aspects of the PSQ-18, namely Technical Quality (TQ), Interpersonal Manner (IM), and Accessibility and Convenience (AC). Highest mean ± SD (3.54 ±0.74) for TQ was in MAK, and post-hoc analysis showed significant differences between MAK and F, and AM and F. Second significant difference was in the IM aspect, and MAK again had the highest mean ± SD (3.77 ±0.87) score. Post-hoc analysis revealed significant differences between MAK and F, MAK and A, AM and F, and AM and A hospitals. The final significant aspect, AC, had highest mean± SD (3.08 ±0.74) score in A, and significant post-hoc differences existed between MAK and AM, MAK and A, AM and F, and F and A.

Conclusions:
We compared patient satisfaction in four public hospitals in Kuwait, and found significant differences in three out of the seven aspects of the PSQ-18. Given the hospitals are under the Ministry of Health and subject to similar quality control, such differences need to be investigated and further studies performed to follow trends.

Key Words: Patient Satisfaction; Outpatient Department; Public Hospitals;

Funding Agency: None

Community Medicine

36

Diabetes Knowledge among Renal Transplant Recipients with Post-Transplant Diabetes Mellitus

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Introduction:
Diabetes knowledge amongst kidney transplant recipients with post-transplant diabetes (PTDM) was not evaluated thoroughly.

Methods:
The study comprised 210 renal transplants with (PTDM) that were referred from Hamed Al-Essa organ transplant center of Kuwait to Dasman diabetes institute. patients' data were collected through patient identification form, metabolic control parameters form and diabetes self-care scale questionnaire (with score between 0-7).

Results:
Of 356 (25.6%) kidney transplants with PTDM, 210 cases were enrolled in this study. Most patients were Kuwaiti (60%), men (61.4%), and with secondary school education (43.8%). The minority was currently smokers (16.2%) and the original kidney disease was glomerulonephritis (37.6%) of cases. Most of patients (71.9%) were hemodialyzed pre-transplant. The majority of patients (>88%) reported low mean score of healthy diet (0-3,); (>93%) reported low mean score of practicing exercise (0-3); (>62%) of them were not checking blood sugar at home and 85% of them did not follow the recommended frequency; and (>72%) were not caring their feet (except washing in 86.7%). Moreover, most of patients were lacking information advices about sharp disposal, diet regimen, using logbook, hypo-and hyperglycemia, sick day management, and the importance of HbA1c and regular fundus examination. Exercise knowledge score was significantly higher in males (especially non-Kuwaiti) ($p<0.05$) otherwise diabetes knowledge scores were comparable in both sexes and different nationalities ($p>0.05$).

Conclusions:
Diabetes knowledge is deficient in kidney transplant recipients with PTDM. Regular meetings, counseling conferences and workshops should be arranged for renal transplant recipients to improve their low level of diabetes knowledge. This is a preliminary report of our randomized controlled study evaluating the effect of structured diabetes education on their self-care activities and metabolic variables.

Key Words: renal transplant; PTDM; diabetes knowledge;

Funding Agency: None

Community medicine and obstetrics and gynecology

37

Factors Associated with Adverse Outcomes of Delivery in Government Hospitals in Kuwait

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Introduction:
Our objective is to assess the association between maternal characteristics and the occurrence of adverse delivery outcomes among newly delivered women in Kuwait's government hospitals. Identifying these factors may help improve the outcomes of delivery in Kuwait.

Methods:
A total of 704 newly delivered women with singleton births were enrolled in an analytic, cross-sectional study. Data were collected using structured questionnaires administered through face-to-face interviews, in addition to referral to maternal files. Analysis was done using Chi-square tests and multivariable logistic regression.

Results:
The prevalence of low birth weight and preterm delivery were found to be 10.8% and 13.5%, respectively, both a little higher than in the total deliveries in Kuwait. The most significant factors associated with low birth weight were previous and current preterm delivery (aOR = 3.4; CI: 1.75 – 5.76) (aOR = 8.71; CI: 5.61 – 15.48). Pre-gestational diabetes (aOR = 5.87; CI: 2.13 – 15.04), history of any preterm delivery (aOR = 3.64; CI: 1.82 – 5.25), premature rupture of membranes (PROM) (aOR = 2.69; CI: 1.42 – 4.71), and non-cephalic presentation (aOR = 4.15; CI: 1.92 – 8.63) were shown to be significant independent factors associated with current preterm delivery. Also, emergent C-section was significantly ($p < 0.05$) related to 2PROM (aOR = 2.51), preterm delivery (aOR = 4.07), and non-cephalic presentation (aOR = 4.28). Finally, preterm, non-cephalic, and infants delivered through emergent C-section were at significantly increased odds of admission to the NICU compared to their counterparts (aOR = 16.02, 3.96, and 2.76, respectively).

Conclusions:
This study demonstrated that past obstetric, medical, and social history, as well as the medical history during the current pregnancy were of utmost importance in relation to birth outcomes. Adequate pre-pregnancy, as well as antenatal, care is warranted to prevent adverse perinatal outcomes in Kuwait's population.

Key Words: delivery; outcome; birth;

Funding Agency: None

Critical Care

38

Healthcare-associated Infections in a Tertiary-care Neurocritical Care Unit in Kuwait

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Introduction:
Healthcare-associated infections (HAIs) in specialized intensive care units carry significant morbidity and mortality. We analyzed the incidence, epidemiology and microbial etiology of HAIs in a neurocritical care unit (NCCU).

Methods:
Over a period of 3 years, all patients admitted to the NCCU for ≥2 calendar days were included in the study. Demographic data and details of episodes of infection were evaluated.

Results:
Of 912 admissions, 109 episodes of HAIs during 79 ICU admissions were evaluated (pooled rate, 21.9 per 1,000 ICU-days). Twenty-nine percent of patients developed multiple episodes of HAIs. Urinary tract infections (UTI) were the commonest (37%), followed by blood-stream infections (28%), ventilator-associated pneumonias (VAP, 11%) and ventriculostomy-associated infections (VAIs, 7%). The majority of HAIs were device-associated (76%). Among 30 episodes of blood stream infections, 20 were CLABSIs while 3 and 7 were primary and secondary bacteremia, respectively. All VAIs were associated with external ventricular drainage. A total of 158 pathogens were isolated. One hundred and nine were Gram-negative bacteria and Klebsiella spp. were the commonest (41%), causing VAP (33%), CLABSI (32%) and CAUTI (31%). Out of 49 Gram-positive bacteria, staphylococci, streptococci and Clostridium difficile were 26, 14 and 7, respectively. Out of 15 Staphylococcus aureus, 47% were methicillin resistant. Two episodes of CAUTI were due to Candida spp. Out of 84 Enterobacteriacae, 24% were extended spectrum B-lactamase producers. All Pseudomonas aeruginosa isolates were susceptible to aminoglycosides and carbapenems. One episode of lood stream infection was due to multi-drug resistant Acinetobacter baumanii susceptible only
to colistin.

Conclusions:
Incidence of HAIs in the NCCU is relatively high and mainly devise related.

Key Words: Healthcare-associated infections; Neurocritical Care Unit; Tertiary-care

Funding Agency: None

Cytopathology

39

Limitations in Fine Needle Aspiration Cytodiagnosis of Anaplastic Large Cell Lymphoma (ALCL): Contribution of Overlapping Cytomorphological Features between ALCL and Hodgkin Lymphoma.

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Introduction:
Anaplastic large cell lymphoma (ALCL) is morphologically characterized by "hallmark" cells and other variants of the neoplastic cells. The main differential diagnoses of ALCL include Hodgkin lymphoma (HL) and T-cell-rich B-cell lymphoma (TCRBCL). We intend to compare the cytomorphologic and immunocytochemical features between cytologically diagnosed ALCL cases, which were confirmed as such by histology and those which proved to be HL.

Methods:
During a period of 10 years (2005-2014), there were 6 ALCL, 11 classical HL and one peripheral T-cell lymphoma, in which ALCL was the prior cytodiagnosis or one of the possibilities in fine needle aspiration (FNA). Two groups (ALCL and HL) were compared in respect of 12 cytomorphological features. Eight immunocytochemical parameters (viz., LCA, CD30, CD15, CD3, CD20, EMA, Alk1 and CK) were performed on FNA smears.

Results:
There was significant difference between the two groups in respect of hallmark cells (p=0.00226), tennis racket-shaped cells (p=0.02951) and eosinophils (p=0.04997), and marginally significant difference for cells with embryo-like nuclei (p=0.08333). There was no
significant difference for donut cells, neoplastic cells with wreath-like arrangement of nuclei, cells with multilobated (morulla-like) nuclei, Hodgkin-Reed-Sternberg (HRS) cells or HRS-like cells, mitotic figures, neutrophils, plasma cells and histiocytes. The immunocytochemical parameters were performed in 30 of 48 (62.5%) stations in 6 histologically proved ALCL cases and 21 of 88 (23.9%) stations in 11 cases those turned out to be HL (p=0.00001).

Conclusions:
Limitations in cytodiagnosis of ALCL cases was mostly due to overlapping cytomorphological features with HL and inadequate immunocytochemical studies in the discordant group. Novelty of findings: The study highlights the differential diagnostic problem associated with two important lymphoreticular malignancies.

Key Words: Anaplastic large cell lymphoma; Hodgkin lymphoma; Fine needle aspiration

Funding Agency: None

Dentistry

40

Oral Health in Children with History of Chronic Liver Disease

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Introduction:
Objective to investigate the oral health status and dental manifestations of children with history of chronic liver disease (CLD) compared to healthy children.

Methods:
Twenty children with history of CLD (15 boys, 5 girls) were compared to twenty healthy controls, matched for age and gender. Clinical examination was carried out by the same dentist. Caries prevalence, using the decayed, missing and filled primary and permanent teeth indices (dmft/DMFT) was recorded. Developmental enamel defects, plaque score and gingival overgrowth were also investigated.

Results:
No differences were found in the mean dmft scores for children with history of CLD (4.9±5.4) and for healthy individuals (3.9±4.5). However, the mean DMFT score was significantly higher ($p=0.025$) in children with CLD (4.2±4.6) compared to controls (1.7±1.6). The mean decayed teeth parameter (DT) was also significantly higher in children with CLD ($p=0.004$). All patients with CLD exhibited enamel defects compared to 33% control ($p<0.05$). A higher mean plaque index was observed in children with history of CLD ($p<0.001$). Also, a positive correlation in gingival overgrowth was noted in patients with history of CLD ($p<0.05$). Green staining was evident only in the permanent dentition of one child with CLD.

Conclusions:
Children with history of chronic liver disease had higher prevalence of caries in the permanent dentition, higher prevalence of enamel defects and poorer oral hygiene compared to healthy controls. Gingival overgrowth is less prevalent among liver transplant patients with tacrolimus therapy.

Key Words: Liver disease; Children; Oral Health

Funding Agency: None

Dentistry

41

In vitro characterization of biofilm formation in Prevotella species

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Introduction:
The development of biofilms in the oral cavity is inevitable. In health, these biofilms are composed mostly of commensal oral flora. A shift in the microbial homeostasis towards the dominance of Gram negative bacteria causes oral infections. Bacteria in biofilms are antibiotic resistant, hence difficult to treat. Of these, elevated levels of Prevotella spp. in oral infections is well documented. Thus, the aim of our study is to characterize biofilms formed by Prevotella species and assess biofilm formation inhibition and detachment of preformed biofilms.

Methods:
Biofilm formation potentials of Prevotella spp were tested. Bacterial suspensions in brucella broth were inoculated into 24-well cell culture plate and incubated in anaerobic conditions for 3 days. The formed biofilms were washed with sterile H2O and quantified using crystal violet staining. The biochemical characterization included quantification of proteins and DNA in both biofilms and their extracellular matrix (ECM). Images of Syto®9 Green fluorescent stained biofilms were captured using CLSM. Also, biofilm inhibition and detachment by proteinase and Dnase was tested. The enzymes were added to the bacterial suspension for biofilm inhibition. Pre-formed biofilms were treated by the enzymes for 1 hour at room temperature. Eventually, the biofilms were quantified as above.

Results:
P. loescheii, P.oralis and P.nigrescens showed highest potentials for biofilm formation. Protein and DNA content were higher in biofilm than the ECM with the highest protein value found in P. oralis biofilm and ECM. However, DNA content was higher in the biofilm of P. nigrescens and the ECM of P. loescheii and P. oralis. Proteinase showed a better effect on biofilm detachment than DNase. Biofilm formation inhibition was observed only in P.oralis with both proteinase and DNase.

Conclusions:
Prevotella spp. demonstrate a biofilm formation potential that in some cases can be prevented by treatment with DNase and proteinase.

Key Words: Prevotella; Biofilm; Dental;

Funding Agency: SRUL 01/14

Dentistry

42

Clinical Factors Influencing Implant Stability Quotient Values: Implant-Related Factors

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Introduction:
The objective of this study is to evaluate the influence of several clinical factors on implant stability quotient, specifically: implant length, width, surface treatment, implant platform design (tissue level/bone level), primary stability following implant placement, and approach (1/2 stage surgery).
Patient's charts from Kuwait University Dental Center (KUDC) were reviewed retrospectively. Patients who received implants from 2014 to 2017 were evaluated. Patients fulfilling the inclusion criteria were included in this study.

Methods:
Fifty-six female and 49 male patients aged between 24 and 81 years old (mean 53.17) who received a total of 105 implants with a mean width of 4.256 mm and a mean length of 9.68 mm were tested. The ISQ values of these implants ranged between 66 to 90 (mean 79.83) and the duration between implant placement and ISQ value measurements ranged between 8 to 84 weeks (mean 21.72 weeks). Two types of implants (36 Astra and 69 Straumann) with different platform designs (50 tissue level and 55 bone level) were placed by two clinicians in different sites (46 maxillary posteriors, 7 maxillary anterior, 48 mandibular posteriors, 4 mandibular anterior). Two placement approaches were used (19 1 stage and 86 2 stage surgery) and primary stability was assessed with 95 implants achieving primary stability and 10 did not. Minor bone grafting was indicated in 63 cases.

Results:
There was a statistically significant difference ($p<.05$) in ISQ values in the following factors: Length (short vs conventional), surface treatments, platform design, (bone vs tissue level), and approach (1/2 stage). ISQ values were significantly correlated ($p<.05$) with length and width. Achievement of primary stability was not a factor influencing ISQ values.

Conclusions:
This study suggests that ISQ values are influenced by the following factors: Length, width, surface treatment, platform design, and approach. However, ISQ values were not influenced by the achievement of primary stability.

Key Words: Implant; Osseointegration; Implant Stability Quotient ISQ;

Funding Agency: None

Dentistry

43

Oral Prevalence of Candida albicans in smokers and non-smokers

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Introduction:
Infections caused by Candida spp. are collectively called candidiasis, which are most commonly localized and superficial. C. albicans is found in about 50% of the oral candidiasis cases. Smoking is believed to be a major risk factor for candidiasis. Objectives: The objective of this study was to investigate the prevalence of C. albicans in smokers and non-smokers of dental patients and staff at the Health Sciences Center.

Methods:
DNA was purified from oral rinse samples collected from the participants. C. albicans species-specific primers (Forward: TCAACTTGTCACACCAGATTATT Reverse: TCCTCCGCTTATTGATATGC) targeting the 23S rRNA gene were used in PCR reactions for the detection. The amplification products were run on an agarose gel to visualize the bands.

Results:
Altogether, 7 of 25 samples (28%) from the smokers group and 4 of 25 (16%) from the non-smokers group were positive for C. albicans. Thus, the number of C. albicans-positive samples in the smokers group were 12% higher than that from the non-smokers group. However, the difference was not statistically significant (P=0.31). The C. albicans-positivity did not correlate with the age of the subjects.

Conclusions:
Although the difference in C. albicans detection rates between smokers and non-smokers was not statistically significant, our results showed that C. albicans occurrence was higher in smokers. A larger sample size might help get a better picture of the candida prevalence in smokers in Kuwait.

Key Words: Candidiasis; oral; smoking;

Funding Agency: SRUL 01/14

Dentistry

44

Effect of Benzyl Isothiocyanate on the expression of genes encoding NADH oxidase and Fibronectin binding protein in oral streptococci

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Introduction:
Even though it is known that biofilms generally are more resistant to antibiotics, antibiotics can affect microbial biofilms in different ways e.g., changes in the microbial population structure, or alterations in bacterial physiology. Recent studies have shown that antibiotic treatment results in up- or down regulation of several virulence-associated genes . The genes encoding NADH oxidase (nox) and fibronectin-binding protein (fbp) are known to play important roles in biofilms of some oral bacterial species. Objectives: To study the effect of benzyl isothiocyanate, an antimicrobial agent from Miswak plant, on the expression of nox and fbp genes in some oral streptococci.

Methods:
Granulicatella elegans CCUG 38949, Granulicatella adiacens CCUG 27809, Abiotrophia defectiva CCUG 27639, Streptococcus mutans CCUG 11877, and Streptococcus gordonii CCUG 33482 were grown as biofilm in brucella broth. The biofilms were treated with BITC for 2 h and mRNA expression was measured by Real-Time PCR.

Results:
As revealed by crystal violet staining, highest amount of biofilm mass was produced by A. defectiva, followed by S. gordonii, S. mutans, G. elegans and G. adiacens. Upon treatment with BITC, S. gordonii biofilms showed highest mRNA expression for both fbp and nox genes. Mean (SE) folds increase in the expression of nox mRNA: 2 (0.30), followed by S. mutans 1.25 (0.18), A. defectiva 1.03 (0.09), G. adiacens 0.7 (0.03). Similarly for fbp, folds increase in mRNA expression was found to be 2.65 (0.03), followed by S. mutans 1.34 (0.018), A. defectiva 1.1 (0.03), and G. adiacens 0.53 (0.02). G. elegans mRNA levels for both fbp and nox were extremely low, 0.13-fold and 0.006-fold, respectively.

Conclusions:
BITC-treatment of the biofilms caused an upregulation of fbp and nox genes in all species tested while for G. elegans, these genes were downregulated. The results suggest significance of fbp and nox genes in biofilm lifestyle of these oral bacteria.

Key Words: streptococci; NADH oxidase; Benzyl isothiocyanate;

Funding Agency: SRUL 01/14

Dentistry

45

Isolation and characterization of extracellular vesicles from Granulicatella spp.

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Introduction:
Granulicatella species are non-motile, non-spore-forming, facultatively anaerobic Gram-positive cocci. They are part of the normal oral flora but cause serious infections such as infective endocarditis. When oral bacteria accidentally enter the bloodstream due to transient tissue damage during dental procedures, they have the potential to attach to the endocardium or an equivalent surface of an indwelling prosthesis and cause infection. Many bacterial species produce extracellular vesicles (EVs) as a virulence strategy. In this study, it is hypothesized that Granulicatella species produce EVs that may play a role in the pathogenesis of Granulicatella endocarditis. Therefore, the objective was to isolate and characterize EVs produced by these species.

Methods:
The reference strains G. adiacens CCUG 27809 and G. elegans CCUG 38949 were cultured on chocolate blood agar with 0.001% pyridoxal hydrochloride at 37 °C and 5% CO2 for 2 days. A loop full of colonies from the CBA plates was inoculated into 100 ml brucella broth supplemented with 0.001% pyridoxal hydrochloride for 2 days. The EVs were isolated using differential centrifugation and filtration protocol and then observed using electron scanning microscopy.

Results:
vesicles of varying sizes (30-250 nm) were seen in the electron micrographs. For comparison, images of bacterial whole cells and the vesicle preparations were captured at the same magnification of ×10000. Vesicle shape and size was visualized better at a higher magnification of □40000. Currently, we are performing protemic analysis of the vesicle preparation by using mass spectrometry.

Conclusions:
To the best of our knowledge, this is the first research that presented evidence for the hypothesis that Granulicatella species release EVs. Characterization of the EVs may provide new insights into virulence mechanisms of Granulicatella.

Key Words: Extracellular vesicles; Granulicatella; Proteomics;

Funding Agency: SRUL 01/14

Dentistry

46

The Effect of non-surgical Periodontal Therapy on Metabolic Control in Children

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Introduction:
A number of intervention studies suggested that resolution of periodontal inflammation can improve metabolic control in patients diagnosed with diabetes mellitus. Objectives: to assess the effect of non-surgical periodontal therapy on glycemic control of children diagnosed with diabetes mellitus.

Methods:
Twenty-eight children diagnosed with diabetes mellitus were recruited. All patients had their glycosylated hemoglobin (HbA1c%) test one week prior to their annual medical and dental visit and 3 months following non-surgical periodontal therapy. All patients received a comprehensive periodontal examination including clinical attachment loss, bleeding on probing, plaque score, plaque and gingival index. All patients were referred for non-surgical periodontal therapy, which included oral hygiene instruction and motivation followed by supra-gingival and subg-ingival scaling using ultrasonic and hand instruments. Data were entered and analyzed using the Statistical Package for Social Science software. Binary logistic regression analysis was performed in order to examine which factors were significant in multivariate analysis after adjusting for confounding between effects. The regression model used the dependent variable 'Improved glycemic control'. Statistical significance was set at $p < 0.05$.

Results:
No statistical difference was found between compliant (received dental scaling) and non-compliant (received oral hygiene instructions only) group in age, gender distribution, oral hygiene practice and the level of diabetes control. There was a significant difference between compliant and non-compliant group in term of improvement of HBa1c before and after periodontal therapy. Mean gingival index was the only significant variable associated with improved glycemic control level.

Conclusions:
Non-surgical periodontal therapy may help in improving HbA1c% control.

Key Words: diabetes; periodontal diseases; HBa1c;

Funding Agency: Kuwait University (research grant No. RD 01/09)

Dentistry

47

Clinical Factors Influencing Implant Stability Quotient Values: Patient-Related Factors

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Introduction:
The objective of this study is to evaluate the influence of several clinical factors on implant stability quotient, specifically: patient's age, gender, site of implant placement, simultaneous bone grafting, and duration between implant placement and ISQ evaluation.Patient's charts from Kuwait University Dental Center (KUDC) were reviewed retrospectively. Patients who received implants from 2014 to 2017 were evaluated. Patients fulfilling the inclusion criteria were included in this study.

Methods:
Fifty-six female and 49 male patients aged between 24 and 81 years old (mean 53.17) who received a total of 105 implants with a mean width of 4.256 mm and a mean length of 9.68 mm were tested in this study. The ISQ values of these implants ranged between 66 to 90 (mean 79.83) and the duration between implant placement and ISQ value measurements ranged between 8 to 84 weeks (mean 21.72 weeks). Two types of implants (36 Astra and 69 Straumann) with different platform designs (50 tissue level and 55 bone level) were placed by two clinicians in different sites (46 maxillary posteriors, 7 maxillary anterior, 48 mandibular posteriors, 4 mandibular anterior). Two placement approaches were used (19 1 stage surgery and 86 2 stage surgery) and primary stability was assessed after implant placement with 95 implants achieving primary stability and 10 did not. Minor bone grafting was indicated in 63 cases.

Results:
There was a statistically significant difference ($p<.05$) in ISQ values for implants placed in different sites. No statistically significant difference was found in the following factors: Age, gender, duration, and simultaneous bone grafting.

Conclusions:
This study suggests that the site of placement influences ISQ values. However, ISQ values were not influenced by age, gender, duration of healing, and simultaneous bone grafting.

Key Words: Implant; Osseointegration; Implant Stability Quotient ISQ;

Funding Agency: None

Dentistry

48

Effect of drug-resistance or susceptibility of Candida species on their ability to coaggregate and form biofilms with oral streptococci

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Introduction:
Coaggregation is a key phenomenon that facilitates cell-cell interaction among oral microbial species, essential for the development of multispecies biofilm communities. Candida albicans is an important fungal species in the human oral cavity. Although a commensal organism, C. albicans in the situations of host-microbe dysbiosis can grow to elevated levels and cause infectious diseases, e.g., candidiasis. Objective: The objective of this study was to investigate whether drug-resistance or susceptibility of C. albicans influences its ability to coaggregate with oral streptococci, initial colonizers in the formation of dental plaque.

Methods:
Cell suspensions equivalent to OD600 = 1 from Streptococcus mutans CCUG 11877, Streptococcus gordonii CCUG 33482 and Streptococcus sanguinis CCUG 17826 were added cell suspensions of fluconazole-resistant (Flu-R) and –susceptible dose-dependent (Flu-SDD) Candida into separate cuvettes. OD600 = 1 cell suspensions of each of the above species were included to study autoaggregation. Optical density of the cell suspensions was measured on a spectrophotometer at every 15 min for 2 h.

Results:
C. albicans FluS showed faster coaggregation (20% at 30 min) than the Flu-R strain (20% at 45-50 min) with all three streptococci. In the case of C. glabrata, similar trend was seen but it varied between streptococcal strains. Except for S. mutans, C. glabrata showed about 27% coaggregation with S. gordonii and S. sanguinus. The percent of coaggregation entered a plateau phase at about 90 min in the case of C. glabrata while it appeared to increase even after 105 min.

Conclusions:
Flu-S strains of C. albicans and C. glabrata seemed to coaggregate faster with oral streptococci, compared to the Flu-R strains. Possibly, differences in cell surface components of Flu-S and Flu-R candida might be contributing to this difference.

Key Words: Coaggregation; Candida; drug-resistance;

Funding Agency: SRUL 01/14

Dentistry

49

An analysis of oral and maxillofacial pathology lesions over an 18-year period diagnosed at Kuwait University

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Introduction:
Objectives: The aim of the present study was to determine the range, frequency, prevalence and distribution of oral lesions submitted for histopathological diagnosis at the oral pathology laboratory in Kuwait University.

Methods:
A retrospective analysis was conducted of all cases submitted to the oral pathology laboratory over a 18-year period (2000-2018). Age, gender, histopathological diagnosis and location of the lesions were recorded. Lesions were classified into 10 diagnostic categories.

Results:
Of the 697 biopsies examined, the average age of the patients ranged from 1-93 years with a mean age of 37.83± 16.62 (mean ±S.D). The intra-oral site most frequently affected was labial mucosa (n=189; 27.1%) followed by the mandible (n=90; 12.9%) and tongue (n=79; 11.3%) The distribution of sex was 346 (50.7%) men and 337 (49.3%) female. The most common diagnostic category was mucosal pathologies (n=205; 29.4%) followed by odontogenic cysts (n=158; 22.7%) and reactive lesions (n=97; 13.9%). The three most common histopathological diagnosis were hyperkeratosis (n=70; 10.04%), dentigerous cyst (n=48; 6.89%) and mucocele (n=44; 6.31%). Twenty-five malignant neoplasms were diagnosed, the majority of them were males. A significant association was observed between age and the group of lesions of the oral cavity ($p \leq 0.001$).

Conclusions:
Mucosal pathologies were the most frequently diagnosed lesions and the majority of diagnosis were benign. A wide variety of oral lesions such as hyperkeratosis, oral lichen planus, papilloma, candidiasis, fibrous hyperplasia etc. were included under mucosal pathology. Hyperkeratosis was the most frequent lesion found in the study. This study provides valuable understanding on the prevalence and range of oral biopsies submitted to the oral histopathology laboratory. Further, it also emphasizes the need for more consistent diagnostic criteria between different retrospective studies.

Key Words: Retrospective study; Oral biopsies; Oral and maxillofacial pathology;

Funding Agency: None

Dentistry

50

Antimicrobial effect of silver diammine fluoride and sodium fluoride on in vitro biofilms of Streptococcus mutans and Lactobacillus casei

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Introduction:
degree where colonization does not occur any more or by direct antibacterial application on the tooth surface. Antibacterial efficacy of sodium fluoride (NaF) and silver diammine fluoride (SDF) is known. However, little is known about the potential of these agents against specific monospecies biofilms of cariogenic bacteria in vitro. Objective: To study the in vitro antibiofilm activities of NaF and SDF on the biofilms and planktonic cell suspensions of Streptococcus mutans and Lactobacillus casei.

Methods:
S. mutans CCUG 11877 and L. casei OMGS 3184 biofilms grown for 2 days and their planktonic counterparts were treated for 2 h with a gradient of concentrations of NaF (0, 0.1, 0.5, 1 M) and SDF (undiluted, 5-, 10- 50-, and 100-fold dilutions).

Results:
Upon treatment with NaF, median CFU/ml of S. mutans biofilm decreased several folds from 5□106 to 2□106, while for planktonic cells, the reduction was from 5.2x106 to 1.9□106. Similarly, L. casei also showed several folds reduction in CFUs: for biofilms the CFUs decreased from 6.2□106 to 2.8□106 and for planktonic cells, 3.8□106 to 2.6□106. Interestingly, biofilms of all species showed a slight increase in CFUs at the highest concentration (1 M) of NaF. In the case of SDF, undiluted, 5-fold and 10-fold dilutions resulted in complete growth inhibition, while higher dilutions 50-fold and 100-fold reduced CFUs several folds. Data compiling and statistical analyses, which are in progress now, would give a better understanding of the data.

Conclusions:
NaF and SDF demonstrated inhibitory effect on the growth of S. mutans and L. casei in both biofilm and planktonic life modes. It appeared that the inhibitory effect of NaF at the highest concentration used (1 M) was reduced. SDF exhibited strong antibacterial activity at very high dilutions (50- and 100-folds) suggesting in vivo testing of this agent at low concentrations.

Key Words: silver diammine fluoride; streptococcus; Lactobacillus;

Funding Agency: SRUL 01/14

Dentistry

51

Perceptions of oral health among parents and teachers of special needs schoolchildren in Kuwait

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Introduction:
Oral health is an important part of general health and contributes to overall health-related quality of life. The objective of this study was to describe the perceptions of oral health among parents and teachers of special needs schoolchildren in Kuwait.

Methods:
A total of 308 parents of children with a physical or developmental disability and 112 teachers were enrolled in this study and completed the self-administered questionnaire regarding their perceptions of oral health. The mean age of the parents was 45 years and of the teachers 38 years.

Results:
The response rate was 92% for the parents and for the teachers 75%. With regard to self-reported oral health, only 7% of the parents and teachers perceived their oral health as "excellent". More than half of the parents (56%) and two-thirds of the teachers (69%) answered that their teeth or gums were "good". About a quarter of parents (25%) and teachers (17%) indicated "average"; whereas 12% parents and 7% teachers claimed "poor" teeth or gums. Dentists were the main source of oral health information among the parents (36%) than for teachers (26%). Parents, who perceived their oral health as excellent/good (63%), had dental visits more often and during the last 12 months compared to those who seemed their oral health as poor (12%) ($p=0.047$). Parents without an university education (67%) regarded their oral health as poor compared to those with a higher education (33%) ($p<0.001$). Teachers who reported brushing at least twice daily (72%) perceived excellent/ good oral health compared to those brushing once a day or less than once a day (28%) ($p=0.039$). Age, gender and nationality were not associated with the perceived oral health among the parents and teachers.

Conclusions:
Preventine oral health care with the importance of good oral hygiene practices and regular dental check-ups should be given more emphasis for the parents and teachers of the special needs children.

Key Words: Perceptions; Oral health; Parents; Teachers; Special needs schools; Kuwait ;

Funding Agency: None

Genetics

52

Role of protein tyrosine phosphatase non-receptor type 22 gene functional variant [C1858T] in genetic susceptibility of psoriatic arthritis in Kuwaiti Arabs

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Introduction:
Psoriatic arthritis (PsA) is a chronic, systemic inflammatory arthritic disease characterized by joint inflammation that is associated with cutaneous psoriasis, and can lead to pain, swelling or stiffness in one or more joints. Epidemiological evidence has shown a higher heritability for psoriatic arthritis compared with psoriasis vulgaris. It has been considered to result from a complex interplay between genetic, immunologic and environmental factors. A single nucleotide polymorphism [C1858T] in the protein tyrosine phosphatase (PTPN22) gene which encoded Arg620Trp in the lymphoid protein tyrosine phosphatase (LYP) has shown to be a negative regulator of T-cell activation. Recent evidence suggests that it shows an association with different autoimmune disorders. The objective of this study was to investigate an association between PTPN22 gene [C1858T] functional variant genotypes and psoriatic arthritis in Kuwaiti patients.

Methods:
We have investigated the association of PTPN22 gene functional variant [C1858T] in 105 Kuwaiti patients with psoriatic arthritis and compared it to that in 214 healthy controls. Genotypes for PTPN22 gene [C1858T] variant were determined by using PCR-RFLP method.

Results:
The frequency of homozygous variant genotype (TT) was found to be significantly higher in PsA patients compared to that in the controls (OR 19.7, p <0.0001). Collectively, the variant genotype was detected in homozygous and heterozygous combinations in 30% patients (p <0.0001) compared to 16% in the controls. The variant genotype was associated more strongly with PsA patients of age (>25-34y). No correlation was detected between the variant genotype and gender of the PsA patients.

Conclusions:
Our data shows an association of PTPN22 gene functional variant [C1958T] with psoriatic arthritis in Kuwaiti patients and highlights its role in determining the genetic susceptibility along with other factors.

Key Words: Genotype; Kuwait; Psoriatic arthritis;

Funding Agency: Kuwait University

Genetics

53

Monogenic Diabetes (MODY) study in Kuwait

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Introduction:
MODY describes a heterogeneous group of monogenic inherited disorder of diabetes. MODY 3, the most common subtype, is caused by mutations in HNF-1 α (hepatocyte nuclear factor -1 α). MODY 5 is caused by mutations in HNF-1 β (hepatocyte nuclear factor-1 β) and is characterized by developmental renal disease and pancreatic atrophy.Objectives: To detect of MODY subtypes in patients with autoimmune negative type 1 or type 2 diabetes diagnosed before the age of 25 years and have a family history of diabetes.

Methods:
Patients with suspected MODY referred to a specialized MODY clinic at Dasman diabetes institute had their blood tested for MODY mutations using Targeted next-generation sequencing at Exeter Laboratory, United Kingdom.

Results:
37 subjects were tested during the period from January 2013 to June 2017. We have identified four MODY subtypes in 6 patients; GCK, HNF1α, HNF1β, and INSR. Here, we describe the clinical features and the molecular genetics of two subjects. The first is a female diagnosed at the age of 16 years with type 1 diabetes, who had C- peptide of 1.2 ng/ml and strong family history of type 2 diabetes in both her mother and sister. She required small doses of insulin (0.5 unit/kg) to maintain good glycemic control. The second subject is a 13-year-old male who was diagnosed soon after birth with chronic renal failure due to bilateral cystic kidney disease. He had renal transplantation at the age of 3 years and developed diabetes at the age of 10 years. Sanger Sequencing of HNF1A gene revealed a heterozygous mutation (c.872dupC) in the first subject, confirming the diagnosis of MODY 3. Gliclizide was started and HbA1c dropped to 6.8%. Sequencing of HNF1B gene revealed a mutation p.E138K consistent with a diagnosis of renal cyst and diabetes syndrome (RCAD) in the second subject.

Conclusions:
Diagnosis of MODY can have implications for the guidance of appropriate treatment and genetic counseling.

Key Words: Monogenic diabetes; MODY; kuwait;

Funding Agency: Dasman Diabetes Institute.

Genetics

54

Identification of a splice site mutation in ARMC4 gene in Multiplex Kuwaiti family with severe chronic respiratory symptoms and randomization of left or right body asymmetry.

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Introduction:
Primary ciliary dyskinesia (PCD) is one of the congenital thoracic disorders caused by dysfunction of motile cilia resulting in insufficient mucociliary clearance of the lungs. Approximately 50% of all PCD patients have Kartagener syndrome. The overall aim of this study is to identify causative mutated genes for PCD and CHD in the Kuwaiti population.

Methods:
A cohort of multiple consanguineous PCD families was ascertained from Kuwaiti patients and diagnosed by ENT and pulmonologist for symptoms of immotile cilia syndrome most of our patients were recruited from Zain hospital. The genomic DNA from the family members was isolated using standard procedures. The DNA samples from all affected individuals were analysed using whole Exome Sequencing technology and Sanger sequencing method. Transmission electron microscopy (TEM) and Immunofluorescence staining (IF) for patient samples obtained by nasal brushings in Kuwait was performed in order to identify specific the structural abnormalities within ciliated cells.

Results:
Here we present one multiplex family from our cohort that has splice site mutation in ARMC4 gene. Whole Exome sequencing show a homozygous splice site mutation in ARMC4 gene c.2799+G>A in Intron 18 that shared between the two affected sibling. Sanger sequencing was performed for the patients and the parents and the results confirming the patients carry a homozygous mutation and the parents are both carrier for the mutations. In addition, TEM for the patients show lacking of Outer Dynein Arms (ODAs). IF staining shows the patients carrying mutation in ARMC4 gene and also lacking ciliary DNAH5 protein comparing with other ciliary proteins that tested in this study such as (GAS8, DNAH11 and RSPH9).

Conclusions:
This study helped the PCD-families to get confirmed diagnosis of PCD firstly by determining the defects in the cilia ultrastructure using (IF and TEM) and then by mapping the disease mutations.

Key Words: Genetics; Congenital thoracic anomalies; Primary ciliary dyskinesia;

Funding Agency: Kuwait Foundation for the Advancement of Science (KFAS)

Genetics

55

An association between the common FTO gene polymorphism and obesity in Kuwaiti children: A cross-sectional study

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Introduction:
According to the world health organization the prevalence of overweight and obesity in children has increased globally from 4% in 1975 to 18% in 2016. Both genetic and environmental factors are involved in the development of obesity. The common fat-mass obesity (FTO) gene polymorphism (rs9939609) has been found to be associated with obesity in both children and adults worldwide. However only a limited number of studies on children has been conducted. Our aim is to investigate for the first time the FTO gene polymorphism in children from Kuwait.

Methods:
Categorical body mass index (BMI) on 705 school children (n=509 Kuwaiti and n=196 non-Kuwaiti) aged 9-14 years were available. The FTO gene polymorphism rs9939609 was genotyped for all children and the relationship with categorical BMI was analyzed using logistic regression.

Results:
We observed an association between the common A-allele of the FTO gene polymorphism with obesity in Kuwaiti children (OR: 1.53 (95% CI (1.19 - 1.98); p= 0.0009). No association was observed in non-Kuwaitis (OR: 0.94 (95% CI (0.64 – 1.39); p= 0.77).

Conclusions:
This is the first study in the region to observe an association between the common FTO gene polymorphism and obesity in Kuwaiti children. Our findings are consistent with other publications and support that genetics contribute to the development of obesity. Moreover, this finding supports the importance of public health awareness on the role of our genes on disease susceptibility.

Key Words: Obesity; Genetics; Kuwait;

Funding Agency: None

Genetics

56

T cells commands chief orchestras for Post-transplant diabetes

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Introduction:
Post-transplantation diabetes mellitus (PTDM) is a serious metabolic complication. Cytokines are involved in the inflammation of islet β-cells in diabetes; however, few studies have studied this in PTDM. We aimed to assess susceptibility to PTDM through screening of transplants that developed diabetes compared with those who did not.

Methods:
A total of 309 renal transplant recipients (RTRs) were included in this study. The association was examined between the development of diabetes in a PTDM cohort compared with those without diabetes (non-PTDM). We have selected cytokines T cell or macrophage derived ones with well-stablished functionality in protein level. Interferon-γ T (+874) A gene (IFNG) (TH1), IL-4 C (-590)T (TH2), TGF-β1 T (29)C (TH3) and IL-6 G (−174) C (macrophage derived) . The genes were amplified using well-established techniques in our laboratory. Allelic and genotype frequencies of IFNG, IL-4 C (-590)T, TGF-β1 T (29)C and IL-6 G (-174)C were calculated for PTDM versus non-PTDM RTRs using SPSS system.

Results:
IFNG TT, high producer of IFNG protein was significantly more in PTDM than non-PTDM, p=0.005, while AA, low producer of IFNG, was predominant in the control group (p = 0.004). In IL-4 the CC genotype, low producer of IL-4 protein level, was more in PTDM than non PTDM, p= 0.02, on the other hand TT which corresponds to high producer of IL-4 was more in non PTDM than PTDM cohort, p=0.003. However, GG of IL6 and TT of TGF-β1 which corresponded to high protein levels of both cytokines were significantly more in PTDM with p=0.002 and p=0.03.

Conclusions:
Inflammation of the islet β-cells- through TH1 cell-mediated variations of IFNG, IL-4, TGF-β1 and IL-6- may play a crucial role in the pathogenesis of PTDM. Further larger studies are required to confirm our findings.

Key Words: Post-transplant Diabetes; renal transplant; cytokines, T-helper cells.;

Funding Agency: DDI, RA2015-013

Genomics

57

Comparative genome analysis of Brucella melitensis isolates from Kuwait

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Introduction:
Brucellosis is a worldwide occurring zoonotic disease caused by the organisms of genus Brucella. The genome of Brucella contains two circular chromosomes and lacks any plasmids. Brucella genomes carry very limited variations across strains, which makes it difficult to identify a particular strain. The aim of this study was to perform in silico comparison of complete Brucella melitensis genomes to identify the species, strains, antibiotic resistance genes, virulence factors, and phage sequences.

