



28th HSC CONFERENCE
14th-15th FEBRUARY, 2024
KUWAIT UNIVERSITY

Under the Patronage of the President of Kuwait University

Sponsored By Kuwait University

Table of Contents

1.	Conference Program	
2.	Organising Committee	
3.	Preface	
	Address of Vice Dean for Research & Postgraduate Studies, FOM	
	Address by Chairman of the Organising Committee	
	Keynote Speaker: Biography & Abstract	
4.	Past Poster Conference Keynote Speakers	
5.	Original Research Abstract List by Subject Area	
6.	Case Report Abstract List by Subject Area	
7.	Abstracts	
	<u>Original Research</u>	
	Allied Health.....	1
	Anesthesiology.....	9
	Anatomy	10
	Artificial Intelligence	16
	Behavioral Sciences	17
	Biochemistry.....	18
	Cardiology	25
	Community Medicine	26
	Cytopathology.....	30
	Dentistry	34
	Dermatology	40
	Disaster medicine.....	42
	Endocrine.....	43
	Genetics	44
	Health economics.....	58
	Hematology.....	59
	Medical Education	60
	Medicine	62
	Microbiology and Immunology	73
	Molecular Biology	69
	Nephrology	93
	Neuroscience.....	94
	Nuclear Medicine and Radiology.....	96
	Nutrition.....	99
	Obstetrics and Gynecology	100
	Oncology.....	106
	Ophthalmology	109
	Orthopedic surgery.....	110
	Pathology	111
	Patient Safety	113
	Pediatrics.....	114
	Pharmacology and Toxicology	118
	Pharmacy	123
	Physiology	128
	Psychiatry	133
	Psychology.....	134
	Public Health.....	135
	Surgery.....	140
	Case Reports	151
8.	Acknowledgements	185
9.	Accreditations	185

Conference program

Wednesday 14th February 2024

- 9:00 - 11:00 ► **Registration**
College of Medicine Lobby
- 9:00 - 13:00 ► **Career Booths**
College of Medicine Courtyard - Gate 1
- 10:00 - 12:00 ► **Poster presentation and Judging**
College of Medicine Lobby
- 10:00 - 13:00 ► **Art Competition and Judging**
College of Medicine Lobby
- 12:00 - 13:00 ► **KUMSA activities**
Abdulrazzaq Auditorium - LT 143

Thursday 15th February 2024

- 9:00 - 10:00 ► **Registration**
HSC Auditorium
- 9:00 - 13:00 ► **Career Booths**
College of Medicine Courtyard - near cafeteria
- 9:00 ► **Opening Remarks**
Acting Dean of Medicine
Dr Mona ALAhmed
- 9:15 ► **Welcome remarks**
Acting Vice Dean of Research and Postgraduate studies
Dr Heba ALHussaini
- 9:45 ► **Keynote lecture**
Professor Ashraf S Ibrahim
Titled: The Candida Vaccine: from Bench to Bedside
- 10:45 ► **Selected Oral Presentations**
- 11:15 ► **Winner Announcement and Award Ceremony**
- 12:00 ► **Inauguration of the poster conference**

Contact us: Centre for Research Support and Conferences; Office of the Vice Dean for Research and Post-Graduate Studies College of Medicine, Kuwait University, Kuwait; Tel: +965 246 36418; Email: poster.hsc@ku.edu.kw

HSC Conference Central Committee 2024**Central Committee**

Dr Heba Al Hussaini	Vice Dean for Research & Postgraduate Studies, College of Medicine
Dr. Sulaiman Al Sabah	Chairman, Department of Pharmacology, College of Medicine
Dr Selma Alkafeef	Department of Biochemistry, College of Medicine
Dr. Dana Al-Tarrah	Department of Public Health, College of Public Health
Dr. Sonia Alhashimi	Department of Anatomy, College of Medicine
Ms. Yasmeen Al Bader	CRC, College of Medicine
Ms. Teena Sadan	CRC, College of Medicine
Ms. Rania Al Mawlawi	CRC, College of Medicine

Scientific Committee

Dr. Sulaiman Al Sabah – Chairman	Department of Pharmacology, College of Medicine
Dr. Selma Alkafeef	Department of Biochemistry, College of Medicine
Dr. Aishah Al-Jarallah	Department of Biochemistry, College of Medicine
Dr. Salem Al-Shammari	Department of Medicine, College of Medicine
Dr. Yousef Abbas Ali Marwan	Department of Surgery, College of Medicine
Dr. Hameed AlSarraf	Department of Physiology, College of Medicine
Dr. Zainab AlMoussa	Department of Community Medicine, College of Medicine
Dr. Ali Jarraugh	Department of Surgery, College of Medicine
Dr. Sonia Alhashimi	Department of Anatomy, College of Medicine
Dr. Anwar Al Awadhi	Department of Allied Health, College of Allied Health
Dr. Mohammed Qaddoumi	Department of Pharmacy, College of Pharmacy
Dr. Fatemah AlRashed	Department of Pharmacy, College of Pharmacy
Dr Samaa AlRushaiud	Department of Pharmacy, College of Pharmacy
Dr. Abeer Al-Abdullah	Department of Physiology, College of Medicine
Dr. Fawaz AlZoubi	Department of Dentistry, College of Dentistry
Dr. Dana Al-Tarrah	Department of Public Health, College of Public Health
Dr. Eiman Al Awadi	Department of Public Health, College of Public Health
Dr Farah Behbahani	Department of Public Health, College of Public Health
Dr. Reem Al Sabah	Department of Community Medicine, College of Medicine
Dr. Fatma Khalil Ali	Department of Medicine, College of Medicine
Dr. Nada Madi	Department of Microbiology, College of Medicine
Dr. Haya Al-Tawalrah	Department of Microbiology, College of Medicine
Dr. Baydaa Al-Sannan	Department of Obse & Gyne, College of Medicine
Dr. Shaima M. Karam	Department of Pharmacology, College of Medicine
Dr. Maysoun Al-Rushood	Department of Pediatrics, College of Medicine
IT Support & Website	
Ms. Ashwaq Derie	DEPT. of Systems Development, Center of Information Systems, KU

*Address of Vice-Dean for Research and Post-Graduate
Studies, College of Medicine*



It is with great pleasure to welcome you all to the 28th Health Science Center Conference, which has become a cornerstone of research innovation and knowledge dissemination in medical advances and health sciences.

This year, our conference has reached new heights, with an impressive total of 185 submitted abstracts. Among these, 152 showcase groundbreaking original research, while 33 are intriguing case reports. What makes this year particularly special is the inclusion of 20 abstracts from GCC students.

We take immense pride in the awards presented at our conference, which have gained widespread recognition over the years. Each award is a testament to the dedication and brilliance of researchers, both local and within the Gulf region.

As we gather here to celebrate excellence in research, let us not forget the core of our conference – the collaborative spirit that fuels advancements in clinical and health science research. The awards we present today not only acknowledge individual achievements but also highlight the collective effort that drives our field forward.

To all attendees, I extend my gratitude for your presence and participation. Let us engage in fruitful discussions, foster new collaborations, and share insights that will propel medicine and health sciences to greater achievements. Just as a final word and a humble reminder that the impact of our research extends far beyond this conference; it resonates in the lives of those we serve and it is through the exchange of ideas and knowledge that we can truly make a lasting impact on healthcare and our nation.

Dr. Heba Al Hussaini
Vice-Dean for Research & Postgraduate Studies, College of Medicine

Address by Chairman of the Organizing Committee



On behalf of the organizing committee, we are delighted to welcome you to the 28th Health Science Center Poster Conference. This annual event has always been an opportunity to exchange ideas, develop collaborations and showcase the work of our staff and students.

This year our conference coincides with the meeting of the Deans of the Gulf Cooperation Council Medical Schools, and we are delighted to have them in attendance. We have also invited students from these medical schools to submit abstracts and present posters at the conference and we hope that this will lead to future collaborations between our institutions.

We are honored that Professor Ashraf Ibrahim David Geffen School of Medicine at UCLA; USA has accepted our invitation to deliver this year's keynote lecture entitled "The Candida Vaccine: From Bench to Bedside". The theme of this year's conference is the translation basic science research to clinical application and Professor Ibrahim's work optimises this concept.

Wishing you all a productive and intellectually stimulating conference.

*Dr. Suleiman Al-Sabah Ph.D.
Chairman, 28th HSC Poster Conference Organizing Committee*

Keynote Speaker



Ashraf S. Ibrahim, Ph.D

Professor of Medicine, David Geffen School of Medicine at UCLA Division of Infectious Diseases, Department of Medicine, Harbor-UCLA Medical Center

Dr. Ibrahim is a Professor of Medicine at David Geffen School of Medicine at UCLA, and a senior researcher and Director of the Graduate Studies Program at the Lundquist Institute for Biomedical Innovation at Harbor-UCLA Medical Center. He received his B.Sc. in Biochemistry-Microbiology in 1986 from Kuwait University with honors. He then attended Post graduate school at Loughborough University of Technology, UK where he obtained a Ph.D. degree in Microbial Physiology in 1991 under the mentorship of Professors R.J. Stretton and M. A. Ghannoum. Dr. Ibrahim completed his Postdoctoral training in Infectious Diseases in the laboratory of Dr. John Edwards, Jr. at Harbor- UCLA Medical Center. Dr. Ibrahim's research focuses on molecular pathogenesis, host-pathogen interactions, immunotherapies, and models of infections to advance the understanding of the pathogenic mechanisms and virulence factors of fungal and bacterial infections and translate this knowledge into novel therapeutic strategies. His research is focused on the following areas: 1) The host-pathogen interactions in mucormycosis and the development of rapid diagnostics and novel antibody-based therapy; 2) Unnatural immunity for the development of vaccine strategies that target multidrug resistant organisms including MDR Candida species, and Gram-negative bacteria; 3) Mechanisms of microbial sepsis for development of novel immunotherapies; and 4) Antifungal drug discovery.