Methods:
Whole genome sequencing of 5 Brucella isolates was performed using the MiSeq platform. Assembly was done using Velvet and SPAdes. Ordering of assembled contigs was done by Mauve. An online NCBI pipeline was used to annotate the contigs. Annotated genomes were compared using in silico multiplex PCR, BLAST and online tools like kmer finder, Phaster, CARD and Patric.

Results:
Multiplex in silico PCR based on six genes provided evidence of DNA amplification corresponding to B. melitensis. An intact phage, Paracoccus vB Pmas, was found in all the genomes with an additional phage, Pseudo MD8, in one of the isolates. An MprF resistance gene was found in all the isolates with at least 99.5 percent homology. The comparative genome analysis showed that despite sharing the same gene sets, the SNPs were prevalent across the genomes, which provided a variable extent of diversity to this bacterium.

Conclusions:
In silico comparative genome analysis is a fast and reliable tool to identify Brucella species and strains. Furthermore, it can provide information about variance in genetic elements, existence of drug resistance genes and SNP-based phylogeny. In summary, whole genome analysis can differentiate between strains to an extent not possible by classical molecular methods.

Key Words: Brucella melitensis; Whole genome sequencing; Comparative genomics;

Funding Agency: MI04/15 and SRUL02/13

Health Policy and Management

58

Management Styles and Challenges in Providing Speech Therapy Services in Kuwait: A Case Study of Sheikh Salem Al-Ali Center of Audiology and Speech Therapy

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Introduction:
Sheikh Salem Al-Ali Centre for Audiology and Speech therapy is a governmental organization under Ministry of Health of Kuwait. It has provided services for children and adults with hearing and speech disorders since 2003. Doctors, nurses, speech pathologists, and audiologists are responsible to provide services in the Centre. The aim of the study is to determine the management styles of managers in the Centre.

Methods:
Data was collected through five (5) unstructured interviews with Acting Head of the Centre, two physicians and two speech therapists. Content analysis approach was used to analyse the qualitative data. Published annual report of the Centre and Accreditation Reports were reviewed for additional information.

Results:
Twenty-two (22) staff ran the Speech Therapy Department of the Centre that managed over 16,000 visits per year. The management applies the Scientific Management Theory, General Administrative Theory, and Total Quality Management in running the Centre. The managers of the Centre use rational and intuitive approach in decision-making. The strengths of the Centre include having specialized and well trained medical staff and offering up-to-date treatment technologies. The Centre regularly hosts experts to train the employees to enhance their clinical skills. The Centre has a good files tracking system, and extend its services to outpatient clinics in four other primary healthcare centres in Kuwait. Two main weak points are high staff turnover due to dissatisfaction on the promotion policy and patients' dissatisfaction with poor quality of the wait-ing area in the Centre.

Conclusions:
The Speech Department in Salem Al-Ali Centre has significant contribution to Kuwait health system. The level of provided services in the centre can be improved by reevaluation of the staff promotion policy and salary scale, increasing public awareness about the Centre, and improving the quality of patient's waiting area.

Key Words: Management Styles; Speech Therapy; Health services;

Funding Agency: None

Hematology

59

Prevalence of anemia in type 2 diabetic patients

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Introduction:
The aim of the study was to determine the prevalence of anemia in patients with type 2 diabetes and to assess the risk of anemia according to gender, age and glycemic control.

Methods:
The study group (male: 9957; female: 9102) comprised of patients with type 2 diabetes attending Outpatient Diabetic Department of Ameri Hospital (Al-Asimah Capital area) from January 1, 2016 to December 31, 2017. Patients were divided into groups according to glycemic status and gender. Glycated hemoglobin (HbA1C) values and hemoglobin (Hb) levels were evaluated. The presence of anemia was defined by an Hb level <13.0 g/dL for men and <12.0 g/dL for women.

Results:
The prevalence of anemia is significantly greater in diabetic females (38.5%) than in diabetic males (21.6%) and in poorly controlled diabetic (33.46%) than those with glycemic status under control (27.9%) ($P < 0.05$). The average age of patients with anemia was found to be 60.669 ± 0.198 years and the average age of patients without anemia was found to be 54.07 ± 0.121 years. This indicates that the risk of anemia increases with age.

Conclusions:
Keeping the diabetes under control and proper investigations to identify anemia in diabetic patients at an early stage can reduce the severity of the complications caused due to anemia in diabetic population. Awareness must be provided to the diabetic population at the time of their diagnosis of the risk of anemia and other complications of diabetes.

Key Words: Anemia; Type 2 diabetes; Glycemic status;

Funding Agency: None

Human genetics

60

Adapting ACMG Incidental Findings gene panel in predictive/Diagnostic genetic testing in Kuwait

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Introduction:
The American College of Medical Genetics incidental findings (ACMG-IFs) gene panel has been designed to include actionable genetic disorders to reduce the burden of disease. We set-out to determine the applicability of the ACMG-IFs gene panel to Kuwait's population.

Methods:
Clinical exome sequencing was performed on a cohort of 178 Kuwaiti individuals. Two virtual gene panels were used; the ACMG-IFs gene panel and a hereditary disorders' gene panel.

Results:
A 1,209 variants were detected in the ACMG-IFs gene panel of which 31 (1.1%) variants in 23 genes were reported to be pathogenic. The overall cumulative prevalence of incidental findings in our population (17.4%) is higher than other populations. The most frequent pathogenic variants were variants associated with cancer predisposing syndromes and cardiovascular (CVD) hereditary disorders. Hereditary disorders' gene panel revealed high frequency of pathogenic variants associated with 29 disorders which were mostly autosomal recessive disorders.

Conclusions:
Detection rate of actionable secondary findings in our Kuwaiti cohort was higher than other populations possibly due to consanguinity and minimal genetic ethnic variation. The high detection rate of actionable CVD and cancer predisposing variants suggests that adapting ACMG secondary findings recommendations might help curb the high incidence of hereditary cancer and CVD among Kuwaitis. The ACMG-IFs gene panel is applicable to Kuwait however, a region-based gene panel must be designed to reflect hereditary disorders prevalent in the region.

Key Words: Incidental findings; carrier frequency; hereditary disorders;

Funding Agency: KFAS grant 2012-1302-02

Human genetics

61

An Association Study of Genetic Risk Factors Affecting Multiple Sclerosis Prevalence in Kuwait

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Introduction:
Multiple Sclerosis (MS) is a chronic autoimmune demyelinating complex disorder affecting the central nervous system. Several genetic factors associate with MS susceptibility exhibiting regional/ethnic patterns. MS prevalence in Kuwait has increased 20-folds in the past 25 years (current estimate 85/100,000), and is projected to increase further. Our aim was to investigate the association of known and novel genetic factors associated with MS risk in the Kuwaiti population.

Methods:
Sixty-eight healthy Kuwaiti volunteers were recruited as controls, and 110 Kuwaiti MS patients were recruited at Dasman diabetes institute's neurology clinic. Exome sequencing was performed on an Illumina HiSeq2000 platform using Agilent's SureSelect human all exonV5 with target coverage of 50X. An additional 441 healthy Arab control exomes available from public depository databases were used. Bioinformatic analysis was conducted using publically available plug-ins, codes, and propriety coding approaches. For novel genetic risk factor analysis a corrected p-value $\leq$ 2.5e-7 was considered significant.

Results:
A total of 95 variants were identified as reported MS genetic risk factors with $\geq$ 2 reports confirming association. These variants were assessed in our exomes, and four variants in four genes (EVI5, TNFRSF1A, MTHFR, CD58) confirmed their association with MS risk in the Kuwaiti population (p-values < 0.05). Novel variant analysis results detected 6 variants in six genes (LEFTY1, SLC2A11, ATXN3, NRF1, GLI3, IL2RB) with varying degrees of associations based on odds ratio statistics (p-values < 2.5e-7).

Conclusions:
The Kuwaiti population genetic predisposition to MS appears to be distinct from other studied populations sharing minor genetic association similarities. Our findings suggest genetic risk factors of Kuwaiti MS in tandem with changing environmental/life-style conditions in the past two decades are affecting increases in MS prevalence in Kuwait.

Key Words: Multiple Sclerosis; Exome Sequencing; Genetic risk factor;

Funding Agency: KFAS grant 2012-1302-02

Medical Education

62

A follow-up of Faculty of Medicine, Kuwait University graduates

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Introduction:
While medical school grades are the most used objective measure for the success of an individual, it does not necessary predict the aptitude of the graduate. Our study aims to investigate the career progress of Faculty of Medicine, Kuwait University graduates and to track any association between university performance and career progress.

Methods:
Students who graduated from the Faculty of Medicine of Kuwait University since its establishment up to 2017 were approached for filling an electronic questionnaire designed to evaluate their extra academic and post-graduate qualifications and progress. Descriptive information is presented in Table 1. Analysis between the 2 GPA groups and cofactors was carried out using logistic regression model after adjustment of all cofactors and is presented in Table 2.

Results:
A total of 533 students who graduated from 1983 to 2017 took part in this study. The mean age was 33 (8.6). Descriptive information about the distribution of their age, graduation GPA, marital status and parenthood, hospital of current work, current career status, monthly income, and specialization is presented in the table 1. Fifty-five percent have done international license examination, 15.8% have done a fellowship, 13.1% have done a master or PHD, 11.3% have practiced internationally, 30.6% have published at least one paper, while 40.2% and 63% reported to be highly satisfied with their progress in career and life, respectively. Table 2 analysis states there was no difference in future progress according to graduation GPA.

Conclusions:
Performance in medical school measured by GPA was not associated with going into specific specialization, undergoing international license examination, doing a masters, PHD, or fellowship, being more satisfied with progress in career or progress in life, having international practice, or publishing research.

Key Words: graduates; GPA; clinical achievment;

Funding Agency: None

Medical Education

63

The Educational Value of "YouYube" Videos on Barlow and Ortolani Maneuvers for Hip Examination

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Introduction:
Screening for developmental dysplasia of the hip (DDH) is mandatory for all newborns. Therefore, mastering the Barlow and Ortolani physical examination techniques of the hip is highly important for physicians to be able to detect DDH at early stage and avoid the possible consequences of this condition. Since medical and educational videos are becoming very popular on YouTube, we aim to assess the educational quality of Barlow and Ortolani techniques videos available on YouTube.

Methods:
A review of YouTube videos on Barlow and Ortolani physical examination techniques was carried out using predetermined search terms. Two sixth-year medical students from the Faculty of Medicine, Kuwait University, conducted the search. An assessment of the educational quality was performed. A 5-point scale was used to measure the overall educational quality of the videos, with "1" indicating low quality and "5" indicating high quality.

Results:
A total of 145,303 videos were identified, of which 11 met our inclusion criteria. The inclusion criteria involve the following: videos in English language only and maneuvers performed by health care professionals or health institutions in only the first 10 pages of each search term. Nine out of the 11 videos had a score of 5 out of 5. The remaining two video had a score of 4 out of 5.

Conclusions:
Barlow and Ortolani techniques of screening for DDH videos on YouTube demonstrate high educational quality. Future studies should assess the learning outcomes of using these videos as a source of self-directed learning by healthcare professionals.

Key Words: YouTube; Developmental dysplasia of the hip; Physical examination;

Funding Agency: None

Medical Education

64

Accuracy and Appropriateness of Social Media Content in Five Medical Specialties.

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Introduction:
In recent years social media (SM) has grown exponentially, and has reached out to medical doctors and students for personal and professional use. Recently, medical associations have set guidelines for physicians on the recommended use of social media in the education of patients. Our objective is to assess the accuracy and appropriateness of SM content in different medical specialties using the platform Instagram.

Methods:
We randomly selected 25 accounts from 5 different specialties (Surgery, Medicine, Pediatrics, Obstetric & Gynecology, and Dermatology). Five posts from each account were randomly selected and evaluated anonymously (by erasing account identification details) with the help of board certified doctors from each specialty (one doctor per specialty), by answering a specially designed questionnaire that evaluated the accounts/posts based on: accuracy, professionalism, provision of credentials, use of medical jargon, referencing, and conflict of interest.

Results:
The mean ± SD were used for descriptive analysis, while proportion (%) were used for categorical variable analysis using SPSS. Among the 5 specialties, 69.6% of the posts were evaluated as accurate or very accurate and 68% were evaluated as professional or highly professional. Most of the posts showed no deviation from the area of specialty (88%) and did not use medical jargon in their content (96%). Half of the posts showed possible or clear conflict of interest. Only about half of the accounts provided the physician's credentials. The overwhelming majority of posts did not reference their content (92%).

Conclusions:
We conclude that although the majority of the posts were accurate in content, displayed professionalism, did not deviate from area of specialty and did not use medical jargon, extra care must be taken by these professionals to publish their credentials and publish referenced content that displays no conflict of interest to benefit their followers in a non-bias manner.

Key Words: Accuracy; Social Media Content; Medical Specialties;

Funding Agency: None

Medical Education - Psychiatry

65

Medical Students Attitude Towards Psychiatry as a Specialty and Career Choice in Kuwait

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Introduction:
The burden of mental illness is growing worldwide. Stigma towards mental illness and psychiatry plays an important role in influencing medical students in pursuing psychiatry as a career. The aim of this study was to examine students' attitudes at Kuwait University Faculty of Medicine towards psychiatry and assess associated factors.

Methods:
Study participants were categorized into three groups: preclinical students, clinical students (no psychiatry clerkship taken yet), and final year students (completed psychiatry clerkship). The Mental Illness Clinicians Attitudes (MICA) & the Balon Attitudes toward Psychiatry, which are two validated questionnaires, were utilized. Associated sociodemographics, academic characteristics, and three scales assessing students' interest, knowledge, and level of pursuit of psychiatry as a career were included.

Results:
A total of 403 students participated (response rate: 99.7%). On a scale of 1-10, the mean score for students' interest, knowledge and level of pursuit of psychiatry was 5.95, 4.9, and 3.96 respectively. While 31.0% of students scored a high level of interest in psychiatry (8,9,10), only 11.3% indicated a high level of pursuing it as a career. The MICA results clearly indicated a low stigmatizing median score towards psychiatry. The Balon questionnaire results showed a positive attitude that also increased in the positive direction across years of study. However, a quarter of students who completed the psychiatry clerkship agreed that most "non-psychiatry staff are disrespectful of psychiatry"; moreover, one third of students believed that "no effort was made in encouraging those who are interested in becoming a psychiatrist".

Conclusions:
The stigma towards mental illness and negative outlook towards psychiatrists may detract medical students from pursuing psychiatry as a career. The psychiatry clerkship can play an important role in influencing students' attitudes and their recruitment into psychiatry.

Key Words: psychiatry; career; medical students;

Funding Agency: None

Medical Education- Ethics

66

Professionalism in Medicine: Preliminary Results of a National Survey of Physicians in Kuwait

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Introduction:
The American Board of Internal Medicine Charter on Professionalism was embraced by many professional organizations. The objective of this study is to ascertain the extent to which practicing physicians in Kuwait agree with the principles and professional responsibilities identified in the charter.

Methods:
Cross sectional study with stratified random sample of physicians working in public hospitals in Kuwait. For data analysis, (SPSS, version 20) was used.

Results:
A total of 305 Physicians were included, 38% aged between 30-40, males 72.6%, 44% Kuwaitis, 70.7% married. Registrars, specialists, interns, & assistants were 43.8%, 14.7%, 11.7%, & 19.1% respectively. KU graduates 23%, 53.2% from Arab countries. Specialty: 51.3%, 15.6%, 13.6%, & 1.6% for Medicine, Surgery, Pediatrics, Obsgyn, respectively. While 56.4% agreed that physicians should lower inequalities in access to care, 57.5% witnessed other physicians discriminating based on race or gender. While 92.6% reported that physicians should be honest with patients at all times, 57.5% withheld information from patients due to family requests. Additionally, while 98.3% reported they would help facilitate funding for a patient who cannot afford a procedure, 59.5% have reported they would personally fund it if all else failed. Interestingly, 67 % said it is not professional to do so. Almost 66% reported never revealing confidential information about patients when it's not legally required. Although 26.2% of physicians reported having had direct knowledge of a colleague who is incompetent, 77% of them said they never reported such physicians to relevant authorities. Finally, 77.4% believed that medical errors should always be reported and 56.9% indicated that they should be disclosed to affected patients.

Conclusions:
While physicians agreed with principles and responsibilities of professional behavior promulgated by the ABIM charter, the reported behavior, however, did not always conform to those norms.

Key Words: Professionalism; Physicians; Kuwait;

Funding Agency: None

Medicinal Chemistry

67

Brintonamides A–E, Novel Dual Protease and GPCR Modulators from a Marine Cyanobacterium Targeting Invasive Breast Cancer

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Introduction:
Cancer metastasis is considered the major cause of death among cancer patients. In addition to proteases, recent studies report the involvement GPCRs in regulating the metastatic process of various tumors. Herein we describe the discovery, synthesis and pharmacological profiling of five novel modified peptides with dual protease and GPCR modulatory activities and report their effects on breast cancer migration.

Methods:
Samples of intertidal cyanobacterial mats were extracted and fractionated. Pure compounds were purified by HPLC. Structures were elucidated using NMR and MS. Biological evaluation involved protease and GPCR profiling, cell viability and migration assays.

Results:
Five novel modified linear peptides named brintonamides A–E (1–5) were discovered. The total synthesis of 1–5 in addition to two other structurally related analogues was achieved. The cancer related serine protease KLK7 was inhibited to similar extents with an IC50 near 20 μM by both representative members 1 and 4. In contrast to the biochemical protease profiling study, clear SAR was observed in the functional GPCR screens, where five GPCRs were modulated by brintonamides to varying extents. CCR10 was potently modulated by brintonamide D (4) with an IC50 of 0.44 μM. Due to the significance of CCR10 in cancer progression we demonstrated the ability of 4 at 10 μM to inhibit CCL27-induced CCR10-mediated proliferation and the migration of highly invasive breast cancer cells.

Conclusions:
We demonstrated for the first time the discovery of cyanobacterial compounds with dual protease and GPCR modulatory activities, which may have a therapeutic potential in targeting invasive breast cancer. Future studies could be directed towards the design of improved small molecule antagonists of CCR10, which could be utilized as valuable probes to understand the downstream cellular pathways mediating the antimetastatic effects in breast cancer.

Key Words: Cyanobacteria; Breast cancer; GPCR;

Funding Agency: The research was supported by the National Institutes of Health grant R01CA172310

Medicine

68

Potential Clinical Utility of Galectin-3 as a Biomarker of Prediabetes and Complications of Type 2 Diabetes Mellitus

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Introduction:
To determine its utility as a biomarker, this study explores the diagnostic usefulness of Galectin-3 (Gal3), in subjects with Type 2 Diabetes (T2D) and their first degree relatives (FDR).

Methods:
Fasting Gal3, glucose and high-sensitivity C-reactive protein (hs-CRP) were measured in 217 T2D patients and 226 FDR. Subjects were classified using homeostasis model assessment of insulin resistance (HOMA-IR). FDR were classified as normal, prediabetes or diabetic using HbA1c. T2D were classified by presence or absence of retinopathy, neuropathy (autonomic (AN) and sensory (SN) and as normo- (NAO, ratio <30mg/g) or micro-albuminuria (MIA, ratio 30-300mg/g) using urine microalbumin to creatinine ratio. Univariate and multivariate analyses were used to compare subjects and binary logistic regression with determination of the Odds Ratio (OR) analyses were used to evaluate associations with T2D complications. Receiver-Operating Characteristic Curve (ROC) analysis was used to evaluate diagnostic utility of Gal3.

Results:
Gal3 showed significant correlations with waist circumference, HbA1c, glucose and hs-CRP. In FDR, mean Gal3 levels increased stepwise with worsening glucose tolerance – normal (7.6ng/ml); prediabetes (8.1ng/ml) and diabetes (9.1 ng/ml) and subjects with HOMA-IR >2 had significantly higher mean Gal 3 than subjects with HOMA-IR < 2 (10.2 vs 9.3 ng/ml). In FDR, ROC analysis showed that Gal3 cut-off value of 8.7 ng/ml has 77% sensitivity and 67% specificity for detection of diabetes. In T2D, binary logistic regression analysis showed Gal3 was significantly associated with hypertension (HT), MIA, AN, SN and retinopathy. ROC analysis showed that Gal3 significantly detects HT, MIA, AS and SN. Gal3 >9.7 ng/ml was associated with presence of T2D complications with sensitivity and specificity >70%.

Conclusions:
Gal3 is significantly associated with diabetes in FDR and is a strong predictor of associated complications in subjects with T2D.

Key Words: Galectin-3; Biomarker; Complications of Type 2 Diabetes Mellitus;

Funding Agency: Grant Support: KFAS-2011-1302-01

Medicine

69

The Combined Infection of Human Adenovirus and Rotavirus is the Leading Cause of Gastroenteritis Among Children in Kuwait

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Introduction:
Gastroenteritis is the second leading cause of death among infants and children worldwide that is characterized by diarrhoea, vomiting, fever, and abdominal pain. Many pathogens can cause gastroenteritis including bacteria, viruses, and parasites. However, viruses cause more than 75% of the cases. Rapid identification of the causative agent is crucial to start an appropriate treatment and save lives. Multiplex Real-Time PCR is a simultaneous detection method that helps in detecting viruses in a short period.

Methods:
Stool samples were collected from 84 children aged one month to ten years old (59; 70.2% males and 25; 29.7% females) attended to Al-Amiri and Mubarak Al-Kabeer hospital from January to December 2017 with signs and symptoms of gastroenteritis. The nucleic acid was extracted from each sample using the Roche ®MagNA Pure LC system and multiplex Real-Time PCR was performed using the Fast Track Diagnostic kit (FTD).

Results:
Of the 84 stool sample tested, 51 (60.7%) samples were found to be positive for viruses causing gastroenteritis. The dual infection of human adenovirus and rotavirus was the most predominant infection (27.4%), while a single infection of rotavirus was the second most predominant infection (19.6%). However, a single infection of adenovirus was detected in 17.6% of the samples.

Conclusions:
The study showed that the multiplex Real-Time PCR method using FTD kit is a beneficial technique in detecting viruses causing gastroenteritis. Metagenomics analysis using Next Generation Sequencer was another major part of this study to detect viruses causing gastroenteritis, however, the results are not presented.

Key Words: Diarrhea; Viruses; Multiplex Real Time PCR;

Funding Agency: kuwait University (YM10/17)

Medicine

70

Circulatory levels of RANKL, OPG and oxidative stress markers in postmenopausal women with normal or low BMD

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Introduction:
In addition to some well-characterized factors, receptor activator of nuclear factor □B ligand (RANKL), osteoprotegrin (OPG) and oxidative stress markers have also been suggested to contribute to bone loss in osteoporosis seen in menopause. However, there is much controversy in the possible association between these markers and bone mineral density (BMD). This study aimed at measuring circulatory levels of these parameters in postmenopausal women with normal and low BMD.

Methods:
The study population included 71 post-menopausal women of whom 25 had normal BMD, 31 had osteopenia and 13 had osteoporosis. Serum levels of RNAKL, OPG and five oxidative stress markers (Catalase, Peroxiredoxin 2 (PRX2), Superoxide dismutase 1 (SOD1), Superoxide dismutase 2 (SOD2) and Thioredoxin (TRx1)) were measured using the Multiplex system and read on the Magpix ELISA platform.

Results:
As compared to women with normal BMD, women with low BMD had a statistically significantly lower median serum levels of OPG, Catalase, SOD2 and PRX2 (p=0.004, 0.031, 0.044 and 0.041 respectively). While levels of RANKL were not different between the two groups, the RNAKL/OPG ratio was significantly higher in women with low BMD (p=0.027). However, levels did not correlate significantly with BMD of the hip or spine.

Conclusions:
These data provide insights into the possible role of OPG, RANKL and oxidative stress on the pathogenesis of postmenopausal osteoporosis. However, the lack of association between studied markers and BMD may indicate that osteoporosis is complex and multivariate.

Key Words: Osteoporosis; RANKL; Stress;

Funding Agency: This study is supported by Kuwait Foundation of Advancement of Science (KFAS) projects no. 2013-1302-02 and PR17-18SL-01.

Medicine

71

Donor source and its impact on graft and patient survival in pediatric renal transplant recipients.

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Introduction:
Evaluation of the impact of kidney donor sources on the outcome of renal transplantation is not adequately studied.
The aim of the study:
We aimed to compare the long-term outcome of kidney transplantation from different sources among a pediatric recipient population.

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

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

Conclusions:
Pediatric renal transplants have good long-term patient outcome whatever the donor source is; with poorer cadaveric grafts and a higher risk of NODAT among emotionally related

Key Words: Kidney Transplant; Pediatric; Donor Source ;

Funding Agency: None

Medicine

72

Fatal and Near Fatal Thunderstorm Asthma Epidemic in a Desert Country

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Introduction:
Background: Reports of thunderstorm asthma in the Middle East are few. This study is the first to report on cases of near fatal and fatal thunderstorm asthma in Kuwait on December 1st 2016.

Methods:
we conducted a chart review and interview with adult patients admitted to Mubarak Al-Kabir Hospital with near fatal asthma, defined as an exacerbation requiring intubation and mechanical ventilation or hypercapnia with a $PaCO2 \geq 6$ kPa. Information including patient age, gender, occupation, asthma history, medication usage and clinical outcome was collected. For fatal asthma cases, patients' data was collected from the Forensic Department at the Kuwait Ministry of Interior.

Results:
17 patients were admitted with near fatal asthma. 15 patients (93.8%) had a prior history of asthma, with an average duration of 9 years. 5 patients (33.3%) reported receiving a corticosteroid inhaler from their physician. 15 patients (93.8%) reported relying on a short-acting β2 agonist alone to manage their asthma. 11 patients (68.8%) reported being outdoors during the storm. Eleven patients were diagnosed with fatal asthma.

Conclusions:
patients' outdoor location is a contributing risk factor to thunderstorm asthma exacerbation. Poorly controlled asthma is another risk factor associated with thunderstorm asthma, especially in patients not adhering to strict inhaled corticosteroid therapy during the pollen season in Kuwait. Our study also demonstrated the rapid onset of asthma symptoms for cases of both near fatal and fatal thunderstorm asthma, emphasizing the need for better awareness of the potential risks associated with this form of asthma among susceptible patients.

Key Words: Thunderstorm asthma; Kuwait; asthma;

Funding Agency: None

Medicine

73

Effect of Accreditation on Patient Health

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Introduction:
Every number in Medical diagnostic tests is a life. Interest in accreditation is growing in developing countries, but there is little published information on the impact of Accreditation on the Quality of Healthcare Services is crucial. Increased focus on improving patient outcomes, safety and quality of care advocate healthcare provider to adopt standardized protocols for evaluating healthcare.
Objectives and Aim
The objectives of this study give an insight into the crucial requirement in fulfilling the minimum laboratory accreditation standards protocols in medical laboratories and diagnostic examinations. The aim of this present study is to control and optimize, in a permanent manner, good professional practice by internationally established standards to maintain accuracy and reliability to maintain patient health.

Methods:
The path to achieve accurate results is by implementing quality standard protocols through the whole three phases of investigation cycles (pre-analytical, analytical and post-analytical phases) starting from patient identification, collection of samples and various diagnostic analysis using systematic standards protocols used in methodologies, reagents, equipments, internal and external proficiency testing. In addition implementing personnel, safety and overall management policies.

Results:
Policies and procedures were written in all three phases pre-analytical, analytical and post-analytical phases of analysis and all procedures, equipments and machines were validated and calibrated and employees demonstrated the crucial aspects of evaluating a checklist through each examination.

Conclusions:
Accreditation improves quality and minimizes errors and mistakes which affect patient's health and recovery. Non accredited laboratory not only jeopardizes the patient health but risks the compromise safety of workers. All health sectors of various categories should implement quality control standards for patient health care.

Key Words: Accreditation; Quality Control; Quality Standard Protocol;

Funding Agency: None

Medicine

74

Use of Traditional Medicine for Primary Headache Disorders in Kuwait.

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Introduction:
Objective: Traditional Medicine (TM) is widely accepted to be used for the treatment of headache disorders in Kuwait however, research data remain poorly documented. We aimed to study the frequency of TM use and its efficacy in primary headache patients.

Methods:
This is a cross sectional self-reported efficacy study, conducted in Headache clinic in Kuwait over 6 months. Patients diagnosed with primary headache disorders of both genders aged from 18-65 years were included. Self-reported questionnaire was used. TM queried included blood cupping, head banding and, herbal medicine.

Results:
A total of 279 patients were included. The mean age is 40.32 ± 11.75 years; females represented 79.6%. Most patients (n=195; 69.9%) reported the use of TM before presentation, mainly Hijama (47.3%). All patients with chronic headache and most of episodic migraine patients (90.4%) used TM while only (31.5%) of Tension type headache sought TM; p <0.047. Patients who sought TM had more frequent episodes of headache, longer duration of attacks and higher number of days of analgesic-usage respectively over last 3 months before presentation (9.66 ± 7.39 versus 4.14 ± 2.72; p < 0.001), (41.23± 27.76 versus 32.19 ± 23.29; p <. 0009), (8.23+7.70 versus 3.18± 3.06; p < 0.001). At 3 months after the final TM session, there was no significant reduction in frequency of headache days/month (9.19 ± 7.33 versus 8.99± 7.59; p <0.50), days of analgesic use/month (7.45± 7.43 versus 6.77± 6.93; p <0.09) and duration of headache (41.23 ± 27.76 versus 41.59 ± 27.69; p <0.78). However, there was a significant reduction in severity of headache (p <0.02). Few patients (17.9%) reported adverse events. Most of TM cohorts were not satisfied after receiving TM.

Conclusions:
TM was widely used in Kuwait for primary headache. Physicians treating headache should be aware of this to monitor potential benefits or adverse events of TM. The usage of TM was not effective in reducing headache attacks and severity.

Key Words: Headache; Traditional Medicine; migraine;

Funding Agency: None

Medicine

75

Prevalence of Primary Headache Disorders in Kuwait- Hospital based study.

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Introduction:
Objective: To determine the prevalence of primary headache disorder at a tertiary center in Kuwait.

Methods:
A cross-sectional hospital-based study was conducted between 1st January 2015 up to 31st December 2015 to assess patients aged 12-65 years old who were referred to neurology tertiary hospital. The International Classification of Headache Disorders (ICH), 3rd edition-beta, was used to determine the types of headache. Patients with secondary headache were excluded.

Results:
A total of 27825 patients were referred to the tertiary hospital; in 2015; of whom 3215 were diagnosed as primary headache disorder. Primary headache prevalence was 11.55% with female predominance 71.7%. Prevalence of primary headache in males was 7.38% versus 14.88%in females ($P < 0.0001$). Mean age was 39.28 ± 11.54 years. Most of them 37.7% in the age group 31-40 years. Episodic migraine was the most prevalent at 46.6% followed by tension-type headache (24.7%), chronic migraine (14.5%), cluster headache (7.4%), medication overuse headache (6.1%) and paroxysmal hemicranias (0.7%). Mean time for referral was 4.25 ± 2.85 years from the headache onset, which was significantly longer among patients diagnosed with medication overuse headache (9.37 ± 9.77) and chronic headache (8.45 ± 2.10) versus episodic migraine (3.41 ± 1.75); ($P < 0.0001$). Most patients were managed by either general practitioners or ENT specialists prior to referral. Discussion: Although tension-type headache accounts for the largest percentage of total headaches in population-based studies, migraine shows higher rates in neurology clinics. In our study migraine is the most frequent primary headache. 17. 52 % of our patients consulted a General practitioner for their headache. This could have an impact on cornification of headache.

Conclusions:
Primary headache prevalence in Kuwait is comparable to international figures. Improving the awareness of the general practitioners and other specialty may reduce the chronicity.

Key Words: Headache; prevalence; migraine;

Funding Agency: None

Medicine

76

Impact of the pretransplant dialysis modality on kidney transplantation outcomes

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Introduction:
The role of the pre-transplant dialysis modality on the outcomes of kidney transplantation remains obscure.
The aim of the study:
To evaluate the impact of pre-transplant dialysis modality, namely hemodialysis (HD) or peritoneal dialysis (PD) on the outcome of a renal transplant.

Methods:
Database of our renal transplant recipients in Hamed Al-Essa organ transplant center was retrospectively analyzed. There were 2089 patients included in our study and were categorized according to the type of pre-transplant dialysis into group 1 (HD, n=1799, 86.1%) and group 2 (PD, n=290, 13.9%). The pre-transplant characteristics, complications during kidney transplantation and post-transplant outcomes were statistically analyzed and compared between the HD and PD groups. The primary outcomes were graft lost and patient survival. The secondary outcomes were events during and after transplantation.

Results:
Most of the patients were males (1333, 63.8%)in their forties with mean age 40.7±15.4 years. Diabetic nephropathy 77 (26.6%)was the commonest cause of ESKD in group 2 while glomerulonephritis 515 (28.6%) was the commonest in group 2. ($p<0.001$). Prevalence of pre-transplant hypertension was significantly higher in group 1 while diabetes was more common in group 2 ($p<0.001$).The two groups were comparable regarding ischemic heart disease, pre-transplant virology profile, and immediate post-transplant graft function ($p>0.05$). CNI free regimen was used more frequently in group 2 (5.6%). Post-transplant diabetes was more prevalent in group 2 (20%) but post-transplant viral infections and even graft outcome were comparable ($p>0.05$). However, patient outcome was better in group 1 (6.5% vs. 10.38% mortality, $p<0.001$).

Conclusions:
Pre-transplant PD contributed to higher risks of death when compared with HD possibly due to the higher prevalence of diabetes in that group.

Key Words: PRE TRANSPLANT; HD; PD;

Funding Agency: None

Medicine

77

Graft function at the time of transplantation: risk factors and impact on long term outcome in pediatric renal transplant recipients

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Introduction:
A successful kidney transplant is the most effective renal replacement therapy for children with end-stage renal disease (ESRD). Delayed graft function has detrimental effect on graft and patient outcomes as adults.
Aim of the study:
Therefore, this study was conducted to assess variable peri-transplant conditions that may affect the postoperative graft function and its impact on long-term patient and graft survivals in our pediatric recipients.

Methods:
Ninety-one pediatric kidney transplant recipients were included in this retrospective study (53 males and 38 females). The patients were categorized into three groups: group 1 (with immediate graft function, 76.9%), group 2 (with slow graft function, 9.9%) and group 3 (with delayed graft function, 13.2%).The impact of pre-transplantation co-morbidities (infections especially HBV, HCV, CMV, TB, anemia, urologic problems, hypertension and DM), bone disease, dialysis type, donor type, donor origin, type of induction and maintenance immunosuppression, NODAT and post-transplantation BK and CMV infection on the graft function were studied. Graft and patient outcomes were evaluated in relation to the graft function at the time of transplantation.

Results:
Recorded graft function was significantly affected by donor type (P=0.005), donor origin (P=0.002), and type of induction therapy (P=0.013).No significant difference was found among the three groups in relation to pre-transplantation infections (HBV, HCV, CMV, and TB), anemia, urologic problems, hypertension, DM, bone disease, dialysis type. The three groups were matched regarding post-transplantation type of maintenance immunosuppression, NODAT, BK or CMV infection. Moreover, the three groups were comparable regarding both graft and patient outcomes.

Conclusions:
Donor type, donor origin, and type of induction therapy are major determinants of postoperative graft function, although none has detrimental effect on long-term patient or graft

Key Words: Renal transplant; Graft function at time of transplantation; Pediatric renal

Funding Agency: None

outcomes
Medicine

78

Comparison of compliance of kidney transplant recipients to their medications and recommended life style in transplant centres in the Middle East.

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OTC, Sabah Area, Kuwait; MUNC, Mansoura, Egypt

Introduction:
Poor compliance to medications and life style modifications among kidney transplant recipients is a serious health care problem. Despite its severe complications, poor adherence can be found in more than 50% of kidney recipients. It was responsible for 35% or more of documented graft losses or general graft failures. Comparative studies concerning compliance of such patients are lacking in Middle East region.
Aim of the study:
We aimed to assess and compare the compliance of Kuwaiti vs. Egyptian renal transplant patients to medications and life style modifications.

Methods:
One hundred transplant patients in Egypt and one hundred and twenty in Kuwait were interviewed using the same questionnaire that covered patient history, demographic data and compliance with medication and daily nutrition habits. Moreover, it evaluated the patient personal hygiene, physical activity, and infection prevention.

Results:
Kidney transplant patients in Egypt were 20% more compliant to immunosuppressant agents ($p<0.0001$) compared to Kuwaiti group of patients, no significant difference was detected in the compliance of other medications types. Egyptian patients were more compliant to low fat diets than Kuwaiti. However, compliance with low carbohydrate and low salt diets were comparable in the two groups. The physical activity in Kuwaiti patients was 34% less than Egyptians ($p < 0.001$). Egyptians were more compliant to the winter shower but they were using crowded transportation more frequently ($p < 0.002$). Male patients and living related donors were more compliant to medications in both groups ($p < 0.04$). Kuwaiti patients' $\geq$ 40 years of age were more compliant to medications than younger patients; but age has no significant impact on Egyptian patients' compliance.

Conclusions:
Patient compliance with medications and life style were considered moderate in both communities. We have to highlight the compliance importance to transplants especially young women.

Key Words: renal transplant; compliance; outcome;

Funding Agency: None

Medicine

79

Effectiveness of Ketogenic Diet in Children with Epileptic Disorders: A Meta- Analysis and Systematic Review

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Introduction:
Epilepsy is a central nervous disorder that affects children at great magnitude. Cognitive, emotional, and behavioral symptoms are common. The ketogenic diet (KD) is as a dietary treatment option, particularly for intractable seizures. The effectiveness of KD in the management of epileptic disorders (ED) varies between studies.This research was performed to know the effectivness of KD in reducing ED.

Methods:
A literature search was performed using relevant key terms to identify studies published from 2007 to 2017 on KD, ED, and children. Studies were identified through an electronic search of Embase, MEDLINE, and ProQuest databases. The main outcomes and measures were a 50% reduction of seizure episodes at one month, three months, six months and twelve months of treatment. Data were pooled using random effects meta-analysis technique.

Results:
Fourteen studies were included in the meta-analysis and systematic review including a total of 1276 participants. Reductions of seizure episodes by ≥50% using KD were 22.9%, 49.9%, 37.9% and 30.8% for 1 month, 3 months, 6 months and 12 months of treatment respectively.

Conclusions:
There is some evidence that KD is effective in the management of some cases with ED. Reduction of seizure episodes ≥50% is seen mainly at the first three months and declines after that, possibly due to the side effects or non-adherence with KD diet. The decision to adopt this type of diet should be based on both short-term and long-term goals, taking into consideration the cost and safety

Key Words: Ketogenic diet; Epilepsy; meta analysis;

Funding Agency: None

Medicine

80

Simultaneous Kidney-Pancreas Transplantation: Kuwait single center experience

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Introduction:
Pancreas-kidney transplantation (PKT) is the best therapeutic option for diabetic patients with end-stage renal failure.
The aim of the work:
We aimed to describe early Kuwait experience regarding simultaneous (KPT).

Methods:
Data of patients who underwent simultaneous kidney-pancreas transplantation were collected including their demographic and clinical-laboratory parameters. All patients were suffering type 1 diabetes. We have paid attention to patient and graft outcome, rejection episodes and associated complication. Rejection of the pancreas was diagnosed by combined clinical and laboratory parameters while kidney rejection was confirmed by biopsy.

Results:
From January 2012to December 2014, 9 SKP transplants (2 women and 6 men) have been performed at Hamed Al-Essa Organ transplant center of Kuwait. The median age of recipients was 28years, with a range of 25 to 36 years. One-year patient survival rate was 100% while the graft survival was 95% for the pancreas graft and 90% for the kidney graft. One pancreas was lost in the first two weeks due to a graft artery thrombosis. All patients showed normalization of their blood sugar within one week after transplantation and remain so even at the time of rejection (2 cases). The mean creatinine was 82 micromol/L at 1 year and 126 micromol/L at two years follow up. We reported biopsy-proven rejection in 2 patients which were treated successfully according to our antirejection protocols (pulse steroid for T-cell mediated rejection; and plasma exchanges, IVIG and rituximab for antibody-mediated rejection).

Conclusions:
A successful pancreas transplant program can be established in a single small-volume institute. A meticulous surgical technique and early anticoagulation therapy are required for further improvement in the outcomes.