Dr. Ibrahim currently holds several NIH and industry-sponsored projects and has received over \$30 M in funding for his research. He coauthored >200 peer-reviewed research papers, review articles book chapters and conference proceeding. He is an elected member of the American Academy of Microbiology and a receiver of several prestigious awards for excellence in research. For the last 15 years, Dr. Ibrahim served on numerous NIH study sections as an Ad Hoc reviewer, and just concluded his tenure (2019-2023) as a standing review member of the National Institute of Allergy and Infectious Diseases (NIAID) Drug Discovery and Molecular Pharmacology A (DMPA) and Drug Discovery and Mechanisms of Antimicrobial Resistance (DDR) study sections.

Keynote Address

The Candida Vaccine: From Bench to Bedside

Ashraf S. Ibrahim, Ph.D

Professor of Medicine, David Geffen School of Medicine at UCLA Division of Infectious Diseases, Department of Medicine, Harbor-UCLA Medical Center

Novel vaccine strategies to prevent and/or treat multidrug resistant (MDR) pathogens would benefit global health in treating currently untreatable infections. The Als3p and Hyr1p are *Candida albicans* (CA) cell wall proteins required for virulence through promotion of host cell invasion and immune cell evasion respectively. Both antigens have orthologues in the emerging MDR *C. auris* (CAU) and Hyr1p shares structural homology with conserved hemagglutinin (FhaB) and OmpA proteins in many Gram-negative bacteria (GNB) including *Acinetobacter baumannii* (AB), *Klebsiella pneumoniae* (KP), and *Pseudomonas aeruginosa* (PA). Vaccine strategies using either Als3p or Hyr1p protect against *Candida* infections due to CA or CAU. Further, vaccination of mice with Hyr1p protect against AB, PA and KP pneumonia.

We hypothesized that a dual Als3p/Hyr1p antigen vaccine formulated with CAF01 (a clinical stage adjuvant with a balanced Th1/Th2/Th17 immune response stimulator) is likely to protect against MDR infection due to *Candida* species and GNB. We mixed CAF01 with Als3p/Hyr1p antigens in the following ratios: 0/0, 10/10, 10/30, 30/10 and 30/3 µg for each dose and vaccinated mice subcutaneously (SC), followed by a booster immunization on day 21. For efficacy evaluation, vaccinated mice were immunosuppressed by cyclophosphamide and cortisone acetate on day -2 and +3, relative to infection with either CAU (intravenous), AB (inhalation), KP or PA (intratracheal). Infection occurred two weeks following the booster immunization. For, CA infection, immunocompetent mice were infected intravenously two weeks following a primary booster or after a second booster given on day 35. All Als3p/Hyr1p formulations induced robust antibody and Th1/Th2/Th17 cells responses against both antigens. For CA infection, two booster immunizations provided superior protection over one booster immunization. For CAU and GNB, one booster dose was enough to provide a significant protection and a second booster did not further improve the protective efficacies. Doses of either 30/10 and 10/10 (Als3p/Hyr1p) vaccine formulations protected significantly against all five infections with ~ 50% survival efficacies (vs. ~ 0% for placebo). This is the first vaccine that targets clinically relevant MDR fungal and GNB pathogens which provides an alternative preventive strategy to combat MDR in the hospital setting.

185 Poster Presentations & Award Winners

Compete to win Award Categories

- *Dr. Nael Al-Naqeeb Award for Undergraduate Research*
 - *Graduate Research Award for Master's Program*
 - *Graduate Research Award for PhD Program*
 - *Graduate Research Award for Medical Residents*
 - *Researcher Award for Basic Sciences*
(Non-Academic, Assistant Professor, Associate Professor)
 - *Researcher Award for Clinical Sciences*
(Non-Academic, Assistant Professor, Associate Professor)
 - *Case Report Award (Registrar, Clinical Academic, MOH Doctors)*
-

KIMS CME/CPED Credited

Category 1: 6 Credits

CME/CPED Reg. No. 005700/IMEI/Feb24

Register for CME Credits

Online Registration for CME:

<https://bit.ly/Registration28thHSCPosterConference2024>

www.hsc.edu.kw/poster

Past HSC Poster Conference Keynote lectures and Speakers

2023	Why can we expect a revolution in obesity treatment?; Professor Carel le Roux ; Co-Director Metabolic Medicine lab; Diabetes Complications Research Centre, Conway Institute, University College Dublin
2022	Keynote Lecture 1: Human iPSC-NSC derived Extracellular Vesicle therapy for Alzheimer's Disease: Promise and Challenges; Prof. Ashok K. Shetty , Ph.D., Institute for Regenerative Medicine, Dept of Molecular and Cellular Medicine, College of Medicine, Texas A&M University Keynote Lecture 2: Biology or technology? Innovation is the key; Prof. Pieter A. Doevendans , Cardiologist UMCU, Utrecht, The Netherlands; Director Netherlands Heart Institute
2021	Healthy Diets in the 21st Century: What are we talking about? Prof. Carlos A. Monteiro , Professor of Public Health Nutrition at the School of Public Health, University of Sao Paulo, Brazil.
2019	What it takes to become an academic surgeon; Prof. Sami Asfar , Professor, Department of Surgery, Faculty of Medicine, Health Sciences Centre, Kuwait University.
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 aging. Prof. 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 21st century; **Professor Barry McGrath**, Professor of Vascular Medicine & Medicine, Southern Clinical School, Monash University, Australia.
- 2011** Cardiovascular Outcome Trials in Diabetes.; **Prof. Rury Holman**, Director of the University of Oxford Diabetes Trials Unit, University of Oxford, Canada.
- 2010** New mycobacterial vaccine candidates: from lab to clinical trials. **Prof. Abu Salim Mustafa**, PhD, FRC Path. Department of Microbiology, Faculty of Medicine, Kuwait University
- 2009** Evidence-Based Medicine and Knowledge Translation Research for Better Health Care.; **Prof. Brian Haynes**, Professor of Clinical Epidemiology and Medicine, Chief of the Health Information Research Unit at McMaster University, Hamilton Ontario, Canada.
- 2008** What Ails The World? How Do We Respond? **Prof. Abdallah S Daar, D.Phil** (Oxon), FRSC, FRCP (Lon), FRCS (Eng), FRCS (Ed), FRCS (C), Director of Ethics and Policy, McLaughlin Centre for Molecular Medicine, Professor of Public Health Sciences and Professor of Surgery, Senior scientist and Co-director, Program on Life Sciences, Ethics and Policy, McLaughlin Rotman Centre for Global Health, University of Toronto, Ontario, Canada.
- 2007** From Molecular Imaging to Molecular Medicine. **Prof. Henry N. Wagner, Jr. MD**, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA
- 2006** Stem cell research.; **Prof. Sir Martin Evans** FRS, DSc (Nobel Laureate), Director of the School of Biosciences and Professor of Mammalian Genetics at Cardiff University, UK.
- 2005** How Corticosteroids Work in inflammatory Diseases: New Molecular Insights.; **Prof. Peter Barnes** is of Thoracic Medicine at the National Heart and Lung Institute, Head of Respiratory Medicine at Imperial College and Honorary Consultant Physician at Royal Brompton Hospital, London, UK.
- 2004** The Nitric Oxide/Cyclic GMP Pathway: Targets for Drug Development; **Prof. Ferid Murad**, Nobel Prize recipient, Chairman, Department of Integrative Biology and Pharmacology, Director, Institute of Molecular Medicine, University of Texas Medical School, Houston, Texas, USA.
- 2003** The Post-Genomic Era: Global Impact on Medicine and Health Care Delivery; **Prof. Seyed E. Hasnain**, Director, Centre for DNA Fingerprinting & Diagnostics (CDFD) Hyderabad, India.
- 2002** Genetics and World Health: Fact or Fantasy; Prof.(Sir) David J Weatherall, Emeritus Professor, Weatherall Institute of Molecular Medicine, University of Oxford, UK.
-

- | | |
|------|---|
| 2001 | Genomic View of Human History; Prof. Mary-Claire King , American Cancer Society Research Professor, Department of Medicine and Genetics, University of Washington, Seattle, Washington, USA. |
| 2000 | Molecular Mechanisms and Biomedical Implications of Apoptotic Cell Death; Dr. Sten Orrenius , Professor and Chairman, Division of Toxicology, Institute of Environmental Medicine, Karolinska Institute, Stockholm, Sweden |
| 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

AlMulla M: Evaluating Magnetic Resonance Imaging (MRI) Safety Policies and Compliance in Public and Private Hospitals in Kuwait: A Survey of Magnetic Resonance Facilities

2

AlMulla M, Albaloul G, Asbeutah A: Quality in Focus: A Study on the Evaluation of X-ray image Excellence by Kuwaiti Radiographers

3

Alozairi A: Quality of life among Arab Parkinson's Disease Patients with Dysphagia living in Kuwait using the SWAL-QOL survey

4

Alotaibi N, Manee F: Efficacy of splinting the wrist and Metacarpophalangeal joints for the treatment of Carpal Tunnel Syndrome: An assessor-blinded randomized controlled trial

5

AlRoomy MS*, Al-Awadhi RM, Chehadeh WF: Prediction of Cervical Cancer Precursor Lesions by Quantitative Methylation Specific PCR: A Retrospective Study

6

Al-Sabaan K*, Al-Awadhi A: Determination of the Coagulation Proteins Von Willebrand Factor, ADAMTS-13 and TSP-1 in Thalassemia Major Patients and assessing the effects of Splenectomy on these proteins

7

Irshad M*, Varghese A, Taghadom E, Alkandari J, Al-Ozairi E: Associations Between Sedentary Behavior and Clinical Characteristics in People with Type 1 Diabetes in Kuwait

8

Kholood Baron: Evaluating radiation protections aspects for pediatric CXR: imaging standards and radiation dose measurements in various hospitals

Anaesthesiology

9

Alisher Agzamov, Hana AL Harbi, Huda Al Foudary: The Robot Physician's (RP - 7) management and care in unstable ICU Oncology patients.