Key Words: Kidney Pancreas Transplant; Kuwait; Study;

Funding Agency: None

Medicine

81

Safe and effective treatment of persistent hypercalcemia and hyperparathyroidism with cinacalcet in renal transplant recipients

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Introduction:
The calcimimetic cinacalcet offers an attractive alternative to parathyroidectomy for treating hypercalcemia with persistent hyperparathyroidism in renal transplant recipients (RTR). The objective of this study is to evaluate the efficacy of cinacalcet in RTR with hypercalcemia and persistent hyperparathyroidism and its safety after long-term use.

Methods:
Cinacalcet at a dose of 30 to 90 mg was prescribed to 15 RTR (8 women, 7 men) with a mean age of 46.6 years (range = 23 to 68) and hypercalcemia with hyperparathyroidism. Cinacalcet therapy was started at a mean of 35.4 (range=4 to 153) months post-transplant and period of follow up after treatment was 20.5 (range = 6 to 54) months.

Results:
Treatment with cinnacalcet effectively reduced levels of, serum calcium from 2.70 ± 0.07 to 2.33 ± 0.22 mmol/L in 6 months (P< 0.001) and 2.31 ±0.17 mmol/L in 12 months (P< 0.001); intact parathyroid hormone (iPTH) from 74.8 ± 34.82 to 22.2 ± 12.34 pmol/L in 6 months (P< 0.001) and 19.28 ± 8.08 pmol/L in 12 months (P< 0.001) and raised levels of serum phosphate from 0.92 ± 0.22 to 1.14 ± 0.29 mmol/L in 6 months (P<0.001) and to 1.11 ± 0.26 mmol/L in 12 months (P= 0.001). Renal function remained stable with pretreatment, 6 month and 12 month post treatment serum creatinine levels of 127 ± 72.4, 130 ± 80.45 (P= 0.381), 131.2 ± 95.75 (P= 0.331) micromol/L and estimated glomerular filtration rates (eGFR) of 72.6 ± 29.23, 74.6 ± 32.39 (P = 0.406) and 75.82 ± 36.34 (P = 0.816) ml/min. Immunosuppressant drug levels remained unchanged and there were no rejection episodes or any significant adverse effects described.

Conclusions:
Cinacalcet was safe and effective in renal transplant recipients with hypercalcemia secondary to hyperparathyroidism with no evidence of declining renal function or limiting side effects.

Key Words: Kideny Transplant; Hypercalcemia; Cinacalcet ;

Funding Agency: None

Medicine

82

Cystinosis in pediatric renal transplant recipients: case control study from Kuwait

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Introduction:
Cystinosis is an autosomal recessive lipsosomal storage multisystem disease characterized by deficient cystenosin that result in cystine accumulation in the lysosomes. It can lead to end stage kidney disease in most of cases before 20 years age. We aimed to evaluate the outcome of renal transplantation in pediatric renal transplant with cystinosis.

Methods:
Data of renal transplant recipients with Cystinosis (n=15) in Hamed Al-Essa organ transplant center were retrospectively evaluated against matched control cohort (n=128).

Results:
Most of cystinosis patients (53.3%) were Kuwaiti males in their second decade of life with their mean age 13.3±3.9 vs. 68% and mean age of 14 ±3.1 years in the control group. The two groups were comparable regarding type of donor, pre transplant comorbidities ($p>0.05$). The percentage of cystinosis cases with immediate graft function was significantly higher than the control ($p=0.024$), and this was reflected by relatively lower basal creatinine but did not rank to significance (>0.05), and they received significantly less induction therapy ($p=0.002$). The two groups were maintained on comparable immunosuppressive regimen and we did not find any significant difference between the two groups regarding post-transplant complications like post-transplant diabetes, viral infections, graft function at 1, 3,5,10 years and the both graft and patient outcomes were comparable ($p>0.05$).

Conclusions:
Under standard immunosuppression therapy with steroid calcinurine inhibitors, mycofenolate mofetil, renal transplant is safe with good long term outcome in patient with cystinosis .

Key Words: Kideny Transplant; Cystinosis; pediatric;

Funding Agency: None

Medicine

83

Impact of Human Leukocyte Antigen-DR Mismatch in Elderly Renal Allo-Transplant Recipients Regardless Donor Sources: single center experience form the Middle East

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Introduction:
Kidney transplant is the optimal therapy for the elderly with end-stage renal disease, however, renal graft survival is limited because of immunologic and non-immunologic factors. New trends suggest using human leukocyte antigen-DR (HLA-DR) mismatched grafts. The HLA mismatches may correlate with risk of death with a functioning graft because of the requirement for higher immunosuppression therapy. The most frequent causes of death with a functioning graft were infection, cardiovascular disease, and malignancy.
The aim of this work was to assess the effect of human leukocyte antigen-DR mismatch on the outcome of elderly renal transplant recipients, regardless of the source of renal allografts.

Methods:
In this retrospective analysis of elderly patients (n= 315), they were divided according to HLA-DR matching into 3 groups: patients with full DR mismatch represented group 1 (n= 83); patients with one DR mismatch represented group 2 (n=191) and those with full DR match represented group 3 (n=41). The median age was 65; ranged from 60 to 81 years old and 201 (64%) were males. With optimized immunosuppression protocols, long-term graft and patient outcomes were assessed.

Results:
We found that post-transplant complications were comparable in the 3 groups, without a significant increase in post-transplant infections, hypertension, diabetes mellitus or malignancies, especially in the full human leukocyte antigen-DR-mismatched group. Moreover, we found no significant difference in the 3 groups regarding long-term graft or patient survival (p values were 0.615 and 0.36 respectively).

Conclusions:
After optimization of immunosuppressants, human leukocyte antigen-DR-miss-matched donors can be safely accepted for elderly kidney transplant recipients with comparable long-term patient and graft survival.

Key Words: Kideny Transplant; Mismatch; Eldery ;

Funding Agency: None

Medicine

84

Public interest in genomic predisposition testing for susceptibility to heart disease: A preliminary survey in Kuwait

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Introduction:
A family history of cardiovascular disease is a significant factor in the evaluation of a given individual's cardiovascular risk. Genetic variation in some genes common to members of the same family may increase predisposition to disease at an early age and thereby simulate a genetic risk factor. Genetic testing and family history assessment can be used as an aid in the prevention of common chronic diseases.
Objective: The aim of this study is to determine attitudes, knowledge and interests in a sample of the general public that had not received detailed information about genetic tests, towards offering genetic testing and family history-based risk assessment for common chronic disease prevention.

Methods:
Cross-sectional questionnaire survey of a panel representative of the Kuwaiti population. The questionnaire was given to a sample population of male and female gender, aged 30-70.

Results:
Eighty seven percent of respondents expressed interest in being tested for genetic susceptibility to heart disease. Men, had a better acceptance of 56%, while women 33%, people aged 40-50 years had 65 % willingness for genetic testing, those with less education, and those with a family history were most interested in genetic testing for heart disease. People with different educational level completed, elementary, high school, university indicated an interest of 20%, 56%, 24%, respectively, but no family history, was associated with interest.

Conclusions:
Variations in many genes, each with a small effect, may trigger susceptibility to several common diseases, such as heart disease. Interest in genetic testing for susceptibility to heart disease was high in the population sample tested. The high level of initial interest in the general public found in this study supports the need for a public education program around genetic testing for multifactorial diseases.

Key Words: Predisposition; Genetic; Heart;

Funding Agency: None

Medicine

85

An increase in the prevalence in Multiple Sclerosis has moved Kuwait to a high-risk zone.

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Introduction:
Objectives: To update the prevalence and incidence rates of MS among Kuwaiti nationals

Methods:
This cross-sectional study was conducted by extracting data from the national registry. Patients with a diagnosis of MS according to 2017 revised McDonald criteria were identified. Patients with possible MS or other demyelinating disorders were excluded. Population census with a cutoff on 30th June 2018 was obtained from Kuwait Bureau of Statistics to determine the number of people at risk. The crude, age- and sex-specific prevalence and incidence rates among Kuwaiti Patients were calculated.

Results:
1722 MS patients were identified of which 1454 (84.4%) were Kuwaitis. Women represented 66.8% of the cohort with female to male ratio of 2.01:1. The mean age of the cohort was 36.7 ±10.7 years while the mean age at onset and disease duration were 27.2 ±8.8 and 10.1 ±7.3 years respectively. The point prevalence of MS was 104.88 (95% CI: 89.5-121.9) per 100,000 persons, which increased 1.6 times since 2012. Women had a prevalence of 137.1 (95% CI: 129.3-145.3) compared to men 71.2 (95% CI: 65.3-77.6). The prevalence among the age ranges of ≤19, 20–29, 30–39, 40-39, 50-59, and ≥ 60 years were 15.5, 147.8, 271.4, 230.9, 174.4 and 36.9 per 100,000 persons respectively. The incidence of MS was 5.39 (95%CI: 4.3-6.8) per 100,000 persons. The 5-year incidence was 6.4, which has been stable since the last reported rate.

Conclusions:
There is an ongoing increase in the prevalence of MS. According to the Kurtzke geographical distribution, Kuwait is considered a high-risk geographical area for MS. Women had a higher prevalence with a peak among patients aged 30–39 years. The incidence rate has been stable throughout the last 5 years.

Key Words: Multiple Sclerosis; Kuwait; prevalence;

Funding Agency: None

Medicine

86

Medication compliance and life style adherence among renal transplant recipients in Kuwait.

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Introduction:
Kidney transplantation is the optimal treatment choice for end stage kidney disease. This option needs a major change in the patients' life style and requires strict adherence to medications for the rest of their lives.
Aim of study:
We aimed to assess the compliance of renal transplant patients to their medications and life style modifications in Hamed Alessa Kidney Transplant Center, Kuwait.

Methods:
One hundred and twenty renal transplant recipients were interviewed for their life style behaviors after transplantation including transplant medications, daily meals contents, personal hygiene, physical activity, regular out-patient visits, prevention from infection and cancer, in addition to sexual activity. The used questionnaire was created by the faculty of nursing staff, Mansura University, Egypt.

Results:
The majority of the renal transplant patients (69%) were compliant to medications. Risk factors associated with medication poor compliance were Kuwaiti citizens, women, and living unrelated donors ($p < 0.05$). Compliance with medications was associated with less rejection episodes ($p = 0.01$). Only 15% of the participants were compliant to low-salt diet, 8% to low-fat, and 11% to low-carb. One fourth of patients were compliant to daily shower and only 20% were physically active. More than 90% of the patients were regularly visiting the out-patient clinic. Infection prevention compliance was observed in 85% of patients and only 5% were avoiding direct sun exposure. Half of the patients had sexual problems but only half of them were consulting their nephrologists about it.

Conclusions:
Kidney transplant patients in Kuwait had a moderate compliance with medications and most of them were poorly compliant to life style modifications. Assessment before and after transplantation is needed to identify the risk factors to avoid the complications associated with noncompliance.

Key Words: Compliance; Renal Transplant; Outcome;

Funding Agency: None

Medicine

87

Impact of full correction of post-transplant anemia on cardiovascular system in renal transplant recipients receiving erythropoietin stimulating agents: prospective randomized controlled trial.

Torki AO, Gheith O, Najeeb AM, Medhat AH, Abo-Atteya H, Tarek A, Nair P, Hany A, Ahmed M, Ahmed, Abdul-Hameed M

Hamad Alessa Organ Transplant Center

Introduction:
Objectives:
Post-transplant anemia (PTA) might be associated with increased mortality and decreased graft survival and de-novo congestive heart failure.
Aim of the study:
From this prospective randomized controlled study, we aimed to assess the impact of full correction of post-transplant anemia on the cardiovascular system of renal transplant recipients receiving erythropoietin stimulating agents.

Methods:
We recruited 247 kidney recipients with stable graft function in this RCT with 2 groups according to their target hemoglobin (11-12 g/dl, group 1, n=183) and (13:15 g/dl, group 2, n=64). After correction of deficiencies, the target hemoglobin was achieved using ESA. All patients were followed up clinically and by serum creatinine and eGFR monthly for 12 months.

Results:
Diabetic nephropathy was the main cause of end stage kidney disease in group 1 (p= 0.005). The studied groups were comparable regarding pre-transplant co-morbidities. Most patients received thymoglobulin as induction then cyclosporine based immunosuppression. We did not find any significant difference between the two groups concerning post-transplant complications especially cardiovascular events (transient ischemic attacks, stroke, acute coronary syndrome), uncontrolled hypertension, heart failure or arrhythmias (p>0.05). Group 1 showed higher mean blood pressure (p=0.003), lower left ventricular (LV) internal dimensions, higher LV hypertrophy, LV mass, interventricular systolic dimensions (IVSD) and LV mass index after one year of the study (p< 0.05) compared to non-significant changes in group 2 (p >0.05). Moreover, IVSD, mean ejection fraction and fractional shortening were comparable in both groups (p>0.05). Graft outcome was comparable but mortality cases were significantly higher among group 1 (16 cases, 8.7%) (p=0.005).

Conclusions:
Full correction of PTA is associated with stabilized cardiac dimensions indices without any significant cardiovascular comorbidities.

Key Words: Kideny Transplant; Anemia; cardiovascular system ;

Funding Agency: None

Medicine

88

Assessment of quality of life after full correction of post-transplant anemia in renal transplant recipients receiving erythropoietin stimulating agents: prospective randomized controlled trial.

Torki Al-Otaibi, Osama A. Gheith, Medhat A. halim, Ayman M Najeeb, Hasanein Abo-Atteya, Said, Nair P, Ahmed Fathy, Suzan Rida, Zohair Fayad

Hamad Alessa Organ Transplant Center

Introduction:
Recent studies showed positive impact of correction of post-transplant anemia (PTA) on general health, exercise capacity, and physical scores. So we conducted this prospective randomized controlled trial (RCT) to assess quality of life after full correction of post-transplant anemia in renal recipients receiving erythropoietin stimulating agents.

Methods:
We recruited 247 kidney transplant recipients with stable graft function in this RCT with 2 groups according to their target hemoglobin (11-12 g/dl, group 1, n=183) and (13:15 g/dl (group 2, n=64) which was achieved using erythropoietin stimulating agents (ESA). Monthly clinical and laboratory evaluation of kidney graft function was carried out. Quality of life (QOL) was assessed –using 25 and 36 questionnaires-at the start and 12 months.

Results:
The two groups were comparable regarding demographic features apart higher females in group 1 and preponderance of chronic glomerulonephritis in group 2 ($p<0.05$). Most patients received thymoglobulin as induction and most of them were maintained on cyclosporine. We did not find any significant difference between the two groups concerning post-transplant co-morbidities ($p >0.05$), however better graft function was observed in group 2 at 6 months ($p< 0.05$). At 12 months, the assessment of QoL using the Medical Outcomes Study 36-Item Short-Form Health Survey, group 1 showed better post-transplant physical features and higher emotional factors related inactivity at 12 month ($p<0.05$), while group 2 showed significantly higher basal and 12 months activity state ($p=0.05$). Basal inactivity was comparable in group 2 with that at 12 months ($p>0.05$), emotional factors related inactivity was significantly higher at 12 months in group 1. Graft outcome was comparable between both groups ($p=0.125$), ($p=0.005$).

Conclusions:
Quality of life as represented by physical activity was improving by full correction of PTA in renal transplant recipients.

Key Words: Kideny Transplant; Anemia; Quality of life;

Funding Agency: None

Microbiology and Immunology

89

Audit of physician's adherence to the local antibiotic policy guidelines in a tertiary care hospital

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Introduction:
Background: Based on local antibiogram profile for most commonly isolated clinical bacterial strains, antibiotic policy guidelines were prepared in Farwania Hospital (FH) in 2017. This study aims to assess if implementation of treatment guidelines were being adhered to by the physicians in different departments in FH.

Methods:
A prospective observational cross-sectional audit was conducted to measure compliance of physician's for appropriate antibiotic prescribing and adherence to departmental antibiotic policy. An audit form was designed to extract data from in-patients at FH during the month of September 2018. Assessment of adherence to local hospital antibiotic policy was performed by categorizing the indications for the use of antibiotics.

Results:
Of a total of 105 files reviewed, 93 were eligible. Patient demographics showed that 57/93 cases were in the age group of 20-60 y, 53.8% were female, 57% had comorbidities, and 87.1% showed clinical improvement. The median hospital stay was 7 days. With evidence of bacterial infection there was definite indication for antibiotic use in 59% cases whereas pre-operative surgical prophylaxis and medical prophylaxis was indicated in 19% and 1% patients, respectively. On the other hand 10%, 9%, and 2% were categorized as unclear diagnosis, indications not covered in the policy and irrational prescription, respectively. Physician's adherence to antibiotic policy guidelines could be only assessed in 73 cases. Of these 29/73 adhered to all aspects of the policy while 44/73 were found to be non-adherent to one or more aspects. Most adherence was observed in medical (37%) versus 11.1% in surgical wards (p= 0.11).

Conclusions:
Our study showed that the adherence rate of physicians to hospital antibiotic policy was relatively low indicating that these policies have not been implemented sufficiently and further awareness is needed.

Key Words: Audit; antibiotic policy; compliance;

Funding Agency: None

Microbiology and Immunology

90

Retrospective analysis of Candida isolated from various clinical samples

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Introduction:
Candida are normal commensal of human frequently found in skin, gastrointestinal tract, in the female genital system and in the urine of patients with indwelling catheter. Patient at risk are these with breached immunity including neutropenia, corticosteroids treatment, HIV infection and diabetes mellitus. The aim of this study is to calculate prevalence and species distribution of Candida isolated from different clinical sites in Ahmadi hospital between January 2016 and November 2018.

Methods:
A search through Laboratory Information System of all the samples between January 2016 and November 2018 yielding Candida growth. All specimens were cultured on Sabouraud agar in accordance with laboratory standard. Colonies suspicious of Candida will be initially identified by gram stain and differentiated as C. albicans and Non-C. albicans by germ tube. After which, isolates undergo Vitek2 yeast identification system (BioMerieux) according to manufacturer instruction.

Results:
A total 64356 samples received during the study period. Of these, 688 yielded Candida spp. (1%). Most of the isolates came from hospitalized patients 32% particularly form ICU 25% and 86% from non-hospitalized patients. All patients were ≥ 20 years old. Female to male ratio were 3:1. The majority of samples yielded non-albicans (86%) vs C. albicans (14%). The highest isolation rate was from urine samples (31%), followed by High Vaginal Swab (HVS) 30%. The commonest species isolated form urine were non-C.albicans (91%) and C. albicans (9%) . Whereas in HVS the bulk were Candida spp. 84% and C. albicans 16%.

Conclusions:
Laboratories should start speciation and susceptibility testing for Candida. Particularly with raising concern of non-albicans being more frequently isolated, as resistant to antifungal agent is challenging.

Key Words: Candida Albicans; Urine; Non-Candida Albicans;

Funding Agency: None

Microbiology and Immunology

91

In vitro spleen cell cytokine responses of adult mice immunized with a recombinant PorA (major outer membrane protein [MOMP]) from diarrheal pathogen, Campylobacter jejuni

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Introduction:
Information on cytokine profiles and immunity against Campylobacter jejuni infection is lacking. We vaccinated adult mice with PorA of C. jejuni in the intestinal colonization model of infection, and measured cytokines after in vitro stimulation of spleen cells.

Methods:
porA from C. jejuni 111 was cloned and expressed using pQE-30 system (Qiagen). Three doses of PorA were administered to adult BALB/c mice by the intraperitoneal route on a weekly interval. A week later, vaccinated mice and control mice (given phosphate-buffered saline) were orally challenged with C. jejuni 111. Intestinal colonization and quantitative fecal excretion of C. jejuni 111 were studied for eight days for vaccine protection. Serum IgG and IgA, and fecal IgA antibodies to PorA were measured by ELISA. In other mice, a week after vaccination, harvested spleen cells were stimulated with PorA, and cytokines were measured using ELISA kits (for IL-4 and IL-8; MyBiosource) and a multiplex mouse cytokine assay kit (for other cytokines listed in Results; Millipore & Luminex).

Results:
Vaccinated mice had less colonization and reduced C. jejuni 111 excretion, and higher levels of antibodies compared to control mice. The levels of pro-inflammatory cytokines (PICs), IL-12, TNF-α, IL-17A and IL-17F were similar in control and test mice. The levels of PICs, IL-2 and IFN-γ were higher in control mice than in test mice, and the levels of PICs, IL-8 and IL-1β were higher in test mice than in control mice. Among the two anti-inflammatory cytokines (AICs), the levels were similar for IL-10 but higher for IL-4 in test mice than in control mice. The PIC to AIC ratios showed a bias towards an anti-inflammatory response.

Conclusions:
Vaccination with PorA showed protection against C. jejuni. An AIC bias in vaccinated animals favors the known role of antibodies in protection. The spleen cytokine levels may be used as markers of protection in the mouse model.

Key Words: Campylobacter jejuni; Cytokines; Vaccine;

Funding Agency: Kuwait University grant no. MI03/13

Microbiology and Immunology

92

In vitro activity of newer and conventional antimicrobial agents, including fosfomycin and colistin, against selected gram-negative bacilli in Kuwait

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Introduction:
Limited data are available on susceptibilities Gram-negative bacilli to some of the antimicrobial agents in Kuwait. The in vitro activities of newer antibiotics, such as, ceftolozane/tazobactam (C/T) and ceftazidime/avibactam (CZA) along with some "older" antibiotics, for example fosfomycin (FOS) and colistin (CL) were determined against selected strains (resistant to ≥ 3 antimicrobial agents) of Escherichia coli, Klebsiella pneumoniae, and Pseudomonas aeruginosa.

Methods:
Minimum inhibitory concentrations (MIC) were determined by Clinical and Laboratory Standards Institute microbroth dilution.The E. coli (n=46), K. pneumoniae (n=39), and P. aeruginosa (n=48) were tested.

Results:
Results showed that E. coli isolates with $MIC_{50/90}$, 0.5/1 µg/mL for CL; 4/32 µg/mL for FOS; 0.25/32 µg/mL for C/T; 0.25/8 µg/mL for CZA, exhibited susceptibility rates of 95.7%, 97.8%, 76.1%, and 89.1%, respectively. On the other hand, K. pneumoniae strains with $MIC_{50/90}$, 0.5/1 µg/mL for CL; 256/512 µg/mL for FOS; 2/128 µg/mL for C/T; 0.5/128 g/mLfor CZA showed susceptibility rates of 92.3%, 7.7%, 51.3%, and 64.1%, respectively. P. aeruginosa isolates with $MIC_{50/90}$, 1/1 µg/mL for CL; 128/128 µg/mL for C/T; 32/64 µg/mL for CZA presented susceptibility rates of 97.9%, 33.3%, and 39.6%, respectively.

Conclusions:
Higher MICs were detected against most of the antibiotics. However, CL retained efficacy at low MICs against most of the isolates tested and could be used to treat infections by some multidrug-resistant Gram-negative bacilli.

Key Words: in vitro activity; Gram-negative bacilli; antimicrobial agents;

Funding Agency: None

Microbiology and Immunology

93

Prevalence and Antimicrobial Susceptibility Patterns of Invasive Escherichia.coli and Klebsiella pneumoniae Infections in Neonates at Maternity Hospital in Kuwait.

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Introduction:
Background: Septicemia is a major cause of morbidity and mortality of newborns worldwide. In this retrospective study we evaluated the prevalence and antimicrobial susceptibility of K. pneumoniae and E.coli isolated from neonates admitted to NICU at Maternity hospital Kuwait.

Methods:
We reviewed the data of 1180 neonates with gram negative sepsis admitted to NICU (152 beds) at Maternity hospital from February 2013 till October 2018 for the presence of E.coli or K. pneumoniae. The bacterial identification was done by Vitek 2, antimicrobial susceptibility testing done by E test and all isolates were tested for extended spectrum β-lactemase (ESBL) production.

Results:
A total of 380 isolates of E. coli (n=103) and K. pneumoniae (n=277) were analyzed. The yearly prevalence was 3.7%, 2%, 3.5%, 4%, 5% and 8% for E. coli and 8%, 10%, 11%, 10%, 12.5%and 14% K. pneumoniae for 2013, 2014, 2015, 2016, 2017 and 2018, respectively. Both species showed susceptibility to amikacin, meropenem, imipenem and piperacillin-tazobactam. Susceptibility rates to cefotaxime were 78%, 67%, 40%, 63%, 74% and 64% for E. coli and64%, 48%, 50%, 46%, 53% and 67% for K. pneumoniae. Overall susceptibility to ceftazidime was 80% for E. coli and 62% for K. pneumoniae. E. coli showed high susceptibility rate to gentamicin except in 2015 and 2018where it reached 77% whereas it was variable for K. pneumoniae (57%, 2013; 88%, 2014; 57%2015; 91%,2016; 87%, 2017 and 82.5%, 2018). The yearly prevalence of ESBL producing strains was22%, 33%, 18%, 42%, 15%, and 32% for E. coli and 26%, 46%, 42%, 50%, 40% and 35% for K. pneumonia over study period.

Conclusions:
The alarming increase in Gram negative neonatal sepsis particularly due to E. coli and K.pneumoniae is a major concern. The prevalence of ESBL producing E. coli and K.pneumoniae presents a significant problem in our NICU since they have potential to cause serious infections if not promptly detected and contained.

Key Words: Gram negative sepsis; ESBL; Neonates;

Funding Agency: None

Microbiology and Immunology

94

Seroprevalence of Toxoplasma gondii Infection among pregnant women in Kuwait

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Introduction:
Toxoplasmosis is caused by an obligate intracellular opportunistic protozoan Toxoplasma gondii (T. gondii) with worldwide distribution. A variety of risk factors is associated with its transmission. The seroprevalence of T. gondii infection varies from 6.1% to 88.6% in different continents and countries, attributed to socioeconomic status and geographical factors. Acute infection during the 1st trimester of pregnancy may transmit the infection to the fetus through placenta causing a wide range of disease entities. Therefore, an early detection of infection in pregnant women with risk factors, especially in endemic countries is utmost important. The objective of the current study is to determine the prevalence and associated risk factors of T. gondii among pregnant women in Kuwait.

Methods:
An observational cross-sectional descriptive study was conducted where 280 pregnant women attending antenatal clinics in the Kuwait were interviewed using close ending questionnaire during the period June 2017- August 2018. The blood was tested for T. gondii IgG antibody and IgG avidity using ELISA.

Results:
IgG ELISA were positive in 35 of the 280 women (12.5%), equivocal in 13 (4.6%), and negative in 232 (82.9%) cases. IgG avidity test was done on all the 35 IgG positive cases. The IgG avidity result was high in all 35 cases suggesting that these cases got the T. gondii infection before pregnancy. There was no significant difference between history of miscarriage, presence of cat, and eating uncooked meat among pregnant women concerning Toxoplasma gondii seropositivity. On the other hand, there was significant difference between nationality, area of residence and seropositivity to anti-T. gondii ($p<0.005$).

Conclusions:
Our study shows a low prevalence (12.5%) T. gondii infection among the pregnant women in Kuwait. The country of residence and education status showed a significant association with Toxoplasma infection.

Key Words: Seroprevalence; Pregnant Women; ELISA;

Funding Agency: YM 14/17

Microbiology and Immunology

95

Multilocus sequence typing of unrelated strains of Candida glabrata isolates in Kuwait: another MLST scheme needs to be developed

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Introduction:
Candida glabrata is an important fungal pathogen that rapidly develops resistance to azoles. Molecular fingerprinting of C. glabrata isolates is essential for better control and prevention of these infections. The aim of this study was to study antifungal susceptibility profile and genetic relatedness of C. glabrata isolates in Kuwait by using multilocus sequence typing (MLST).

Methods:
A total of 73 unrelated clinical C. glabrata isolates obtained from patients in different hospitals in Kuwait were analyzed in this study. These phenotypically identified isolates were speciated by multiplex PCR (mPCR) assay. The identity of the isolates was also confirmed by DNA sequencing of internal transcribed spacer (ITS) region of rDNA. Antifungal susceptibility testing was performed by Etest against amphotericin B, fluconazole and voriconazole. Fingerprinting of 73 C. glabrata isolates was performed by six loci-based MLST.

Results:
All 73 C. glabrata complex isolates were identified as C. glabrata sensu stricto by mPCR and PCR-sequencing of ITS region of rDNA. MLST identified 28 sequence types (STs) including 18 new STs among 73 isolates. ST46 (n=23), ST3 (n=7) and ST55 (n=6) were the most dominant genotypes. Nineteen C. glabrata isolates from 19 patients belonged to 19 different STs (including 17 new STs), while 54 isolates from 54 patients were grouped in 9 clusters. The largest cluster represented by ST46 contained 23 (32%) isolates from 23 patients. Among 73 C. glabrata isolates, 13 isolates were susceptible dose-dependent to fluconazole. Five isolates were resistant to voriconazole while 10 isolates show reduced susceptibility to amphotericin B. Fluconazole resistant strains belonged to different MLST haplotypes.

Conclusions:
Our data show limited discriminatory power of the currently used six loci-based MLST. Other gene loci such as ITS or intergenic spacer region need to be investigated for greater discriminatory power of the fingerprinting scheme.

Key Words: Candida glabrata; Fingerprinting; MLST ;

Funding Agency: Supported by College of graduate studies and Research Sector grant YM10/11

Microbiology and Immunology

96

Investigation of Fusidic Acid Resistance Determinants in Methicillin-Resistant Staphylococcus aureus obtained in Kuwait Hospitals.

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Introduction:
Fusidic acid (FD) resistance is a major problem in MRSA isolated in Kuwait hospitals. The resistance is mediated by 3 types of genetic determinants (fusA, fusB, and fusC) which vary in their genetic locations. The aim of this study was to investigate the genetic mechanisms of FD resistance in MRSA strains collected from Kuwait hospitals.

Methods:
A total of 97 FD resistant MRSA were obtained from clinical samples between January and June 2018. Isolates were tested for resistance to different antibiotics by the disc diffusion method. E-test was used to measure the minimum inhibitory concentration (MIC) of FD. DNA microarray was used to determine their genetic background and resistance mechanisms.

Results:
The isolates were obtained from different samples including blood (n=17), nasal (n=12) and wound (n=11). The isolates were resistant to penicillin (97.9%), trimethoprim (48.4%), tetracycline (45.4%), kanamycin (31.9%), gentamicin (28.9%), erythromycin (27.8%) and clindamycin (27.8%). The MIC for FD ranged from 3mg/L to >256mg/L. fusA was associated with strains with FD MIC of >256 mg/L, whereas MIC for fusB and fusC were variable. Of the 97 strains, 80 (82.5%) harbored fusA, 79 (81.4%) harbored fusC and fusB was detected in four isolates. Sixty-four isolates carried fusA and fusC, two isolates harbored fusA and fusB. Fifteen and 14 isolates carried only fusC and fusA respectively while two isolates contained only fusB. Clonal complexes (CCs) were determined for 83 of the 97 isolates. Eight CCs consisting of CC1, CC5, CC8, CC15, CC22, CC80, CC88, CC97 were identified with the majority belonging to CC5 (50.6%) and CC97 (13.2%).

Conclusions:
The study revealed that fusA and fusC were the dominant genetic determinants of FD resistance. Whereas, fusA and fusC were widely distributed among the CCs, fusB was limited to CC80. This study has increased our knowledge of the genetic mechanisms of FD resistance in MRSA in Kuwait hospitals.

Key Words: MRSA; Fusidic acid resistance; Genetic determinants;

Funding Agency: None

Microbiology and Immunology

97

Livestock-associated methicillin-resistant Staphylococcus aureus in patients admitted in Kuwait hospitals, 2016-2017

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Introduction:
Background: Livestock-associated methicillin-resistant Staphylococcus aureus (LA-MRSA) have the ability to colonizes and cause infections in animals as well as humans. Several MRSA clones including CC9, CC96, CC97, and CC398 have been characterized as LA-MRSA. LA-MRSA isolates have only recently been identified in patients admitted to Kuwait hospitals. This study was conducted to characterize LA-MRSA isolates obtained from patients admitted to Kuwait hospitals.

Methods:
A total of 204 (4.3%) of 4726 MRSA isolates obtained from clinical samples in 2016 and 2017 in 11 public Kuwait hospitals were identified as LA-MRSA. They were characterized using antibiogram, spa typing and DNA microarray.

Results:
The LA-MRSA isolates consisted of CC9 (n= 2), CC96 (n= 31), CC97 (n= 169), and CC398 (n= 2). Isolates belonging to CC9, CC96 and CC398 were non-multidrug resistant, while CC97 isolates were multidrug-resistant to gentamicin, kanamycin, erythromycin, clindamycin, tetracycline, chloramphenicol, fusidic acid, trimethoprim and ciprofloxacin and harbored aacA-aphD, ermA, ermC, msrA, tetK, cat, fusC, and dfrS1. Thirty-seven spa types were identified among the isolates. CC9 isolates consisted of t1379 and t1830, while CC398 isolates consisted of t899 and t034. Ten spa types were identified among CC96 with t11822 (N=13) as the most prevalent. CC97 consisted of 26 spa types with most belonging to t267 (N=73) followed by t359 (N=39). DNA microarray showed that CC9 comprised of CC9/ST834-MRSA-IV, WA MRSA-13. CC398 comprised of CC398-MRSA-IV and CC398-MRSA-V [PVL+]. CC96 belonged to CC96-MRSA-IV and CC96-MRSA-IV [PVL+] Central Asian caMRSA/WA MRSA-119. CC97 consisted of six strains with the CC97-MRSA-V [fusC+] (139) as the dominant strain. While CC9, CC96 and CC97 isolates were identified in 2016 and 2017, CC398 isolates were detected only in 2016.

Conclusions:
Four LA-MRSA clones were identified among patients in Kuwait hospitals in 2016-2017 with CC97-MRSA-V [fusC+] as the dominant clone.
Key Words: LA-MRSA; Antibiotic resistance; Molecular Typing ;

Funding Agency: None

Microbiology and Immunology

98

Analyzing antibiotic utilization in a secondary care facility prior to implementation of antimicrobial stewardship program: a sample study

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Introduction:
In the setting of continued emergence of antibiotic resistant pathogens and a limited pipeline of new antimicrobials, attention to optimizing antibiotic use in healthcare settings is essential. The aim of the current study was to review the measure of antibiotic consumption in our hospital and trends in antibiotic use as a prelude to antimicrobial stewardship program and interventions to optimize antimicrobial use.

Methods:
This study collated antibiotic prescription data for inpatients at a secondary care hospital in Kuwait during 2017-2018 for a period of 11 months. Total amount of antibiotics dispensed by the hospital pharmacy to each specialty wasexpressed as the defined daily doses (DDD) by WHO standard. The pattern of antibiotic use was compared in different classes and in various specialties of the hospital. We defined 3rd and 4thgeneration cephalosporins (3CF & 4CF), beta lactam/beta lactamase inhibitors and fluoroquinolones (FQ) as broad spectrum (BS) antibiotics; carbapenems (CAR), tigecycline (TIG), glycopeptides (GLY), oxazolidinone (OXD) and colistin (COL) were defined as antibiotics against multidrug-resistant (MDR) pathogens. Other antibiotic classes were defined as non-BS antibiotics.

Results:
The highest and lowest consumption of antibiotics, 1417 and 826.85 DDD was observed for the months of April 2018 and September 2017, respectively while the average consumption during the study period was 1123.5 DDD.A total of 6263.75 DDD were dispensed to medical wards as compared to 1528, 1345.3, 841.7, 576.8 and 226.3 DDD for adult ICUs, surgical, pediatrics, urology and ob/gyn specialties, respectively. Among 3CF ceftriaxone (1425 DDD) was more often prescribed in medical wards than cefotaxime (88.25DDD), which was more often requested by the pediatric wards (437.75 DDD). For CAR, mostly meropenem (939.5 and 280.25DDD) versus imipenem (26.25 and 10.75 DDD) was prescribed in medical wards and ICUs, respectively while highest TIG (226 DDD) use was noted in surgical wards. Use of COL (199.3 and 118.6 DDD) was mostly restricted to medical wards and ICUs, respectively. Use of clindamycin (232.16 and 213.67 DDD) was mostly observed in medical and surgical wards, respectively.

Conclusions:
Since we observed increased BS antibiotics, especially 3 CF, prescription rates in the medical wards it is necessary to carry out studies for point prevalence to monitor inappropriately prescribed antibiotics. Suitable and sustainable interventions should be implemented to promote rational use of antibiotics to overcome the problem of antibiotic resistance.

Key Words: Antibiotic prescription; Defined daily doses; Antibiotic consumption;

Funding Agency: None

Microbiology and Immunology

99

Antibiotic susceptibility of bacteria isolated from patients with acute otitis

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Introduction:
Acute bacterial otitis (ABO) is a common disease both in adults and children. The infection is associated with risk for developing medical complications. We conducted a retrospective survey of bacteria recently isolated from adults and children with acute otitis in London Hospital over aperiod of two years.

Methods:
During 01.10.2016-30.11.2018 our study involved 57 adults aged 27 to 63 years and 7 children with acute otitis. Isolation was performed by standart method and the identification - by the API system - bioMerieux. The standart disk diffusion method was used for susceptibility testing and the results were interpreted according to CLSI guidelines.

Results:
64 isolates from ear specimens were collected. Staphylococcus aureus (S. aureus) and Pseudomonas aeruginosa (P. aeruginosa) were the predominant pathogens (84%), followed by Haemophillus spp. (4,7%), Group A streptococcus (3,12%), Pasteurellaspp. (3,12%). The cumulative results of the susceptibility rates of S. aureus and P. aeruginosa were represented.

Conclusions:
Knowledge of most frequent otopathogenic bacteria and their antimicrobial susceptibility patterns in adults and children, is essential to provide clinically successful antimicrobial therapy for ABO, good evaluation and decrease the risk of complications.

Key Words: otopathogens; antibiotic resistance; virulence determinants;

Funding Agency: None

Microbiology and Immunology

100

Measuring the Effect of Implementing Antimicrobial Stewardship in Jahra Hospital

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Introduction:
A third of the patients admitted to our hospital receive antibiotic treatment. The broader spectrum antibiotics we prescribe the more resistant pathogens could develop. Therefore our aim of implementing Antimicrobial Stewardship (ASP) is to combat antimicrobial resistance while achieving the best possible clinical outcome for our patients.

Methods:
This is a retrospective study to evaluate the impact of ASP on antibiotic resistance pattern. Our team consisted of Clinical Microbiologist, clinical pharmacist and ID preventionist. The team is conducting clinical rounds for all patients who were treated with broad spectrum antibiotics to ensure maximum effect with minimum risk of antibiotic resistance. Data were collected retrospectively by our antibiogram for 2016 and 2017. We focused on the most prevalent multidrug resistant pathogens (MDR) e.g. Pseudomonas, Acinetobacter, Klebsiella pneumoniae, Enterobacter cloacae, E. coli, Methicillin resistant staph aureus (MRSA) & Vancomycin resistant Enterococcus (VRE). ASP methods were carbapenem restriction, avoiding sub therapeutic dosage, adjusting empirical therapy based on local epidemiology and drug tissue penetration.

Results:
It was found that the total number of isolates has been reduced significantly in 2017.there was a decreasse in number of isolates in 2017 with either Acinetobacter baumannii, Klebsiella pneumoniae, Enterobacter Cloacae, pseudomonas aeruginosa, E. coli and MRSA. We did not have even one VRE isolate in 2017 in spite of two isolates in 2016. There was no change between the two years in antimicrobial resistance pattern especially in the carbapenem group against MDR gram negative.

Conclusions:
Conclusions and novelty of findings: Implementation of ASP In our hospital was a helpful tool to minimize antimicrobial resistance and to preserve the efficacy of currently available antibiotics. We strongly recommend the mandatory implementation of ASP in Kuwait hospitals in accordance with national guidelines.

Key Words: Antimicrobial Stewardship; Antibiotic Resistance; Carbapenem ;

Funding Agency: None

Microbiology and Immunology

101

Analysis of Genetic Variability of Respiratory Syncytial Virus Group A and B in Kuwait

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Introduction:
Respiratory syncytial virus (RSV) is the most frequently identified viral agent in infants, children and elderly with acute respiratory tract infections (ARTIs). This study is unique of its kind in Kuwait that aimed to investigate the genetic variability of the G protein gene in RSV strains prevalent in Kuwait.

Methods:
Respiratory samples were collected from patients with ARTIs in various hospitals in Kuwait and subjected to reverse transcription PCR (RT-PCR) amplifying a fragment of the G gene of RSV. The amplified fragments were subjected to DNA sequencing to check genetic variability of RSV.

Results:
A total of 305 samples were collected between January and mid- December 2016, and 77 (25.2%) were positive for RSV. Group A viruses were predominant over group B viruses; RSV-A group was detected in 52 (67.5%) of the positive samples while RSV- B group was detected in 25 (32.5%) of the positive samples. Phylogenetic analysis showed that all RSV-A strains could be clustered into 8 clusters of identical sequences of untyped strains. Twelve RSV-B strains, on the other hand, belonged to RSV-B/BA10 genotype, while the rest were of untyped strains.