Anatomy

10

Abed BS*, Al-Hussaini HA, Al-Onaizi MA: The Effect of Blue Light Wavelength Exposure on Mitochondrial Function and Acute Cytokine Expression in Serum

11

Alasousi DH*, Alfadhli YA, Alonaizi MA: Exploring The Efficacy of the Non-Erythropoietic Peptide ARA 290 on Visuospatial Acquisition and Cognitive Flexibility in db/db Mice

12

AL-Mutawa MW*, Moussa AM, Jamal WY: Anti-heparin/platelet factor4 antibodies induced immune thrombotic thrombocytopenia long time post COVID-19 vaccines: myth or fact?

13

Braysh K*, Alkafeef S, Altarrah D, Dannoos S, Williams M, Alzaid F, Al-Onaizi M: Glucose intolerance induces anxiety-like behaviors independent of obesity and insulin resistance in a novel model of nutritional metabolic stress

14

D'Souza L*, Braysh K, Williams MR, Alzaid F, Al-Onaizi M: Age Dependent Dynamics of Tau Pathology in Mouse Models of Diabetes

15

Khanafer NA*, Samaro BH *, Braysh K, Alzaid F, Alonaizi MA: The Influence of Metabolic Alteration on Hippocampal Neuronal Cell Density

Artificial intelligence in medicine and healthcare

16

Elnaggar MA, Alharbi ZA, Alanazi AM, Alsaiari SO, Alhemaiddani AM, Alanazi SF, Alanazi MM: Assessment of the Preception and Worries of Saudi Healthcare Providers About the Application of Artificial Intelligence in Saudi Health Facilities

Behavioral Sciences

17

Najem R, Alonaizi M, Williams M, Kandari A, Jacob T, Almulla F, Ahmad R, Alzaid F: Tumor necrosis factor alpha deficiency alters metabolic, neurobehavioral responses to diet-induced obesity in mice

Biochemistry

18

Allothman R, Al-Jarallah A, Babiker F: High-Density Lipoprotein Protects Normotensive and Hypertensive Rats Against Ischemia-Reperfusion Injury by Differentially Regulating mTORC1 and mTORC2 Signaling

19

Al-Harban AA*, Ludmil B, Shuaib AS, Tovmasyan A: Newly Modified Tetrapyrroles: Promising Photosensitizers for Photodynamic Treatment of Cancer

20

AlRasheedi NA*, AlRashidi FT: Metallic Beauty: A Comprehensive Analysis of Heavy Metals in Cosmetic Products.

21

Eldesouqi SI*, AlRashidi FT, Shabeb MM: Can Neutrophil-Lymphocyte Ratio Predict the Development of Gestational Diabetes in Kuwait?

22

Kadhem ZH*, Alkafeef S, Benov L: Antifungal Photodynamic Therapy: Investigation of Porphyrin-based Photosensitizers Against *Candida albicans*

Biochemistry-Cardiovascular

23

Al-Jarallah A, Kalakh S, Akhtar S, Yousif M: HDL Attenuates ANG II-AT1R-EGFR Signaling and Reverses Vascular Remodeling in Spontaneously Hypertensive Rats

Bioinformatics

24

Hussain A Safar, Fatemah Alatar, Abu Salim Mustafa: Read correction significantly improves eukaryotic protein detection in ONT reads

Cardiology

25

Sayed Almoosawy, Joud Albalool, Ebram Shenoda: Atrial Fibrillation, Kuwait Single Center Registry

Community Medicine

26

Abed BS*, Al-Ajmi AM, Al-Enezi AF, Al-Ajmi MA, Al-Zufairi OF, Al-Msaileem SD, Al-Sabah RA: Knowledge, Attitudes, and Use of Weight Loss Medications (GLP-1 Agonists) of the General Population in Kuwait

27

Alawwad D*, Alsahli H, Almoosa M, Almutairi R, Alrashidi D, Awadh A, Akhtar S: Prevalence of smoking, nicotine dependency, and associated factors among Kuwait University students

28

Al-Dalmani MA*, Al-Batineh AN, Shukkur M, Al-Mutairi RB, Al-Shammari MG, Al-Rashid EA, Al-Otaibi TM, Al-Dousari AM: Prevalence and Factors Associated with Functional Foot Care Among Patients with Diabetes in Kuwait.

29

Al-Mutairi NF*, Al-Mutairi NH, Ziyab AH: The prevalence, knowledge, and beliefs about irritable bowel syndrome among Kuwait University students

30

Asbeutah SA, Shaaban AM, Alhashime KM, Allanqawi MJ, AlRoumi SS, Moradi NS, Almazyed DM, Alonaizi LA, Alshaiji AJ, and Almousa ZM: Factors Affecting the Patient's Decision-Making Process When Selecting Physicians to Receive Medical Care

31

Ghadeer Aldallal, Shahad Redha, Nourah Alotaibi, Sharifa Aljohar, Hawraa Alabdullah, Tahraa Lari, Ali H Ziyab: Knowledge of Kindergarten Teachers About Autism in Kuwait

32

Kazem LM*, Alawadhi AA, Alkandari FA, Hussain MJ, Dashti RH, Almeskati HF, Ziyad A: Burden of Eczema Among Working Adults in Kuwait and its Association with Work Performance and Mental Health

33

Yassin BM*, Kandari NA, Alkadneri AM, Almajed YA, Mohammad AA, Alturaifi SA, Ahmad FS, Bastaki H: Knowledge About and Attitudes Towards HPV Infection and HPV Vaccination Amongst Adults in Kuwait.

Dentistry

34

ALI KA, Limmechokchai SU, Savignano RO, Goodacre CH: The Effect of Scanning the Palate with Different Palatal Vault Depths and Implant Numbers on the Accuracy of Complete-arch Implant Digital Impressions

35

AlKazemi G*, AlAbraheem Z, AlOmari Q Faridoun A: Assessment of Stress-Related Salivary Biomarkers Levels in Clinical Dental Students at Kuwait University

36

Alkhalifah AB*, Alfuraih NT, Joseph B, Baskaradoss JK: The Effect of Professional-Mechanical-Plaque-Removal on The Gingival Crevicular Fluid Levels of Interleukin 1-Beta Among Electronic Nicotine Delivery Systems Users and Non-Smokers with Gingivitis

37

Loulwah Al Mulla, Jaghan Kumar: Hidden Sugar for age group from Birth to Six Years Old-icy hills theory

38

Qali MQ, Al-mesbah SN, Al- Mulla AO: Gingival Depigmentation using diode laser vs bur abrasion: a Split-Mouth Randomized Clinical Trial-Pilot Study

39

Nazar S*, Barry S: A survey of antibiotic prescription practices amongst dentist treating children in the UK

Dermatology

40

Aleid AM Nukaly HY AlAlqam FB Alzahrani MM* Almulhim NA Almatrafi S Alajlan AH: Comparative Analysis of Chemical Peels for Melasma Treatment Among Saudi Arabian Women: A Cross-Sectional Study.

41

Houriah Nukaly, Waseem AlHawasawi, Ibrahim Albalawi, Reema Albalawi, Raghad Aldibane, Razan Alsuayri, Jannat Alamoudi, Bader Zimmo: Efficacy of Adalimumab in Improving Hidradenitis Suppurativa: Hyperbaric Oxygen Therapy as a Potential Adjuvant to Conventional Treatment? A Meta-Analysis of Randomized Controlled Trials

Disaster Medicine

42

Mzahir B, Alzahrani A, Alzahrani AA*, Aldharman S, Alkhamis W, Almutairi BS, Sabbagh AY, and Khan A: Incident Management System Comparison: Hospital Incident Command System Versus Major Incident Medical Management And Support

Endocrine

43

Wani FA, Alrashed HA, Albalwan AS, Alfuhigi YM, Dilli MA, Alruwaili LD: Epidemiological Characteristics, Clinical Features and Laboratory Finding of Hypothyroidism Patients: A Hospital-Based Study

Genetics

44

Abdullah Al-Qahtani, Bency John, Ali Al-Ali, Kusum Kapila, Mrinmay Kumar Mallik, Rabeah Al-Temaimi*: Ethnicity and Gender Influence Genetic Variants Associated with Pancreatic Cancer Risk in Kuwait

45

Abdulkarim B*, John B, Al-Ali A, Kapila K, Mallik MK, Al-Temaimi R: Analysis of Candidate microRNA Biomarkers in Pancreatic Cancer Tissues

46

Alhaddad ME, Alali M, Bastaki L, John SE, Bahbahani Y, Ali H: Genetic Landscape and Clinical outcomes of Autosomal Recessive Polycystic Kidney Disease in Kuwait: Exploring Genetic Diversity and Its Impact on Clinical Presentation

47

Alwehaidah MS*, AlFadhli S, Al-Kafaji G: Leukocyte mitochondrial DNA copy number is a potential non-invasive biomarker for psoriasis

48

Alkhawaja A*, Alroughani R, Al-Temaimi R: Aberrant FOXP3 promoter methylation in multiple sclerosis patients

49

Dashti M, Nizam R, Jacob S, Al-Kandari H, Al Ozairi E, Thanaraj TA, Al-Mulla F: Link between HLA Class II Gene Variants and Type 1 Diabetes in Kuwaiti Children: An Analysis of Alleles and Haplotypes

50

Dashti M, Ali N, Alsaleh H, Nizam R, Thangavel AT, Almulla F: Mitochondrial DNA Variants and T2D Susceptibility in Kuwaiti and Qatari Natives

51

Fahd Al-Mulla, Mohamed Abu-Farha, Jehad Abubaker, Akram M Asbeutah, Sajjad Ahmed, Medhat Naim, Naser Hussain, Lauren M Seaburg, Christina Heyer, Peter C Harris: Navigating the Complexities of PKD1 Duplicated Regions: Impact on the Clinical Effectiveness of Whole Exome Sequencing in Autosomal Dominant Polycystic Kidney Disease Diagnosis

52

Hamad Ali*, Md Zubair Malik, Mohamed Abu-Farha, Jehad Abubaker, Preethi Cherian, Rasheeba Nizam, Sindhu Jacob, Yousif Bahbahani, Medhat Naim, Thangavel Alphonse Thanaraj, Fahd Al-Mulla: Leveraging Dysregulation in Urinary Exosomal small RNAs Profiles for Autosomal Dominant Polycystic Kidney disease therapeutic Insights

53

Hamad Ali*, Medhat Naim, Yousif Bahbahani, Mohamed Abu-Farha, Jehad Abubaker, Anwar Mohammad, Naser Hussain, Sumi Elsa John, Thangavel Alphonse Thanaraj, Mohammad Al-Ali, Fahd Al-Mulla: Genetic Mapping of Autosomal Dominant Polycystic Kidney Disease in Kuwait: Bridging the Genotype-Phenotype Gap

54

John SE*, Channanath AM, Malik M, Nizam R, Dashti M, Alhusayan M, Al-Mulla F, Thangavel AT: Genetic Insights into Morbid Obesity: Case-Control Analysis of Exome Data in Kuwaiti Population.