Conclusions:
These data suggest that new and untyped strains of RSV-A group likely predominated in Kuwait and that BA10 genotype of RSV-B group became the dominant genotype in the 2016 season.

Key Words: RSV; G gene; Kuwait;

Funding Agency: This work was supported by an initiation Grant from the Research Sector, Kuwait University, Kuwait (Grant no: ZM04/16).

Microbiology and Immunology

102

High prevalence of rectal carriage of blaKPC medicated carbapenem-resistant Enterobacteriaceae among healthy community food handlers and infected inpatients from different hospitals in Kuwait.

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Introduction:
Background: The rapid and global dissemination of carbapenemase-producing Enterobacteriaceae (CPE) is of great public health concern. In this study, we report high presence of high prevalence of KPC-producing CPE among healthy food handlers (FHs) and infected patients (IPs) in Kuwait.

Methods:
Rectal swabs were collected from 405 FHs and 93 CPE-positive IPs during 2015-2017. Isolates identification was done by VITEK 2 card system. The susceptibility testing to 21 antibiotics was done by E-test. Genes encoding carbapenemase production were characterized by PCR and nucleotide sequencing. Clonality was determined by MLST.

Results:
A total of 36 CPE were identified from 31 FHs, and 85 from 82 IPs, of which 41.7% and 17.6% were E. coli and 22.2% and 72.6% were K. pneumoniae, respectively. A very high proportion (58.3%) of the CPE harbored blaKPC among the FHs and (34.1%) among the IPs. All isolates from FHs were susceptible to amikacin and tigecycline but an alarming high percentage (38.9%) were non-susceptible to colistin. In contrast, resistance percentages to amikacin and tigecycline among isolates obtained from IPs were 44.7% and 20%, respectively; resistance to colistin was (11.8%). Sequencing of the KPC genes obtained from FHs revealed the following: blaKPC-18, blaKPC-2 and blaKPC-29 represented 45%, 36% and 18%, respectively. Among IPs, blaKPC-2, blaKPC-18, blaKPC-20 and blaKPC-29 were 75%, 14.2%, 7.1% and 7.1%, respectively. Considerable genetic diversity was identified by MLST assays which demonstrated emergence of new clones, including K. pneumoniae harboring blaKPC-2-blaOXA-48 ST-25 and K. pneumoniae clones harboring blaKPC-2 and blaKPC-29. Five diverse new CPE clones were detected.

Conclusions:
The study demonstrates a relatively high colonization rate by CPE among both FHs (7.6%) and IPs (88%) of which KPC-producing CPE were predominant; this is an unusual finding representing the first of such findings in our country and GCC.

Key Words: KPC carriage; CPE colonization; Community ;

Funding Agency: This study is supported by Kuwait University, College of Graduate Studies and Research Administration, Grant No. YM07/15.

Microbiology and Immunology

103

Performance comparison of GeneXpert MTB/RIF Ultra and BBD Max MDR-TB for rapid detection of Mycobacterium tuberculosis and its resistance to rifampicin and isoniazid in a country with a low incidence of multidrug-resistant tuberculosis

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Introduction:
Kuwait is a low TB incidence country and only 1% of Mycobacterium tuberculosis (MTB) isolates are resistant to rifampicin and isoniazid (MDR-TB). This study evaluated GeneXpert MTB/RIF Ultra (Xpert) and BBD Max MDR-TB (BBD-Max) for rapid detection of MTB and its resistance to rifampicin and isoniazid in comparison with culture and clinical diagnosis.

Methods:
A total of 51 pulmonary (sputum, n=35; bronchoalveolar lavage, 15; endotracheal aspirate, n=1) and 30 extrapulmonary (cavitary fluids, n=24; fine needle aspirate/pus, n=6) specimens collected from 81 consecutive patients presenting with TB-like symptoms were processed for Zhiel-Nielsen smear microscopy, culture in MGIT 960 system, Xpert (Cepheid) and BBD-Max (Beckton and Dickinson) assay.

Results:
Fifteen specimens were MGIT culture-positive including ten smear-positive for acid-fast bacilli. Of those, 87% were positive for MTB by both Xpert and BBD-Max, one was negative by both tests and one specimen contained nontuberculous mycobacteria. Of 67 smear-negative and culture-negative specimens, 12% were MTB-positive by Xpert only, 1% were positive by BBD-Max only while 87% were MTB-negative by both tests. In Xpert-positive specimens 75% were from patients with a clinical diagnosis of TB. All MTB-positive specimens (n=13) were rifampicin-susceptible by MGIT and Xpert while 15% yielded indeterminate results by BBD-Max. Although two of 13 MTB isolates were isoniazid-resistant by MGIT, BBD-Max detected resistance in only one, 11 were isoniazid-susceptible while one yielded indeterminate result.

Conclusions:
Our data show that Xpert is more useful than BBD-Max for rapid diagnosis of active TB disease. Detection of isoniazid resistance by BBD-Max does not offer much advantage over Xpert assay in settings of low prevalence of MDR-TB as the latter performed better in low bacterial load specimens from patients with clinical disease but were smear-negative and culture-negative.

Key Words: Mycobacterium tuberculosis, rapid diagnosis; GeneXpert MTB/RIF Ultra; BBD

Funding Agency: None

Microbiology and Immunology

104

Mycobacterium tuberculosis-specific antigen Rv3619c inhibits asthma-like parameters by deviating the immune response in a murine model of asthma

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Introduction:
Asthma is a chronic disease afflicting people of all age groups throughout the world. It is an inflammatory disease characterized by the inflammation and narrowing of the airways with significant eosinophil and lymphocyte infiltration, hyper-production of mucus, and airway hyper-responsiveness. In asthma, antigen-specific Th2 cells and their cytokines are primary mediators of the pathological consequences. Whole cell mycobacteria have been shown to suppress asthmatic responses in experimental animal studies by preventing the development of asthma with altered Th1/Th2 cytokines ratios. In this study, we evaluated the efficacy of immunization with Mycobacterium tuberculosis-specific antigen Rv3619c, utilizing a Th1 delivery system, in modulating the allergic airway inflammation in a Th2 driven model of asthma.

Methods:
The rv3619c gene was cloned in an expression plasmid PGESTH-1, and expressed in Escherichia coli. The recombinant protein was purified to homogeneity using affinity chromatography. Mice were immunized with the recombinant proteins emulsified in Freund's Incomplete Adjuvant (IFA) and challenged with ovalbumin (OVA). Mice were sacrificed and 1) total and differential cell counts from BAL fluid, 2) histological changes and airway remodeling of lung tissue, 3) Th2 cytokine (IL-5) secretion from spleenocytes, and 4) OVA-specific IgE from sera were assessed.

Results:
Rv3619c was successfully cloned, expressed and purified from E. coli. In OVA-challenged mice, immunization with Rv3619c/IFA effectively inhibited the OVA-induced total cell counts, eosinophil airway cell infiltration in BAL fluid, perivascular and peribronchial inflammation and fibrosis, and goblet cell hyper/metaplasia. In addition, Rv3619c/IFA inhibited the OVA-induced elevated IL-5 levels in spleen cells, and OVA-specific IgE levels in sera.

Conclusions:
The study is a "proof of concept" that Rv3619c/IFA may be an effective vaccine for the prevention of asthma.

Key Words: Rv3619c; Asthma; Vaccine;

Funding Agency: Kuwait University grants (YM06/15, SRUL02/13) and Kuwait Foundation for the Advancement of Sciences (KFAS) Project CB17-63MM-03.

Microbiology and Immunology

105

Microbial analysis of the hands of food handlers in Kuwait restaurants

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Introduction:
The prevalence of microbial contamination of food handlers' hands in Kuwait restaurants is unknown. This study aimed to estimate the prevalence of microbial contamination on the hands of food handlers in Kuwait restaurants and to investigate the association between pathogenic microbes and food handlers with restaurants characteristics.

Methods:
A cross-sectional study on 208 food handlers who were selected from Kuwait restaurants using stratified weighted random sampling. Microbial contamination was assessed by fingerprints of both hands and was transported for microbiological identification using standard laboratory methods. Face-to-face interview using structured questionnaire was used to collect data about restaurants, food handlers, and food hygiene practices. Chi square/Fisher's exact test and unconditional logistic regression were used to assess and quantify the association between restaurants and food handlers' characteristics and presence of pathogenic bacteria.

Results:
The prevalence of antibiotic resistant gram-negative pathogens (pseudomonas spp, Klebsiella spp, Acinetobacter spp, pantoea spp, and Enterobacter spp) in at least one hand of food handles was 61.5%. Methicillin resistant staphylococcus aureus (MRSA) was identified in 9.2% of food handlers, at least one hand. After adjusting for potential confounders, the contamination of gram-negative pathogen in at least one hand of food handles was significantly associated with restaurant type, food handlers work in restaurants located in restaurant complexes, being a male and attending food safety course in the last six months.

Conclusions:
The prevalence of hand contamination of food handlers during food preparation is high. Results indicated that food handlers in Kuwait can potentially contaminate food with antibiotic resistant gram-negative pathogens. Food safety training should target food handlers working in Kuwait restaurants.

Key Words: Food Handlers, Hand contamination; Antibiotic resistant; Food Safety;

Funding Agency: Kuwait University

Microbiology and Immunology

106

Stability of the dominant Methicillin-resistant Staphylococcus aureus clones in Kuwait hospitals in 2016-2017.

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Introduction:
MRSA strains differ in antibiotic resistance, genetic backgrounds, and virulence determinants. Knowledge of local clonal composition of MRSA strains is important for patients' management, and for designing effective control methods. This study investigated MRSA strains isolated in Kuwait public hospitals during 2016 - 2017 for antibiotic resistance, genetic backgrounds and carriage of Panton Valentine leucocidin (PVL) genes.

Methods:
In total, 3801 MRSA isolated in 2016 (N=2305) and 2017 (N=1496) in 13 hospitals were tested for antibiotic susceptibility and typed using Staphylococcal chromosome cassette mec (SCCmec) typing, Spa typing, DNA microarray and carriage of PVL genes.

Results:
The isolates were susceptible to vancomycin (MIC: ≤2mg/L), linezolid and rifampicin. The isolates (2016; 2017) were resistant to fusidic acid (51.0%; 55%), kanamycin (42.0%; 41.0%), tetracycline (36.0%; 39.0%), trimethoprim (37.0%; 35%), erythromycin (40.0%; 33%), clindamycin (13.0%; 16 %), gentamicin (33%; 32%), chloramphenicol (13%; 16 %) and high level mupirocin (4 %; 25 %). Genes for PVL were detected in 31% and 21% of the isolates in 2016 and 2017 respectively. SCCmec types IV (50%; 45%), type V (30%; 29 %), type III (13%; 11.7%) and type VI (7.0%; 11.3%) were detected in 2016 and 2017 respectively. There were 22 clonal complexes (CC) and 273 spa types in 2016 and 24 CC and 263 spa types in 2017. The dominant genotypes (2016; 2017) were CC5-MRSA-V-t688 (10.4% VS 12.6%), CC6-MRSA-IV-t304 (9.1%; 8.9%), CC239-MRSA-III-t860 (8.2% 8.4%), CC1-MRSA-IV- t127 (6.5%; 6.4%), CC5-MRSA-IV-t311 (5.3%; 4.9%), CC80-MRSA-IV- t044 (5.7%; 4.0%), CC22-MRSA-IV- t223 (4.0%; 3.7%), CC5-MRSA-IV-t002 ((4.4; 3.2%), CC97-MRSA-V- t267 (2.8%; 2.8%) and CC30-MRSA-IV-t019 (2.5%;2.3%)

Conclusions:
The MRSA strains belonged to diverse genetic backgrounds with the dominant clones being stably maintained suggesting their ongoing transmission in Kuwait hospitals.

Key Words: MRSA; Molecular typing; PVL;

Funding Agency: None

Microbiology and Immunology

107

Prevalence of rectal colonization of carbapenem-resistant Enterobacteriaceae (CRE) in patients admitted to the intensive care units (ICU) of 7 major hospitals in Kuwait

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Introduction:
Background: The emergence of carbapenem-resistant Enterobacteriaceae CRE has become an important epidemiological change in infectious diseases in the last 10 years. The gut is an important reservoir for these isolates thereby creating opportunity for dissemination in a hospital setting especially the ICUs. The objective of this study was to study the colonization rates of patients, by CRE, admitted to the ICUs of 7 teaching hospitals and their molecular characterization.

Methods:
Rectal swabs were collected during July 2017 to November 2018 from all patients on the day of ICU admission in each hospital. They were screened by direct plating of the rectal swabs on MacConkey agar containing 10-µg meropenem.. Bacterial species identification and antibiotic susceptibility tests were performed using the VITEK-2 system. The minimum inhibitory concentrations (MICs) of 14 antibiotics were determined by using Etest. Existence of genes encoding carbapenem resistance was detected using PCR with sequencing.

Results:
A total of 2580 Enterobacteriaceae isolated from all patients, of which 74 were confirmed as CRE from the following hospitals: Amiri 12 (2.3%), Adan 27 (5.2%), Mubarak 34 (6.4%), Jahra 1 (0.2%), Maternity 0, Ibn Sina 0 and Al Razi 0. About 64% of K. pneumoniae, 21% of E. coli and 14% of Enterobacter spp. were resistant to colistin. Sixty (81.1%) of the CRE harbored one or more of the tested carbapenemases genes. Forty-six (62.2%) carried blaOXA-181, 9 (15%) blaOXA-48, one carried blaKPC-2 while 14 (18.9%) carried 2 genes and 5 (6.7%) both blaKPC-2 and blaOXA-181 genes. Both blaVIM-1 and blaOXA-181 genes were found in 4 (5.4%), blaNDM-5 and blaOXA-181 in 3 (4.1%) and blaNDM-1 and blaOXA-181 in 2 (3.3%),

Conclusions:
The prevalence of rectal colonization by CRE in the ICU patients was higher than expected. Detection of blaOXA-181 variety and blaNDM-5 is a completely new to the milieu of genes so far described among isolates in Kuwait.

Key Words: Carbapenem resistant Enterobacteriaceae; ICU; Rectal swab;

Funding Agency: Kuwait University Research Sector, YM 07/17

Molecular Biology - Joint MSc. Degree Program

108

Germ Cell Apoptosis: Interplay between the Thioredoxin System and the ASK1/Trx/TXNIP /JNK signaling pathway

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Introduction:
Testicular ischemia reperfusion injury (tIRI) is suggested as the underlying mechanism for testicular torsion and detorsion due to the overproduction of reactive oxygen species (ROS) leading to germ cell apoptosis (GCA). The aim is to explore the mechanism of the apoptosis signal-regulating kinase 1 (ASK1) signaling pathway and the role of the thioredoxin (Trx) antioxidant system during tIRI by using ASK1 specific inhibitor, NQDI-1.

Methods:
Male Sprague-Dawley rats (n=36) were divided into 3 groups: sham, tIRI and tIRI+NQDI-1 (10 mg/kg). Ischemia was induced for 1 hour followed by 4 hours' reperfusion before animal sacrifice. The NQDI1 was injected i.p. 30 minutes post ischemia. Histological analyses were used to evaluate spermatogenesis. Gene expression, protein immunoexpression and enzyme activities were assessed by real-time PCR, ELISA, IHC and colorimetric assays.

Results:
An arrest in spermatogenesis was represented by a significant decrease in the Johnsen score, which was associated with GCA. Real-time PCR confirmed the upregulation of the pro-apoptosis genes BAD and BAX and the downregulation of anti-apoptosis genes Bcl2 and survivin, which were accompanied by activation of the executioner caspase-3 and oxidative DNA damage in the tIRI group. The levels of the antioxidants GSH, SOD, Trx and Trx reductase enzyme were also significantly reduced in tIRI-subjected testes. Immunoexpression of ph-ASK1, ph-p38 and ph-JNK were increased significantly after tIRI confirming the activation of ASK1 signaling pathway. The damaging consequences of tIRI were attenuated after NQDI1 treatment obtaining normalized values similar to sham.

Conclusions:
Our findings suggest that the redox status of the cell is regulated by the Trx system via the ASK1/Trx/TXNIP /JNK to maintain cellular homeostasis during testicular oxidative stress. This interplay between the Trx system and ASK1 suggests their potential role in the pathogenesis of tIRI and induction o

Key Words: Thioredoxin; Germ Cell Apoptosis; ASK1/JNK pathway;

Funding Agency: CGS-RA Grant YM 09/17 and KU-RA Grant SRUL02/13

Molecular Biology – Joint MSc. Degree Program

109

Mitochondrial Dysfunction Contributes to Germ Cell Apoptosis via the JNK/Survivin/p53 Pathway

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Introduction:
Testicular ischemia reperfusion injury (tIRI) is the underlying mechanism of testicular torsion and detorsion characterized by testicular oxidative stress (OS) and germ cell apoptosis (GCA). The c-Jun N-terminal kinases (JNK) pathway is activated in response to cell stress and DNA damage. The aim is to study whether JNK signaling and mitochondrial dysfunction contribute to the pathophysiology of tIRI-induced GCA and oxidative DNA damage using the JNK inhibitor SP600125.

Methods:
Male Sprague-Dawley rats (n=36) were divided into sham, tIRI and tIRI+SP600125 (15 mg/kg). Histological analyses were performed to assess spermatogenesis and oxidative DNA damage. The expression of oxidative stress induced-GCA genes and proteins were evaluated by real-time PCR and immunofluorescence (IF). Mitochondrial stress was examined by western blot and colorimetric assays.

Results:
Severe morphological damage to spermatogenesis was observed by Johnsen's scoring in tIRI-subjected rats. Testicular OS was demonstrated by a 2-fold increase in both protein and lipid peroxidation products. Oxidative DNA damage was augmented by 24.3-fold in the number of TUNEL stained nuclei and a 1.5-fold increase in 8-oHdG. Induction of GCA was validated by elevated Bax:Bcl-2 ratio accompanied by activation of the initiator caspase 9 and the executioner caspase 3 by 1.3-fold and 2.3-folds, respectively. Furthermore, heightened IF expression of JNK and p53 was specifically detected in secondary spermatocytes and spermatozoa accompanied with survivin down-regulation. During tIRI, mitochondrial dysfunction was reflected by ATP and NADH depletion, overexpression of uncoupling protein 2 (UCP2) and cytochrome c. These tIRI-induced damages were all attenuated by SP600125 treatment.

Conclusions:
The study outcomes implicate the contribution of mitochondrial dysfunction in germ cell apoptosis via the JNK/survivin/p53 signaling pathway during testicular ischemia reperfusion injury

Key Words: Testicular Ischemia Reperfusion Injury; JNK; Mitochondrial Dysfunction;

Funding Agency: CGS Grant YM 15/17 and KU-RA Grant SRUL02/13.

Neurology

110

Epidemiology of NeuromyelitisOptica Spectrum DisordersPatients in Kuwait.

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Introduction:
Background: NMO is a rare disorder with prevalence ranging from 0.4-5 per 100,000 across the world. No data has been published from Kuwait.We aimed to present the demographics and characteristics of patients with Neuromyelitis Optica Spectrum Disorders (NMOSD) in Kuwait

Methods:
A cross sectional study was conducted to assess patients with NMOSD. The data was obtained from the newly established NMO database using the 2015 international consensus diagnostic criteria for neuromyelitis optica spectrum disorders. Demographics, clinical and radiological characteristics, and serological markers including serum anti-Aquaporin-4 IgG were extracted.

Results:
As of September 2018, 32 patients were identified with NMOSD; of which 26 (81.3%) were women. The mean age and mean age of onset of the cohort were 35.6 ±11.9 and 28.9 ±9.8 years respectively. The mean disease duration was 6.9 ±6.6 years. 56.3% were seropositive to anti-aquaporin-4 IgG. Most of the patient (50%) presented initially with optic neuritis, followed by myelitis (37.5%) while 6.3% and 3.1% presented with brainstem and area postrema syndromes, respectively. Longitudinally extensive transverse myelitis was present in 78.1% while oligoclonal bands in CSF was positive in 31.3% of patients. Plasamphoresis was administered to 23 (71.9%) patients due to poor response to systemic corticosteroids. The mean EDSS score was 3.7 ±2.2 at last follow-up visit. The most commonly used disease modifying therapies were Rituximab (59%), followed by Azathioprine (30.8%) and mycophenolate mofetil (10.3%).

Conclusions:
This is the first report of patients with NMOSD in Kuwait. There was a strong female predominance.The clinical features in our cohort are similar to reported studies from Western countries, yet we have seen lower EDSS score, which could be the result of early use of Rituximab. Longer follow-up data is needed to assess natural history and prognosis.

Key Words: Neuromyelitis Optica Spectrum; Epidemiology; Kuwait;

Funding Agency: None

Neurology

111

Pregnancy outcome in Multiple sclerosis patients exposed to disease modifying therapies.

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Introduction:
MS patients may be exposed to DMTs during the first trimester in unplanned pregnancies or while using high efficacy drugs in patients at risk of disease reactivation. Objective: To evaluate pregnancy outcomes in Multiple Sclerosis (MS) patients exposed to
disease modifying therapies (DMTs).

Methods:
Data of MS pregnant women were extracted from the national MS registry. Details of drug exposure and pregnancy outcomes were collected. The occurrence of spontaneous/ elective abortions and fetal malformation were obtained. Pregnancy outcomes in women who were exposed to DMTs were compared to women who discontinued DMTs prior to conception.

Results:
Outcomes of 142 pregnancies (120 women) were assessed; 80 (56.3%) of which were exposed to DMTs. At the time of pregnancy confirmation, mean age and mean disease duration were 20.5 ± 4.7 and 5 ± 4.2 years respectively. There were no significant differences between DMT-exposed pregnancies and the non-exposed in terms of mean age ($p = 0.95$), age at onset ($p = 0.84$), age at pregnancy confirmation ($p = 0.37$) or disease duration ($p = 0.35$). In the exposed group, the most used DMTs were beta interferons (n=50; 35.2%), natalizumab (n=28; 19.7%), fingolimod (n=24; 16.9%), and dimethyl fumarate (n=5; 3.5%). In the non-exposed group, 53.2% (n=33) of patients were not on DMTs, while 21% (n=13) were on fingolimod, 19.4% (n=12) were on beta interferons and 4.8% (n=3) were on dimethylfumarate. Most pregnancies (~85%) resulted in full term births. There were no significant differences between the exposed and non-exposed in the rate of premature birth (5% versus 3.2%) and abortions (10% versus 11.3%) [$p = 0.47$]. No major fetal malformations were reported.

Conclusions:
Most of the pregnancies in our cohort were exposed to disease modifying therapies. The pregnancy outcomes in patients exposed to DMTs is comparable to those were not exposed.

Key Words: Multiple sclerosis; Pregnancy; Disease modifying therapies;

Funding Agency: None

Neurology

112

The use natalizumab in multiple sclerosis patients during pregnancy is safe and prevents disease reactivation.

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Introduction:
Background: Data of the use of natalizumab during pregnancy is limited. Objective: To assess the effectiveness and safety of natalizumab in Multiple Sclerosis (MS) patients during pregnancy.

Methods:
Data of women using natalizumab was extracted from the national registry. The cohort constituted 3 groups; patients continued natalizumab during pregnancy till 28th gestational week (group 1), patients discontinued natalizumab before pregnancy (group 2) and a control group included women who did not get pregnant (group 3). Demographics and clinical characteristics of the three groups were assessed. Clinical (relapses) and radiological (MRI new T2/ gad-enhancing lesions) data during pregnancy and at one-year post delivery were compared.

Results:
68 patients were identified; group 1 (n=14), group 2 (n=14), and group 3 (n=40). At baseline, there were no significant differences across the three groups in mean age ($p = 0.07$), mean age at onset ($p = 0.44$), mean disease duration ($p = 0.21$), annualized relapse rate ($p = 0.27$) and MRI measures ($p = 0.25$). The mean number of natalizumab infusions was 44 ± 26.05. During pregnancy, no relapses occurred in group 1 while four patients (28.6%) sustained relapses in group 2 ($p = 0.03$). At last follow-up visit, annual relapse rate was significantly higher in group 2 (0.75 ± 0.51), compared to groups 1 & 3 (0.14 ± 0.36 & 0.05 ± 0.22; $p < 0.001$) respectively. The proportion of patients with MRI activity was significantly higher in group 2 compared to groups 1 and 3 (50%, 7.1%, and 2.5%; $p = 0.03$). Abortion rate was not statistically significant between group 1 and 2 ($p = 0.47$) and no fetal malformation was observed.

Conclusions:
Patients who continued using natalizumab during pregnancy remained in remission while natalizumab discontinuation resulted in disease reactivation. The use of natalizumab during pregnancy was safe in our cohort.

Key Words: Natalizumab; Multiple Sclerosis; Pregnancy;

Funding Agency: None

Nuclear Medicine and Radiology

113

Fatty Liver Evaluation using Tc-99m Tetrofosmin Myocardial Perfusion Imaging (MPI) Gated Single Photon Emission Computed Tomography/Computed Tomography (SPECT/CT) and its Correlation with Coronary Artery Disease (CAD)

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Introduction:
Fatty liver, especially non-alcoholic fatty liver disease (NAFLD), can be associated with CAD as a consequence of dyslipidemia. Since patients undergoing MPI gated SPECT/CT studies get a non-contrast enhanced CT scan of the liver due to its normal anatomical relationship with the heart as part of the imaging protocol, information on fatty liver changes in terms of lower attenuation compared to normal liver and a diagnosis of fatty liver can thus be made. The aim of this study is to investigate fatty liver using the CT component of the MPI gated SPECT/CT imaging and its correlation with CAD in the patient group.

Methods:
Retrospective analysis of 37 patients with MPI gated SPECT/CT data at our department in January 2018 was done. Using a HERMES workstation, 6 circular regions of interest (ROI) were chosen, 3 in the right hepatic lobe, 2 in the left lobe, and 1 in the spleen, as a reference. The average of the Hounsfield units (HU) of these 5 ROIs in the liver was calculated. Criteria for fatty liver disease: 1) attenuation of the liver is at least 10 HU less than the spleen, or, 2) absolute attenuation of the liver is less than or equal to 40 HU. Using the CT scans, coronary calcifications were also assessed. The results of the MPI in terms of ischemia/scarring were also recorded. The data were analyzed by SPSS (descriptive stats, paired t and chi square tests).

Results:
30/37 (81%) patients had CAD (ischemia or scarring on MPI, or coronary calcifications on CT). The prevalence of fatty liver among all patients was 30% (11/37) and among those with CAD was 33% (10/30). The differences according to age or sex were not statistically

Conclusions:
Conclusions and Novelty of Findings: CT imaging of the liver as part of MPI gated SPECT/CT studies provides information on NAFLD that can be directly correlated with CAD. This novel use of the data available in this diagnostic procedure presents a holistic approach for abnormalities in the heart and liver.

Key Words: Fatty liver; Coronary artery disease; Myocardial perfusion imaging ;

Funding Agency: Research under KuMSA SCORE Scheme

significant.
Nuclear Medicine and Radiology

114

Nuclear medicine Practice: Assessment of physician and their awareness of nuclear medicine practice in Kuwait main Hospitals.

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Introduction:
Nuclear medicine is a specialized imaging modality that utilizes trace amounts of radioactive materials in imaging different physiological processes in the living body. This filed is growing fast and the introduction of new imaging devices as well as new specialized radioactive materials made the specialty one of the important procedures used in patient management. The aim of this study is to investigate the awareness level of nuclear medicine procedures and services among referring physicians in Kuwait. The study covers main governmental hospitals in Kuwait; including Mubarak, Amiri, Farwaniya, Jahra, Sabah and Adan Hospitals.

Methods:
An online survey form is developed to collect information that is used for assessing the awareness level and knowledge regarding nuclear medicine specialty. The survey uses a smart website that is distributed to doctors at major medical specialties. Including speciality like internal medicine, surgery, pediatric, obstetrics and gynecology to evaluate the level of their knowledge and understanding of nuclear medicine awareness scope. The quantitative data will be classified using percentages and frequencies and analyzed using chi-squared tests.

Results:
The study shows that the participants had little knowledge about nuclear medicine procedures and services. The number of statistical comparisons between groups show variety in the awareness level of physicians with different specialty. The level of nuclear medicine awareness for pediatrics physicians was found to be significantly high about the nuclear medicine procedures related to the children such as DMSA and GOR.

Conclusions:
The level of awareness of nuclear medicine can helps the stakeholder to introduce their specialty by increasing the access to informations needed to enhance the awareness. This can be through advertisement at social media, conference booths, department workshop and lectures as a way to outreach clinical teams.

Key Words: nuclear medicine; awareness; radioactive materials ;

Funding Agency: None

Nuclear Medicine and Radiology

115

Joint/Bone Ratio as an Indicator of Arthritis on the Tc-99m HDP Bone Scan

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Introduction:
Tc-99m HDP bone scan is a sensitive test for detecting pathophysiological changes in the skeleton including arthritis. The aim of the research work was to evaluate a semi-quantitative method, namely, the joint/bone ratio (J/B) for its usefulness in gauging uptake on both blood pool images for interstitial edema or inflammation and delayed images for bony reaction in selected joints: shoulders, hips and knees.

Methods:
Whole body blood pool (BP) and delayed (Del) Tc-99n HDP scans for 33 patients referred for various indications were retrieved from the digital archives and a pair regions of interest (ROI) were drawn on the joint and adjacent areas for the shoulders, hips and knees for both BP and Del whole body scans using a Xeleris workstation. The ratio of uptake in terms of the counts in the ROI between joint/background (soft tissues or bone) was obtained. Analysis involved descriptive statistics and comparisons of the values per area and side (right versus left).

Results:
The mean age of the 33 patient included was 48.1 yr±14.82 with 26 females (79%). The mean J/B for the shoulders (n=66) was 1.46±0.29 in the BP and 2.85±0.74 in the Del images. For the hips: 1.33±0.25 BP, 2.09±1.04 Del. The knees had a mean J/B ratio of 0.97±0.26 (BP) and 1.74±0.51 (Del). There was statistically significant difference for the BP and Del ratios between shoulders, hips and knees. The right to left comparisons, however, did not show significant differences for BP and Del ratios. The influence of age was only seen on the Del ratio in the left knee, while the gender influence was not statistically significant.

Conclusions:
Conclusions and Novelty of Findings: The J/B is a simple quantitative method that can indicate active pathological involvement of joints by deviation from the unique values recorded for the shoulders, hips and knees in this study. The findings are a novel way of looking at changes that cannot be identified by mere visual inspection of the bone scan.

Key Words: Bone scan; Arthritis; Shoulder, hip, knee;

Funding Agency: Research under KuMSA SCORE Scheme

Nuclear Medicine and Radiology

116

Pattern of cerebral blood flow and the interrelationship of vascular parameters of transcranial Doppler imaging in children with sickle cell disease

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Introduction:
We assessed the pattern of cerebral blood flow and the relationship between the different Transcranial Doppler Imaging [TCDI] vascular parameters in children with SCD.

Methods:
Forty-three SCD pediatric patients with a stable condition (21 HbSS, 19 HbSβ0 Thal, and 3 HbSD), aged 10.1±3.9 years were studied. A control group of twenty-six age and sex-matched, were included for comparison. TCDI scanning was carried out using a phased array transducer of 1-3 MHz through the trans-temporal window. Peak systolic velocity (PSV), end diastolic velocity (EDV), time-averaged mean of the maximum velocity (TAMMV), pulsatility index (PI), and resistive index (RI) were in the anterior circle of Willis vessels and posterior cerebral artery.

Results:
The highest mean±SD values for the middle cerebral artery PSV, EDV, TAMMV, PI, and RI were 130.30+26.5, 145.0 ± 21.9; 58.60+13.70, 67.90 ± 13.3; 84.90+14.50, 94.80 ± 17.9; 0.95+0.20, 0.80 ± 0.20; 0.58+0.09, 0.50± 0.10 in the control and SCD groups, respectively. Independent t-test showed significant difference ($p<.05$) for all vascular parameters in all vessels in each side between both groups. There was a positive significant correlation between TAMMV, PSV, and EDV ($p=.001$, $r=.93$), and a negative significant correlation between TAMMV and PI in the SCD group ($p= .001$, $r= -.46$) but not in the control group ($P>.05$, $r= -.05$).

Conclusions:
There was a direct relationship between TAMMV and PSV and EDV, and an inverse relationship between TAMMV and PI in a group of SCD patients with normal TCDI values.

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

Funding Agency: This study was supported by Kuwait University Grant MK 01/08.

Nuclear Medicine and Radiology

117

Patterns of F-18 Fluorodeoxyglucose (FDG) PET/CT Uptake in Ocular Tissues and Muscles

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Introduction:
F-18 FDG PET/CT has been increasingly used for non-invasive and functional evaluation of a variety of clinical conditions including tumors and inflammation. Pathophysiological processes involving the eye could be amenable for investigation using this technique since it offers good image details for both metabolism and structure of the orbit, ocular muscles and optic nerve. The aim is to study uptake patterns for ocular structures using computerized quantitative methods available for PET/CT procedures and provide background values for future reference.

Methods:
A total of 47 FDG PET/CT whole body studies were selected retrospectively from the departmental computer archives. Using a HERMES workstation, analysis involved drawing 3 regions of interest (ROI) on the CT image of the eyes around the orbit, the retrobulbar region including ocular muscles and optic nerve. A background region in the zygomatic fossa was chosen. Data collected were: Standardized Uptake Values (SUV) from PET images, Hounsfield Units (HU) from CT images and the absolute count (ab ct) from PET images. The values were recorded and comparison were made between right versus left and background using paired t-test and chi-square test as appropriate.

Results:
Mean age of the patients was 60.3 yr±14.75 with 23 males (49%), 18 patients (38%) had diabetes mellitus. Mean orbit SUV (n=94 orbits) was 1.49±0.45. mean orbit HU: 11.05±10.22, ab ct: 1249±468. Mean SUV for ocular muscle: 2.77±1.06, HU: -32.08±13.57, ab ct: 2217±1014. For the optic nerve: 2.69±1.03 SUV,-13.46±15.59 HU, 2303±1101 ab ct. There was no significant difference in the corresponding values between right and left eye. The regions selected showed highly significant uptake compared to background.

Conclusions:
Conclusions and Novelty of Findings: Successful documentation of values for FDG PET/CT parameters (HU, SUV & ab ct) that could serve as reference benchmarks for pathologies involving the eye as investigated by this procedure.

Key Words: Eye; FDG PET/CT; SUV;

Funding Agency: Research under KuMSA SCORE Scheme

Nuclear Medicine and Radiology

118

Effect of Brown Adipose Tissue Activation on Myocardial [18F]FDG Uptake

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Introduction:
Adipose tissue has an important effect on human health as it plays a significant role in energy balance. It has been traditionally believed that brown adipose fat (BAT) only exists in infants and disappears later in life. After the introduction of fluorine-18-fluorodeoxyglucose (FDG) positron emission tomography combined with computed tomography (PET/CT) in clinical practice, it was noted that BAT is present in adult humans and can be imaged due to its metabolic activity and ability to take up FDG. The aim of this study is to investigate the relationship between BAT activation and myocardial FDG uptake in terms of intensity and patterns.

Methods:
The patients were divided into two groups; BAT and control group. The BAT group consists of 34 cases that showed BAT uptake. BMI/gender/season matched control group included 68 patients. The scans were retrospectively reviewed by two nuclear medicine physicians who visually evaluated the intensity of myocardial FDG uptake. The myocardial FDG uptake was visually classified into three patterns; diffuse, heterogeneous and focal. The regions of activated BAT distribution were noted.

Results:
The mean myocardial FDG uptake was 2.50 ± 0.75 for the BAT group and 2.13 ± 0.88 for the control group with P value of 0.031. The myocardial FDG uptake pattern was similar in the BAT and control groups with the diffuse pattern being the most common followed by the heterogeneous and less commonly focal. In the BAT group, the anatomical distribution of BAT was mainly in supraclavicular, paravertebral and axillary and to a lesser extent in cervical regions.

Conclusions:
BAT group had significantly higher intensity of FDG myocardial uptake compared to control group. Presence of activated BAT did not affect the pattern of myocardial uptake. Knowledge of these findings may help in understanding the variability of myocardial FDG uptake and consequently in avoiding misinterpretation of cardiac findings in PET/CT studies.

Key Words: FDG; activated brown adipose fat; myocardial uptake ;

Funding Agency: None

Nuclear Medicine and Radiology

119

Mammographic BIRADS 3 category: a radiologist dilemma

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Introduction:
The aim of the study was to investigate the prevalence and malignancy rates of probably benign (BI-RADS 3) lesions in our practice. Management of BIRADS 3 remains a dilemma and challenge. The recommendation of BIRADS 3 lesions is follow up in 6-month then annually for 2 years. Patient compliance for followup remains an issue when assigning patients to this category. The literature varies for mammogramic BI-RADS 3 prevalence, ranging from 1.1%–12.2% with an average of 6%, with a rate of malignancy lower than 2%. In practice, 0.9–7.9% of probably benign lesions are upgraded to suspicious and proceed to biopsy.

Methods:
This is a retrospective study of the patients who underwent breast imaging and image guided core biopsy in the mammography Unit Mubarak Al-Kabeer hospital from 2013 to 2018. Mammographic findings are categorized according to The American College of Radiology standardized Breast imaging-reporting and data system® (BI-RADS), fifth edition 2013. Categories 1 to 3 indicate negative, benign and probably benign findings and categories 4 to 5 indicate suspicious and malignant findings respectively and correlated with the histopathology results.

Results:
Out of total 1156 cases who underwent breast imaging and biopsy, 125 (10.8%) patients were assigned as probably benign (BIRADS 3) category. Mean age was 45.5±14.0. On histopathology, 121 (96.8%) cases were benign, 4 (3.2%) were malignant. Two of the malignant cases were DCIS, one presenting as a complex cyst and the other as microcalcification. The other two cases were invasive ductal carcinoma presented as mass lesions measuring 1.1 x 0.7 cm and 1.5 x 1.4 cm.

Conclusions:
The prevalence of BIRADS 3 in our practice is within the international expected range. The malignancy rate is slightly higher than the 2% in the ACR guidelines. This higher rate gives the radiologist when concerned a justified indication for biopsy.

Key Words: Mammography; BIRADS-3; Biopsy;

Funding Agency: NO|NE

Nuclear Medicine and Radiology

120

Estimated Dose from Diagnostic Nuclear Medicine Patient to Workers and People outside N M department

Sdeeg M
Jaber Al Ahmed center for Molecular Imaging and Nuclear Medicine

Introduction:
This study was to investigate the radiation exposure the patient undergoing diagnostic nuclear medicine (NM), to minimise the risk to the family (carers and comforters) and workers from ionisation radiation emanating from the patient doses.
N M uses radioactive materials which give rise to unnecessary exposure to staff, family and the public form patients undergoing nuclear medicine scans. According to (ICRP) publications 53, 80 and 106 for all scan types, doses are estimated to be substantially less than the trigger level of 300 µSv. Staffs receive the highest dose (up to 80 µSv) from for out-patients, the highest doses (up to 100 µSv)

Methods:
The data were collected from (Jaber Al Ahmed Centre for Molecular Imaging and Nuclear Medicine. The study involved 20 patients who were injected FDG with doses ranging (5 mci -3.3 mci), The survey was performed according to the ALARA principle recommended by ICRP, these principles are time and distance, a survey meter were used to measure dose rates for the patients one hour after injection then one hour following acquisition time, before the patient left the N M Department. Distances chosen were 5 cm and1 meter. 15 patients scan post voiding and 5 patient scans pre-voided

Results:
Based on the data of this study, the average dose rate for first scan (90 µSv – 76 µSv) at 5 cm and (9 µSv – 7.5 µSv), the second scan (48 µSv – 33 µSv) for 5 cm and (5.3 -3 µSv) the dose reduced between 43% to 53 % and 5 patient scans pre-voided more than 10% compare with post voiding

Conclusions:
According to ALARA principle to minimise the dose reduce time and distance. Reduced dose rate by 43% -53% will lead to minimisation of the risks to family and staffs, Its recommended the patient to drink more water and stay 1 h after acquisition time, and radiation worker should take measures to avoid longer attachment with the patient by speeding up their work to reduce time with a sufficient distance to reduce the

Key Words: NM: Nuclear Medicine , JAC:Jaber Al Ahmed center; ICRP: International

Funding Agency: None

Nutrition and food science

121

Prevalence of microminerals deficiencies among adolescent school children in Kuwait

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Introduction:
Microminerals such as copper (Cu), manganese (Mn), selenium (Se) and zinc (Zn) are essential for both physical and neurological/mental development. Adolescents usually do not meet their recommended daily intake due to unhealthy eating patterns. There is a paucity of data on the prevalence of the deficiencies in these microminerals among adolescents in Kuwait. We aimed to estimate the prevalence of microminerals deficiency in large nationally representative sample of adolescents in Kuwait.