55

Shbib MM*, Nizam R, Malik MZ, Alqaderi H, Thanaraj TA: Impact of Oral Microbiota on Obesity Status in Kuwaiti Adolescents.

56

Zubbair Malik MD, Mohammed Dashti, Mohammed Alhusayan, Sumi Elsa John, Arshad Channanath, Fahd Al-Mulla & Thangavel Alphonse Thanaraj: Identification of potential therapeutic target associated with coronary artery disease in type 2 diabetes patients: system biology approach.

Genetics and Inborn Errors of Metabolism

57

Alsharhan H, Haidar MZ, Qadoura B, Ayed M5, Dhaunsi GS, Alkandari H: Enzymatic Testing for Mucopolysaccharidosis Type I in Kuwaiti Newborns: A Pilot Study Toward Newborn Screening

Health economic

58

Nur AM*, Aljunid SM, Almari M: Provider Cost and Economic Burden of the COVID-19 Pandemic in the State of Kuwait

Hematology

59

Alazmi RM*, Alshemali RK, Awad MA, Alshemmari SF: Essential thrombocythemia in Kuwait: Cross-sectional Study

Medical Education

60

Katoue MG*, Awad AI, Dow AW, Schwinghammer TL: Interprofessional Education and Collaborative Practice in Kuwait: Attitudes and Barriers from Faculty

61

Mahdi GA, Ghanem RA, Mahfouz WS, AlHaddad SK*, AlHayyan WF, AlMoosa AI, Shehab HF, AlRashied AJ, Garashi AN, Kankouni MW, Ziyab A: Skin Tone and Disease Diagnosis: A Study of Medical Students in Kuwait

Medicine

62

Alali AA, Alghamdi S, Albeshir M, Shastari Y, Aljahdali E, Ghaith J, Rammal AA, Bamakhrama K: Solid Pancreatic lesions Visualized on Endoscopic Ultrasound (EUS) in the Gulf Council Countries (GCC): An International Multicenter Study

63

Alali AA, Pittayanon R, Martel M, Martins BC, Almadi MA, Barkun AN: TC-325 Alone is More Efficacious than Standard Endoscopic Hemostatic Modalities when Managing Patients Presenting with Malignant Gastrointestinal Bleeding: Meta-analysis of Individual Patient Data of Randomized Controlled Studies

64

Alali AA, Maher A, Alboraie M, Maharshi S, Sharma SS: Early Precut Sphincterotomy vs. Delayed Precut Sphincterotomy To Reduce Post-ERCP Pancreatitis: Multicenter Randomized Controlled Trial

65

Aljabri J, Alali AA, Al-Elaewah A, Abdulsalam M, Al-Ghunaim E, Shehab D, Khoder A, Khadadah ¹: Transesophageal Endoscopic Ultrasound with Fine Needle Biopsy of Centrally Located Lung Parenchymal Lesions, safety and yield

66

Alhindi NI*, Mortada HH, Almalki ZT, Attar AF, Alharbi OM, Alamri SA, Halawani AA, Bamakhrama BA, Alsuhaim MA, Alnjaim NA, Fadel ZT: Safety and Efficacy of Periclavicular Brachial Plexus Block for Upper Extremity Surgeries: A Network Meta-Analysis of Randomized Clinical Trials

67

Alobaid DA*, Alonaizi MA, Alzaid FN, Braysh K, Samaro BH: Establishing a Model of Systemic Inflammation to Assess the Efficacy of Pulmonary Surfactant on Inflammation-Induced Tissue Damage

68

Alrashidi RS*, Chaudhary NT, Alenezi RT*, Alenezi RT, Aladwani NA, Alazemi FY, Alanzi AF, Qasem WA: Exploring Knowledge and Competency of Physicians in Managing Celiac Disease in Kuwait: A Cross-Sectional Survey

70

Fares Alhawaj* Mohammed Alonaizi, KAwthar Braysh Anwar Kandari Michayla Williams Fawaz Alzaid: Microglial Morphological Heterogeneity Implications in Diet-Induced Inflammation in the Hippocampus

71

Firas Kseibi, Eiad Kseibi, Mohamed Tlayjeh, Wael Kalou, Adel Kalou, Jad Attari, Abduljalil El Sibai: Evaluation of the Efficiency of the 'Home Mechanical Ventilation Program' in Preventing Rehospitalizations of Discharged ICU Patients in a Tertiary Institution

72

Sultan Ayoub Meo, Abeer A Al-Masri, Metib Alotaibi, Muhammad Zain Sultan Meo, Muhammad Omair Sultan Meo: ChatGPT Knowledge Evaluation in Basic and Clinical Medical Sciences: Multiple Choice Question Examination-Based Performance

Microbiology and Immunology

73

Abdulla A, AlShalabi H, Mokaddas E: In-vitro synergy testing of ceftazidime-avibactam with aztreonam for the treatment of carbapenem resistant Enterobacterales

74

Ahmad S*, Alfouzan W, Meis JF, Parker JE, Kelly SL, Asadzadeh M: Performance comparison of Etest, MICRONAUT-AM EUCAST and CLSI antifungal susceptibility testing methods for clinical Candida kefyr isolates

75

Al-Herz W*, Azizieh F, Raghupathy R: High Protein Diet Increases the Risk of Allergic Sensitization But Not Asthma In Mice Through Modulation Of The Cytokine Milieu Toward Th2 Bias

76

Al-Mansour N, Al-Mahmeed A, Bindayna K: Effect of HMGB1 and HBD-3 levels in the diagnosis of sepsis- A comparative descriptive study

77

Al-Mutairi NM*, Ahmad S, Mokaddas E: Discordance in Phenotypic and Genotypic Susceptibility Testing for Streptomycin due to Nonsynonymous/Nonsense/Deletion Frame-shift Mutations in gidB among Clinical Mycobacterium tuberculosis Isolates in Kuwait

78

Asadzadeh M, Ahmad S, Khan Z: Occurrence of pathogenic and allergenic molds in the outdoor and indoor environment in and around a major hospital in Kuwait

79

Al-Thaferi RS*, Alfouzan WA, Mustafa AS: Antibiotics Resistance Profile of Clinical Isolates of Pseudomonas aeruginosa Obtained from Farwaniya Hospital in Kuwait Using Phenotypic and Genotypic Methods

80

Alzahrani AA, ALTALHI YA, Alghamdi AS, Muhandis SM, Al Aboud DM, Shehab GM, Abdel-Moneim As: Premarital screening of the viral hepatitis among Saudi nationals

81

Fatemah Bahman, Nadeem Akhter, Shihab Kochumona, Hana Drobiova, Taxy Jacob, Fahd Al-Mulla, Rasheed Ahmad: Tryptophan metabolite ITE attenuates LPS-induced MMP-9 expression in monocytic cells via NF-kB/AP-1 Axis

82

Ibrahim R*, Boutaiban D, Aldowaisan R, Azizieh F, Essa S, Shehab D, Al-Jarallah K, Raghupathy R: Cytokine Production Patterns in Elderly Sarcopenic Subjects Suggest a Pro-inflammatory Bias

83

Kandari AH*, Martin JC, Hayes H, Raikos V, Scott KP: Enhancing the Eubacterium rectale Population in the Gut Microbial Community

84

Madi NM*, Safar H, Al-Adwani A, Sadeq MA, Al-Turab M: Genetic Characterization of Human Respiratory Syncytial Virus Group A and B in Kuwait Using Whole-genome Sequencing Reveals the Circulation of New Lineages

85

Moghnia OH*, Alotaibi HS, Al Haqqan AM, Pathan SS, Abdulaziz NE Sokhn E, Mohammed HY, Al-Sweih NA: Prevalence, Etiology and Antibiotic Susceptibility Patterns of Urinary Tract Infections among neonates at Maternity Hospital in Kuwait: A Six-Year Study

86

Mokaddas E, Asadzadeh M*, Sayed S, Albert MJ: High prevalence of novel sequence types of Streptococcus pneumoniae causing invasive diseases in Kuwait in 2018

87

Nasser K*, Safar HA, Alatar F, Al-Ajmi R, Al-Fouzan W [3,4], Mustafa AS: Species identification, genome characterization, and detection of antimicrobial resistance genes in neonatal bacterial isolates using Oxford Nanopore Technology

88

Sahar Essa, Wassim Chehadah, Marwa Alkhabaz, Shiji George: The Detection of The Viral Nucleic Acid of Latent Viruses in Peripheral Blood Mononuclear Cells and Neutrophils in Healthy Subjects.