Methods:
A cross-sectional study was conducted on 1396 (681 males) adolescents aged 11-16 years, who were randomly selected from public middle schools in Kuwait. Whole blood samples (0.5ml) were digested in 5 ml Perchloric/Nitric acid mixture (1:5) on a shaker, overnight to insure complete dissociation. The samples were then heated on a hotplate to evaporate the Perchloric/Nitric acid mixture completely. The residues were dissolved in 5 ml 1% Nitric acid and analyzed for micromineral by Inductively Coupled Plasma Mass Spectrometry (ICP-MS). Chi-square test was used for estimating the difference between boys and girls.

Results:
Compared to the published reference values, the proportion of children with insufficient (below the reference range) Cu, Mn, Se and Zn were 97.6%, 41.3%, 79.4% and 75.6%, respectively. Furthermore, 12.5% children had Mn levels above the reference range. Males compared to females had significantly higher prevalence of deficiencies of Cu (99.1% vs. 96.1%, $p<0.001$), Mn (44.2% vs. 38.6%, $p<0.001$) and Zn (79.4% vs. 71.9%, $p=0.001$). No significant difference was observed in the prevalence of Se deficiency between boys and girls.

Conclusions:
Our data suggest that micromineral deficiencies are widespread among adolescents in Kuwait, which may have significant public health implications. Measures to address these deficiencies and to prevent their consequences should be a priority in Kuwait.

Key Words: Kuwait , Prevelance; Deficiency ,Adolescent; Micro-minerals ;

Funding Agency: Kuwait university project No. WF02/13

Obstetrics and Gynecology

122

Tractocile in the management of preterm labour in Kuwait

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Introduction:
Preterm labour is responsible for 75 to 90 percent of all neonatal deaths and 50 percent of childhood neurological morbidities, and high immediate and long-term costs after discharge from hospital. Atosiban (Tractocile) is an inhibitor of oxytocin and used as a tocolytic to halt premature labour.
Objective of this study is to investigate the outcome of the use of atosiban at the Maternity Hospital Kuwait

Methods:
In this retrospective study, data was collected from the computer system of Maternity Hospital Pharmacy, involving the amount of Atosiban dispensed between October 2017 and September 2018. The use of Atosiban was in three steps of a bolus of atosiban given by intravenous injection of 7.5 mg given over 1 minute, 300 mg\min over 3 hours and 100 microgram /min over 48 hours between 24 and 33 weeks of gestation.

Results:
During the study period, 408 patients were administered atosiban, but outcome was traced in only 238. In 24 patients (10.1%), contractions continued to preterm delivery, 84 patients (3.8%) had the labour delayed for 48 hours and majority 130 (50.8%) had an average delay of 7 days and 9 reached term. Generally, atosiban was well tolerated by patients with no observed side-effects.

Conclusions:
Atosiban is a safe tocolytic drug with high degree of efficacy. Prospective studies are advocated to ascertain the efficacy.

Key Words: Preterm labour; Atosiban; Tocolysis, Safety, Efficacy;

Funding Agency: None

Obstetrics and Gynecology

123

Determinants of Caesarean section rate in Kuwait.

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Introduction:
Over the past five decades, there has been a steep increase in the caesarian section rate worldwide. According to World Health Organisation "every effort should be made to provide caesarian sections to women in need rather than striving to achieve a specific rate and caesarian sections are effective in saving maternal, and infant lives, but only when they are required for medically indicated reasons.".
Objective of the study: This is a retrospective study was carried out to spotlight the increasing rate of caesarian sections in Kuwait and the indications in the period between January 2017 till December 2017.

Methods:
Data were collected from the Maternity Hospital. The variables included Patients' age, parity, gestational age, induction state, whether induced or not, primary vs. repeated caesarian. Complications were listed as vascular or urological injuries, postpartum hemorrhage (PPH), and CS Hysterectomy.

Results:
A total of 11,909 deliveries were conducted in the period between January 2016 and December 2016. Out of these, there were 6229 spontaneous vaginal deliveries SVD (52.3%); including twins normal delivery and assisted breech delivery, 668 operative vaginal deliveries OVD (5.6%), and 5012 caesarian sections CS (42.1%). Out of the 11,909 total deliveries, 1717 were induction of labour cases. Successful induction of labor was achieved in 59.7% of the cases, while 40.3% of the induction cases ended in caesarian sections. There were two hundred cases of Assisted Reproductive Technology, 69% delivered by a caesarian section and 31% delivered vaginally.

Conclusions:
There is increasing Ceasarian section rate in Kuwait. There is need to halt and reduce the trend.

Key Words: Kuwait; Cesarean Section; Increasing Rate;

Funding Agency: None

Obstetrics and Gynecology

124

Significance of oxytocin receptors in pregnancy.

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Introduction:
The initiation of term and preterm labour is shrouded in controversies and confusion. Oxytocin is known to regulate contraction of the gravid uterus in the presence of its receptors
Objective of the study: To investigate the association between gestational age and serum levels of oxytocin receptors.

Methods:
Between October 2017 and May 2018, 68 women were studies as to the relationship between serum oxytocin receptors and gestation, comparison of oxytocin receptors in women with oxytocin receptors in women with preterm labour and their counterparts with similar gestation but no contractions and those with posterm prepared for induction of labourand controls. 10 ml of blood was withdrawn and serum separated and stored at-80*C. Oxytocin receptors serum levels were then measured by ELISA after thawing

Results:
There was significant increase of serum oxytocin receptors from first trimester-1.42±0.45ng/ml to second trimester - 2.04±1.01 ng/ml ($p<0.04$) and to third trimester-2.35±1.06ng/ml ($P<0.05$). Women with preterm labour between 24 and 36 weeks had higher oxytocin receptors than their matched controls 3.17±1.10 vs 1.31 ($p<0.001$) and with spontaneous onset of labour at termand those women postterm; 2.80±0.79 ng/ml vs1.30±019ng/ml ($p<0.001$). There was no difference between non-haemolysed and haemolysed blood samples

Conclusions:
Serum oxytocin increases with gestation, with high levels in women with preterm labour and decreased levels in postterm pregnancies

Key Words: Oxytocin receptors, ,; Preterm labour; Postterm;

Funding Agency: None

Obstetrics and Gynecology

125

Bioinflammatory markers in gestational diabetes mellitus (GDM)

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Introduction:
Gestational diabetes mellitus (GDM), which is defined as impaired glucose tolerance with onset or first recognition during pregnancy, is one of the most common pregnancy complications and affects approximately 3–8% of all pregnancies. GDM is thought to be partly attributed to secretion of upregulated inflammatory cytokines from gestational tissues that accelerate insulin resistance. Among these cytokines, extensive attention has been given to TNF-α, leptin, and adiponectin. TNF-α is one of candidate molecules responsible for causing insulin resistance during pregnancy.
Objective of study. To investigate the relationship between inflammatory factors, including C-reactive protein (CRP), tumor necrosis factor alpha (TNF-α), adiponectin, leptin and gestational diabetes mellitus (GDM).

Methods:
From September 2017 to June 2018, 53 cases with gestational diabetes mellitus, 41 cases of normal pregnancy (controls) were enrolled in this study. Fasting venous blood were obtained prenatally. Seruml adiponectin, leptin and TNF-α and the other cytokines and C-reative protein (CRP) were measured by ELISA, At delivery, Cord blood of both GDM and Controls were collected and the above biomarkers similarly estimated by ELISA

Results:
The proinflammatory Cytokines were significantly lower in women with GDM than controls; TNF-α (pg/ml), 46.9 vs 108.7 ($p<0.025$) IL-I β 35.8 vs 67.1 ($p<0.oo1$), IL-6 1.81 vs 11.8 ($p<0.025$), IL-8 96.7 vs 223.3 ($p<0.001$. Similarly, Adiponectin 5.7 vs 8.4 ($p<0.03$) but Leptin was higher in women with GDM 31.9 vs 23.5 (0.025) and no differences in IL-12, IL-13 and IL-17. Convertly all the Proinflammatory Cytokines were significantly higher in the cord blood of GDM neonates

Conclusions:
Proinflammatory cytokines and adiponectin are significantly lower than in con. On the other hand, the proinflammatory cytokines were significantly higher in GDM cord blood than control. TNF-α might be the index to predict GDM and evaluate prognosis

Key Words: Gestational Diabetes Mellitus; Inflammatory Biomarkers; Cord blood;

Funding Agency: None

Oncology

126

Influence of hypoxia on proliferative and migratory capacity of endocrine sensitive and resistant breast cancer cells

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Introduction:
Metabolic behavior of tumor cells under hypoxic conditions found in the core of a tumor mass is influenced by the actions of hypoxia-induced factor (HIF). Breast cancer cells cultured under hypoxia display increased motile/invasive capabilities. However, to metastasize in vivo, hypoxic cells within the tumor core must penetrate layers of other cancer and non-cancer cells to gain access to vascular elements present nearer to the surface of the tumor mass. We have already demonstrated loss of endocrine control leads to increased motile and invasive behavior in vitro. Our aim in this study was to investigate the effect of hypoxia on breast cancer cells.

Methods:
Hypoxia was induced by culturing cells [MCF10A, PII, YS1.2] in a hypoxic chamber, or using chemical agents [cobalt chloride or deferoxamine]. HIF1α expression was measured using western blotting, ELISA and Immunofluorescence. Cell proliferation was measured using MTT assay. Cell motility and invasion were determined using scratch assay, live cell imaging and matrigel assays.

Results:
All experiments, performed in replicates, found that under hypoxic conditions, expression of HIF1α was significantly elevated in ER- cells ($P<0.001$) compared with ER+ or normal cells. In all cell lines, proliferation was inhibited whereas motility was increased, particularly in ER- cells ($P<0.001$). Also, ER- cells were able to penetrate and invade a dense layer of ER+ cells, as well as move out of a mixture of ER± cells ($P<0.05$). However, hypoxia did not increase the migration of ER- cells through a layer of basement membrane extract.

Conclusions:
Hypoxia increases the expression of HIF1α more in ER- cells which leads to higher cell aggressiveness and motility than in ER+ breast cancer cells, suggesting that hypoxic cells at the core of the tumor can penetrate layers of other cancer and non-cancer cells in order to gain access to vascular elements at the tumour periphery enabling them to metastasize.

Key Words: breast cancer; Hypoxia; invasion ;

Funding Agency: Graduate studies project, YP03/17

Oncology

127

Contribution of elevated miR-146b-5p to papillary thyroid cancer diagnosis and development

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Introduction:
Papillary thyroid carcinoma (PTC) represents 80% of thyroid cancers and ranks among the five most common cancers in many countries including Kuwait. MicroRNAs (miRNAs) are endogenous non-coding RNAs that contribute to the pathogenesis of multiple cancers by interfering with many biological processes. PTC specific miRNAs can have clinical utility as diagnostic and prognostic markers or targets to manipulate the progression of the disease. Objective: To investigate the diagnostic potential and the biological function of miR-146 in PTC development.

Methods:
The expression of miR-146b-5p was assessed by Quantitative real time PCR in different variants of PTC (113 samples). miR-146b-5p inhibitor was transfected into primary thyroid cultured cells and the activity of 5 signaling pathways were assessed by luciferase assay. The obtained results were confirmed by immune-fluorescence staining. Effect of miR-146b-5p inhibition on apoptosis in PTC cultured cells was assessed by flow cytometry.

Results:
The real time PCR results followed by analysis with the Receiver operating characteristic curve showed that miR-146b-5p significantly discriminates classic PTC from other PTC variants and benign tumors. Inhibition of miR-146b-5p activated the JNK/AP1 pathway and increased the number of apoptotic cells. Active Phospho-JNK was detected by immunofluorescence in the nuclei of tumor cells in PTC cases with low miR-146b-5p level but not detected in tissues with high miR-146b-5p. These results confirm that miR-146b-5p inhibits activation of the JNK/AP1 pathway in vitro and in vivo. Considering the importance of the JNK pathway in facilitating the stress mediated cell death, inhibition of this pathway can be an attempt of the cancer cells to overcome the stress response and maintain survival.

Conclusions:
high level of miR-146b-5p distinctively characterizes classic PTC. miRNA-146b-5p contributes to PTC carcinogenesis by regulating the stress kinase pathway in thyroid cells.

Key Words: Thyroid cancer; microRNA; stress kinase pathway ;

Funding Agency: Research sector YM 08/15

Oral cancer

128

Oral Cancer Knowledge, Attitudes and Practices among Primary Oral Health Care Dentists in Kuwait

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Introduction:
Oral cancer signifies a public health concern of international importance. Early detection of oral cancer can improve the prognosis and the 5-year survival rate. The aim of this study was to assess the level of oral cancer knowledge, opinion, attitudes and practices among dentists working at the primary oral health care centers in Kuwait.

Methods:
In this cross-sectional study, self-reported questionnaire was distributed to the dentists working at the primary oral health care centers in Kuwait. A total of 289 dentists participated in the present study. The questionnaire included 23- questions on oral cancer knowledge, opinion, attitudes and practices.

Results:
The mean age of the dentists was 35.2 ± 10.9 years. Approximately, all dentists (99.7%) were aware of the major risk factors that were most likely associated with oral cancer. Overall, majority of the participants knew the most common form of oral cancer (80.6%), most common site (80.3%) and the likely lesions associated with oral cancer occurrence (87.9%). A large number of dental practitioners (81%) would routinely refer a patient with a suspicious lesion to a specialist. Nearly one-third (32%) reviewed their patients' oral cancer risk factors. Approximately two-thirds (62%) assessed the use of tobacco in their practice. Almost, all (92.4%) were interested in attending continuing education courses on oral cancer.

Conclusions:
Majority of the participants presented good knowledge about various aspects of oral cancer. More continuing education programs on risk factors and diagnosis of oral cancer should be organized to train the dentists. Oral cancer screening should be a routine procedure for the high risk patients at the primary oral health care centers in Kuwait.

Key Words: Oral cancer; Knowledge; Primary oral health care dentists; Kuwait;

Funding Agency: None

Pathology

129

Myofibroma - a rare entity with frequent misdiagnosis

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Introduction:
Myofibromas are rare benign fibroblastic-myofibroblastic tumors that have a predilection for the head & neck (H&N) region in children. Due to its rarity, the presence of atypical radiologic/histologic features may lead to a misdiagnosis of malignancy by general pathologists. In this retrospective review we examine the pathologic features of this tumor and the frequency of misdiagnosis.

Methods:
Myofibromas diagnosed in 2005-2018 were retrieved from several labs in Kuwait. H&E and immunohistochemistry (IHC) slides were reviewed by 2 subspecialized pathologists (H&N and soft tissue).

Results:
A total of 9 myofibromas were identified in 5 males & 4 females (mean age 9.4 y; range 4 wk to 24y). Six (67%) were < 18 years old. Five cases arose in the head & neck (4/5 oral cavity, 1/5 orbit) and 4 on the trunk. Tumor sizes were 1.5-4cm (mean=2.5). The lesions were solitary in 8/9 cases and multiple in 1/9. Radiologically, the differential diagnosis of myofibroma was not considered in any of the cases as most were suspicious for malignancy. Histologically, almost all cases showed a fascicular pattern (8/9), hemangiopericytoma-like vascular pattern (4/9), without significant nuclear pleomorphism. Mitosis was 0-12/10hpf. On IHC, most were diffusely positive for SMA & negative for desmin, CD34, and p-CK. A misdiagnosis of malignancy was made in 2/9 cases in this series, with an initial diagnosis of leiomyosarcoma, partly due to the pathologist's unfamiliarity with the morphological spectrum of this tumor and misleading IHC results. These occurred in the jaw and had infiltration into bone & skeletal muscle. The rest of the cases were diagnosed in consultation with a head & neck specialist from the outset minimizing the risk of misdiagnosis.

Conclusions:
Myofibroma is rarely encountered in general pathology practice. Its rarity and variable histologic features frequently result in misdiagnosis. Distinction from malignant tumors is vital to prevent overtreatment.

Key Words: Myofibroma; Head and Neck; Fibroblastic tumor;

Funding Agency: None

Pathology

130

Assessment of the diagnostic impact of glioma reclassification based on the 2016 WHO integrated molecular/histological classification system

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Introduction:
The 2016 WHO classification of brain tumors has incorporated molecular parameters in addition to histology to define diffuse gliomas. This integrated approach has important diagnostic & therapeutic implications. The aim of this study is to reclassify a cohort of diffuse gliomas, previously diagnosed on histological grounds alone, using the updated WHO system to evaluate its impact on the final diagnosis.

Methods:
Gliomas, diagnosed between Jan 2015-Sep 2018, were retrieved from the pathology database at Kuwait Cancer Control Center. The tumors were reclassified incorporating key genetic markers e.g. IDH1/2 mutations and 1p19q codeletion. A glioma was labelled "not otherwise specified (NOS)" when molecular results were inconclusive or incomplete.

Results:
Out of 87 gliomas, 56 (64%) had available molecular results (47 males, 9 females, mean age 41 years, range 12-69). Original diagnoses were as follows: diffuse glioma of "ambiguous" histology (n=22), diffuse astrocytoma (DA=5), anaplastic astrocytoma (AA=3), oligodendroglioma (ODG=7), anaplastic oligodendroglioma (AODG=2), and glioblastoma multiforme (GBM=17). IDH1/2 mutations were detected in 23/46 cases tested (50%), with R132H mutation in IDH1 being the most frequent, seen in 18/23 cases (78%). Following revision, all ambiguous cases were classified into specific categories mostly as astrocytoma (increasing the number from 8 to 27 cases in total) and into subcategories e.g. IDH-mutant & IDH wild-type. Also, 3/7 original ODGs were reclassified into DA, being negative for 1p19q codeletion, highlighting the lower diagnostic threshold for this tumor type on histology alone. All GBMs remained as such but the diagnosis was refined into subcategories. Five cases were labelled as NOS due to limited molecular testing.

Conclusions:
The integrated 2016 WHO criteria leads to more objective classification of gliomas and elimination of the "ambiguous" group. However, limited access to molecular resources is a major obstacle.

Key Words: Glioma; Brain tumor; IDH1/2;

Funding Agency: None

Pathology

131

Atypical Squamous Cells of Undetermined Significance: Interlaboratory comparison and human papillomavirus testing.

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Introduction:
Cervical cytology is the mainstay of screening for carcinoma of the uterine cervix. The significance of Atypical Squamous Cells of Undetermined Significance (ASCUS) diagnosis is controversial and in several laboratories is not given importance. The percentage of ASCUS varies from 1.6% to 9% in different laboratories. The role of Human papillomavirus (HPV) testing in cervical cancer is well documented. Our aim is to review the morphological diagnosis of ASCUS and compare with high risk HPV (HR-HPV) typing.

Methods:
Cases reported as ASCUS on liquid-based preparations in the cytology laboratory of Mubarak Al kabeer Hospital were reviewed from June 2017 to May 2018. Two pathologists and a cytotechnician blindly reviewed 180 Papanicolaou smears reported as ASCUS and categorized them using The Bethesda system (2014) into negative for intraepithelial lesion or malignancy (NILM), ASCUS, atypical glandular cells (AGC), low-grade squamous intraepithelial lesions (LSIL) and high-grade squamous intraepithelial lesions (HSIL).The results of HR-HPV testing in these patients was correlated. For statistical analysis, the nationality was also evaluated.

Results:
The review diagnosis in 180 reported cases of ASCUS was NILM in 58 (32.2%), ASCUS in 105 (58.3%), AGC in 7 (3.9%), LSIL in 6 (3.3%), HSIL in 2 (1.1%), ASCUS with AGC in 2 (1.1%).In 58 patients classified as NILM on review, HR-HPV showed positivity in only 1 case while HR-HPV positivity was seen in 20 of the 105 (19%) ASCUS cases.

Conclusions:
This study highlights that cervical smears reported as ASCUS need to be reviewed to avoid unnecessary HR-HPV typing. HR-HPV typing was seen in 19% of our ASCUS cases, this is important for further management.

Key Words: Papanicolaou smears; ASCUS; HR-HPV;

Funding Agency: None

Pathology

132

Classification of Endoscopic Ultrasound Guided Fine Needle Aspiration Cytology Samples from Pancreatic and Peri-pancreatic Mass Lesions Using The Standardized Pancreatobiliary Terminology proposed by the Papanicolaou Society of Cytopathology.

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Introduction:
Cytopathologists play a very important role in the diagnosis and management of pancreatic mass lesions for which the endoscopic ultrasound guided (EUS) method has become the one of choice. The Papanicolaou Society of Cytopathology has proposed a standardized terminology for reporting fine needle aspiration cytology (FNAC) smears to facilitate clear communication between cytopathologists and clinicians. In this study this terminology was used to classify FNAC of pancreatic and peri-pancreatic lesions which were reported in our laboratory.

Methods:
91, EUS guided FNA samples were reported at the cytopathology laboratory Mubarak Al Kabeer Hospital. between November 2016 and November 2018. These cases were classified according to the method proposed by the Papanicolaou society of cytopathology in the following categories I) Nondiagnostic II) Negative (for malignancy) III) Atypical IV) Neoplastic; subcategorized as A) Benign B) Other V) Suspicious VI) Malignant

Results:
Of the 91 cases, there were 66 males and 25 females. The age range was 11 to 86 years with a median age of 56 years. The distribution of cases according the terminology was as follows: (I) Nondiagnostic: 23 cases (II) Negative for malignancy: 6 (III) Atypical: 2 (IV) Neoplastic (A): Benign: 5 (B) Other: 8 (all neuroendocrine tumors) (V) Suspicious: 7 (VI) Malignant: 40 (All ductal adenocarcinomas).

Conclusions:
This is the largest series of cases reported from the Middle East on EUS FNA samples of pancreatic and peri-pancreatic mass lesions and highlights the utility of the Papanicolaou terminology in classifying these lesions.

Key Words: Endoscopic Ultrasound guided FNAC; Pancreas; Papanicolaou terminology;

Funding Agency: None

Pediatric Psychology

133

Predictors Of Cognitive Function Among Adolescents In A High-Income Setting

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Introduction:
Poor cognitive function during childhood and adolescence is strongly linked to various negative health outcomes in adulthood. We aimed to investigate predictors of cognitive functions including obesity, nutritional deficiencies such as low level of vitamin B12, iron and ferritin.

Methods:
A school-based cross-sectional study was conducted on 1370 students aged (11-16) years from 12 public middle schools that were selected using stratified multistage cluster random sampling with probability proportional to size from all governorates of Kuwait. Raven's Standard Progressive Matrices (SPM) was used to assess the cognitive functions of the study participants. Data on predictors of cognitive function were collected from parents and adolescents. Weight and height of the participants were measured in a standardized manner and blood samples were tested in an accredited laboratory under strict measures of quality control.

Results:
The mean (SD) age was 12.40 (0.93) years, while the mean (SD) SPM score was 101.30 (23.43), which was not significantly different by gender (p=0.12). In multivariable linear regression analysis, factors that showed significant association with the SPM score were gender (p=0.002), season of birth (p=0.009), place of residence (p<0.001), father's (p (<0.001) and mother's (p=0.025) educational level, type of housing (p<0.001), passive smoking at home (p=0.31), sleeping hours during weekends (0.017), students educational level (p<0.001) and the frequency of consumption of sugary drinks (p<0.001).

Conclusions:
Several sociodemographic variables were significantly associated with cognitive function. Interestingly, parental education (but not family income) was a predictor of cognitive function, while obesity and laboratory markers were not significantly associated with cognitive function among adolescents.

Key Words: Cognitive function; Adolescents; Raven's Progressive Matrices;

Funding Agency: Kuwait University Research Project No. WF02/13

Pediatrics

134

Alpha Thalassemia Alleles in Kuwait

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Introduction:
Alpha thalassemia is a widely distributed genetic disorder worldwide, with a prevalence of ~5 – 60% in the Arabian Peninsula. Deletions involving the α-globin genes are the commonest alleles although a few non-deletional mutations are known. The present study reports alleles detected among patients referred on a suspicion of α-thalassemia, based on microcytic, hypochromic anemia, H band on HPLC with or without H inclusions.

Methods:
The samples were analyzed between 1994 and 2015. Hemolysates were subjected to high performance liquid chromatography for hemoglobin quantification. DNA was extracted with phenol and all patients were screened for α-thal alleles by PCR, allele-specific oligonucleotide hybridization and/or reverse-dot blot hybridization.

Results:
There were 400 individuals studied, 54.1% and 45.1% males and females respectively. Most (90.8%) were Kuwaitis. There were 25 different genotypes; the commonest being homozygosity for the polyadenylation AATAAA/AATAAG, non-deletional mutation ($\alpha^{PA-1}\alpha/\alpha^{PA-1}\alpha$) in 33.3%, followed by α^{PA-1} heterozygotes (32.3%) and compound heterozygotes ($\alpha^{PA-1}\alpha/-\alpha^{3.7}$) in 20.5%. Among the total of 655 chromosomes studied, there were 10 α-thalassemia alleles characterized. Apart from the common PA-1 mutation and the -3.7 kb deletion, rare alleles included the α^0 (MED), α0 (FIL), Hb Constant Spring, α2 cd 19 (-G), α2 cd 59 (G/A) were seen at different frequencies.

Conclusions:
α-Thalassemia is common in Kuwait and the HbH phenotype is frequently encountered. The commonest genotype is $\alpha^{PA-1}\alpha/\alpha^{PA-1}\alpha$, which has a mild phenotype. The frequency of the α0 (MED) is 0.019, which indicates that hydrops fetalis may be seen among Kuwaits. This has implication for premarital screening and counselling. Novelty: No previous reports of alpha thalassemia alleles in Kuwait.

Key Words: Alpha thalassemia; Alleles; Kuwait;

Funding Agency: None

Pediatrics

135

Audit of healthcare for children and adolescences with type 1 diabetes in a tertiary center in Kuwait

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Introduction:
Intensive glycemic control reduces microvascular and long term macrovascular complications as demonstrated by the Diabetes Control and Complications Trial. Furthermore, the Epidemiology and Diabetes Interventions and Complications Study had introduced the concept of "metabolic memory" that stresses the importance of optimal glycemic control since the onset of diabetes. The aim of this study is to audit the quality of diabetes care by assessing the glycemic control (HbA1C) of children and adolescences with Type 1 Diabetes (T1D) treated at our tertiary institution.

Methods:
This is a retrospective cross-sectional study including patients with T1D treated at the Pediatrics Unit at Dasman Diabetes Institute between January 2013 and December 2015.

Results:
A total of 470 patients (250 males and 220 females, p= 0.209) were assessed. Half of the patients had mean HbA1C levels in the high risk range (>9%) and less than 15% had met the target for optimal glycemic control with HbA1C <7.5%. Most of school-aged patients (58.7%) and adolescence (50.2%) had their glycemic control in the high risk range (HbA1C >9%) whereas children less than 6 years of age were mostly (56.9%) maintaining their targets in the suboptimal range (p=0.002).

Conclusions:
In our institution, children and adolescence with T1D did not achieve optimal targets for glycemic control especially older age groups. Despite the advances in technologies available for the management of diabetes, it is still challenging to achieve optimal glycemic control in youth with T1D. Nationwide information on the quality of diabetes care is crucial to plan comprehensive prevention and treatment strategies targeted towards preventing future complications and improving the quality of life of youth with T1D in a country.

Key Words: Type 1 Diabetes; Glycemic control; Health Audit;

Funding Agency: Dasman Diabetes Institue. RA 2015-021

Pediatrics

136

Type 2 Diabetes in Children in Kuwait: Results from the Childhood-Onset Diabetes eRegistry (CODeR)

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Introduction:
Type 2 diabetes (T2D) has been emerging as a public health problem in children and adolescents worldwide. Despite this, there has been paucity of data accurately assessing T2D in Kuwait. The aim of this study is to report the incidence of T2D in children in Kuwait.

Methods:
As per the 2014 ISPAD guidelines, all Kuwaiti patients (aged 0-14 years) who were newly diagnosed with T2D registered through the Childhood-Onset Diabetes eRegistry (CODeR) during the period of 2011-2013 were included in the study.

Results:
During the study period, a total of 599 patients were diagnosed with diabetes among which 31 patients were classified as T2D (5.18%). The male to female ratio was 1.07. The mean body mass index at diagnosis was 32.68 ± 6.76 Kg/m2 for boys and 32.85 ± 6.83 for girls. The crude incidence rate (95% CI) was 2.46 (1.66-3.57) per 100,000 per year (2.48 (1.4 - 4.19) among boys and 2.43 (1.95 - 2.92) among girl). At diagnosis, mean age was 12.3 years (±1.5) and mean HbA1C was 9.2% (±2.3) with no gender difference. Out of the 31 patients diagnosed with T2D, two patients (6.5%) had positive anti-pancreatic antibodies.

Conclusions:
We present the first report on incidence rate of T2D in Kuwait. Future research should concentrate on reporting glycemic control, complications, and quality of life of these children. Such information is crucial in planning strategies targeted towards prevention and treatment of T2D.

Key Words: type 2 diabetes; diabetes; kuwait;

Funding Agency: Dasman Diabetes Institue.

Pediatrics

137

A 7 year old boy with short stature and hepatomegaly

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Introduction:
Background: Glycogen storage disease type IX is a rare disease with variable clinical manifestations and severity. Short stature is one of the clinical manifestations of this disease. We are reporting a patient who was evaluated for short stature and was confirmed to have Glycogen storage disease type IXb.

Methods:
A 7 2/12 year old boy was referred to Endocrine clinic with short stature. Examination was positive for marked hepatomegaly. His height was -3.03 SD. Hormonal workup (T4, TSH, IGF-1 and IGFBP-3) for short stature was negative. CK, uric acid, lactate, lipid profile, and echo were all normal. Blood glucose was 3.8 mmol/L and liver function test showed slightly raised total bilirubin and AST.Whole-exome sequencing detected a previously unreported homozygous variant in exon 13 of the PHKB gene, c.1330G>A. In addition, his sister was detected to be homozygous variant of the same mutation. The parents were found to be heterozygous carriers of the mutation. A genetic diagnosis of glycogen storage disease type 9b is given. Cornstarch was not started since the patient did not have hypoglycemia on follow up. The case is being monitored currently in metabolic clinic and endocrinology for short stature outcome. Given the nature of the disease and hepatic involvement, growth hormone therapy was not initiated.

Conclusions:
Clinical manifestations of GSD IX is reported to disappear by adolescence, however, not enough data on short stature outcome has been described. Few reports have mentioned normalization of short stature while the patients were on treatment (cornstarch). Further studies needed to address outcomes of short stature in GSD IX adolescents and growth hormone safety in GSD.

Key Words: short stature; glycogen storage disease; hepatomegaly;

Funding Agency: None

Pediatrics

138

Galactose and Galactose-1-Phosphate attenuate Insulin-like Growth Factor-1 Activity through Receptor Impairment in Neonate Skin Fibroblast Cultures

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Introduction:
Pathogenesis of classical galactosemia is known to involve a cascade of cytokines, reactive oxygen species and growth factors. Growth factors, particularly Insulin-like growth factor-1 (IGF-1), regulate growth and development from fetal stage to adulthood. This study was carried out to examine ex vivo, the mitogenic activity of different growth factors under galactosemic conditions.

Methods:
Fibroblasts derived from foreskin of 3-8 days old healthy neonates were cultured for 1 -14 days with 0-20mM galactose or 0-10 mM galactose-1-phosphate (Gal-1-P) and then stimulated with 5% FBS or 50 ng/ml of PDGF or FGF or IGF-1 for 24 hrs. DNA synthesis was measured and protein expression of PDGFR, FGFR and IGF-1R was assessed by Western blotting. Supraphysiological concentrations of Galactose significantly decreased FBS- and IGF-1-induced BrdU incorporation.

Results:
Presence of Gal-1-P (5-10mM) in culture medium for 7-14 days significantly ($p<0.01$) decreased IGF-1-, PDGF- or FBS-stimulated DNA synthesis. While treatment with Gal-1-P selectively and significantly reduced the protein expression of IGF-1 receptor, Galactose treatment did not have any marked effect on examined growth factor receptors.

Conclusions:
This study demonstrates that Gal-1-P might be responsible for a receptor-mediated impairment of growth factor activity under chronic hypergalactosemic conditions, thereby providing a new insight into molecular mechanisms galactosemia pathogenesis.

Key Words: Igf-1 Receptor; Galactosemia; Neonates;

Funding Agency: Research Sector, Kuwait University MK 01/ 16

Pharmacology and Toxicology

139

A Protective Role of The Hydrogen Sulfide Donor GYY4137 Against Diabetes-Associated Vascular Complications in Mesenteric Bed of STZ-Diabetic Rats

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Introduction:
Hydrogen sulfide (H2S) is reported to have beneficial effects in biological systems. More attention is focused towards examining potential biological significance of H2S in different pathological conditions. A protective role of H2S against diabetes-associated vascular dysfunction is suggested. Objectives of this study included investigation of: (1) effects of chronic treatment of diabetic rats with GYY4137 on reactivity of mesenteric bed to vasoactive agonists, and (2) nitric oxide (NO) and H2S levels in control and treated groups.

Methods:
Male SD rats weighing 250 g are used according to National Institutes of Health Guide for Care and Use of Laboratory Animals. Rats are divided into four groups: control (C), C+GYY1437 (50mg/kg, ip daily) diabetic (D) and D+GYY4137. Diabetes is induced by ip injection (55 mg/kg) of streptozotocin (STZ). After 4 weeks of diabetes induction, rats are sacrificed and mesenteric beds are isolated for functional or biochemical studies. Reactivity of perfused mesenteric bed to carbachol (10−9-10−4M) or norepinephrine (NE) (10−9-10−5M) is determined by measurement of changes in perfusion pressure. Vasodilator responses to carbachol are investigated in perfused mesenteric bed after pre-contracting the tissues with NE 10-7 M. NO levels are measured in isolated tissues or plasma using Griess method. Biochemical assay is used to determine hydrogen sulfide levels. Data are presented as mean±S.E.M. of number of experiments (n=6-8).

Results:
Diabetes-induced abnormal reactivity of the mesenteric bed to NE or carbachol is significantly improved after chronic treatment with GYY4137 ($p<0.05$). Plasma levels of NO and H2S are significantly improved after treatment with GYY4137. However, H2S levels in the mesenteric be0d showed a non-significant increase in diabetic-treated tissues.

Conclusions:
Conclusion and novelty of findings: Our results indicate that GYY4137 is a promising novel therapeutic tool to prevent diabetes-associated vascular dysfunction.

Key Words: Nitric Oxide; Carbachol; Norepinephrine;

Funding Agency: YM06/18

Pharmacology and Toxicology

140

Bradykinin sensitizes the cough reflex via a B2 receptor dependent activation of TRPV1 and TRPA1 channels through metabolites of cyclooxygenase and 12-lipoxygenase

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Introduction:
Inhaled bradykinin (BK) has been reported to both sensitize and induce cough but whether BK can centrally sensitize the cough reflex is not fully established. In this study, using a conscious guinea-pig model of cough, we investigated the role of BK in the central sensitization of the cough reflex and in airway obstruction.

Methods:
Drugs were administered, to guinea pigs by the intracerebroventricular (i.c.v.) route. Aerosolized citric acid (0.2 M) was used to induce cough in a whole-body plethysmograph box, following i.c.v. infusion of drugs. An automated analyser recorded both cough and airway obstruction simultaneously.

Results:
BK administered by i.c.v. route dose-dependently enhanced citric acid-induced cough and the enhancement in Penh (mean cough ± SEM: 8.8 ± 1.7 and 15.9 ± 4.5 for 0.03 and 0.06 nmole ml-1 BK; respectively, compared to vehicle treated animals, 4.1 ± 1.3; $P < 0.05$; n= 5-9). This was reversed by administration of B2 receptor antagonist (mean cough ± SEM: 3.2 ± 1.3 and 2.0 ± 0.6 for 10 and 100 nmole ml-1 HOE-140; respectively, compared to vehicle pretreated animals, 10.0 ± 3.6; $P < 0.05$; n = 6-8), TRPV1 antagonist (mean cough ± SEM: 13.0 ± 3.5 and 4.4 ± 2.6 vs. 17.7 ± 3.2 for JNJ-17203212, 1 and 3 µmole ml-1, compared to vehicle pretreated animals, respectively; $P < 0.05$; n = 7-9),TRPA1 antagonist (mean cough ± SEM: 14.8 ± 4.7 and 4.5 ± 1.7 vs 19.5 ± 4.5 for 60 and 150 nmole ml-1 HC-030031 compared to vehicle pretreated animals, respectively; $P < 0.05$; n=8-13),COX inhibitor (mean cough ± SEM: 11.2 ± 4.6 and 5 ± 1.7 vs 17.1 ± 3.5 for 30 and 80 nmole ml-1 compared to vehicle pretreated animals, respectively; $P < 0.05$; n = 5-10), and 5/12-LOX inhibitor (mean cough ± SEM: 14.2 ± 4.2 and 5.2 ± 4.0 vs 19.8 ± 2.3 for 30 and 100 µmole ml-1 baicalein compared to vehicle pretreated animals, respectively; $P < 0.05$; n = 5-6). However, administration of 15-LOX-1 inhibitor did not alter BK-induced sensitization of the cough reflex and airw

Conclusions:

Our findings show that central BK administration sensitizes cough and enhances airway obstruction via a B2 receptor/TRPV1 and/or TRPA1 channels which are coupled via metabolic products of COX and/or 12-LOX enzymes.

Key Words: Cough; bradykinin; B2 receptors; TRPV1; TRPA1; cen; Bradykinin; B2

Funding Agency: This study was supported by the College of Graduate studies and by grant #YP05/16 from Kuwait University Research Sector.

Pharmacology and Toxicology

141

Hetero-dimerization of the Incretin Receptors

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Introduction:
The incretin hormones; glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide-1 (GLP-1) are important regulators of many aspects of metabolism including insulin secretion. Their receptors (GIPR and GLP-1R) belong to the secretin class of G protein coupled receptors, which recently have been shown to form dimers. Since both GIPR and GLP-1R are expressed on pancreatic β-cells there is a possibility that they could form hetero-dimers. Our objective is to investigate whether these receptors can form hetero-dimers in vitro and to investigate the impact of receptor activation on dimer formation.

Methods:
Receptor dimerization was investigated using a bioluminescence resonance energy transfer (BRET) saturation assay. GLP-1R was labelled at the C-terminus with a nano-luciferase (Nluc) and stably expressed in Flip-In HEK-293 cells. These cells were then transiently transfected with increasing concentrations of GIPR labelled at the C-terminus with a variant of yellow fluorescent protein (SYFP2). BRET saturation curves were generated following incubation in the absence of agonist to monitor constitutive dimerization or in the presence of either 1 micro M GIP or GLP-1.

Results:
BRET saturation curves were plotted as a ratio of SYFP2 fluorescence to Nluc luminescence. In the absence of agonist an exponential curve was generated, increasing and then reaching an asymptote, consistent with a saturable BRET signal. Treatment with GLP-1 resulted in a significant ($P>0.05$) increase in maximum BRET signal whereas treatment with GIP resulted in a non-significant decrease compared to non-stimulated, n=3.

Conclusions:
The results support the hypothesis that GIPR and GLP-1R form hetero dimers. The increase in BRET signal observed with GLP-1 treatment can be interpreted as either an increase in the number of dimers formed or a change in receptor conformation. Future experiments will investigate the impact of receptor dimerization on cells signal

Key Words: GIP; GLP-1; Dimerization;

Funding Agency: College of Graduate Studies, Kuwait University.

Pharmacology and Toxicology

142

A detailed analysis of the signaling properties of a dual incretin receptor agonist.

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Introduction:
Glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like pepide-1 (GLP-1) are important regulators of glucose homeostasis, making their receptors (GIPR and GLP¬1R) attractive targets in the treatment of type 2 diabetes mellitus. While GLP-1R agonists are used clinically to treat diabetes and obesity, the use of GIPR agonists remains controversial. Recent studies however suggest that simultaneous activation of GIPR and GLP-1R with a single peptide may provide superior glycemic and weight control than activation of GLP-1R alone. Our aim in this study was to investigate the signaling properties of a recently reported 'dual incretin' receptor agonist (P18).

Methods:
GIPR, GLP-1R or the closely related glucagon receptor (GlucR) were transiently expressed in HEK 293 cells. Activation of adenylate cyclase via Gs was monitored using a highly sensitive reporter gene assay (CRE-Luc). G protein-independent signaling was monitored using a bioluminescence resonance energy transfer (BRET) arrestin assay.