89

Alatar FA, Boswihi SS, Safar HA, Udo EE, Mustafa AS: Comparative Evaluation of Four Genomic DNA Isolation Methods for Whole Genome Sequencing of Staphylococcus aureus using Nanopore Technology

90

Shetty S, AlShalabi H, Mokaddas E: Prevalence of Microbial infections pre- and post-COVID-19 at a tertiary care hospital in Kuwait

Microbiology and Immunology, Infection Control

91

Deema AlAteeqi, Maryam AlNaser, Dana Daboul, Dr Muawia Qudeimat, Maribasappa Karched: Genetic Insights into Antibiotic Resistance: Exploring Hygiene Practices among Healthcare Students through a Comparative Analysis of Medical and Dental Students' Hands and Smartphones

Molecular Biology

92

Kandanath BM, Thomas BT, M A Sheikh: Quality check of primers in HPRP module of PF2D Fractionation system using eluates of primers purified in RP-Oligo purification cartridges

Nephrology

93

Ali AlSahow, Anas AlYousef, Bassam AlHelal, Ahmed AlQallaf, Heba AlRajab, Yousif Bahbahani, Abdulrahman AlKandari, Gamal Nessim, Ahmad Mazroue, Noha Dewidar, Mohamed Sherif, Hisham Zamel, Ahmed Ezzeldine, Ahmad Atef Mekky, Rajeev Kumar.: Characteristics and Management of Chronic Kidney Disease in Kuwait A multicenter study of ethnically diverse cohort

Neuroscience

94

Barakat F*, Garret M, Albano R, Plas D R: The Response of Glioblastoma Cell Lines To Epigenetic Targeting Chemotherapeutics

Nuclear Medicine and Radiology

95

Asbeutah AM*, Asbeutah SA, Zahra A, AlMajran AA, Adekile AD: Intracranial & Extracranial Internal Carotid Artery Doppler Findings in Kuwaiti Children with Sickle Cell Disease

96

Sabika Alnuaimi, Aisha Albouloshi, Omar Albouloshi: Assessment of Radioactivity in Plant-Based Milk in Kuwait

97

Alkandery NF, Aldhafiri DA, Alshammari FR, Bouzabar MM, Humoud HB, Loutfi I: Evaluation of Adenosine-induced Splenic Switch-off in Tc-99m Myoview Myocardial Perfusion Studies as Marker of Stress Adequacy by Semiquantitative Analysis of Acquired SPECT/CT Images

98

AlSaeedi F*: Asiaticoside Inhibits TNF- α , IL-6 activity, and 99mTc-MIBI Uptake in MCF-7 Cells via the NF- κ B Pathway

Nutrition

99

Sumaiah Hassain, Sabeekah Alnuaimi, Abdulaziz Alzalalah: Nutritional profile of shrimp cultured in biofloc system

Obstetrics and Gynecology

100

Alsannan B, Alharmi J, Alrahal F, Al Mansoor S, Tulandi T: Prevalence and quality of life among overweight and obese women with different severity and types of urinary incontinence

102

Baydaa Alsannan* Antonio Simone Laganà, Jehad Alhermi, Shaikha Almansoor, Amal Ayed, Renato Venezia, Andrea Etrusco: Prevalence of overactive bladder among overweight and obese women: a prospective cross-sectional cohort study

103

Eman Alazmi, Zahraa Akbar, Mariam Aldarweesh, Elaf Hussain, Khalid almusayen, Fatmah alhadhoud, Jehad alharmi: Retrospective cohort study Comparing the clinical profile and outcomes of critically ill pregnant patients in Kuwait during the COVID-19 pandemic waves

104

Mahmoud, Zenab Shehab: 2-year experience of induction of labour at Farwanyia hospital: a cross sectional study

105

Mahmoud: Factors associated with preterm labour in diamniotic twin pregnancy

Oncology

106

Hachim I, Shams A [2,5-7], LebrunJJ, Ali S: A favorable role of prolactin in human breast cancer reveals novel pathway-based gene signatures indicative of tumor differentiation and favorable patient outcome

107

Sarah khochiach, Maitham khajah: Effect of lactate dehydrogenase enzyme inhibition on cell motility, invasion and expression profile on signaling molecules in –ER breast cancer cells.

108

Shams A, Binothman N, Boudreault J, Wang N, Shams F, Hamam D, Tian J, Moamer A, Dai M, Lebrun JJ, Ali S: Prolactin receptor-driven combined luminal and epithelial differentiation in breast cancer restricts plasticity, stemness, tumorigenesis and metastasis

Ophthalmology

109

Ali H Alghamdi, Mahadi A Bashir, Saleha K Alatawi, Hani A Alghamdi, Ahmed M Alzahrani: Prevalence of Mask-Associated Dry Eye (Made) Among the General Population of Al- Baha Area, Saudi Arabia

Orthopedic Surgery

110

Alfaresy SA*, Khaja A, Aladwani B: Mini-incision (Minimally Invasive) And Standard Incision Direct Lateral Transmuscular Approach For Total Hip Arthroplasty, Comparison Of Complications, Function, Clinical and Radiological Outcomes: A Systematic Review

Pathology

111

Alsairafi ZK, Naser AY, Hemmo SI, Alshatti BJ, Alrawashdeh HM, Taqi A: Incidence, death, and vaccination rates for COVID-19 across six continents

112

Jarkhi HH, Al-Murshed M: Correlation Between the Molecular Alterations and the Meningioma Grade

Patients safety

113

Aleinati GT, Kamal ZA*, Alkandery NA, Alajmi HM, Alajmi SE: Medical & Nursing Students' Insights Towards Patient Safety

Pediatrics

114

Alawadi AM*, Alsharhan H, Makhseed N, Ramadan D, Shahhat MA, Elshawaf RI, Alsafi R, Albash B: Understanding The Prevalence And Variants Of Mucopolysaccharidoses In Kuwait

115

Al-Enezi RT*, Qureshi SK*, Ayed MK: Incidence and Outcome of Infants Born at More Than 35 Weeks Gestation With Low Cord pH < 7 in Kuwait

116

Adekile AD*, Al-Kindi S, Wali Y, Gupta R, Sameer R Al-Sahaf H, Al-Abboh H, Zahra A: Phenotypic Variability of Sick Cell Disease in the Arabian Gulf: Influence of Fetal Hemoglobin among Kuwaiti and Omani Patients

117

Kalim S*, Al-Enezi R, Ayed M: Early aEEG Background and Cerebral rSO₂ For Predicting Brain Injury in Preterm Neonates

Pharmacology and Toxicology

118

Al Baloushi A O, Aly E M, Al-Romaiyan A, Masocha W: Dual COX/LOX inhibition prevents and ameliorates paclitaxel-induced mechanical allodynia in rats in a cannabinoid receptors-dependent manner

119

Anwar Mohammad, Maha M Hammad: Signaling and structural characterization of MC4R activation by Setmelanotide

120

Jragh D*, Yousif M, Oriowo MA, Chandrasekhar B: The Role of Endothelium in Mediating the Vasodilator Response to Trace Amine Associated Receptor Agonists in Isolated Perfused Rat Kidney

121

Omaima A Ahmedy, Marwa W Kamel, Dalia M Abouelfadl, Marwa E Shabana, Rabab H Sayed: Berberine attenuates epithelial mesenchymal transition in bleomycin-induced pulmonary fibrosis in mice via activating A2aR and mitigating the SDF-1/CXCR4 signaling

122

Swathi Suresh, Chitra Vellapandian: Cyanidin improves spatial memory and cognition in Bisphenol A-induced rat model of Alzheimer's-like neuropathology by restoring canonical Wnt signaling.

Pharmacy

123

Al-Awadhi, FH*, Paul VJ, Luesch H: Discovery and Characterization of a New Anti-Inflammatory Macrolide Glycoside from Marine Cyanobacteria Targeting the Keap1/Nrf2 Pathway

124

Alfoudiry MM, Khajah MA: Effect of Angiotensin 1-7 Treatment on Breast Cancer Cell Proliferation and Motility

125

Gagan Preet, Rishi Vachaspathy Astakala, Emmanuel T Oluwabusola, Marcel Jaspars, Rainer Ebel, Puja Kumari, Frithjof Christian Küpper: Chemical Profiling of Seaweeds of the Arabian Gulf by Liquid Chromatography-Mass Spectrometry and in-silico screening against Monkeypox

126

Matar KM*, Anwar AA, Ezzo AA, Thomas SA, Ali AF: Therapeutic Drug Monitoring Services: A 14-Year Experience in TDM-CT Laboratory, College of Medicine, Kuwait University, Kuwait

127

Nafee N*, Gaber DM, Abdallah OY: Green Nanomedicine: Inhalable Herbal Nanotherapeutics For The Treatment Of Lung Carcinoma

Physiology

128

Al-Mallah H*, Mouihate A, Al-Sarraf H: Adaptation to Resistance Exercise Prior to Sciatic Nerve Injury Promotes a Promyelination Effect in the Crush Injured Sciatic Nerves of Rats

129

Barakat RM, Kilarkaje N, Redzic Z: Differential Effect of Hypoxia Related Cytokines on Cell Death in the Rat Brain during Hypoxemic Hypoxia.