Results:
The native peptides; GIP, GLP-1 and glucagon displayed exquisite selectivity for their receptors in the CRE-Luc assay. The dual incretin P18 was able to activate both GIPR and GLP-1R with significantly higher potency ($P<0.05$) than the endogenous peptides. In contrast P18 was only able to activate GlucR at concentration above 1 µM. Furthermore, P18 did not act as an antagonist at GlucR. Interestingly P18 was significantly ($P<0.0001$) less potent than GLP-1 at recruiting arrestin to GLP-1R. All data are from at least 3 independent experiments.

Conclusions:
P18 activates both GIPR and GLP-1R with higher potency than the native peptides but has little activity at GlucR in a CRE-Luc assay. In terms of arrestin recruitment P18 was significantly less potent than GLP-1 at GLP-1R, suggesting that as well as being a dual incretin receptor agonist P18 is also a biased agonist.

Key Words: GLP-1; GIP; Biased Agonist;

Funding Agency: Research Sector, Kuwait University Grant Number YP04/17

Pharmacy

143

Does Regular Consumption of Beetroot Improve Chemotherapy-Induced Anaemia in Cancer Patients?

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Introduction:
Cancer patients are at high risk of developing anaemia either due to the nature of the disease or as a consequence of administering myelo-suppressive chemotherapeutic agents. This precipitates fatigue and general weakness. Cancer patients are seeking evidence-based knowledge about improving their dietary intake to manage chemotherapy side effects. Beetroot is a potent antioxidant and powerful source of dietary nitrates. Beetroot is considered a potential therapeutic treatment of heath conditions that are associated with inflammations and oxidative stress reactions. Also, it improves the endothelial function and iron level in the blood.

Methods:
In a comparative prospective study, 30 breast cancer patients with Invasive Ductal Carcinoma (IDC) who were candidates for a standard chemotherapy protocol [doxorubicin/cyclophosphamide+paclitaxel] were included. Patients were allocated to either consume beetroot juice [250ml/3-5times weekly], or no intervention [control group]. The baseline haemoglobin level was documented and monitored throughout the study.

Results:
The baseline haemoglobin level was comparative in the two groups (Hb>10.5g/dL) indicating that all patients started as either non-anaemic or with mild-anaemia (p-value 0.1).However, post-chemotherapy, the haemoglobin level was significantly higher in patients who had regular consumption of beetroot juice (p-value 0.00). While 13% of patients in intervention group had mild anaemia (Hb:10.1-11.9g/dL), 87% had moderate anaemia (Hb:8-10g/dL). None of these patients developed severe anaemia. Whereas the controls group had 40% mild anaemia, 53% moderate anaemia, and 7% developed severe anaemia (Hb:6.5–7.9g/dL).

Conclusions:
Cancer patients undergoing chemotherapy are at a high risk of developing anaemia, which worsens their quality of life. Beetroot juice consumption has been shown to prevent severe or life-threatening anaemia by maintaining acceptable haemoglobin level, and reduce the risk of progressing mild-moderate anaemia.

Key Words: Anaemia; Chemotherapy; Beetroot;

Funding Agency: None

Pharmacy

144

Barriers affecting the adoption of mobile apps for the self-management of type 2 diabetes: A systematic review

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Introduction:
Diabetic patients are required to manage many aspects of diabetes by themselves on a life-long basis. For that, diabetes self-management (SM) is the cornerstone of care and is a major determinant of micro and macrovascular outcomes. The potential of mobile apps to improve diabetes (SM) practices and patients' outcomes is well established in the literature. However, the barriers that affect the adoption of SM apps among Type 2 diabetes (T2D) patients and healthcare professionals (HCPs) are not as clear. Thus, the aim is to explore the barriers affecting the adoption of mobile apps for the SM of T2D and identifying the facilitators and barriers towards their adoption.

Methods:
Six electronic databases were searched for articles published from 2008. The search identified studies involving patients with T2D, HCPs and reporting on the barriers affecting their use of SM apps. Thematic analysis were undertaken for data synthesis.

Results:
27 articles were included. The findings were categorised into patients' and HCPs' perspectives. Patients' age was reported as a key factor affecting adoption. Technology illiteracy, lack of knowledge and awareness of self-managment apps, time constraints and a busy schedule were the main barriers towards patients' adoption of SM apps. While, the lack of knowledge about apps, workload, lack of time and lack of resources were the main barriers reported by HCPs for not recommending SM apps.

Conclusions:
Lack of awareness and knowledge of SM apps, as well as the need for maintained interaction, even in a virtual environment, to sustain feedback and monitoring activities seem to be common among HCPs and patients. The latter factor is key since it has been shown to improve diabetes outcomes. Our findings will be useful to HCPs and diabetes app developers who can identify the factors that can influence users' intention to leverage the benefits of diabetes SM apps.

Key Words: e-Health; diabetes; mobile apps;

Funding Agency: None

Pharmacy

145

Stability Study of Atorvastatin Cocrystals

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Introduction:
Stability is an integral part of formulation development and it is important in ensuring safety and efficacy of drug products. The aim was to evaluate the stability of atorvastatin (ATC) cocrystals, that were prepared by solvent drop grinding (SDG) method with two coformers, glucosamine (GluN) and nicotinamide (NIC).

Methods:
The cocrystal preparations; namely GL2 (1:3, drug: GluN) and NL2 (1:3, drug: NIC), physical mixtures; namely GP2 (1:3, drug: GluN), and NP2 (1:3, drug: NIC) and raw ATC were subjected to stability testing at room temperature (RT) and at 40°C ± 2°C/75 ± 5% RH for 6 months. Drug content was evaluated using a validated UFLC method at 2 months' interval during the storage period. After 6 months, dissolution rate, Fourier-transform infrared (FT-IR), powder x-ray diffraction (PXRD), differential scanning calorimetry (DSC), and mass analysis (MS) were applied as evaluation methods. Experiments were run in triplicates and average ± SD were calculated and differences were statistically evaluated by t-test ($p < 0.05$).

Results:
In all preparations, no significant changes were observed in ATC content after 6 months of storage at both storage conditions. When the data of dissolution results of all freshly prepared samples and after 6 months' storage were compared, no significant differences were found in the dissolution data of the untreated ATC, GP2 and NP2 physical mixture preparations. Moreover, the dissolution rate data of the freshly prepared cocrystals and the aged cocrystals at RT were higher and differ significantly from those at 40°C. These results are in accordance with MS, PXRD and DSC analysis.

Conclusions:
The prepared cocrystals were stable in different storage conditions with no significant changes in drug content. After storage at 40°C partial dissociation of the prepared cocrystals occurred due to the weak intermolecular hydrogen bonding between ATC and the coformers.

Key Words: Atrovastatin; Cocrystals; Stability ;

Funding Agency: College of graduates studies and research sector (YP01/16),Kuwait University

Pharmacy

146

Comparing glycaemic control: Super Attenders vs. Poor Attenders; A 5-year retrospective study in young patients with type 1 diabetes.

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Introduction:
Aims: Type 1 Diabetes Mellitus (T1DM) is a potentially life-threatening condition, with the majority of sufferers being children. Professionals have recognised the importance of managing the condition, often through a multidisciplinary care team and by the patient taking degree of responsibility and commitment to the care plan. This includes attending clinical appointments. The aim of this study is to examine the hypothesis that says: better clinic attendance (CA) correlates with improved management and outcomes.

Methods:
To select a sample for the study, Brighton's Royal Alexander Children's Hospital's database was used. T1D Children with a full 6-year record (2011-2016) were selected. The first year of this period was then discounted, leaving a sample of 54 children, with full 5-year records (HbA1c- along with attendance-records were provided). All the samples were anonymised.

Results:
1) There was a general statistical correlation between non-attendance (NA) and poor glycaemic control (GC), with high HbA1c levels, and a corresponding relationship between good attenders (GA) and better control. 2) Poor attendance (PA) was generally linked with a longer duration before any improvement in HbA1c levels was recorded, the opposite for GA. More significantly, between the super attenders (SA) and PA there was an average difference, over the 5-years, of 1.1% in their HbA1c levels. 3) There were no instances of excellent levels of GC among the PA, while nearly 25% of SA achieved this. 4) The min. average number of annual visits by any of the SA was 3.4, while the max. number in the other group was 3, suggesting that the minimum number of visits to aim for annually should be 4.

Conclusions:
From the results, it can be seen that CA positively affects the management of T1D in children, whereas NA tends to lead to less satisfactory levels of GC. Therefore, attendance needs to be encouraged and this important feature should be emphasised to both the patient and their care provider.

Key Words: •Diabetes; •Non-attendance •Clinical appointments; •Glycaemic control •HbA1c

Funding Agency: None

Pharmacy

147

Medical and Pharmacy Students' Attitudes towards Physician-pharmacist Collaboration in Kuwait

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Introduction:
Medical and pharmacy educational programs should prepare graduates who are equipped with positive attitudes towards collaboration. This study aimed to assess and compare the attitudes of medical and pharmacy students towards physician-pharmacist collaboration and explore their opinions about the barriers to collaborative practice in Kuwait.

Methods:
A cross-sectional survey of pharmacy and medical students (n=467) was conducted in Faculties of Medicine and Pharmacy, Kuwait University. Data were collected via self-administered questionnaire from first-year pharmacy and medical students and students in the last two years of the two programs. Descriptive and comparative analyses were performed using SPSS, version 22.

Results:
The response rate was 82.4%. Respondents had positive attitudes towards physician-pharmacist collaboration. Pharmacy students expressed significantly more positive attitudes than medical students ($p < 0.001$). Medical students' top three perceived barriers to collaboration were: pharmacists' separation from patient care areas (n=100, 70.0%), lack of pharmacists' access to patients' medical record (n=90, 63.0%) and physicians assuming total responsibility for clinical decision-making (n=87, 60.8%). Pharmacy students' top three perceived barriers were: lack of pharmacists' access to patients' medical record (n=80, 84.2%), organizational obstacles (n=79, 83.2%), and pharmacists' separation from patient care areas (n=77, 81.1%). Lack of interprofessional education was rated the fourth-largest barrier by both medical (n=79, 55.2%) and pharmacy (n=76, 80.0%) students.

Conclusions:
Medical and pharmacy students advocate physician-pharmacist collaborative practice but both groups identified several barriers to implementation. Efforts are needed to enhance undergraduate/postgraduate training in interprofessional collaboration and to overcome barriers to physician-pharmacist collaboration to advance team approach to patient care.

Key Words: Interprofessional relations; Attitude of Health Personnel; Education;

Funding Agency: None

Pharmacy education

148

Trends in Drug Information Education in different first-professional degree pharmacy programs in the Arabian Gulf Region

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Introduction:
Pharmacists play an essential role in providing reliable drug information. This puts pressure on pharmacy schools to enhance teaching to prepare students who are competent in contemporary drug information activities. This study aimed to characterize trends in drug information education in countries of the Arabian Gulf.

Methods:
All pharmacy schools in the Arabian Gulf region were identified from the FIP's official world list of pharmacy schools and included in this study. Deans of pharmacy schools, heads of pharmacy practice departments or course coordinators were identified via the schools' websites and sent an electronic survey addressing drug information education (developed according to consensus-driven drug information education objectives).

Results:
Twenty-four schools of pharmacy were identified for inclusion and contacted to participate in the study. Fifteen schools replied with a completed survey (response rate of 63%). Didactic drug information courses were provided in all of the schools surveyed, with more than half of those schools providing it in year 4 of the program. Experiential training was a required rotation in 57% of the schools surveyed. Less than half of drug information instructors in the region have completed any postgraduate training in drug information.

Conclusions:
Drug information education in schools of pharmacy in countries of the Arabian Gulf is continuing to evolve. More emphasis has to be placed on transitioning teaching from the university to experiential rotations in order to complete the drug information learning cycle for students, from theory to practice.

Key Words: Arabian Gulf; drug information; experiential training;

Funding Agency: None

Physical Medicine and Rehabilitation

149

Rehabilitation of Patients with Neurological Complications after Bariatric Surgery

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Introduction:
Obesity has become a serious health problem worldwide and the number of Bariatric surgeries (BS) is rapidly increasing. Neurological complications after BS is not uncommon and in this study we describe the clinical presentation and rehabilitation outcome of 17 such patients.

Methods:
The medical records of 17 patients who underwent inpatient rehabilitation in Physical Medicine and Rehabilitation Hospital during the period 2010 to 2017 were reviewed and personal and clinical data were collected. Patients who did not complete their rehabilitation program were excluded from the study.

Results:
Of the17 patients, 14 were females and 3 males. The average age was 25.4 years. 47% of the patients were not compliant with intake of vitamin supplements after BS. 64.7% of patients had protracted vomiting prior to onset of neurological symptoms. The average time between the surgery and onset of symptoms was 3.2 months. The most common clinical presentation (70.6%), was numbness/dysesthesia followed by weakness in the lower limbs and upper limbs, the weakness was distal more than proximal with hypotonia. 23.5% of patients had only lower limb involvement, 23.5% had diplopia and 29.4% had bladder incontinence. Glove and stocking pattern of sensory impairment with neuropathic pain was seen in 70.6%. EMG showed sensory motor axonal neuropathy in 70.6% patients. Imaging of the Brain was abnormal in 1 patient with features suggestive of Wernicke's encephalopathy. On admission 82.4% could not walk and 17.6% were able to take steps with a walker. At discharge all patients could walk, 35.3% of them needed assistive devices and all achieved urinary continence. The average FIM score on admission was 74.5 and on discharge 114.4

Conclusions:
Education of the patient and physician is important for prevention of neurological complications after BS. Early and intensive interdisciplinary rehabilitation program for such patients results in a better functional outcome.

Key Words: Bariatric Surgery; Neurological Complications; Rehabilitation;

Funding Agency: None

Physical Medicine and Rehabilitation

150

Outcome of Injection of Botulinum toxin (BoNT –A) in Children with Cerebral Palsy- Spastic Diplegia- Kuwait Experience

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Introduction:
Objective: The aim of this retrospective study was to describe the Outcome of Injection of Botulinum toxin –A in Children with Cerebral Palsy- Diplegia in Kuwait

Methods:
Data from 30 cerebral palsy spastic diplegia walking cases from the spasticity clinic were analyzed retrospectively. The evaluations were done initially repeated two weeks, two months and four months after the injection botulinum toxin A to the lower limb muscles.Assessment measures were the modified ashworth scale for spasticity around ankle, adductor tone rating scale for adductor spasticity, passive range of motion of the ankle, walking speed in m/sec, global improvement rating scale (-1 worse,0-no change,1-improve,2-much improved,3-very much improved) was recorded by physician in the clinic. SPSS version20.0 used for statistical analysis

Results:
Mean age of cases was 3.75 years, 19 boys were and 11 girls. Before the injection, 24 cases were walking with plantar flexion deformity with average walking speed of 1.00+0.20 m/sec. Modified Ashworth scale was grade 2 in 19 cases (63 %) around the ankle and Adductor tone rating scale was grade 1 in 18 cases and passive range of motion of ankle was full in 20 cases and limited in others.Inj Botulinium toxin was given to lower limb muscles, mainly gastrosoleus in around 60% of cases. After the injection, at 4 month evaluation there was statistically significant ($p<0.05$) -reduction in number of cases with modified ashworth scale grade 2 around ankle to 13 cases from 19 cases. Global improvement scale which was assessed by physician showed mild change in outcome and was statistically significant on correlation ($p<0.05$). Passive range of motion of ankle improved to full range from 19 cases to 28 cases and walking speed was 0.93 m/sec at 4 month evaluation even though it was not significant but they were more upri

Conclusions:
We have seen a significant improvement in the reduction of spasticity around ankle and global improvement scale of the physicians.

Key Words: cerebral palsy; spasticity; neurotoxin;

Funding Agency: None

Physiology

151

Correlation and differentiation-based algorithms for cell-mobility quantification

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Introduction:
Quantification of cell mobility in high density cell cultures is a challenge, because tracking of individual cells is not readily possible. Two procedures have been developed to measure dynamic mobility changes in cell cultures, namely a correlation and a differential algorithm.

Methods:
Both algorithms compared successive image frames in time laps videos, analyzing the degree of differences between them and calculated a descriptor that correlated closely to cellular motility speed. The acquisition of meaningful motility data depended on proper preprocessing of the images to separate the cells from the background and other moving particles. A similar strategy had to be employed to measure the dynamics of plasma membrane contraction or organelle traffic in highly magnified cells. Image processing was required to neutralize brightness changes and inhomogeneous illumination. Additionally, structures and membranes in the images were enhanced and standardized by edge-detection filters.

Results:
The algorithms had advantages in different experimental setups, depending on the complexity of the cellular movement. Their discriminating performance and sensitivity were checked and calibrated on computer-simulated cells and further tested on living cells that were treated with motility-modifying drugs. The calibration by means of simulated cells, whose speed could be set precisely, provided the basis for the determination of absolute real cell movement velocity.

Conclusions:
The results show that the correlation algorithm (COPRA) performed best under most tested conditions and appeared less sensitive to variable cell densities, brightness fluctuations and focus changes.

Key Words: Image Processing; Mobility measurements; Hippocampal neurons;

Funding Agency: College of Graduate Studies (MSc grant to MSA-Q), Kuwait University Research Sector Grant MY 01/11 to AWH, Kuwait University Research Sector Grant no YM 03/16 and General Facility Grant, Kuwait University, no SRUL02/13

Physiology

152

Delayed release kinetics of FM1-43 from hippocampal synapses reveal a sequential 'kiss-and-run' - 'full collapse fusion' mechanism.

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Introduction:
Styryl dyes and pH-sensitive probes are in use for over 15 years to investigate the kinetics of synaptic exocytosis. Here we describe that the onset of FM1-43 release from individual synapses in cultured hippocampal neurons can be delayed by several seconds after the onset of an electric field stimulation.

Methods:
Hippocampal neurons from newborn rats were cultured in vitro until they acquired functionally mature synapses. Synaptic vesicles were fluorescently labeled and subsequently destained in two consecutive stimulation cycles, where the first stimulation served as an internal control. Neuronal cells were treated with either drugs or vehicle during the second stimulation. The kinetic parameters from both cycles were compared.

Results:
Repeated staining and destaining cycles showed that these synapses could modulate the delay duration in consecutive stimulation cycles, indicating an activity-dependent regulation mechanism for neurotransmitter exocytosis. Staurosporine, which has been used to induce 'kiss-and-run' exocytosis, increased the proportion of synapses with delayed response and increased the duration of this delay. Vesicle fusion was never delayed when it was monitored with pH-sensitive probes, synaptopHlourin and αSyt-CypHerE5 antibody. This indicated a rapid formation of a fusion pore that allowed rapid equilibration of vesicular luminal pH but prevented the release of FM1-43. Previous studies have shown that this dye required a fully collapsed vesicle to escape from the inner vesicular membrane. The delay of FM release could be explained by transient fusion pore that progressed towards 'full-collapse fusion' after a few seconds.

Conclusions:
Our observations point to a complex exocytosis mechanism in hippocampal synapses that combines 'kiss-and-run' and 'classical exocytosis' in a sequential process.

Key Words: FM1-43, hippocampal neurons, exocytosis, fusion po; Transient exocytosis;

Funding Agency: Kuwait University Research Sector Grant MY 01/11

Physiology

153

Impairment of renal function in male rats exposed to maternal dexamethasone in utero

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Introduction:
Mothers at risk of preterm delivery are treated with glucocorticoids (GCs), such as dexamethasone (Dex), to induce fetal lung maturation. Exposure to GCs leads to low birth weight and may cause prenatal programing increasing the risk of development of diseases such as hypertension and impairment of renal function later in life. It is believed that male offspring are more susceptible to the development of hypertension, however, studies on the gender specificity of the renal response to Dex were inconclusive. Therefore, the aim of this study was to investigate the effect of maternal Dex treatment on renal function in male and female adult offspring.

Methods:
Pregnant Sprague Dawley dams were randomly divided into 2 groups (n: number of dams=6-15): saline-treated controls and Dex-treated with 0.2 mg/kg i.p. from day 15 of pregnancy till 20 days gestation. Body weight (BWT), kidney weight (KWT), 24hr-urine volume (V), urine osmolarity (Uosm), and protein excretion rate (PER) were measured in all groups at 4 months of age. MAP was measured using a pressure transducer and glomerular filtration rate (GFR) was estimated using sinistrin infusion technique. Results are expressed as mean ± SE and comparisons were performed using unpaired student t-test.

Results:
Maternal treatment with Dex had no effect on Uosm, V or PER or MAP in any of the groups. In addition, Dex treatment had no effect on female BWT or KWT, however, 4-month-old male rats had lower body weight (441.35±14.81g, n=12 vs. 491.86 ± 13.39 g, n=14, $p<0.05$) and KWT (1.16±0.06g vs. 1.38±0.04g, $p<0.01$) than controls with no change in KWT/BWT. GFR was not different in female rats exposed to Dex, but significantly lower in Dex-treated males (0.67±0.06 ml/min.100g-1, n=8, vs. 1.159±0.10 ml/min.100g-1, n=6, $p<0.01$).

Conclusions:
This study shows that exposure to maternal Dex leads to a decline in renal function in the male offspring and has no effect on renal function in the female offspring.

Key Words: Dexamethasone; Renal; Filtration;

Funding Agency: Supported by Research Sector, Kuwait University (Grant No. MY02/16)

Psychiatry

154

Prevalence of Post-Traumatic Stress Disorder among Young Adults in Kuwait

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Introduction:
Post-Traumatic Stress Disorder (PTSD) affects 3.5% of the United States general population. PTSD in the Middle East affects 0-33% of the population depending on the level of trauma exposure in the country. There is no data available about the prevalence of PTSD among the younger general population (ages 18-30) of Kuwait. Therefore, we conducted an internet survey-based approach to estimate the prevalence in order to ascertain the utility of screening for and allocating hospital centric resources to the injured population.

Methods:
Data was collected using an opt-in self-administered questionnaire available in two languages; English and Arabic. Anonymity was assured using a disclaimer. The questionnaire consisted of socio-demographic factors, The Primary Care Post-Traumatic Stress Disorder Screen for DSM-5 (PC-PTSD-5) for screening, and the Post-Traumatic Diagnostic Scale for the DSM-5 (PDS-5) for the diagnosis of PTSD. Written consent was obtained to use both questionnaires.

Results:
The total sample was 179 residents of Kuwait aged 18-30 years. Thirty-four (19%) of respondents screened positive for PTSD. Thirteen (7.3%) of respondents were diagnostic positive for PTSD. Among those with a positive diagnosis, the associated factors were single, non-smokers, university graduate females with a past psychiatric history of either anxiety or depression.

Conclusions:
Kuwait has a significantly higher prevalence when compared to other countries without current war exposure; 7.3% vs. 0.2% in Yemen and 3.4% in Lebanon. Although the study has some limitations, it may illustrate the need for PTSD screening to be mandated as a part of our management of our trauma patients.

Key Words: Post Traumatic Stress Disorder; Kuwait; Prevalence ;

Funding Agency: None

Psycology

155

Gender Differences in 15 Facet Scales for the Second Big Five Inventory among Kuwait University Students

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Introduction:
Gender differences in personality can be described in terms of the Big Five Inventory personality facets. The BFI-2 introduces a robust hierarchical structure of the Big Five personality domains with 15 facets (Sociability, Assertiveness, Energy Level, Compassion, Respectfulness, Trust, Organization, Productiveness, Responsibility, Anxiety, Depression, Emotional Volatility, Intellectual Curiosity, Aesthetic Sensitivity, and Creative Imagination). The present study aims to investigate gender differences in the 15 Facet Scales among Kuwait University Students.

Methods:
The Arabic version of BFI-2 a 60-item with 15 Facet Scales (4-item facet scales) was administered to participants. The internal consistency reliability and one-way ANOVA analysis of the 15 Facet Scales of BFI-2 were examined, and the data for normality was tested by Shapiro-Wilk test of normality and were significant ($p<.000$) for all variables . The (alpha) coefficient ranging from 0.75 to 0.86 for males & 0.75-0.81 for females denote good internal consistency reliability for the 15 Facet Scales of the Arabic version of BFI-2.

Results:
The participants were 780 first year undergraduate Kuwaitis: 288 males (mean age = 21.81, SD = 0.70) and 492 females (mean age = 20.95, SD = 1.31). The results revealed significant gender differences where males obtained a higher score than females on open-mindedness, while females obtained a higher score than males on negative emotionality. The results revealed significant gender differences in which males obtained a higher score than females on Assertiveness ($p<.002$), Compassion (6.04, $p<.01$), Productiveness ($p<.005$), Aesthetic Sensitivity ($p<.04$), and Creative Imagination ($p<.02$), whereby females obtained a higher score than males on Depression ($p<.02$) and Emotional Volatility ($p<.02$).

Conclusions:
These findings provide evidence for the association between gender and personality facets.

Key Words: Gender differences; 15 Facet; Big Five ;

Funding Agency: This Research was supported by Research Rector of Kuwait University grant number OP 01/18.

Psycology

156

Investigating the Psychometric Properties of the Arabic version of Montreal Cognitive Assessment (MoCA)

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Introduction:
Neuropsychological assessments are important tools for diagnosis and evaluation in psychiatric institutions. One of the famous assessments used in screening mild cognitive impairment is Montreal Cognitive Assessment (MoCA). The assessment has several translations including an Arabic language one. Despite the good psychometric properties of the English version, there are little studies regarding the Arabic language version.
Objectives:
The aim of this study is to investigate the healthy cutoff score of the Arabic version of Montreal Cognitive Assessment, in addition to its other psychometric properties.

Methods:
Sample: The participants were 27 healthy female university students with mean age of 21 years old and the standard deviation was ±1.4, and Arabic language is their first language.The sample consisted of only females as they were the only available sample of this study, and because the original version of the assessment did not show any gender bias on the total cutoff score.
Measurement Tools: MoCA is a 10 minutes long screening tool. The assessment scoring starts from 0 points to a maximum achieving score of 30 points. The normal suggested cutoff score is 26 points for adults with above 12 years of education, and 25points for adults with less than 12 years of education.

Results:
Surveying healthy young adults revealed an average score of 25 points with standard deviation of 2.74. Around 48% of the sample scored below of the suggested cutoff score.

Conclusions:
Despite the good psychometric properties of the English version of MoCA and its ease of use, the Arabic version of MoCA needs a review and an adjustment for its cutoff score. It also need an in-depthreview of its psychometric properties to have a reliable tool that can be used in screening mild cognitive impairment.

Key Words: Montreal cognitive assessment; Neuropsychological assessment; Mild cognitive

Funding Agency: None

Public Health

157

Identification of Public Health Priorities, Barriers, and Solutions using Modified Delphi Method for Stakeholder Consensus in Kuwait

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Introduction:
Where published evidence is inadequate or non-existent, 2 consensus methods in health research are used, Delphi process and Nominal group technique.
Objective Identify public health priorities, major barriers, and solutions in Kuwait using the Delphi process.

Methods:
The modified Delphi technique was used. It is similar to the full Delphi in terms of procedure (i.e., a series of rounds of questions with stakeholders) and intent (i.e., to set priorities and to arrive at consensus). Another modification to the Delphi approach was possible with the use of a back-up computer team, and through the use of an automated audience response system to obtain almost instantaneous feedback. This allowed a rapid one-day process of 3 iterative rounds.

Results:
A total of 66, 64 and 60 participants contributed to rounds 1, 2, and 3, respectively. The top 5 ranked priorities included 1. obesity, 2. diabetes, 3. cardiac diseases, 4. enforcement of laws, and 5. cancer. Top barriers included 1. lack of vision, 2. lack of intersectional research, 3. hurdles in implementation, 4. gap in communication, and 5. emphasizing treatment over prevention. Top solutions included 1. invest in prevention, 2. strengthening communication, 3. education/awareness of public health issues, 4. health monitoring and surveillance, and 5. environmental and occupational health laws and regulations.

Conclusions:
Stakeholders identified the top 5 priorities, barriers, and solutions for PH action in Kuwait. The top selections in the three categories included obesity, lack of vision, and investment in prevention respectively. Recommendations were made for follow-up by health agencies in Kuwait.

Key Words: Delphi Consensus Method, Public Health; Priorities, Barriers, Solutions;

Funding Agency: KFAS (Kuwait Foundation of Advancement of Sciences)

Public Health

158

Association of serum 25-hydroxyvitamin D with cognitive function in adolescent school children in Kuwait

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Introduction:
A positive association between serum vitamin D (VD) and cognitive function has been reported in elderly but this association has not been demonstrated in adolescents. As VD deficiency is prevalent globally among adolescents, this has important public health implications. This study aimed to investigate the association between VD and cognitive function as well as academic achievement among adolescents in a country with abundant sunshine.

Methods:
A cross-sectional study was conducted on 1370 adolescents (11-16 years) randomly selected from public middle schools in Kuwait. Cognitive function was tested using the Raven's Standard Progressive Matrices (SPM) test. Plasma 25-hydroxy vitamin D (25-OH-D) was measured by liquid chromatography-tandem mass spectrometry. Data on socio-demographic factors and other covariates were collected through self-administered questionnaire completed by the parents and face-to-face interview with adolescents.

Results:
Weak positive correlation was found between 25-OH-D and the age-adjusted standard score (ASC) [=0.06; p=0.038]. Univariate linear regression analysis also showed association between 25-OH-D categories and ASC after adjusting for gender but adjusting for parental education was sufficient to explain this association. Multivariate analysis showed no association between 25-OH-D and ASC after adjusting for potential confounders whether 25-OH-D was fitted as a continuous (p=0.725) or categorical variable, categorized by either acceptable cutoff points (p=0.475) or as quartiles (p=0.881).

Conclusions:
No association was found between 25-OH-D levels and cognitive function, which could be due to the fact that most of adolescents in our setting are VD deficient/insufficient. Randomized controlled trials using VD supplementation are recommended to investigate the impact of VD on cognitive function in areas where VD deficiency/insufficiency is too common.

Key Words: Vitamin D; Cognitive Function; Adolescents;

Funding Agency: Kuwait University Grant No. WF02/13

Public Health

159

Anemia among School Children in Kuwait

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Introduction:
Anemia among school children is a major public health problem worldwide. In Kuwait, as in many other countries in the Gulf region, there is a lack of data on the prevalence of anemia and the underlying factors. This study aimed to estimate the prevalence of anemia among school children and investigated the underlying factors.

Methods:
Hemoglobin (Hb) level was measured on 1415 school children (age range 10.33-16.10 years) selected randomly from all governorates of Kuwait using probability proportional to size sampling methods. Anemia in this age group was defined as per World Health Organization (WHO). Data on socioeconomic factors and other covariates were collected from parents (using self-administered questionnaire) and from the children using face-to-face interview. All laboratory analysis were conducted in accredited laboratory. Logistic regression was used to investigate factors associated with anemia.

Results:
Of the study group 721 (50.95%) were females; and the mean (SD) age was 12.48 (0.94) years. The overall prevalence of anemia was 8.06% (95%CI: 6.69-9.60%), which was significantly higher among females compared to males (10.96% vs. 5.04%; $p<0.001$). The mean (SD) Hb level was 133.7 (9.89) and 130.00 (10.48) g/L among males and females,respectively ($p<0.001$). In multivariable analysis, factors that was found to be positively associated with anemia were female gender ($p=0.007$), older age ($p= 0.0165$); while iron level ($p<0.001$), ferritin level ($p<0.001$) and transferrin saturation ($p=0.0350$) were negatively associated with anemia.

Conclusions:
This is one of the few studies that assessed anemia prevalence in middle-school aged children in Kuwait. Our data (8.06%) suggest that anemia is a mild public health problem among school children in Kuwait (WHO criteria of 5-19.9%). Anemia prevalence is higher among females compared to males; and the negative association between anemia and iron suggests that anemia is due to iron deficiency in both genders.

Key Words: Anemia; Children; Kuwait;

Funding Agency: WF02/13

Public Health and Epidemiology

160

Cancer survival in Kuwait: the first profile of population-based cancer survival

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Introduction:
Population-based cancer survival is crucial to assess the effectiveness of the health system for cancer care.
AIMS
To assess, for the first time, population-based cancer survival trends in Kuwait during 2000-2013, to facilitate public assessment of cancer control.

Methods:
Data were obtained from the Kuwait Cancer Registry for Kuwaiti adults (15-99 years) and children (0-14 years) diagnosed in 2000-2013 with one of 18 common cancers. A novel approach to collect data on follow-up for vital status was implemented to ensure that deaths due to any cause were included. This required manual and electronic tracing of the patients' Civil ID numbers, followed by manual linkage to the Public Authority of Civil Information database to ascertain the vital status. The Pohar-Perme approach was used to estimate population-based (net) survival up to 5 years. Estimates were age-standardised using the International Cancer Survival Standard weights.

Results:
The traditional method to obtain data on vital status, restricted to patients whose death was due to cancer, had captured only 62% of all patients' deaths. Our approach resolved the vital status for 98.3% of patients for whom it was previously unknown.During 2000-2013, the highest net survival was found for prostate, breast (women) and rectum in adults, and lymphoma in children. Survival was lowest for liver, pancreas and lung cancer in adults, and brain tumours in children. Survival was generally higher for women than men.

Conclusions:
The quality and completeness of data on follow-up for vital status in Kuwait were substantially improved. With ministerial assistance, this effective approach should become routine to ensure robust estimation of cancer survival. For most cancers survival trends were increasing. Continuous surveillance is required to monitor cancers where survival did not improve, and to dissect the underlying causes for the differences in survival between Kuwait and other countries.

Key Words: Cancer; survival; population-based;

Funding Agency: Kuwait University

Surgery

161

The Prevalence of Burnout and its Associated Factors Among Surgical Specialists in Kuwait Ministry of Health Hospitals

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Introduction:
Physician burnout is important not only because of its personal implications, but also because it can interfere with patient care by impairing clinical judgement. This study assessed the prevalence of burnout and associated factors among surgeons in Kuwait.

Methods:
A self-administered questionnaire was completed by 445 surgeons (181 general surgeons and 165 subspecialists of all ranks from 11 subspecialties) from all secondary and tertiary Ministry of Health hospitals in Kuwait. Burnout was assessed using the Maslach Burnout Inventory, which has 3 subscales: emotional exhaustion (EE, score range, 0-54), depersonalization of others (DP, score range, 0-30), and low personal accomplishment (PA, score range, 0-48). Burnout is defined as an EE score ≥27, a DP score ≥10, or a PA score ≤33. A defining score in all 3 subscales was considered "severe burnout." Associations of burnout or severe burnout with participant characteristics were assessed using multivariate logistic regression.

Results:
Of the participants, 87.2% were male and 47.6% were Kuwaiti. The prevalence of burnout and severe burnout were 76.9% and 13.9% respectively. The prevalence of high EE, high DP, and low PA scores was 44.7%, 43.1%, and 47.2%, respectively. The prevalence of burnout was highest among neurosurgeons (100%) and lowest among ENT surgeons (66%). After adjustment, burnout was associated with younger age (<33 vs >40 yrs; OR=2.23; p=0.007); lower income (<2000KD vs >3000KD; OR, 1.88; p=0.042); and more on-calls/month (>8 vs <5 calls; OR=2.6; p=0.01). Analysis of potential sources of stress also found a significant effect of work-life imbalance (p=0.002) and case overload (p=0.005) on burnout. The most common source of stress among surgeons was less time to spend with family (68.7%).

Conclusions:
The prevalence of burnout among surgeons in Kuwait MOH hospitals is high. Occupational Health programs should use these findings to design interventions to reduce burnout in this population.

Key Words: Prevalence; Surgeons; Burnout;

Funding Agency: None

Surgery

162

Traumatic Brain Injuries; A single centre review on clinical and radiological outcomes.

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Introduction:
Traumatic brain injuries (TBI) are the leading cause of trauma related mortalities, where intracranial hypertension and cerebral hypo-perfusion are common. It is the objective of this study to review the incidence of TBI presenting to a AlAdan Hospital, a secondary center in Kuwait, and their management outcomes.

Methods:
Adan trauma data base was used in this retrospective study. TBI patients with abnormal CT brain findings and admitted to the intensive care unit (ICU) from January to August 2018 were identified. Exclusion criteria were age less that 12 years, Glasgow Coma Scale (GCS) score of 3 with bilateral fixed and dilated pupils, arriving dead, and missing data. Our primary outcome was inpatient mortality and secondary outcomes were GCS day 6 and discharge, ICU and in hospital length of stay, administration of osmotherapy agents, and surgical interventions used; craniotomy, Extra ventricular drain (EVD) insertion, or burr hole. Data were presented as mean ± SD or median ± interquartile range and frequencies. In addition, a multi-variant regression analysis was used.

Results:
Among 47 patients that were included, the majority had a severe GCS on admission (42.5%), Marshall class II (59.5%), and mixed subdural and subarachnoid hemorrhage (25.5%) and brain edema (34%). The median GCS score was 11 on day 6, and 14 on discharge. The mean ICU stay and in hospital stay were lower in patients who received osmotherapy, 11.2 and 25.78 days respectively, than in patients with surgical interventions, 14.3 and 36.9 days respectively. Total inpatient mortality rate was 25.5%, among osmotherapy patients was 25%, and 0% among surgical intervention patients. 70% of the surgical intervention patients had increase in their GCS score on day 6/discharge.

Conclusions:
The in-patient mortality rate was lower among patients that underwent surgical intervention. And while those patients showed improvement in their GCS score, they had longer ICU and in hospital stay.

Key Words: Traumatic brain injuries; Intracranial pressure; Mortality;

Funding Agency: None

Surgery

163

The Effects of Pregnancy on Weight loss in Post-Bariatric Patients

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Introduction:
Surgical treatment of obesity is indicated in patients of BMI >40 or >35 with significant related comorbid-disease. The outcomes of pregnancy and these comorbidities in patients undergone bariatric surgery has been well studied in the past, however the most desired outcome in the eyes of the patient; optimal weight control has not been fully established.
Objective:
To explore the effects of pregnancy on weight loss outcomes in post bariatric surgery patients Setting: Private Obstetrics and Gynecology clinic in Kuwait (Al-Hikma Clinic)

Methods:
Retrospective review. Total of 73 patients identified from the database having undergone bariatric surgery. 40 patients (LSG: 34, Gastric Bypass: 6) were matched by our inclusion criteria of age, year of surgery (2010-2016), time from surgery to pregnancy (1 year or less), type of surgery and follow-up duration of 3-6 months post partum. The remaining 33 patients were excluded, as they did not match the aforementioned criteria.

Results:
The age of patients was identified (Mean – 32) with mean BMI of 28 post-surgery and at the time of confirmed pregnancy (range: weeks 1-7). Mean BMI post-partum within 3-6 month period is 28.9. These patients gained a mean of 9.4kg during their term pregnancies leading up to delivery. This is comparable to the approx. 10.5kg expected to gain in non-bariatric pregnant patients of this BMI quote (>26.1).

Conclusions:
Pregnancy after bariatric surgery does not drastically affect desired weight control in the short term. Longer follow-up data is required as well as further statistical analysis of the presented data to ensure validity.

Key Words: Post-bariatric; Weight loss; Pregnancy;

Funding Agency: None

Surgery

164

The Aftermath of the Kuwait Mosque Bombing: A retrospective cohort analysis and lessons learned

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Introduction:
The occurrence of terrorist attacks are still recurrent incidents plaguing the middle east region. However, Kuwait has been mostly spared from these attacks over the years. Therefore, when the bombing of the mosque in 2015 happened, it shocked a country that is not prepared for such disasters. Our aim was to present the incident that occurred on that day and on the lessons learned from it.

Methods:
A collaborative effort among the hospitals in Kuwait examined the details and outcomes of the initial response to the bombing. The centers reported their retrospective data, which was analyzed to determine prehospital and intra-hospital management and assess the medical response to the terrorist bombing.

Results:
A total of 239 victims were involved in the explosion, of which 18 were pronounced dead on site. 147 (67%) were transferred to the hospital for care 22 minutes after the explosion occurred. The injuries seen were not localized to one region of the body, but afflicted various organ systems. 86 patients were admitted to the hospital, for which five required urgent surgical intervention. Total mortality (on-site and in-hospital) reported after the bombing was 11.2%.

Conclusions:
Rapid response after a mass casualty is of utmost importance for the adequate management of the victims of such tragedies, and could ensure excellent outcomes if performed precisely. However, many lessons can be learned from this shocking event, especially that it exposed the gaps currently present in our disaster plan systems and the importance of looking into addressing them

Key Words: Trauma; Bombing; Mosque;

Funding Agency: None

Surgery

165

Synchronous acute appendicitis and acute cholecystitis: A literature Review

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Review
Acute appendicitis and acute cholecystitis are some of the most common surgical emergencies in the emergency department. Both conditions are common causes of abdominal pain. The concurrent presentation of acute appendicitis and cholecystitis is thought to be rare. A PubMed search of MEDLINE was performed using a combination of the keywords ‘acute appendicitis’ and ‘acute cholecystitis’ to obtain case reports. The search returned 11 case reports of co-existent acute appendicitis and acute cholecystitis. Emergency physicians should consider more than one pathology as the cause of abdominal pain. The concurrent presentation of acute appendicitis and cholecystitis is rare but should be considered in investigations of abdominal pain.

Key Words: Synchronous; acute appendicitis; acute cholecystitis;

Funding Agency: None

Surgery

166

The Use of Surgicel in Achieving Hemostasis in Pediatric Tonsillectomy

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Introduction:
Objective: This study was conducted to evaluate the efficiency of arresting primary hemostasis in tonsillectomy patients when applying surgicel on the operative site and compare it to the conventional method, bipolar cautery.

Study Design: The study was carried out from the period of January 2016 to August 2018. It is a prospective cohort study, and the patients were enrolled from three tertiary centers in Kuwait.

Methods:
A total of 203 participants were included (122 males and 81 females) in our research. The average age of them was 3.9 years (SD= 2.38 years). All patients underwent tonsillectomy, in addition to adenoidectomy, myringotomy, or tube insertion, if required. But the main focus of the study was tonsillectomy bleeding. They were clustered into 2 groups. The first group underwent cold dissection tonsillectomy and attained hemostasis through the application of surgicel to the operative site. The patients of the second group were subjected to hot dissection tonsillectomy and achieved hemostasis by cautery.

Results:
There was no occurrence of primary post tonsillectomy bleeding in either group after achieving hemostasis. However, 3 cases of secondary post tonsillectomy bleeding were recorded in the surgicel group, yet there was no statistical significant difference (p= 0.269). No other post operative adverse events arose in any of the two groups.

Conclusions:
The application of surgicel was effective in achieving primary hemostasis in tonsillectomy. Despite the results of our research, additional studies are required to determine the effectiveness of surgicel in primary hemostasis of tonsillectomy, due to the small sample size and several limitations that were present in our study.

Key Words: Tonsillectomy; Hemostasis Tonsillectomy; Surgicel Tonsillectomy;

Funding Agency: None

Surgery

167

The Pattern of Pediatric Head Injury in Al-Ahmadi and Mubarak Al-Kabeer Health Regions in Kuwait

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Introduction:
Head injury and traumatic brain injury (TBI) are common conditions affecting the pediatric population globally, representing a global concern. This study aims to explore the epidemiological trend of head injuries in the pediatric population of Al-Ahmadi and Mubarak Al-Kabeer health regions.

Methods:
A retrospective review of prospectively collected data of head injury and TBI from Trauma Unit evaluation sheets in Al-Adan Hospital from 1/1/2018 to 30/9/2018. Inclusion criteria included evidence of head trauma on history, clinical or radiological examination. Patients below the age of 12 were defined as pediatric as per Kuwait Ministry of Health practices. Patients with head trauma presenting sub-acutely (>24 hours from incident) were excluded from the study. Data pertaining to the patient demographics (age, gender), mechanism of injury, neurological status and radiological findings were recorded. Patient outcome from the

Results:
A total of 263 patients met the inclusion criteria. There was a male predominance in the study population at a ratio of 1.85:1. The most common mechanism of injury was falls, seen in 206 patients (78.3%), followed by motor vehicle collisions (5.7%). The majority of patients had trivial head injury (76.8%), followed by mild TBI (20.5%). One patient presented with moderate TBI, whereas 6 presented with severe TBI (0.4% and 2.3% respectively). Head CT was carried out on 98.1% of patients, and among them, 20.9% had significant radiological findings. Most patients required hospitalization, as 39.9% were admitted to general wards, with an additional 16.1% requiring ICU admission. One in five patients were kept in casualty for observation (19%). The crude mortality rate was 0.8% within casualty settings. Neurosurgical intervention rate was 0.38%.

Conclusions:
A better understanding of the epidemiological trend of pediatric head injury in Kuwait can lead to improved services and care.

Key Words: Head trauma, epidemiology; Pediatrics, Kuwait; Traumatic brain injury;

Funding Agency: None

casualty was recorded.
Surgery

168

Developing an innovative 3D printed prostate as in situ for accurate targeted prostate biopsy and visualization.

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Introduction:
WHO publication has ranked Kuwait 5thamongst the middle east countries in relation to prostate cancer. In conventional systematic biopsy, if the suspected foci is located in the peripheral zone, sampling can be done by transrectal 12-needle systematic biopsy. In cases of non-peripheral zone and larger-sized cancers, it is impossible for the biopsy needle to sample in the suspected area as it triggers the moment touches the envelope of the prostate. An individualized biopsy plan can be worked out and the needling depth can thus be adjusted. This study explores to develop 3D printing of prostate to assist the biopsy regimen, and its efficacy by generating in -vitro 360^{o} visualization of prostate gland and the embedded cancer foci. 3D printing has not been much reported from urinary surgery point of view.

Methods:
A DICOM file of 3T MRI scan of a 60 years old patient with an enlarged prostate and embedded cancer foci was introduced into the image processing software accordingly. The prostate and the cancer foci anatomical structure were isolated from transaxial images and then separate thresholds with segmentation software (mimics innovation suit) were applied and edited for inclusion of all ROI. A final 3D digital model produced and saved in a STL file format for 3D printing. The model then printed with a commercial PolyJet 3D printer in translucent materials and multiple colors.

Results:
3D computer model of the prostate provided an in-vitro 360^{o} visualization to plan effective biopsy. Before transrectal 12-needle biopsy, the operator can observe the 3D model from multiple angles, to evaluate the possibility of sampling by systematic biopsy and have hands on practicing biopsy.

Conclusions:
We developed a 3D computer and printed prostate models with the embedded foci of a patient data that can provide a platform to assess biopsy procedure in-vitro and so reduces missed detection in high-risk prostate cancer.

Key Words: 3D printing; Prostate Cancer; Biopsy ;

Funding Agency: None

Surgery

169

Relation Between Intraoperative Dexamethasone and Post-Tonsillectomy Morbidity

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Introduction:
Almost 13% of all operations performed by otolaryngologists in the USA every year are tonsillectomies. Regardless of improvements in anesthetic techniques, post-tonsillectomy morbidity is still an important clinical matter. Numerous randomized studies on steroids in post-tonsillectomy morbidity have established incongruous results, as some show clinical benefit while others no benefit at all. The aim of this study was to determine the effects of dexamethasone on reduction of post-operative morbidity in patients undergoing tonsillectomy.

Methods:
A cross-sectional study was conducted on 94 participants (50 male and 44 female), aged between 5 and 18, who underwent tonsillectomy in Al-Sabah, Zain Ear, Nose, and Throat Hospital, Kuwait. All patients received a single dose of intravenous dexamethasone intraoperatively. Post-operatively, all patients were monitored for pain (depending on frequency of need for analgesia), number of episodes of vomiting 6 hours post-operative, and for any signs of airway compromise (determined by clinical evaluation and oxygen saturation on monitor) in the hospital for 24 hours or longer depending on the morbidity.

Results:
Decline in the prevalence of post-operative pain, nausea and vomiting, and airway obstruction with respiratory compromise was noted. On the day of the operation only 12 patients out of the 94 (12.7%) required an extra analgesic due to pain. In addition, only 6 out of all the patients in the study (6.4%) experienced more than 2 episodes of vomiting 6 hours postoperative, and only 1 case exhibited airway compromise (1.1%).

Conclusions:
A single intra-operative dose of dexamethasone 1mg/kg is an efficacious and safe method for reducing post-tonsillectomy morbidity.

Key Words: dexamethasone; post-operative morbidity; tonsillectomy;

Funding Agency: None

Survey

170

Feedback of Foundation Year doctors on Internship 2017/2018

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Ministry of Health

Introduction:
Internship is a one-year program that all medical graduates have to complete as part of their training regardless of which university they graduated from. It consists of a four-month rotation in Medicine and another 4 months of general surgery, in addition to a month in each pediatrics and Obstetrics along with 2 months of electives. Despite its long-existence no official feedback is available to evaluate it from the trainees' point. The objective of this study is to explore the interns' experience and obtain feedback on the impact of this educational year.

A Survey composed using Google Forms was used to the gather information from interns of 2017/18 in different hospitals through social media. The areas targeted were interns' satisfaction, exposure, adequacy of teaching, and difficult encounters faced during the year.

Methods:
There were a total of 59 participants, 34 females (58%) and 25 males (42%). Eight (13.5%) were from Amiri, 26 (44%) were from AlAdan, 11 (18.6 %) from AlFarwaniya, 13 (22%) from Mubarak AlKabeer Hospitals. Out of a total of 59 trainees, 17 (29%) were Very Satisfied, 24 (41%) were satisfied, 12 (20%) were neutral and 6 (10%) were disappointed. Regarding educational teaching from mentors assigned, 19 (32%) voted strongly agree in favor of receiving adequate teaching, 24 (41%) voted agree, 7 (13%) were neutral, 2 (3%) disagreed, 7 (12%) strongly disagreed.

Results:
Finally, 25 (42%) trainees reported that they never met their clinical tutors, 15 (25%) once or twice a month, 9 (15%) once a week, 7 (12%) every other day, 3 (5%) daily.

Conclusions:
Overall, the data that has been gathered from this study has shown that the majority were satisfied with trainee year (70%), and that (72%) agreed that they need more teaching during the year. In addition, (73%) have faced difficulties at least once a month. In conclusion, more internship and research needs to be put on the internship year to especially targeting the area of education and dealing with difficult situations.

Key Words: Internship Year; Kuwait; Foundation Year;

Funding Agency: None

Trauma

171

The Adherence to Canadian CT Head Rules (CCHR) in Al-Adan's Hospital Trauma Unit.

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Introduction:
A head injury is any sort of injury to the brain, skull, or scalp, that disrupts the normal function of the brain. It occurred among all age groups, in males more than females. The study focuses on head injury because it is common cause of admission to A&E departments. Canadian CT head rules, a well-validated clinical protocol, was developed to help physicians determine which minor head injury patients need C.T. brain. Applying CCHR allow physicians to reduce unnecessary head C.T. imaging around 30% safely. It has 100% sensitivity in determining the need for neurosurgical intervention.
Aim: Assess Al-Adan's Trauma Unit's compliance to the CCHR regarding imaging following head injury. Also, assess the sufficiency of documentation following head trauma.

Methods:
Retrospective analysis of prospective data collection of all evaluation sheets written by the trauma team in Al-Adan Hospital in August 2018 . All patients with C.T. brain were included. The documentation was assessed for evidence of head injury.

Results:
290 patients were seen by the trauma unit in August. C.T. head was performed in 263 patients (90.7%). 80.5% of patients had a head CT scan as part of a PAN scan protocol, therefore their eligibility for CT scanning as per CCHR was not assessed. 19.5% had C.T. imaging of the head. 67.7% did not meet CCHR criteria for C.T. head as per the evaluating team's documentation in evaluation sheets. None of patients had a significant radiological finding on imaging. The most common causes of injury were MVC 40.7%, then fall 39.9%. 42% head injuries were documented.

Conclusions:
A significant proportion of CT head following mild traumatic brain injury doesn't meet CCHR. A raise in the collaboration between the trauma team and radiology department is needed to reduce the number of unnecessary C.T. brain. Documentation of head injury following head trauma must be improved to protect the patient and health care provider.

Key Words: CCHR: canadian ct head rules; Head injury; Documentation ;

Funding Agency: None

Virology and Immunology

172

The influence of neutrophils on the production of cytokines associated with different Th cell subsets in chronic HCV-infected patients with compensated liver disease.

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Introduction:
Several Immune mechanisms combat viral infections; these include phagocytosis, production of cytokines and chemokines, the formation of neutrophil extracellular traps, and interactions with other immune cells. The aim of this study is to investigate the influence of neutrophils on the production of cytokines associated with different Th cell subsets in chronically HCV-infected patients with compensated liver disease. We propose to investigate the role of neutrophils in chronically HCV-infected patients.

Methods:
Till now, fifteen chronically HCV-infected patients and 21 sex and age-matched healthy subjects were enrolled in this study. Peripheral blood mononuclear cells (PBMC) were isolated from whole blood by Ficoll-Hypaque density gradient centrifugation and neutrophils were isolated by density gradient separation. Neutrophil-depleted and neutrophil-enriched PBMC were stimulated with a mitogen, phytohaemagglutinin (PHA) and the proliferation index (PI) were assessed using flow cytometric Carboxyfluorescein succinimidyl ester (CFSE) incorporation assay. After stimulation the culture supernatants were collected and evaluated for levels of GM-CSF, IFN-α, IFN-γ, IL-2, IL-4, IL-5, IL-6, IL-9, IL-10, IL-12p70, IL-17A, and TNF-α cytokines by MACSPlex Cytokine 12, human kit.

Results:
Significant differences were detected in the PI and cytokines levels of neutrophil-depleted and neutrophil-enriched PBMC between the HCV-infected patients and healthy subjects.

Conclusions:
Our results highlight the possible role of neutrophils on cytokine production and antiviral effect against HCV. Furthermore, these findings could extend the knowledge about the induction of host immune responses against HCV.

Key Words: Hepatitis C virus; Neutrophils; Cytokines;

Funding Agency: Research grant MI02/16 by the Research sector, Kuwait

CASE REPORTS

Clinical Ophthalmology

173

Ethical, and Legal Issues Related to Presentation of Child Abuse Cases to Ophthalmic Care in Kuwait: A Case Report

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CASE REPORT

Background:
Child abuse occurs worldwide. It has short and long-term consequences. The World Health Organization has identified the following among a comprehensive list of such consequences: death, physical injury, disability, stress that can potentially impairs brain development and damages the nervous and immune systems. Such consequences are associated with delayed cognitive development, poor school performance and dropout, mental health problems, suicide attempts, increased health-risk behaviors, and revictimization. The present report describes two cases of non-accidental injuries presenting to ophthalmic care in Kuwait with clinical, ethical and legal consequences and lessons to be learnt.

Case Summary:
case (1): 9 years old non-Kuwaiti boy with previously diagnosed intellectual developmental disorder presented to albahar casualty accompanied by his grandmother (mother with known intellectual disability). On presentation he had severe swelling of the left eye lid for more than 2 weeks.The child was obedient, with no eye contact, doesn't speak, not allowing anyone to examine/ touch him, and didn't want any male nurse/ doctor to come near him. After a long pause and trial of persuasion, the child was finally examined and diagnosed with preseptal cellulitis case(2): 2.5 years old non-Kuwaiti baby girl presented to albahar eye centre causality with her mother and her alleged father (unsteady, with slurred speech and red eyes). She looked very quiet, obedient with mask face. on examination: 3 cigarette burn marks on the inner canthal area, two on the upper lid and a larger one on the lower lid

Conclusion:
Cases of child abuse present to all medical specialties and its diagnosis is dependent on recognition of risk factors, patterns in medical history, physical findings and a high level of suspicion. In Ophthalmology, the spectrum of ocular manifestation of non-accidental trauma is extensive affecting any part of the eye along its anatomical pathway.

Key Words: ophthalmology ; case report; child abuse;

Dentistry

174

Lower lip numbness due to the periapical infection

Tin Y
KOC, Ahmadi Hospital, Dental Devision

CASE REPORT

Background:

- Dental nerve injuries are always an upsetting event for those unfortunate enough to experience them.
- Endodontic-related paresthesia is a very rare complication in dentistry and can be related to periodontal pathology (periapical lesions) or endodontic iatrogenic causes as a consequence of the filling material in the mandibular canal or over instrumentation.
- Number of nerves that can be damaged during dental procedures, but ("IAN") and the ("LN") are the two nerves most frequently injured.
- Systemic causes refer, viral and bacterial infections, diseases, drug allergy, and blood diseases.
- Local factors like mechanical, thermal, or toxic injuries of IAN.

Case Summary:

A 52 year old female Kuwaiti presented at the dental division of Kuwait Oil Company (KOC) during November 2017. She C/O about Unilateral numbness with tingling sensation in the lower right lip. Since 4-month with pain in lower right side. Intra Oral examination revealed tooth 47 with distal crack with tender on percussion not responding to cold test. PA x ray shows peri-apical radiolucency and peri-radicular radiolucency. Extra oral examination reveals no lymphadenopathy and palpable swelling, with no facial asymmetry with no pain or sinus tracts. Emergency RCT done for 47 after 3 days her numbness released, improvement in sensation to the lip.

Conclusion:

•The nerves most affected by paresthesia are those located in the jaw, specifically the IAN and the mental nerve.
•To prevent paresthesia, the endodontist should be aware of the proximity of the apexes of the teeth to the nerve structures before initiating intracanal procedures.
•To diagnose paresthesia, the endodontist should perform anamnesis, nociceptive and mechanoceptive tests on the affected region, periapical and panoramic radiography, and, in some cases, cone-beam CT.

Key Words: paraethesia; lower lip; numbness;

Dermatology

175

Patent natural topical treatment from faculty of medicine-Kuwait University shows significant repigmentation of acral vitiligo that was not responsive to PUVA

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CASE REPORT

Background

Vitiligo is a disorder that causes skin depigmentation. The acral vitiligo is considered to be the most common and most difficult case to treat among all types and cases of vitiligo. “Vt.tratment” (patent number 23588.95) is a natural based topical treatment developed in faculty of medicine-Kuwait university and patented by Kuwait University, the treatment is based on natural psolaren topical application (6.6%) with short exposure UVA phototherapy, and then followed with the immediate application of topical natural antioxidant based medicine. Case series showed significant repigmentation of vitiligo patient and it is currently used in several dermatology clinics as a “new” PUVA method. This case report focus and follow up with acro vitiligo condition that failed to be treated with conventional PUVA but surprisingly showed significant repigmentation in 5 months treatment with PN.23588.95.

Case summary

A 30 years old male gender diagnosed with progressive non-sigmental vitiligo for 8 years. The case history showed a failure of a 4-months treatment by conventional PUVA with normal thyroid function. Pictures were taken before treatment and 2 to 5 months post-treatment with patented treatment. The case showed significant repigmentation on treated areas that involved the end of fingertips with no recurrence for at least 3 months observation, no repigmentation was shown on control areas.

Conclusion

The new patented treatment (PN.23588.95) with ultraviolet treatment showed significant repigmentation of acral vitiligo on hand and fingertips (that failed to be treated with PUVA) with no changes in control areas. suggesting that the faculty of medicine new patent treatment (PN.23588.95) and the new treatment protocol (PUVA followed by topical anti-oxidant treatment) may be a good option in treating vitiligo if conventional PUVA failed and can be a subject to be considered in vitiligo research.

Key Words: Vitiligo; Dermatology; Medicine;

ENT (otolaryngology)

176

A Recurrent Maltreated Case of Keratosis Obturans: A Case Report

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CASE REPORT

Background:
Keratosis obturans (KO) is a rare disorder of the external auditory meatus characterized by accumulation of keratinaceous material in a lamellar arrangement which dilates and blocks the ear canal. Otalgia and hearing loss are the main symptoms. We present a misdiagnosed and maltreated case of KO.

Case:
A 45-year-old male presented to our otolaryngology clinic due to numerous unsuccessful ear wax removal attempts in his left ear, even after the usage of alkaline ear drops. He complained of left moderate-severe otalgia for several months and a feeling of ear blockage alongside ipsilateral hearing loss. Otoscopy of the left ear revealed impacted ear wax concealing the tympanic membrane, which could not be evaluated. Otoscopy of the right ear revealed a normal tympanic membrane, and mild ear wax. Removal of the wax under section was attempted on several occasions and failed, even with the use of alkaline ear drops. Nevertheless, the surgeon became skeptical that he had KO since the wax was thick, had the appearance of keratin plugs, and was hard to remove after numerous efforts. Microscopic-guided examination of the ears under general anesthesia showed that the left ear was filled with wax that was piling up in the skin and encompassed a thick keratinous plug that had dilated the external auditory canal with pockets and bone remodeling. The plug was extracted and a diagnosis of KO was rendered. An ear pack was draped with antibiotics and placed in the left ear, which was removed after 3 weeks.

Our diagnosis was established through pathological analysis which revealed acellular lamellated keratin flakes and keratinous material. Post-operatively, the pain subsided and his hearing resumed to normal level.

Conclusion
KO can be misdiagnosed and maltreated as impacted ear wax, which can lead to disturbing symptoms and major complications. Hence, early diagnosis and proper treatment is fundamental.

Key Words: Keratosis Obturans; Otology; Impacted Ear Wax;

Genetics

177

First case of 2q13 microduplication in Kuwait: unusual presentation of already a rare syndrome

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CASE REPORT

Background:
Copy number variants (CNVs) within 2q13 region commonly includes deletions and duplications that are most likely submicroscopic in size. It is commonly associated with psychiatric problems ranging from mild developmental delay, found attention deficit hyperactivity disorder (ADHD), autism spectrum disorders (ASD), to aggressive (33%) and self-injurious behaviors. Some reported cases have also been associated with mild facial dysmorphism in combination with mild developmental delay. We are presenting a case of a microduplication of 2.155 Mb in size within 2q13 region, which is to our knowledge, is the first case in Kuwait.

Case Summary:
A 7-year-old young girl, who presented to genetic clinic around the age of 5 6/12 years with mild intellectual disability, overgrowth with height and weight >95th centile, normal head circumferance (25th centile), and mild facial dysmorphism. Metabolic work-up including ammonia and lactate, and brain MRI show no major abnormalities. Due to mild phenotype, the decision was to go directly to chromosomal micro-array (CMA) analysis, which revealed a 2.155Mb (Chr2:110,983,417-113,137,975) microduplication within 2q13 region.

Conclusions:
Although this microduplication has not been previously reported, the size of the duplication and the number of genes within the region, give an excellent indicator of its pathogenicity. Therefore, using CMA, rather than conventional karyotyping; is a very good first-line genetic testing for cases suspected to have genetic syndrome, especially in cases with no suspected diagnosis has been reached despite extensive investigation

Key Words: submicroscopic chromosome aberrations; chromosomal microarray; developmental delay;

Genetics

178

Case report Bardet-Biedl syndrome type 6 (BBS6) from Kuwait: Tricky mutation detection

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CASE REPORT

Background:
Bardet-Biedl syndrome (BBS) is relatively rare syndrome. It is actually group of genetically heterogeneous disorders even though they share a lot of phenotypic features such as developmental delay, obesity, polydactyly, pigmentary retinal dystrophy, and renal defects. Majority of BBS types follow autosomal recessive inheritance. Here we are presenting a family who has multiple individuals with BBS6 type 6 by detecting c.116C>T pathogenic variant in BBS6 gene in all affected individuals.

Case Summary:
The proband is an 11-year young man, presented with developmental delay, morbid obesity, post-axial polydactyly, and night blindness. He also has two sisters with near identical phenotype except absence of the night blindness. Parents are paternal first cousin (PFC) and there is an affected male first cousin, also his parents
PFC; who has BBS gene panel sequencing that showed a homozygous c.116C>T pathogenic variant in BBS6 gene (Abu-Safieh et al 2012). As a result, targeted mutation testing using restriction fragment length polymorphism (RFLP) for all family members showed homozygous mutant in the proband his mother, and his normal sister, while it is in heterozygous in the father. Due to inconsistency of the results, sequencing analysis of the region was performed which showed homozygous state in all affected individuals while it is heterozygous in both parents and their normal sister. Meanwhile, a careful literature search revealed single nucleotide polymorphism in the nearby position (i.e. c.115). This concludes the inconclusive result of RFLP.

Conclusions:
Because of the large number of genes that are associated with BBS, target panel sequencing should be the golden standard test to start with for any suspected BBS case. In addition, despite the finding in this case report, RFLP is nonetheless is a sufficient and cost-effective genetic test and one should re-assess its result if it shows unusual and unexplainable result.

Key Words: Bardet-Biedl syndrome; BBS6 gene; consanguinity;

Genetics

179

Fibrochondrogenesis case-a great lesson learnt from a rare syndrome

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CASE REPORT

Background:
Fibrochondrogenesis (FCG) is a rare lethal chondrodysplasia disorder. To date, there are 26 reported cases in the literature, most of them survived just few hours after birth. However, there are 3 cases survived beyond neonatal period. FCG is characterized by recessively inherited disorder, multiple skeletal anomalies, severe myopia, and profound sensory-neural deafness. We are reporting a case of FCG who survived beyond neonatal and even first year of life with unusually moderate sensory-neural deafness.

Case Summary:
12-month girl with antenatal history of oligohydramnios and short limbs detected by antenatal ultrasound. She was admitted to special care baby unit (SCBU) due to presence of short limbs, facial dysmorphism and cleft palate. Skeletal survey showed multiple skeletal anomalies including rhizomelic shortening, hypoplastic pelvic bones, displaced and adducted thumb B/L. Both Kniest and FCG were suspected as a daignosis. However, FCG was initially excluded because it is known to be lethal. Thus, COL2A1 gene analysis was requested to investigate Kniest syndrome, which surprisingly revealed no detectable mutations. Finally, targeted exome sequencing of skeletal dysplasia revealed likely pathogenic variant c.2323G>C in homozygous state within the COL11A1 gene; which further confirmed by detecting this variant in both parents in heterozygous state.

Conclusion:
Rare surviving FCG cases have been reported previously, here in this case a novel likely pathogenic variant has been identified in one of the candidate gene (COL11A1) of FCG in a still surviving 12 months girl. Due to high level of overlapping among various skeletal dysplasia as our case between FCG and Kniest, it is appropriate to start with target exome sequencing/whole exome sequencing. Finally, it is crucial to share and publish such a clinical and genomic data to provide a valuable insight in the clinical genomic field of skeletal dysplasia.

Key Words: Fibrochondrogenesis; Chondrodysplasia; COL11A1 gene;

Hematology

180

Hypercalcemia as a rare presentation of Burkitt Cell Leukemia

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CASE REPORT

Background:
Burkitt lymphoma (BL) is a highly aggressive but curable lymphoma that often presents in extranodal sites or as an acute leukaemia. Rare cases, more commonly in males, may present principally with marrow and blood involvement, so-called Burkitt cell leukemia (BCL) variant. BCL tends to involve the CNS at diagnosis or early in the disease course. Unlike in B Acute lymphoblastic leukemia (B-ALL), the blasts of BCL have a phenotype similar to that of typical BL. The molecular hallmark of BL and BCL is IGH/MYC t(8;14) (q24;q32). Different tumor types can induce hypercalcemia, with acute leukemia, lymphoma, and solid tumors being the most prevalent. However the occurrence of hypercalcemia as the initial presentation is very rare and unusual.

Case Summary:
An 11 years old boy came to pediatric causality for fever, anorexia, vomiting, neck pain, lower limb pain & wasting. Initial lab investigations showed high serum calcium: 4.21 mmol/L (RR: 2.18 – 2.68) and mild thrombocytopenia (PLT= 137 109/L). After admission, CBC showed bicytopenia (Hb=102 g/L, PLT= 101 109/L) with no abnormal cells noted in blood smear. Parathyroid hormone= 0.9 (RR: 1.3-9.3 pmol/l), virology screen (including EBV) by PCR was negative. Abdominal ultrasonography showed mild splenomegaly, chest X – ray and CT neck, brain & spine were normal. Two days later, serum calcium increased to 5.02 mmol/L and CBC showed pancytopenia (Hb=82 g/L, WBCS= 2.5 109/L, PLT= 61 109/L) with leukoerythroblastic blood picture. Bone marrow examination was done and showed total infiltration by blast cells. By flow cytometry study, blasts gave positivity with CD10, CD19, CD20, cCD22 & CD79a markers, while TdT & CD34 were negative. Ki-67 was strongly positive (near 100%) by immunohistochemistry study. Molecular studies showed IGH/MYC t(8;14) (q24; q32). The final diagnosis was BCL.

Conclusion:
The presence of severe hypercalcemia may be a clue for early diagnosis of childhood hematological malignancies including lymphoma and leukemia.

Key Words: Burkitt Cell leukemia; Blast cells; Hypercalcemia;

Medicine

181

Successfully treated MDR pseudomonas induced Skull Base Osteomyelitis in renal transplant recipient: case report and review of literature.

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CASE REPORT

Background:
Skull base osteomyelitis is a rare serious disorder that typically begins as malignant otitis externa. We report a successfully treated renal transplant patient who developed relapsing skull base osteomyelitis due to multi-drug resistant pseudomonas infection which was complicated with meningitis and thrombosis of the lateral sinus.

Case report:
A 61-year-old male ESRD secondary to diabetic nephropathy underwent kidney transplant on 3.10.2017. His multidrug resistant (MDR) pseudomonus aerogenosa wound infection was managed by colomycin for 14 days. He was re-admitted for treatment of MDR pseudomonas that was isolated from urine and blood with meropenem and colomycin. He developed left ophthalmic neuralgia. His skull MRI on (4.4.2018) showed left occipital and mastoid osteolysis, partially thrombosed left internal jugular vein and left lateral sinus; in addition to left temporal meningeal contrast enhancement. He was diagnosed as multi-drug resistant pseudomonas osteomyelitis of the skull base associated with partial jugular thrombosis for which he received a course of combined colymicin, fosfomycin and cloxacillin (6 weeks) with good evolution of pain and imaging. On 24.6.18, he was re-admitted with resurgence of fever, facial pain, headache, vomiting and convulsions. He was supported by Keppra and we planned to repeat brain MRI and to treat his septic condition. We considered as relapsing osteomylitis of the skull base and we resumed the same antibiotic regimen together with holding his maintenance immunosuppression except steroid for nearly 6 weeks and after that tacrolimus was resumed gradually. He still has mild intermittent headache with some postural hypotension possibly due to diabetic autonomic neuropathy.

Conclusion:
Skull base osteomyelitis among renal transplant will need prolonged course of antibiotics together with minimization of immunosuppression to prevent its relapse especially if it is due to MDR paeudomonas infection.

Key Words: Skull Base ; Mdr Pseudomounus; Kidney Transplant;

Medicine

182

Adult respiratory distress syndrome during Basiliximab treatment in renal transplantation.

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CASE REPORT

Background:
Basiliximab is a chimeric interleukin-2 receptor antibody used as an induction immunosuppressive agent in renal transplant recipients. It is proven to be highly effective in preventing acute rejection episodes and has an excellent safety profile. Hypersensitivity reactions due to cytokine release syndrome leading to adult respiratory distress syndrome (ARDS) following Basiliximab therapy have been rarely reported. We report 2 such cases of ARDS following Basiliximab administration.

Case Summary:
Case 1:- A 48-year-old lady with end stage renal failure and normal cardio respiratory status underwent renal transplantation with Basiliximab induction (2 doses on day 0 and day 4) followed by steroids, mycophenolate and tacrolimus as immunosuppression. There was immediate postoperative diuresis with excellent graft function and the patient received standard fluid management during and after surgery. She developed acute respiratory distress with clinical and radiological evidence of pulmonary edema on day 2 and day 4 post operatively, not responding to fluid restriction and diuresis. Cardiac and respiratory workup were normal and she was successfully treated with assisted ventilation and ultrafiltration.

Case 2:- A 28 year old lady with multiple congenital anomalies and end stage renal failure underwent a preemptive live renal transplant with Basiliximab induction on day of transplant followed by triple maintenance immunosuppression with steroids, mycophenolate and cyclosporine. On the 2nd postoperative night she developed acute respiratory distress with features of ARDS. Investigations did not reveal any cause for the ARDS. The second due dose of Basiliximab was not given and she responded to assisted ventilation, fluid restriction and diuresis.

Conclusion: Basiliximab induced cytokine release and increased capillary permeability leading to ARDS is a serious adverse event and improved awareness and prudent management can be lifesaving.

Key Words: KIDENY TRANSPLANT; ARDS; Basiliximab ;

Medicine

183

Combined Membranous Glomerulonephritis and Plasma Cell-Rich Acute Rejection Presented as Nephrotic Syndrome: Case Report and Review of Literature.

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CASE REPORT

Background:

Regardless of the continuous efforts to reduce the rate of acute rejection episodes and to optimize allograft survival with potent immunosuppressive drugs, the occurrence of more than 10 % of the inflammatory cells infiltrating renal allograft as mature plasma cells are not common and were recognized as plasma cell rich acute rejection (PCAR). It has a poor long-term outcome in renal transplant recipients and little is known about its management.

The aim of the work: We describe a case of biopsy-proven combined membranous glomerulonephritis (GN) and plasma cell rich acute rejection presented with nephrotic syndrome and mild renal allograft dysfunction: management challenge and its clinical outcome.

Case report

A 58-year-old male, suffering from ESKD and underwent overseas living unrelated kidney transplantation, landed at our center in Kuwait on the 6th day post-operatively and was admitted to control his diabetes and hypertension. His basal graft ultrasound and renogram were normal. Two years after transplant, he developed lower limb edema, puffy face, heavy proteinuria, hypo-albuminemia and hypercholesteremia. His graft biopsy showed membranous GN and PCACR. Bence Johns protein, serum electrophoresis, and bone survey were all normal. He received pulse steroid 1g od for 3 days followed by 30 mg /day for 30 days then gradual tapering till 20 mg per day according to our protocol. CD19 lymphocyte was high, therefore he was given a single dose of rituximab. His donor-specific antibody was negative. Follow up graft biopsy (3 months later) revealed membranous GN and complete resolution of plasma cells. His proteinuria started to improve after 4 months

Conclusion:

PCAR is a treatable form of acute rejection, and its combination with membranous GN will need special care with specific CD20 ablation therapy.

Key Words: REJECTION; MEMBRANOUS; PLASMA ;

Medicine

184

Pure Red Cell Aplasia In Renal Transplant Recipient: Case Report And Review Of Literature.

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CASE REPORT

Background:
Anemia is common in the post-renal transplant period and has been reported in up to 40% of renal transplant recipients. It is commonly due to drugs and infections. While post-transplantation anemia is usually due to graft dysfunction and drugs such as mycophenolate and cotrimoxazole, tacrolimus is an uncommon cause. Severe anemia requiring multiple blood transfusions in post-transplant period begets the risk for rejection as well. So, timely evaluation and management of anemia in these patients are very important.

Case scenario:
A 61-year-old male ESRD secondary to diabetic nephropathy underwent preemptive live unrelated renal transplant on 13.9.2018. He had a past history of CABG and TAVI 3 years' prior transplantation. He was maintained on prednisolone, mycofenolate mofetil, and tacrolimus, until he started to complaint low cardiac output symptoms. The complete blood count revealed normocytic normochromic anemia and his hemoglobin dropped from 111 down to 70 g/l with reticulocytopenia necessitated regular blood transfusion. His investigations showed normal iron profile, serum folate and vitamin B12 with negative hemolytic indices and autoimmune screen. Bone marrow biopsy revealed acquired pure red cell aplasia most likely drug induced as viral profile were negative for Parvovirus B19, CMV, and EBV. Patient was managed by discontinuing Mycofenolate mofetil, Sulfa-methoxazol trimethoprim and valgancyclovir and higher dose of steroid. Considering tacrolimus as a cause to be discontinued if no response to the previous management.

Key Words: Pure red cell aplasia; kidney transplant ; case reprort;

Medicine – Ethics

185

I Am My Own Doctor

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CASE REPORT

Background:
"Listening is a therapeutic intervention in its own right, but regrettably, health professionals are not good at it" (1).The patient voice program in the FOM at KU uses reflective methods to motivate insight, increase moral sensitivity, and drive healthcare improvement through critical transformative educational encounters.

Case Summary:
A 75 years old gentleman presented to a secondary care hospital with a retrosternal burning sensation radiating to his neck associated with palpitations & heaviness in the lower limbs. He informed the ER doctor "I am having an MI, it happened 4 times before". He was diagnosed with Flu and was prescribed Antibiotic, Zertic & Panadol with no investigations ordered 'as per the patient's story'.He discussed the 'Flu' diagnosis with the doctor and told him "I do not have a certificate of a doctor, but I am my own doctor". After taking the prescribed medications, his symptoms worsened and he developed nausea & vomiting.Finally, he was diagnosed with an MI in another hospital and got transferred to a specialized hospital, he is still an inpatient undergoing further investigations and management.He experienced a similar negative doctor-patient encounter 3 months earlier in the same hospital when he presented with severe headache and a burning sensation at the back of his neck. He was told "it is nothing serious" and had to go to two other hospitals before he was diagnosed with a stroke that left him with a visual field defect.The patient is a known diabetic and hypertensive on medications. He was a smoker for 59 years before quitting last September.

Conclusion: Our healthcare system is in severe need for so many changes. One of the ways to address this earlier in our career while still being healthcare students is to have the opportunity to reflect about our educational experiences and to continuously improve the student-patient interaction through respecting the patient's voice

Key Words: patient's voice; ethics and professionalism ; expert patients;

Microbiology and Immunology

186

Imported PVL-Producing Staphylococcus aureus to Kuwait

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CASE REPORT

Background:
Panton-Valentine leukocidin (PVL) is a cytotoxin produced by Staphylococcus aureus that causes leukocyte destruction and tissue necrosis. Although produced by <5% of S. aureus strains, the toxin is detected in strains that cause skin necrosis and severe necrotizing pneumonia. It is usually associated with community-acquired methicillin resistant S. aureus (CA-MRSA), outbreaks due to methicillin susceptible S. aureus (MSSA) have also been reported.

Case Summary: A one year 8 months old girl presented with fever and leg swelling of 6 days' duration. She had a history of right foot injury while swimming in a public pool in Dubai, U.A.E. Later she became febrile with a swollen right foot. She received amoxicillin/clavulanic acid for 2 days with no improvement. She was admitted to Mubarak Al Kabeer hospital, Kuwait directly from the airport. On examination, she was febrile. Systemic examination was unremarkable except for swollen, tender right lower limb and infected wound above the ankle. Investigations showed WBC 13.7 10^9/L, platelets 202 10^9/L, PCT 0.09 %, CRP 148 mg/L and ESR 71 mm/hr. Blood culture yielded the growth of PVL-producing MSSA. Doppler Ultrasound of the right lower limb showed acute thrombus in the Right thigh. Lower limbs MRI confirmed osteomyelitis. Surgical debridement was done, and the patient was kept on clindamycin and linezolid. Post-operative day 4, she developed fever with tachypnea. CT chest showed lung abscess and rifampicin was added. She improved clinically and discharged well after completing 6-week combination triple therapy.

Conclusion: PVL-producing S. aureus is rare, but the prevalence is increasing. It causes severe necrotizing infection and it is lethal if not treated aggressively. Although the isolate was susceptible to methicillin, the treatment of choice should be flucloxacillin. However, a PVL-producing MSSA, flucloxacillin will increase the production of the toxin and the patient will deteriorate further.

Key Words: PVL; MSSA; Necrosis;

Microbiology and Immunology

187

The First Report of Neonatal Outbreak of Ralstoniamannitolilytica Associated with the use of Commercial Irrigation Solution in Maternity Hospital NICU Kuwait

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CASE REPORT

Background:
Ralstoniamannitolilytica is an emerging opportunistic pathogen and it is a rare cause of neonatal infections with only 10 cases reported in literature till date. There were only two reports in the literature of R.mannitolilytica neonatal infection/colonization, both linked to a humidifying respiratory devices. In this report we summarize the clinical infection of 3 cases in our NICU during January 2018, antibiotic susceptibility and outbreaksource detection.

Case Summary: The 3 cases of R.mannitolilytica infection in our NICU occurred within 2 weeks between 8-to-21 January 2018. All were premature. Case 1 was diagnosed as neonatal sepsis and treated accordingly, case 2 was diagnosed as respiratory infection and the organism was isolated two times from ETT and managed with antibiotics while case 3 was postsurgical wound infection. All cases were advised to be treated tazocin and all were responded to the treatment and stable after the antibiotic course. Outbreak was declared and environmental screening was conducted including water and solutions used in NICU. All used or opened solution bottles in the NICU were discarded. The irrigation solutions in use were positive and to roll out cross contamination from the infected neonates sealed bottles with the same lot number were also positive for the same organism. Higher authority and the manufacturer were notified.

Results: R.mannitolilytica isolated from the neonates and the environment samples were identified with Vitek MS and susceptibility done by Vitek2. All the isolates were resistant to ampicillin, amikacin, gentamicin and meropenem and sensitive to tazocin. The DNA finger printing analysis of the 6 strains were identical.

Conclusion: Our investigation demonstrated the contamination of commercially purchased irrigation solution resulted in an outbreak in our NICU. The strength of this report were the identification of the outbreak source and the genetic identity of the isolates from the clinical and the source.