130

Sayed ZA*, AlBader MD, Redzic Z: Effects of Estradiol Signaling on Secretion of Cytokines, Growth Factors and Cell Death in the Rat Brain During Middle Cerebral Artery Occlusion

Plastic Surgery

131

Nawaf Alhindi, Sarah Alzolaibani, Sarah Qari, Kausar Ahmed, Houriah Nukaly, Abdulaziz Alsuhaim, Abdulaziz altala, Hanin banjer, Feryal Alali, Asal Hobani, Abdulaziz Samandar, Zainab Alasfour, Abdullah Althagafi, Mousa Akkour: The management of the donor site of split-thickness skin graft

132

Nawaf Alhindi, Sarah Alzolaibani, Sarah Qari, Kausar Ahmed, Houriah Nukaly, Abdulaziz Alsuhaim, Abdulaziz altala, Hanin banjer, Feryal Alali, Asal Hobani, Abdulaziz Samandar, Zainab Alasfour, Abdullah Althagafi, Mousa Akkour: Skin Graft Donor-Site Dressing: Network Meta-analysis of the rate of re-epithelization

Psychiatry

133

Alotaibi TA*, Alkhalifah KM, Alhumaidan NI, Almutiri WA, Alsaleh SK, AlRashdan FM, Almutairi HR, Sabi AY,

Almawash AN Alfaifi MY, Al-Mourgi M: The Benefits of Friendships in Academic Settings: A Systematic Review and Meta-Analysis

Psychology

134

Alansari B M: Psychometric Properties of the Arabic version of The Ten-Item Personality Inventory (TIPI)

Public Health

135

Abahussain EA, Alyahia AH, Alajeel NA: Take-Back Campaign: A Multisectoral Approach to Medication Safety in Kuwait

136

Alajmi HS, Altarrah DK: Peri-Conceptional Folic Acid Supplementation Related Knowledge And Practice Among Healthcare Professionals And Patients In Kuwait

137

Al-Shammari H, Al-Jarba M, Al-Shammari Jehan, Al-Ateeqi S: Risk Assessment of Gross Alpha-Beta Radiation in Drinking Water in Kuwait

138

Ibrahim D *, Saadallah A, Awada Z, Alawadhi E: Prevalence of Minimally Invasive Facial Cosmetic Surgery and its Association with Mental Health Among College Students in Kuwait

Sports medicine

139

Sabbagh AY, Abedalqader T, Alzahrani A, Alzhrani A, Alzahrani W, Bin Orayir L, Abualenain JT, Alzahrani A: Impact Of 5k Run Race Conducted During Health-Care Events On Level Of Physical Activity And Motivation Among Health-Care Professionals In Saudi Arabia.

Surgery

140

Al-Khafaji MQ, Althobaiti NS, Alhassani NF, Alnahwi ZA, Aldawsari WA, Alquraini SK, Abdrabalameer AH, Alharamlah FS, Almalki AS, Alotaibi NA, Alabdulkarim AO: The Application and Efficacy of Hyaluronic Acid Fillers for Chin Enhancement and Retrusion Correction: A Systematic Review of Patient-Reported Outcomes

141

Alsuyari RA, Alassiri AK, Awad AK, Faleh MN, Baqays RT, Porqueddu M: Moderate Ischemic Mitral Regurgitation in Ischemic Heart Disease: To Operate or Not? A Meta-analysis.

142

Chun Hong Tang, Abdullah Addar, James Alfred Fernandes: Amputation vs Reconstruction in Type IV Tibial Hemimelia: Functional Outcomes and Description of a Novel Surgical Technique

143

Dsouza C, Al-Hashemi M, Al-Hassani S, Qasem W, Al-Mazeedi S, Al-Sabah S: Semaglutide and Tirzepatide for Weight Regain and Management following Sleeve Gastrectomy

144

Esraa O Abdjlaber, Khaled Hindi, Smiley George: Histopathologic analysis of 1688 sleeve gastrectomies: a case study

145

Marwan Y*, Böttcher J, Laverdière C, Jaffer R, Burman M, Boily M, Martineau PA: Three-dimensional magnetic resonance imaging in guiding tibial and femoral tunnels position in anterior cruciate ligament reconstruction: A cadaveric study.

146

Marwan Y*, Turner J, Senan R, Muir R, Barron E, Hadland Y, Moulder E, Sharma H: Circular external fixation for revision of failed tibia internal fixation.

22 www.hsc.edu.kw/poster

Surgery and Transplantation

147

Mahmoud F Sakr: Ligasure Versus Milligan-Morgan Hemorrhoidectomy: A Prospective Randomized Clinical Trial

148

Mahmoud F Sakr, Mohamed M Moussa: Ligasure Hemorrhoidectomy Versus Stapled Hemorrhoidopexy: A Prospective Randomized Clinical Trial

Surgery, Plastic Surgery, Psychology

149

Alsulami OA, Alsuyari RA, Alrashed HA, Hibili NH, Alkhudairy AI., Mahjari AA, Alshaikh SA, Fadel Z: Behind the Mask: Psychological Effects of Post-COVID Mask Wearing on Self-Deprecation and Cosmetics

Virology

150

Maisa Kamkar, Zain Zia*, Kashif Aziz, Mohammed Elfar, Abu Salim Mustafa, Mamoun Al Qasser: Prevalence of Naturally Occurring NS3, NS5A and NS5B Amino Acid Substitutions and Resistance Associated Substitutions (RASs) in Kuwaiti Patients with Chronic Hepatitis C Infection

Case Report Abstracts List

Dentistry

151

Al-Jassim D, Nazar S*, Barry S: Mucocoele Excisional Biopsy- An alternative approach using the laser.

152

Clarke Lisa, Barry Siobhan: Sequelae of injuries to the primary dentition and shared care management

Dermatology

153

Alajmi HM: A Case of Nevus Lipomatosus Superficialis

Genetics

154

Alzayed N, Ali NY, Ebrahim MA, Albash B, Ramadan DG, Bastaki L, Alsharhan H: Cardiovascular Form of Gaucher Disease Associated with Homozygous Asp448His in GBA gene in Kuwait

155

Naser Hussain, Medhat Naim, Mohmmad Zayed, Peter C Harris, Fahd Al-Mulla: Case Study: Co-inheritance of a PKD1 mutation and novel PKD1 variant: a potential modifier in autosomal dominant polycystic kidney disease

Haematology

156

Omar MS, Bahl S, Omara NM, Shams Aldeen NK: Lambda Light Chain Myeloma Presenting Initially by Pancytopenia.

Hematology (laboratory)

157

Gouda EF*, Elsherbiny ZM and Hasan ML: Case Report: An Unusual Initial Presentation of BCR-ABL1-Positive Chronic Myeloid Leukemia with Pancytopenia and No Splenomegaly.

Medicine

158

Aladwani MM: A Case of Secondary Syphilis: The Great Imitator Can't Be Forgotten

159

Asbeutah SA*, Shah SS, Ponomareva GV, Molla MM: A Glimpse into Parkinsonism: A Case Report

Microbiology and Immunology

160

Halwani M A: A Case of Serratia marcescens Conjunctivitis in a Young Male after Exposure to Contaminated Shampoo in a Fitness Club

161

Manchanda Y*, AlBazali A, Alsadat M, Alobaid K, Asadzadeh M, Ahmad S: The First Isolation of Madurella Mycetomatis In a Mycetoma Patient In Kuwait

Neurology

162

AlJassar RW, AlShatti NN, Aleinati GT, AlShammari SS, AlHalban FA: Atypical Presentation of Guillain-Barre Syndrome (GBS): A Case Report

Oncology

163

Abutalib M, Shams A [5*], Tamur S, Khalifa E, Alnefaie G, Hawsawi Y: Metastatic Papillary Thyroid Carcinoma in Pleural Effusion: A case report and review of literature

Otolaryngology

164

Babiker AF*, Alsakka MA, Al-Sabeih KH: Solitary Neurofibroma of the Nasal Columella: A Rare Case with Emphasis on Cosmetic Considerations and Management

Pathology

165

Aldousari L, Hindi K, George J: Adenomatoid Odontogenic Tumor: A Case Report

166

AL-Shamaa A, Jarkhi H, Abodief W: A Rare Case of Cerebral Schistosomiasis Presenting as Epilepsy: A Case Report

167

Baqer MW*, Alshammaa A, Alkandari M: Unraveling a Rare Case of Filarial Orchitis: A Case Report

168

Hasuneya M, Al Taleb A: Light Chain Proximal Tubulopathy as The First Indicator Of An Underlying Plasma Cell Neoplasm in a Patient with Renal Impairment and Proteinuria

169

Jamil M*, Arora R: Multiple Splenic Epithelial Cysts: A Rare Presentation

170

Indushekar V*, Mohana Al M, Annie S, Mohammed T: Rénal And Hepatic Hydatid Cyst Presenting as Anaphylactic Shock: A Case Report

171

Shamsuddin F, George SA, Alyouha N, Alali B: Hidden Identity: Unmasking follicular dendritic cell sarcoma mimicking squamous cell carcinoma in the tonsil

Pathology, cytopathology

172

Pathan SK*; Mothafar FJ; Al Rashedi B; Abdullah HA; Kapila K: Role Of Exfoliative Pleural Fluid Cytology And Immunocytochemistry In The Diagnosis Of Pleural Malignant Mesothelioma: A Case Report.