Key Words: neonatal sepsis; R.mannitolilytica; outbreak;

Microbiology and Immunology

188

Primary peritonitis and intra-abdominal sepsis due to group A streptococcus

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CASE REPORT

Group A streptococcus (GAS) is considered a rare aetiology of primary peritonitis or spontaneous bacterial peritonitis (SBP). Review of literature reveals very few reports on peritonitis by GAS. Isolation of GAS from peritoneal fluid is an unusual event.This case study discusses a 41 year old lady admitted with complaints of fever, diarrhoea and diffuse abdominal pain. CT abdomen and pelvis revealed multiple intra- abdominal collections and free fluid. Diagnostic laparoscopy confirmed the CT scan findings and culture of intra peritoneal fluid grew GAS (Streptococcus pyogenes) confirmed by streptococcal grouping latex agglutination kit (Strep PRO Grouping Kit) and Vitek 2 (Automated). The patient was allergic to penicillin and therefore, was treated with clindamycin.The patient responded to antibiotic therapy and drainage, and was later discharged in an improved state of health. No intra abdominal or extra abdominal source of the peritonitis could be detected. This case report is, therefore, a typical case of SBP due to GAS. This case report also emphasizes on the fact that primary peritonitis due to gram positive cocci are more frequently encountered in recent years.GAS peritonitis is a life threatening disease and early diagnosis and treatment with the appropriate antibiotic along with drainage of the infected peritoneal fluid can be life-saving.

Key Words: Peritonitis; Group A streptococcus; Intra-abdominal;

Microbiology and Immunology

189

Congenital malaria: first case report in Kuwait

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CASE REPORT

Background:
Malaria in pregnancy poses a great health risk to mother and her fetus and causes abortion, still birth, intrauterine growth retardation and low birth weight. It is due to the infection of the placenta and transplacental passage of parasites infecting the fetus.

Case Summary:
A 32–days old female neonate was admitted in ICU for intermittent high grade fever and rapid breathing of one week duration. The mother had malaria two years before while visiting Afghanistan and treated with chloroquine for three days and came back to Kuwait. The baby was born normally and her birth weight was 2.600 Kg. On admission, physical examination revealed pallor, poor feeding and mild hepatosplenomegaly and jaundice. Complete blood count showed severe anaemia with haemoglobin (Hb) 7.7 g/L, red blood cell count 3.25 × 1012/L, white blood cell count 10.5 × 109/L and platelet count 40 x 109/L. Total bilirubin 30.80 umol/L, aspartate aminotransferase 207 IU/L, alanine aminotransferase 64.0 IU/L were elevated, alkaline phosphatase (219.0 IU/L) was normal. C-reactive protein was mildly elevated (34 mg/L).Giemsa stained blood smear revealed rings, gametocytes of Plasmodium falciparum and trophozoites, gametocytes of Plasmodium vivax with a parasitemia of 0.2 %. Rapid immunochromatographic test for histidine rich protein II was positive. Artesunate (3mg/ Kg body weight) was initiated and followed with Coartem. After treatment parasitemia was cleared and the hematological parameters became normal.

Conclusions:
We report the first case of congenital malaria in a 32-day old baby girl from Afghanistan who presented high grade fever and rapid breathing of one week duration. The diagnosis of congenital malaria was established by the presence of mixed infection of P. falciparum and P. vivax in Giemsa stained peripheral blood smear. The onset of symptoms and parasitemia in the neonate also favored the diagnosis of congenital

Key Words: Congenital malaria; Plasmodium falciparum; Olasmodium vivax;

Nuclear Medicine and Radiology

190

A Rare case of a Double posterior cerebral artery

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CASE REPORT

Background:
Double PCA is an extremely rare anomaly. The PCA stem is formed of the posterior choroidal branches feeding the dien-mesencephalon, and it acquires its telencephalic branches by annexing the distal anterior choroidal supply. The proximal PCA connection to the basilar artery occurs after the paired longitudinal neural arteries fuse, and the developing vertebrobasilar system begins its contribution to the PCA supply. The balance between the early anterior and posterior choroidal branches is a determinant of the degree of observed variance from the usual adult cerebrovascular configuration

Case Summary: We report a case of a double right posterior cerebral artery (PCA) seen in a patient complaining of recurrent attacks of a severe headache and suspected to have a vascular insult. Two right posterior cerebral arteries exist, one from the basilar artery (usual PCA) and the other one as a continuation of the right posterior communicating artery (Pcomm) (fetal PCA).

Conclusion:
The most commonly detected PCA variant is the fetal PCA, which is defined as hypoplastic or absent P1 segment of the PCA while its P2 segment arises from the corresponding Pcomm. This variant has been found in up to 22% of the cases. Embryologically, this can be explained by the derivation of the posterior cerebral vascular territory from the caudal trunk of the primitive ICA. Failure of regression the Pcomm in this stage leads to hypoplasia or agenesis of the P1segment that connects the basilar artery to the PCA. Consequentially, the flow into the PCA becomes reliant on the ICA. This variant does not truly represent a fetal origin of the PCA. A true fetal PCA is defined by the persistent fetal supply of the telencephalon via the anterior choroidal artery during adulthood rather than being annexed by the posterior choroidal artery. This is the first case to have double PCA associated with hypoplastic A1 segment of the contralateral ACA on the same side.

Key Words: Fetal posterior cerebral artery; Congenital anomaly; posterior choroidal ;

Nuclear Medicine and Radiology

191

The combination of reverse Hot Cross Bun sign, Mercedes Benz sign, Face of giant Panda and her cub in non-Wilson disease.

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CASE REPORT

Background:
Middle cerebellar peduncles are composed of white matter fibers originating from the contralateral pontine nuclei. This explains the combined bilateral middle cerebellar peduncles and pontine hyperintensity described in a wide variety of diseases such as demyelinating, metabolic, ischemic, and multisystem atrophy. The uncommon "Hot Cross Bun" sign has been described in few diseases such as multisystem atrophy, Parkinson's, spinocerebellar atrophy and variant Creutzfeldt-Jakob disease, where a cruciate like high signal intensity (SI) is seen quadrisecting the pons. Reverse Hot Cross Bun sign was described in Wilson's disease along with several other radiological features.

Case Summary: We report a peculiar set of magnetic resonance imaging (MRI) findings in a non-Wilson's patient suffering from vertigo and loss of consciousness. The findings include bilateral hyperintensity in middle cerebellar peduncles, posterior limb of internal capsule and tegmentum of the midbrain (sparing the red nucleus). In addition to cruciform hypointensity quadrisecting and trisecting the pons with subsequent "reverse Hot Cross Bun" and "Mercedes Benz" signs respectively, giving what's called the face of giant Panda and her cub.

Conclusion: The present case possesses the same combination of hyperintensity in middle cerebellar peduncles, bilateral internal capsule, and tegmentum of the midbrain in the case of non-Wilson's disease. Only one case reported with this combination of MR findings in non-Wilson's disease.

Key Words: Hot Cross Bun sign; ilson's disease. ; Mercedes Benz sign;

Nuclear Medicine and Radiology

192

Disc Herniation and Myofascial Syndrome: Possible Diagnostic Errors. Case Report

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CASE REPORT

Background:
Low back pain may not be a result of disc herniation or post surgery for disc herniation but can be due to myofascial syndrome (trigger point syndrome) a condition that can be easily treated by simple non invasive measures. The authors present a case with severe back and leg pain whose pain was attributed to disc herniation shown on MRI but proved to be a case of myofascial syndrome that completely recovered by simple non invasive treatment

Case Summary:
A 34 year-old female who complained of a two-year history of back and right leg pain. The back, pain was localized over the L4-S1 segment and the leg pain over L5. MRI examination of the lumbar spine revealed a L5-S1 disc herniation that was in contact with the nerve root and with the dural sac. The patient was advised surgical removal of the L5-S1 disc herniation. The patient on visit to the author performed a full examination of the dorsal and lumbar paravertebral, lateral lumbar, gluteal and abdominal muscles which revealed the presence of important trigger points in superficial and deep paravertebral muscles on the right side. The patient was treated with standard techniques of spray and stretch of the involved muscles. Immediately after the treatment the patient showed significant clinical improvement. The patient was advised to perform fifteen minutes home exercises daily for the next two weeks. Follow up at 3 weeks and 3 months revealed significant progressive improvement with complete recovery.

CONCLUSION:
The presence of a disc herniation on neuroradiological examination is not necessarily the cause of the patients symptoms. Although clinical examination is mandatory even in the presence of disc herniation to assess specific trigger points to render appropriate non-invasive treatment.

Key Words: disc herniation; myofascial syndrome; trigger point;

Ophthalmology- Medical Education

193

Bilateral Medial Canthal Lesions: How Knowledge of Basic Anatomy and Age-related Anatomical Changes can Save the Vision of a Patients

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CASE REPORT

Background:
The process of aging affects virtually all organ systems in the body, including the eyes and its associated structures. With aging, the periorbital tissue atrophies and the lacrimal gland function decreases. Although that is true, watering eyes become more common due to displacement of the lacrimal punctum secondary to atrophy of the periorbital tissue. These age-related anatomical changes might be misdiagnosed as pathological changes. It is the task of the doctor to be able to differentiate the clinically significant pathological changes from benign anatomical alterations to preserve the visual capability of the patient.

Case Summary: A 79-year-old gentleman was referred to the ophthalmology clinic from the primary care center for excision of bilateral medial canthal lesions. The patient presented with bilateral inflammation in both the upper and lower puncta of the tear ducts that were noted by the general practitioner after a follow-up visit post right eye phacoemulsification. The patient had no significant points in the history as he was not bothered by the lesion, and on examination, the patient was pseudophakic in the right eye with IOL, had cataracts in the left eye, and bilateral corneal arcuses, with protrusions from the puncta that are otherwise clinically non-remarkable. A conclusion was made, dictating the avoidance of excision due to them being anatomical variations with no clinical significance, and the patient was scheduled for a left cataract surgery to follow.

Conclusion: It is very essential to have knowledge about the basic anatomy and the normal age-related anatomical changes and not to mix them with the pathological changes to avoid misdiagnoses and treatments that may cause more harm to those seeking help, which breaks the first medical ethics guiding principle: do no harm.

Key Words: Ophthalmology; Case report; Medical education;

Pathology

194

Follicular variant of papillary thyroid carcinoma with bone metastases - report of two cases and review of literature.

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CASE REPORT

Background:
Osseous metastasis of thyroid carcinoma is uncommon. Incidence of bone metastasis in follicular thyroid carcinoma (FTC) and papillary thyroid carcinoma (PTC) range from 7 to 28% and 1.4 to7% respectively. The common sites of bone metastasis are sternum, vertebrae, pelvis and ribs while metastasis to appendicular skeleton is the rarest. Follicular variant of PTC (FVPTC) is believed to behave in a clinical manner similar to classical PTC with lymph node metastasis. There have been few case reports of FVPTC with metastasis to rare sites like humerus and clavicle.

Case Summary:
Case 1: A 75 year old Kuwaiti woman presented with an osteolytic mass in proximal humerus with soft tissue involvement. Bone scan showed multiple destructive bone lesions. Fine needle aspiration cytology (FNAC) and biopsy of the right humeral mass showed metastatic thyroid carcinoma. On further clinical workup, ultrasound showed multiple thyroid nodules. FNAC of the largest nodule with calcifications in the left lobe showed a FVPTC.
Case 2: A 61 year old Indian male presented with a solitary nodule in the right lobe of thyroid with calcification along with a right supraclavicular fossa mass involving the lateral end of clavicle. FNAC of the thyroid nodule showed a PTC. FNAC of right clavicular mass showed a metastatic PTC. Patient underwent total thyroidectomy which was reported as multifocal FVPTC

Conclusion:
Cytodiagnostic accuracy of metastatic bone carcinoma including metastasis from thyroid is high. Our case report emphasizes the need for increased awareness of the possibility of rare metastatic deposits of thyroid carcinoma in unusual sites. FNAC can help early diagnosis of metastatic bone lesions resulting in proper management and better prognosis.

Key Words: Follicular variant of papillary thyroid cancer; Bone metastasis; Fine needle aspiration cytology;

Pathology

195

Rare Cases of Primary Hyperparathyroidism: Carcinoma, Cyst, Oncocytic, and Lipoadenoma

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CASE REPORT

Background:
Primary hyperparathyroidism (PHP) is a systematic disease characterized by abnormal metabolism of calcium due to a cause within the parathyroid gland. It commonly occurs because of chief cell adenoma and less commonly because of hyperplasia. In this report, we describe very rare causes of primary hyperparathyroidism.

Summary of the Cases:
Four female patients between 39 and 62 years of age were identified. Two patients presented with bone pain, and the other 2 patients presented with symptoms unrelated to hypercalcemia. Pathological examination showed a parathyroid cyst in one patient. Two patients had adenomas; one was a lipoadenoma, and the other was an oncocytic adenoma. The fourth patient had a 6.0-cm parathyroid tumor with invasion into adjacent tissue as well as vascular invasion, diagnostic of parathyroid carcinoma.

Conclusion:
In conclusion, this report has described cases of PHP attributable to rare underlying causes. Pathologists and clinicians should be aware of these causes and the association with an underlying genetic syndrome as well as that PHP can be associated with an underlying malignancy.

Key Words: Rare; Primary; Hyperparathyroidism;

Pathology

196

Synchronous Myxoid liposarcoma and Thyroid papillary carcinoma- A case report.

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CASE REPORT

Background:
Liposarcoma is a rare malignancy of putative adipocyte origin. Myxoid liposarcoma is the second most common subtype and is considered among the high grade morphologies of liposarcomas. There have been rare case reports describing second primary cancer in patients with liposarcomas. Here we present a patient who was diagnosed with two different types of cancer within 3 weeks interval.Case report 40 years old patient complained of soft tissue mass in the right upper thigh since two and half years, recently increased in size. MRI showed well defined subcutaneous soft tissue lesion surrounded by minimal edema measuring about 9x8.5cm. FNAC was suggestive of myxoid liposarcoma which was confirmed by histological core biopsy and S-100positive immunostaining. Molecular genetics (FISH) done was also compatible with myxoid liposarcoma. During the work up for sarcoma prior to surgery ultrasonography of neck showed nodule in the left lobe with ipsilareral enlarged cervical lymph nodes. FNAC was reported as papillary carcinoma of thyroid with metastatic thyroid carcinoma to cervical lymph node. Immunohistochemistry was found to be positive for both CK19 and TTF-1 on both thyroid and lymph node samples. The time interval between the two cytology aspirations was 20 days.

Conclusion:
The phenomenon of second primary malignancy in patients in whom one of the tumors was soft tissue occurs at a rate of 7.5%. The majority of cases occur by chance without any obvious association with chemotherapy or previous exposure to radiotherapy. The clinical implication includes the need to search for a concurrent primary malignancy in patients with soft tissue malignancy as an integral part of their work up. The purpose of presenting this case is to highlight the possibility of concurrent primary malignancy in patients with newly diagnosed liposarcoma for better management. Specially with regard to the fact that high grade liposarcomas have a higher chance of second primary malignancy.

Key Words: Concurrent malignancy; Myxoid liposarcoma; Thyroid papillary carcinoma;

Pathology

197

Forensic pathology autopsy of incidentally discovered Didelphys Uterus, that successfully conceived:A Case Report and Review of the Literature

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CASE REPORT

Background:

Mullerian duct anomalies (MDAs) are congenital defects of the female genital system that arise from abnormal embryological development of the Mullerian ducts. These abnormalities can include failure of development, fusion, canalization, or reabsorption, which normally occurs between 6 and 22weeks of intrauterine gestational age. Most references estimate an incidence of these abnormalities to be from0.5 to5.0% in the general population.

Case Summary:

A 29 years old, Asian, woman referred to Kuwait forensic medicine department as a suddenly died case . On autopsy an apparently looking bicornuate uterus with absent right kidney, a case of Herlyn-Werner-Wunderlich (HWW) syndrome. Her female genital organs weighing 265 grams was sent for pathological examination, which revealed a completely separated double uterus, double cervix, and double vagina. the right side smaller one showed a near 8-weeks pregnancy with a well-formed right ovarian corpus luteum. Representative specimens were taken for histopathology, DNA and toxicological laboratories . to assess the pathological findings, a cause of death and the person accused of pregnancy.

The novelty of Findings:

Overall, the literature available on the didelphys uterus is quite limited at the present time

Key Words: Didelphys; Absent kidney; Herlyn-Werner-Wunderlich (HWW)

Pathology

198

Rare Case of Collison Tumor of Thyroid With Parathyroid Adenoma- A Case Report.

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CASE REPORT

Background:
Collison tumors of the thyroid is rare and present a diagnostic and treatment challenge. Combination of thyroid carcinoma variants have been reported, such as follicular with papillary carcinoma; medullary with follicular and anaplastic with follicular carcinoma. We report a case of Hurthle cell neoplasm and micropapillary carcinoma in a patient with hypertension and renal allograft dysfunction. Additionally, this patient was detected to have a parathyroid adenoma in the residual thyroid tissue.

Case Summary:
A 45-year-old woman with history of hypertension and renal allograft dysfunction was investigated for weight loss. A PET/CT showed focal hypermetabolic lesion in the left thyroid lobe. Fine needle aspiration cytology (FNAC) diagnosed the lesion to be suspicious of a follicular neoplasm (Hurthle cell type). The patient underwent left partial thyroidectomy. Histopathological examination revealed a Hurthle cell neoplasm with incidental micropapillary carcinoma. One year later; the patient was detected to have a well-defined hypoechoic nodule, in the postero-inferior aspect of the right lobe of thyroid by ultrasound. FNAC showed sheets of uniform round cells arranged in micro follicles, intermixed with Hurthle like cells with absence of colloid in the background. The possibility of a Parathyroid adenoma was considered. Biochemical investigations revealed mild hypocalcaemia, hyperphosphatemia and hyperparathyroidism, supporting a parathyroid adenoma.

Conclusions: This case report highlights the rare occurrence of three tumors in the thyroid gland of a patient with hypertension and renal dysfunction. Diagnosis of parathyroid adenoma is challenging due to its proximity to the thyroid tissue and cytomorphological similarities, which may masquerade follicular neoplasms. Clinical information, meticulous pathological examination, parathormone (PTH) assay and additional radiological tests is crucial in such cases.

Key Words: Fine needle aspiration cytology; Hurthle cells; Parathyroid adenoma;

Pediatrics

199

Intracerebral cysticercosis: A case report from Kuwait

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CASE REPORT

Background:
Neurocysticercosis (NCC) is a neurological disease due to the parasitic infection (Taenia solium). This disease has been considered nonexistent in Muslim Arab countries since the pork is the main host of the tape worm (Taenia solium). Recently, NCC cases are being increasingly reported in Arab world including Kuwait. We hereby are reporting a child who presented with intractable epilepsy and was found to have NCC. This paper emphasise the importance of considering NCC as a leading cause of acquired epilepsy even in countries where pork consumption is prohibited by religious laws.

Case report:
A 2 year old Egyption boy, product of FTND, known to be healthy, presented with a tonic clonic convulsion involving mainly the right arm extending to the right shoulder and neck. It was of more than 1 hour duration, associated with fever and was aborted by Valium. In spite of IV phenyton, the patient continued to have three attacks of convulsion. Lab investigations including LP revealed normal results. CT head revealed multiple hypodense lesions with faint marginal enhancement in left frontal and right parietal area, MRI revealed multiple well defined lesions suggestive of cysticercosis . EEG was normal. PPD and ELISA for NCC were negative. Patient responded to trileptal.

Conclusion / Recommendation:
Neurocysticercosis has been increasingly recognized as a leading cause of acquired epilepsy in Kuwait. Although Taenia spp eggs were not identified in all cases, the proper interpretation of the diagnostic criteria for NCC plus the typical findings in the neuroimaging studies will allow a correct diagnosis in most of these cases. General paediatricians in Kuwait should become familiar with this disease process since early diagnosis will enable early correct management avoiding unnecessary surgical procedures. Moreover, diagnosing these cases will enable identification of probable sources of the infection and so limit the spread of the disease.

Key Words: Neurocysticercosis,; CNS parasitic infection.; Taenia solium;

Pediatrics

200

Isolated Retroclival Hematoma: Commonly Overlooked finding in Pediatric Head Trauma

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CASE REPORT

Background:
Retroclival hematoma is a rare entity only few cases have been reported in literature. The pathology can be categorized into epidural hematoma or subdural hematoma based on the anatomy of the tectorial membrane. Frequently, the etiology is related to accidental trauma, though other mechanisms have been observed, including coagulopathy, non-accidental trauma, and pituitary apoplexy.

Case Summary:
A ten -year -old female child presented to the paediatric emergency department with a history of high-speed motor vehicle accident,Glasgow Coma Score (GCS) of 13 and left six cranial nerve palsy. Computed tomography (CT) revealed a hematoma along the dorsum sella and clivus reaching the level of the dens and measuring 8 mm in maximum thickness. Magnetic resonance imaging (MRI) demonstrated the retroclival hematoma with intermediate signal intensity in T1and Low signal intensity in T2 associated with apical ligament injuryand intact tectorial membrane. No operative intervention was performed and the patient just kept under conservative management with resolution of the left abducens nerve palsy after 3 weeks.

Conclusion:
Retroclival hematoma is a very rare entity in the practical field of neurosurgery. Most cases exhibit a benign clinical course with conservative management, yet significant and profound morbidity and mortality have been reported. Prompt diagnosis with close observation is prudent. Surgical management is indicated in the presence of hydrocephalus, symptomatic brainstem compression, and occipito-cervical instability

Key Words: Retroclival hematoma; Abducens nerve palsy; Tectorial membrane injury;

Pediatrics

201

Sanjat Sakati Syndrome: The Effect of Consanguinity on the Future Generation

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CASE REPORT

Background:
Sanjad Sakati syndrome (SSS) is a newly described syndrome, discovered in the Arabian Gulf countries. It is an autosomal recessive condenital disorder that affects one in eight children affected with this condition are born with IUGR and present with hypocalcaemic tetany or seizures due to hypoparatyroidism at an early stage in their lives.

Case Summary:
A 10-month-old girl, product of a triplet pregnancy, born at the 32nd week with a birth weight of 1045 grams, head circumference of 25 cm, and length of 36 cm, presented with a picture of acute bronchiolitis. She also had a resolved necrotizing enterocolitis at birth. In addition, patient showed a bilateral connatal cysts on head ultrasound (normal variant). Also, the patient had corneal opacities. Patient also has a past presentation with hypocalcemia and presented with convulsions controlled with iv and oral Calcium. Family history was positive for consanguinity, and the uncle from the father's side and girl cousin were both diagnosed with Sanjat-Sakati Syndrome. On physical examination, the patient looked small for her age, with a height, weight, as well as a head circumference below the 5th percentile of her age. Patient also showed several dysmorphic features including a long narrow face, small eyes, a peaked nose, large ears, and micrognathia, as well as abnormally small hands and feet.The patient was managed for her infection with supportive therapy, and she was discharged one week later with follow-up appointments with the endocrinologist, ophthalmologist, and regular outpatient clinic visitations.

Conclusion:
It is very integral for people in the gulf region –and internationally- to understand the implications of consanguineous marriage on the health of their offspring. Therefore, genetic counseling should be sought for as a part of any pre-marital check-up, and the implications should be well-understood and well-explained to avoid health implications for the future generation.

Key Words: pediatrics; consanguinity; sanjat-sakati;

Physical Medicine and Rehabilitation

202

Ultrasound guided cosmetic filler injections: Why the(y) wait?

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CASE REPORT

Background:
The incidence of iatrogenic trauma is the facial nerve is low.

Case Summary:
A 34-year-old slender male patient was referred to our outpatient clinic of the Physical Medicine and Rehabilitation Hospital with bilateral facial nerve paralysis one day after dermal filler injections due to distal branch facial nerve entrapment. We believe that excessive dose of dermal fillers and - perhaps more importantly - their blind administration ended up with facial nerve paralysis.

Conclusion and Novelty of Findings:
We strongly suggest that prompt/simple ultrasound imaging and guidance can be used very conveniently/effectively during these types of procedures

Key Words: cosmetic; filler; ultrasound;

Physical Medicine and Rehabilitation

203

Joubert Syndrome, Case Report

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CASE REPORT

Background:
Joubert Syndrome is an autosomal recessive genetic disorder. It is characterized by absence or underdevelopment of the cerebellar vermis and brain stem giving pathognomonic molar tooth appearance in brain MRI. Gene mutations causing Joubert syndrome encodes proteins localize to the primary cilium and centrosome. The main clinical features are: Hypotonia in infancy, developmental delay, and intellectual disability. To our knowledge there are no specific clinical practice guidelines for such disorder. Sensory integration approach of rehabilitation provides graded tactile, proprioceptive and vestibular input to influence child development.

Case Summary:
Five years old boy presented in physical medicine and rehabilitation clinic at age of 3.5 months with dysmorphic features, hypotonia and poor head control, poor eye contact, poor hands grip and swallowing difficulties. Incubated 8 days due to tachypnea. MRI brain showed typical molar tooth appearance. Multidisciplinary outpatient rehabilitation approach started. Child showed initial mild improvement then reached plateau from age of 11months till 3 years. Interdisciplinary intensive rehabilitation approach with addition of sensory processing and integration therapy was applied; three courses each course is 10 weeks long. In-between courses he was receiving outpatient rehabilitation program and caregivers were following home program. Marked improvement in patient development achieved subjectively (caregivers based) and objectively using WeeFIM (which is a standardized measure of functional performance in children). Wee FIM improved after each course (First 15 to 20, second 20 to 33 and last course from 35 to 47). It was stationary in-between courses.

Conclusions:
Intensive interdisciplinary rehabilitation approach including sensory processing and integration facilitated the functional performance and development of the patient with Joubert Syndrome.

Key Words: Joubert Syndrome; Sensory integration; Interdisciplinary team ;

Surgery

204

Failure of Non-operative management of Splenic Injury Resulting in Paraplegia, Gastric Necrosis, Pancreatic Necrosis and Splenic Abscess as a complication of Embolization

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CASE REPORT

Background:
Splenic angioembolization (SAE) is a non-operative approach in managing blunt splenic trauma, with active hemorrhage and hemodynamic stability. This case demonstrates the possible risks involved in such cases.

Case Summary:
A 33 year old male pedestrian was struck by a car and presented to our service with hemodynamic instability. Adequate resuscitation was carried out and he underwent a whole body CT scan, which revealed a grade 4 splenic injury with active contrast extravasation, warranting treatment with SAE using gel foam and coils. The patient subsequently developed paraplegia with no sensorium and reduced anal tone. An MRI of the spine confirmed focal spinal infarction at D4 and D5 that seemed embolic in nature. A CT scan of the abdomen showed pancreatitis with hypoperfusion of the tail, and an infarction of the upper pole of the left kidney, suggesting distal embolization of the artery of Adamkewicz. The patient later developed shock, elevated WBC count, and a drop in hemoglobin by 4 grams and the decision was made to undergo an exploratory laparotomy which showed an infected spleen and a 10 cm long perforation of the stomach with necrosis of the distal pancreas. A splenectomy, distal pancreatectomy, and wedge resection for stomach were done. The patient had a full recovery from his surgery, acute kidney injury and pancreatitis, but remains debilitated due to his paraplegia.

Conclusion and Novelty of Findings:
Although angioembolization of the spleen is recommended as an adjunct in cases such as this and is recommended by both the Eastern Association of Surgeons in Trauma and the World Society for Emergency Surgery, the recommendation remains a grade 2 recommendation and so therefor the risks, capabilities and facilities available should be weighed.

Key Words: Splenic Injury ; Angioembolization; Complications;

Surgery

206

An Unexpected Diagnosis: Multiple intra-abdominal abscesses secondary to Actinomycosis from an intrauterine contraceptive device

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CASE REPORT

Actinomycosis is an uncommon, chronic granulomatous disease caused by gram positive, anaerobic bacteria. These bacteria normally colonize the bronchial system and gastrointestinal tract in humans. The most common diseases associated with Actinomycosis are orocervicofacial, thoracic and abdominal infections. It can be easily mistaken for other clinical conditions, including malignancy, because of its rarity and it's different clinical presentations.We report a case of a young 26 years old Sri Lankan lady who presented with abdominal pain and was found to have multiple liver and mesenteric cystic lesions as well as a para-splenic cyst. She was suspected of having a parasitic or protozoal infection or an intra-abdominal malignancy with metastasis, however, after being thoroughly investigated, she was discovered to have Actinomycosis secondary to an intrauterine contraceptive device with subsequent multiple abscess formation.The rare diagnosis of Actinomycosis should be considered in patients with abdominal pain and fever, especially if a previous history of IUCD usage is known.

Key Words: Actinomycosis; Intra-abdominal abscess; Intrauterine device;

Surgery

207

Laparoscopic Repair of Intersigmoid Hernia: A Case Report

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CASE REPORT

Background:
Internal hernias are a rare cause of bowel obstruction, and they have many classifications and can be congenital or acquired. Generally, the preoperative diagnosis is challenging because of their nonspecific signs and symptoms, but often require emergent surgery because of their complications.

Case Summary:
We present a case of a 28-year-old female who presented with symptoms of acute small bowel obstruction, following a normal vaginal delivery. She had no previous history of any abdominal surgeries or trauma. Routine blood investigations and imaging were performed and then the patient was taken for a diagnostic laparoscopy where the herniated bowel was extracted from the defect, and the defect was closed. The post-operative course was uneventful.

Conclusion: Internal hernias can be very difficult to diagnose as patients may remain asymptomatic for many years and only present to the hospital when it causes complications such as bowel obstruction. Most cases are diagnosed intraoperatively. Although imaging tests play a huge role in establishing the diagnosis, exploratory surgery is often necessary when clinical features are unclear. Due to the many advantages of laparoscopic surgery over the conventional laparotomy, laparoscopic surgery should be the first option for the treatment of internal hernias when there are no contraindications for laparoscopy.

Key Words: internal hernia; small bowel obstruction; laparoscopy;

Surgery

208

Bleeding nasal hemangioma in a pregnant patient: A case report and literature review

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CASE REPORT

Background:
Nasal cavernous hemangioma is a benign tumor of endothelial origin and most often presents in the inferior turbinate. A bleeding nasal mass in pregnant women is a rare cause of epistaxis. Additionally, most reported cases in the English literature were of pyogenic granulomas. Our aim was to determine the best management options for a pregnant woman presenting with massive epistaxis due to a bleeding nasal hemangioma and recommend how to approach such cases. In addition, cavernous hemangioma should be considered as one of the differential diagnoses in a pregnant woman presenting with a bleeding nasal mass.

Case Summary:
A 38-year-old healthy woman, gravida 2, para 1, presented to the ENT emergency room (ER) at Sabah hospital at 32 weeks' gestation. An exophytic and hemorrhagic right nasal mass protruding outside the nasal cavity through the nostril was noticed. The epistaxis required multiple ER visits and was managed simply and conservatively by anterior nasal packs, which was not sufficient. The patient was anemic and required blood transfusion prior to any surgical intervention. Surgical excision of the mass was performed endoscopically. Intraoperative nasal examination showed a polypoid and hemorrhagic nasal mass arising from the right inferior turbinate. The histopathology report was consistent with a diagnosis of nasal cavernous hemangioma.

Conclusion:
Nasal cavernous hemangioma is one of the rare causes of epistaxis in pregnant women. In our case, the patient had massive bleeding, which required surgical excision during her pregnancy.

Key Words: Nasal mass; cavernous hemangioma; pregnancy ;

Surgery

209

Break down of tracheostomy tube in a 3-year-old girl: A case report

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CASE REPORT

Background:
Tracheostomy tube (t-tube) break down is a rare but life-threatening complication that can be prevented by following several preventive measures. Few such incidents, mainly in developing countries, have been reported in the English literature, indicating ineffective tracheostomy care as the leading cause. We report the case of a girl with t-tube break down, where the most likely cause was a manufacturing defect. We seek to educate readers about the importance of proper tracheostomy care.

Case Summary:
A 3-year-old girl, known case of down syndrome and choanal atresia, presented to the emergency room with a history of tracheostomy tube (t-tube) separation from the flange during routine suctioning at home. She had also experienced a brief cyanotic attack previously. An urgent neck X-ray revealed a separated t-tube within the trachea. We extracted the t-tube from the left main bronchus using a rigid bronchoscope, and the t-tube was changed.

Conclusion:
Rigid bronchoscopy has both diagnostic and therapeutic applications. Close follow-up and scheduled tube changing are essential for preventing this complication.

Key Words: Tracheostomy; Down syndrome; Choanal atresia;

Surgery

210

Damage Control Airway: Establishing a Supra-Epiglottic Surgical Airway in a Cannot Intubate, Cannot Ventilate Blunt Polytrauma with Combined Cervical Spine Injury, Vertebral Artery Injury, Obstructing Tracheal Hematoma and no clearly defined Anatomy.

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CASE REPORT

Background:
Guidelines advocate the use of surgical cricothyroidotomy airway as an adjunct in "can't intubate, can't ventilate" scenarios.However, in cases of combined injuries, expanding hematoma & poorly defined anatomy as we report in our case,a temporary supra-epiglottic airway may be life-saving with justifiable risks.

Case Summary:
A 65 year old male presented post car crash with an expanding neck hematoma & aphasia. While initially vitally stable, the patient rapidly desaturated with respiratory distress. Trials of intubation by direct & video assisted laryngoscopy were unsuccessful. The patient arrested due to respiratory compromise & CPR was commenced. A standard surgical cricothyroidotomy was attempted, however due to extensive neck hematoma & edema, only the hyoid bone was identified. A decision was made to perform a surgical airway above the vocal cords at the hyoid bone using a scalpel, blunt dissection & a bougie to feed a size 6 endotracheal tube. After securing the airway & 3 cycles of CPR, ROSC was achieved and the patient was shifted to OR. A bronchoscopy revealed that the airway insitu & the ET tube was exchanged with a size 6 tracheostomy. Neck dissection was performed for hemostasis. The ENT unit involved decided to preserve the established airway until edema resolution. A postoperative CT confirmed presence of obstructing airway edema, transected non bleeding left vertebral artery & C5 vertebral fracture. After 48 hours a tracheostomy and repair was performed & intraoperatively the vocal cords were found to be mobile.Patient was subsequently decannulated post rehab & has now fully recovered

Conclusion:
Although we do not recommend a supraglottic airway in defined anatomy,we hope that this case illustrates that in cases where a patient is in extremis with combined injuries & no identifiable anatomical landmarks; an atypical surgical airway with a staged approach to repair & rehab can be life saving in keeping with the principles of damage control surgery.

Key Words: Can't intubate, can't ventilate; Supra-epiglotic airway; Surgical airway;

Surgery

211

Perforated retroperitoneal appendicitis presented with right thigh abscess: Case report and literature review

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CASE REPORT

Background:

A typical clinical presentation of acute appendicitis is initial diffuse abdominal pain that shifts to right iliac fossa as well as nausea, vomiting and an elevated white blood cell count. It is reported that approximately 20%-30% of patients with acute appendicitis present with an atypical picture. A retroperitoneal perforated appendix can cause retroperitoneal and psoas abscess. After abscess formation, inflammation and pus may extend to the pelvis and extra abdominal compartments through certain, such as deep to the inguinal ligament and fibro-osseus canals are reported in literature.

Case Report:

We report a 67 year-old patient with an initial presentation of right thigh abscess and psoas abscess caused by perforated retroperitoneal appendicitis. His condition was managed with vertical drainage of the thigh abscess and laparoscopic appendectomy with psoas abscess drainage. There are several reports that state that diagnostic modalities, such as CT of the abdomen and pelvis or MRI, could direct the management to surgical or non-surgical plans. Early surgical intervention to the intra-abdomen pathology with sufficient drainage of the psoas and thigh abscess is the definite treatment.

Conclusion: Furthermore we argue that, in unexplained thigh or groin pain/soft tissue infection that are accompanied by a fever and leukocytosis, a gastrointestinal pathology should not be overlooked. Retroperitoneal perforated appendicitis could present as psoas and thigh abscess due to the anatomical communicating routes between abdomen and lower limbs

Key Words: appendix; perforated; psoas abscess;

Surgery-Medical Education

212

Incarcerated Umbilical Hernia: Can It Be Something Else?

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CASE REPORT

Background:
Umbilical hernia is the protrusion of abdominal organs or tissue outside the skin through the umbilical ring. Middle-aged obese women are the ones at risk (1). Other risk factors include obesity, frequent pregnancies or deliverance, and ascites from liver cirrhosis or renal failure. The standard repair is an open umbilical hernioplasty by primary closure of the fascial defects (2).

Case Summary:
The patient was assessed 2 times after getting admitted and there was a variation in the documented information.

History:
A 33 years old Kuwaiti female experienced a 2 months history of umbilical swelling. It was painless & reducible, however, at 2 am the patient woke up with a compressing colicky pain at the site of the swelling, which radiates to both flanks graded as 10/10. The patient had a history of anal fissure, which she was diagnosed with 3 years ago. She underwent liposuction 3 years ago.

Examination: The patient had a fatty abdomen with 2 small scars. On palpation, the patient had an umbilical irreducible hard swelling, which was tender & was 1x2cm in diameter. It had regular boarder & smooth surface. The cough impulse was negative, & the bowel sounds were audible at the swelling site. On inspection of the rectum, the patient had a skin tag of 0.5cm.Investigations: CBC, basic profile, coagulation profile, urine microbiology, CXR, & AXR were normal.US abdomen: small infra-umbilical incarcerated hernia measuring 1.7x2.7cm with hernial defect measuring about 1.3cm, the sac showing incarcerated part of the bowel loop with anechoic fluid seen within, no evidence of vascularity seen on applying color Doppler study. Histopathology: paraumbilical cystic lesion, excision biopsy: encapsulated fat necrosis with cystic changes & calcification.

Conclusion: Although an incarcerated umbilical hernia is a medical emergency that require an immediate intervention, this case proved to be more benign and was most likely associated with the previous liposuction 3 years ago.

Key Words: Incarcerated umbilical hernia; Differential diagnosis; Diagnostic process ;

Vascular Surgery

213

Anterolateral (Supra-iliac) Extra-Anatomic Ilio-femoral Bypass for an Infected Prosthetic Femoral Graft: A Case Report

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CASE REPORT

Background:

Vascular graft infection is a major limb- and life-threatening clinical situation. The treatment options vary from long-term antibiotics administration to removal of the infected graft. Immediate lower extremity revascularization is usually required to avoid limb loss. Many different routes are described to tunnel the new grafts such as trans-obturator and crossover trans-obturator tunneling, through sciatic foramens, creation of a window in the iliac bone; however, there is another route (anterolateral supra-iliac) which is a rare kind of bypass that was reported only few times, which was utilized in this case.

Case Summary:

In August 2017, this 64 years old lady presented with a picture of left groin vascular graft infection (Dacron interposition graft). Broad-spectrum parenteral antibiotics started, the graft was removed, the external iliac, superficial femoral and profunda femoris segments were ligated. The limb was revascularized by a graft from the left common iliac artery to the popliteal artery (ilio-popliteal bypass). The graft was tunneled over the iliac crest very laterally to avoid the infected pelvic tissues. Post-operatively, the infected wounds of the first surgery improved on VAC suction and parentral antibiotics for 6 weeks. During her last visit in July 2018 the wounds were healed, posterior tibial pulses were clinically palpable, bilaterally, and the ABI was normal.

Conclusion:

The antero-lateral (supra-iliac) approach is an effective, less demanding and safe temporary (and possibly long-term) extra-anatomic revascularization option to bypass a septic groin, which might be considered in the sitting of limb-threatening ligation of the ilio-femoral arterial segment.

Key Words: Anterolateral Supra-Iliac; Vascular Graft Infection; Extra-Anatomic Bypass;

AUTHOR INDEX

KEYWORD INDEX

PARTICIPANTS & ACKNOWLEDGEMENTS

Sponsor: Kuwait University

The Organising Committee would like to thank the following for their support:

- Centre for Research Support and Conferences, Office of Vice Dean for Research & Postgraduate Studies, Faculty of Medicine
- Administration, Faculty of Medicine
- Technical Support Administration, Health Sciences Centre
- Medical Illustration and Photography Unit, Faculty of Medicine
- MDL Facilities, Faculty of Medicine

Special thanks to the following staff for their contribution from Health Sciences Centre, Kuwait University:

- Mrs. Teena Sadan
- Mrs. Laya Jacob
- Mrs. Mariam Al-Najadah
- Mr. Waled A Kamil

ACCREDITATIONS

KIMS CME/CEPD Reg.

Title of Activity:

24th Health Sciences Centre Poster Conference

Scheduling: 12-14 March 2019

Reg. No.: 00L624/CARL/MarL9

Category 1: 3 credits, varies on Poster/Oral Presentations

CME Provider: Faculty of Medicine

CME Organizer: Dr. Mayra Al-Saeid

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