173

Sany PK*; Bahiya HI; Elhosiny MM; Kotb MM; Kapila K: Fine Needle Aspiration Cytology of Thymoma- A Diagnostic Dilemma

Pediatrics

174

AlJassar RW*, Ebrahim MA, Ng CA: Long QT Syndrome: Phenotypic and Genotypic Evidence to Upgrade 2 KCNH2 Variants of Unknown Significance with Calibrated Functional Patch-Clamp Assay

175

BinNakhi HA, Alfaiakawi HA, Ashkanani M, Elsayed Farara N: Methicillin Resistant Staphylococcus Aureus (MRSA) Hepatic Abscess in a Neonate: A Case Report And Literature Review

176

Bin Nakhi HA, FRAJ RA, Amin HI: Salmonella Pyelonephritis in a healthy child: A case report and literature review

Public Health

177

Al-Ayyadhi NH*, Shaimaa S Al-Awadhi SS, Al-Shammari FJ, Dr Al-Hassan HA: A rare congenital Brucellosis re-emerging in Kuwait: Case Report

Surgery

178

Athary Saleem, Abrar Alawadhi, Mohammad Almarri, Sarah Al Safi, Ahmed Alkhamis: Management of recurrent colostomy prolapse by Laparoscopic Enteropexy for Prolapsing Stoma (LEPS) technique; case report

179

Athary Saleem, Saqer Alenezi, Jumana Alfadhli, Fahad Alhammadi, Maher Hassan, Khaled Alshammari: Rare emergency case of bowel ischemia as a result of diabetic ketoacidosis complication; A case report and literature review of an unusual entity

180

Athary Saleem A, Saqer Alenezi, Ali Alenezi, Omar Alhajri, Fahad Alabdulghani, Ahmed Alkhamis: Management of unusual complications of modified rhomboid/Limberg procedure by interventional radiology guidance; A case report and literature review

181

Athary Saleem, Saqer Alenezi, Nimer Al-Shadidi, Khaleel Mohammad: Pyogenic hepatic abscess formation after Roux-en-Y Gastric Bypass; A case report and literature review of an infrequently encountered postoperative complication

182

Athary Saleem, Saqer Alenezi, Seddeqah Abdulbaqi, Anas Saud, Nimer Al-Shadidi: Multiple abdominopelvic abscesses caused by fishbone: A case report of rare etiology and literature review

183

Athary Saleem, Fatma Albloushi, Abdullah Jamal, Fahed Alajmi, Ali Alenezi, Odai Al Shdifat, Maher Hassan, Bashayer Al Kandari: Giant multinodular goiter with Grave's disease associated with retrosternal extension; A case report of thyroid-related emergency

184

Dr Adullah Al Futaisi: Incidence of Second Primary Malignancies Following Thyroid Cancer Treatment with Radioactive Iodine

185

Al-Omairi AM: Impact of Maternal Body Mass Index on Maternal and Perinatal outcome

186

*Al-Shatti BJ, Alsairafi ZK, Al-Tannak NF: Green chemistry and its implementation in pharmaceutical analysis

Evaluating Magnetic Resonance Imaging (MRI) Safety Policies and Compliance in Public and Private Hospitals in Kuwait: A Survey of Magnetic Resonance Facilities

AlMulla M

Department of radiologic sciences, Faculty of Allied health, Kuwait university

Introduction:

Purpose: Magnetic Resonance Imaging (MRI) has become vital for non-invasive diagnostics in Kuwait, offering detailed internal body images without the use of ionizing radiation. With its increased utilization, however, come significant challenges, particularly the risk of interactions between MRI magnetic fields and ferromagnetic materials in medical devices and implants. Ensuring adherence to categorized MRI safety standards is critical to prevent injuries and maintain operational safety. This study assesses adherence to MRI safety guidelines across Kuwait's MRI facilities, in line with the American College of Radiology (ACR) recommendations.

Methods:

We surveyed 35 MRI facilities in Kuwait (15 public and 20 private) including, radiographac technologist working within these facilities using a 13-section questionnaire aligned with ACR guidelines. The questionnaire gathered data on demographics, patient screening, emergency preparedness, infection control, and more. Data collection occurred from August 2022 to January 2023 following ethical approval, with analysis conducted using statistical software.

Results:

In each facility the distribution of MRI machines varied by magnetic field strengths and healthcare settings, displaying a predominant allocation of mixed 1.5T and >1.5T units in public hospitals. A 60% response rate (n=21) was seen, predominantly from public facilities (n=15 public, n=7 private). In total, 109 MR technologists participated, with an average knowledge score of 68% regarding safety procedures. While most facilities had an MRI safety plan, only 6% regularly reviewed these policies. Reporting of incidents was high at 71.4% (n=15).

Conclusions:

The study identifies compliance levels and areas for MRI safety policy improvement in Kuwait. Recommendations include adopting standard protocols and enhancing training to elevate MRI safety, safeguarding patient and staff welfare. Future research could build on these findings by utilising diverse data collection methods for more comprehensive insights.

Key Words: Magnetic resonance imaging safety; radiographers' knowledge; safety policies;

Funding Agency: none

Quality in Focus: A Study on the Evaluation of X-ray image Excellence by Kuwaiti Radiographers

AlMulla M, Albaloul G, Asbeutah A

Department of radiologic sciences, Faculty of allied health, Kuwait university

Introduction:

In Kuwait's medical imaging sector, diagnostic image quality assessment is subjective, hinging on radiographers' training and practical exposure. This study aims to evaluate the assessment process of radiographic (X-ray) images to enhance diagnostic precision and reduce retakes, thereby minimising radiation exposure.

Methods:

A survey was conducted online sent to radiographers from different hospital and diagnostic centres in Kuwait. It presented 30 clinical scenarios, asking participants to categorise X-ray images as 'keep,' 'could keep,' or 'reject,' with justifications for their Rejection choice. Once collected, descriptive analysis was performed using MACOS software, Microsoft Excel Version 16.72, and Wizard 2 Version 2.0.14 (264).

Results:

This study of 43 radiographers observed diverse demographics and professional backgrounds. Among them, 46.5% were Kuwaiti, and 53.5% were of other nationalities, with a notable female majority (69.8%). Age-wise, participants ranged from their twenties to over fifty, encompassing various career stages, from Chiefs of Specialists to less common Senior Radiographers and Technologists. Upon analysing 1,290 radiographic image evaluations, 467 were rejected, 458 Technologists. Upon analysing 1,290 radiographic image evaluations, 467 were rejected, 458 were kept, and 365 were a could keep. Notably, most rejections were due to deficiencies in image criteria, like exposure and positioning errors. Compared analysis of kept images across genders criteria, like exposure and positioning errors. Compared analysis of kept images across genders and years of clinical practice. While there was no significant difference in the "Could Keep" and years of clinical practice. While there was no significant difference in the "Could Keep" category, a notable difference was observed in the "Keep" category, with a P-value of 0.046, suggesting a statistically significant difference in the number of kept images when comparing suggesting a statistically significant difference in the number of kept images when comparing radiographers with less than 5 years of experience to those with more than 5 years. Comparatively, radiographers with less than 5 years of experience to those with more than 5 years. Comparatively, the keep rate for Kuwaiti radiographers was lower at 44%, as opposed to the higher rates observed the keep rate for Kuwaiti radiographers was lower at 44%, as opposed to the higher rates observed in the UK/Ireland (83%), Norway (82%), and the rest of Europe (88%). This discrepancy suggests an opportunity for the advancement of radiographic evaluation standards in Kuwait to align with international practices and indicate a need for standardising radiographic evaluation practices.

Conclusions:

The study underscores the necessity of standardised assessment protocols in Kuwait's radiographic practice. Enhanced training, particularly in areas highlighted by seasoned professionals, could align Kuwait's radiographic standards with international norms, thereby improving diagnostic efficacy and patient care. Further research is warranted to explore the integration of global standards into local practices.

Key Words: Radiography; Quality control; Image evaluation;

Funding Agency: none

Quality of life among Arab Parkinson's Disease Patients with Dysphagia living in Kuwait using the SWAL-QOL survey

Alozairi A

¹ Allied Health Sciences, Dept. Hearing and speech Science, Kuwait University, ² Faculty of Medicine, Psychiatry dept, Kuwait university

Introduction:

Parkinson's Disease (PD) is a chronic and progressive neurodegenerative disorder. More than 80% of people with PD develop dysphagia, which can impact the quality of their life (QOL). Purpose: We seek to explore levels of patient awareness of dysphagia and how it impacts their QOL.

Methods:

Participants with PD completed: 1) a mini-mental state exam (MMSE), requiring them to pass (>25) to be included in the study; 2) a self-assessment Swallowing Quality of Life (SWAL-QOL) questionnaire to assess the impact of dysphagia; 3) a Water Swallow Test was also used to detect the presence or absence of oropharyngeal dysphagia. Pearson's correlation test performed to compare SWAL-QOL statements between participants, mean scores were also calculated (Sig p <0.001).

Results:

64 participants in total (33 PD, 31 control) took part in the study and were assessed for swallowing problems, and their perceived QOL. Participants with PD presented with significantly slower, weaker and less efficient swallows compared to the control group participants; they also had significantly poorer ratings on symptom frequency, food selection, and social functioning. Participants with PD had limited awareness of dysphagia, scored significantly lower than control group participants in SWAL-QOL survey domains and their swallowing difficulties significantly impacted their QOL.

Conclusions:

while many PD participants initially reported having no swallowing difficulties, many appeared to show changes in swallowing function. Furthermore, participants with PD had significantly lower SWAL-QOL total scores compared to the control group.

Key Words: Parkinson's disease (PD), ; dysphagia, quality of life (QOL), ; Swallowing Quality

Funding Agency: NONE

Efficacy of splinting the wrist and Metacarpophalangeal joints for the treatment of Carpal Tunnel Syndrome: An assessor-blinded randomized controlled trial

Alotaibi N, Manee F

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

Introduction:

Objective: To compare the efficacy of a traditional cock-up splint, which supports the wrist only, with a modified splint that supports the wrist and the metacarpophalangeal (MCP) joints of the medial four digits in the treatment of Carpal Tunnel Syndrome (CTS).

Design: An assessor-blind, randomized controlled trial.

Setting: hospital-based hand therapy clinics.

Participants: Fifty-nine adults with mild-to-moderate CTS were randomly assigned to wear a wrist splint (control group) or an MCP splint (intervention group) for 6 weeks.

Methods:

Outcome measures: The outcome was measured at baseline, six weeks, and six months post-intervention. The standardized outcome measures used included grip and pinch strength, the static two-point discrimination test, Phalen's maneuver test, Tinel's sign, and the Boston Carpal Tunnel Syndrome Questionnaire.

Results:

Both groups improved significantly from splint use in some clinical features. The wrist splint and the MCP splint groups had significant improvements in lateral pinch strength ($p=0.032$, $.002$, respectively), 2-point discrimination of the thumb ($p=0.003$, 0.041 , respectively), 2-point discrimination of the index ($p=0.035$, 0.023 , respectively), and the Phalen's maneuver symptoms ($p=0.025$, 0.002 , respectively). The MCP splint group had additional improvements over the wrist splint group in tip pinch ($p=0.012$) and palmar pinch ($p=0.011$) strength.

Conclusions:

Splinting is a practical and effective intervention option for improving the symptoms of CTS. A wrist splint that incorporates the MCP joints is more effective than the traditional wrist-only splint, with long-lasting improvements that remained consistent after six months of the splint intervention. Utilizing the more effective MCP splint may consequently reduce disability, facilitate return to work, and lower the associated costs.

Key Words: Orthotic Device; Hand rehabilitation; Lumbricals;

Funding Agency: Kuwait University Research Grant No. # No01-14.

Prediction of Cervical Cancer Precursor Lesions by Quantitative Methylation Specific PCR: A Retrospective Study

AlRoomy MS^{*1}, Al-Awadhi RM¹, Chehadeh WF²

¹ Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, Kuwait University, ² Department of Microbiology, Faculty of Medicine, Kuwait University.

Introduction:

Since the discovery of the Papanicolaou test, several limitations were observed in the cervical cancer screening program. As the infection with a high-risk HPV (hr-HPV) genotype is associated with the development of cervical cancer, hr-HPV-based screening was implemented. However, the specificity of hr-HPV-based screening is low, therefore further triaging is required. DNA methylation is one of the common epigenetic modifications in cervical cancer, which can be used as a triage tool. This study was undertaken to evaluate the performance of FAM19A4 and hsa-mir-124-2 hypermethylation as a triage tool for women who are at risk of developing cervical cancer or high-grade cervical cancer precursor lesions by taking into consideration the cytology report, histology diagnosis, and human papillomavirus (HPV) status.

Methods:

A total of 330 cervical Thinprep samples were retrospectively collected and used for DNA isolation. HPV DNA was detected by real-time PCR, and HPV genotypes were identified by Sanger-based sequencing. DNA extracts were bisulfite-treated, and hypermethylation of FAM19A4 and mir-124-2 genes was detected by a quantitative methylation-specific PCR (qMSP) test using the QIASure Methylation assay.

Results:

Hypermethylated genes were detected in 27 (9.6%) samples and were mostly found in women cytologically diagnosed with HSIL (77.8%) and in (57.1%) of women diagnosed with HSIL and hr-HPV infected. In samples with histology diagnosis, hypermethylated genes were found in (72.7%) of women with CIN3 and in (75%) of women with CIN3 and hr-HPV infected. The sensitivity of the qMSP test to predict histological lesions among women with hr-HPV was 38.9% for CIN1+, 57% for CIN 2+, and 75% for CIN3. The specificity of the qMSP test was 91%.

Conclusions:

This study supports the use of FAM19A4/mir124-2 methylation assay as a safe triage tool to differentiate between women at risk for cervical cancer progression which requires immediate treatment, from women with lower-risk lesions that have a high chance for regression.

Funding/Acknowledgements: I would like to acknowledge the College of Graduate Studies and the Research Sector (Research Project No. YN01/21) for their financial support.

Key Words: Cervical cancer; Hr-HPV; QIASure Methylation test;

Funding Agency: the College of Graduate Studies and the Research Sector (Research Project No. YN01/21)

Determination of the Coagulation Proteins Von Willebrand Factor, ADAMTS-13 and TSP-1 in Thalassemia Major Patients and assessing the effects of Splenectomy on these proteins

Al-Sabaan K^{*1}, Al-Awadhi A²

¹Department of Hematology, Farwaniya Hospital, Ministry of Health; ²Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, Health Sciences Center, Kuwait University.

Introduction:

Thalassemia major is an inherited disorder characterized by chronic haemolytic anaemia and tendency for thrombosis. Alterations in the endothelium and endothelial adhesion proteins such as von Willebrand factor (vWF), contribute to hypercoagulability in thalassemia. vWF protein is released as a large multimeric molecule that plays an important role in platelet aggregation and thrombi formation. It is then degraded by the proteolytic enzyme ADAMTS-13. Thrombospondin-1, is a multifactorial glycoprotein which was reported to compete with ADAMTS-13 for the sites of vWF proteolysis. In this study, levels of vWF, ADAMTS-13 and TSP-1 proteins were determined in β -thalassemia major patients and compared to healthy controls in our local population. The effect of splenectomy on the expression of these proteins was also analysed.

Methods:

The study was conducted among 160 subjects; 80 β -thalassemia major patients and 80 age and sex matched healthy controls. The 80 patients were sub-divided into two groups; splenectomised (SP) (n=34) and non-splenectomised (Non-SP) (n=46). vWF, ADAMTS-13 and TSP-1 plasma levels were measured using ELISA technique.

Results:

There was no significant difference in vWF and TSP-1 antigen levels between patients and controls ($p>0.05$). However, ADAMTS-13 activity levels and ADAMTS-13 activity/vWF antigen ratio were significantly higher in patients ($p<0.05$). SP patients showed higher levels of vWF antigen and TSP-1 levels compared to Non-SP patients ($p=0.025$ and $p<0.001$, respectively). We also observed a significant decrease in ADAMTS-13 activity/vWF antigen ratio among SP patients ($p=0.019$).

Conclusions:

vWF:Ag and activity levels were not different between patients and controls and the reported increase in ADAMTS-13 in patients may have a protective role. Splenectomy seems to increase the susceptibility to hypercoagulability in patients as it was associated with significant rise in vWF:Ag, TSP-1 levels and low ADAMTS-13/vWF ratio. Acknowledgements: This work was funded by Kuwait University College of Graduate studies and Research Sector Grant No. YN02/21. The authors wish to thank the Research Core Facility in Kuwait University Health Sciences Center for providing help in using different facilities in the unit supported by Research Project No. GM 01/15.

Key Words: Thalassemia; Von Willebrand factor; ADAMTS13 ;

Funding Agency: Kuwait University College of Graduate studies and Research Sector Grant No. YN02/21.

Associations Between Sedentary Behavior and Clinical Characteristics in People with Type 1 Diabetes in Kuwait

Irshad M*, Varghese A, Taghadom E, Alkandari J, Al-Ozairi E.
Dasman Diabetes Institute, Kuwait City, Kuwait

Introduction:

In the past four decades, the living standards of Arab people have improved, leading to an increase in sedentary behaviors. Sedentary behavior is deleterious to people with diabetes, as they are at a higher risk of comorbid chronic disease compared to people without diabetes.

Aims:

This study aimed to explore the correlations between time spent in inactivity and various clinical parameters in people with type 1 diabetes residing in Kuwait.

Methods:

A cohort of 573 people with type 1 diabetes participated in this study at the DAFNE clinic, Dasman Diabetes Institute, Kuwait. Participants wore a wrist accelerometer device for seven consecutive days to measure their physical activity behavior, and clinical data were collected, after obtaining ethical approval from the Ethical Review Committee of Dasman Diabetes Institute. Correlations were examined between inactivity time and clinical parameters, including lipid profile, glycemic levels, basal metabolic index (BMI), and waist circumference. Data were analyzed by the SPSS software, and $p \leq 0.05$ was considered a significant level.

Results:

The median age of people with type 1 diabetes was 34 years, and the average duration of diabetes was 18.5 years. The time spent in inactivity was 719 minutes per day, ranging from 384 to 1253 minutes per day. A negative association was found between inactivity time and HDL-cholesterol ($r = -0.13$, $p = 0.0001$), while positive associations were found with triglyceride levels ($r = 0.09$, $p = 0.001$) and total cholesterol levels ($r = 0.06$, $p = 0.03$). Additionally, inactivity time demonstrated a positive association with waist circumference ($r = 0.07$, $p = 0.02$). However, no significant association was found between glycemic levels and inactivity time.

Conclusions:

People with type 1 diabetes exhibited high levels of sedentary behavior, correlating with adverse effects on lipid profiles and increased waist circumference. The dyslipidemia and associated comorbid complications can be prevented through comprehensive diabetes management, coupled with the improvement of their physical activity behaviors.

Acknowledgments

We gratefully acknowledge Dasman Diabetes Institute for its facility and support.

Key Words: Type 1 diabetes,; inactivity time, ; glycemic levels, lipid profile;

Funding Agency: None

Evaluating radiation protections aspects for pediatric CXR: imaging standards and radiation dose measurements in various hospitals

Kholood Baron

Radiologic Science Department, Faculty of Allied Health Sciences, Kuwait University

Introduction:

Chest radiography (CXR) is one of the most important diagnostic examinations in pediatric radiography. It is a critical tool for diagnosing various diseases. Pediatric chest X-ray use ionizing radiation to obtain images. Radiographers should follow strict radiation protection strategies and ALARA principle to ensure that pediatrics receive the lowest dose possible.

Aim: this research evaluated different criteria related to pediatric CXR examinations performed in the radiology department in five hospitals.

Methods:

Data collected from a questionnaire (asked 10 questions) and Entrance Skin Dose (ESD) measurements during CXR. The questionnaire was distributed electronically to radiographer working in the radiology departments. 100 responses were collected and analyzed to highlight issues related to immobilization devices, radiation protection issues and repeat rate. While ESD measurements were performed via thermoluminescence dosimeter (TLDs) during 25 CXR for pediatric patients. In addition, other aspects on the radiographer skills and information written in patient requests were collected and recorded.

Results:

questionnaires responses showed that most radiographers do follow radiation protection guidelines, but more emphasis should focus on improving their skills in collimation to ROI and dealing with immobilization and exposure factors. Since the first issue was least applied to young pediatrics, and the latter two issues were the common reasons for repeating an image. The ESD measurements revealed that the averaged dose involved in pediatric CXR is 143.9 μ Gy, which is relatively high but still within the limits of the recommended values. The data suggests that this relatively high ESD values can be associated with using higher mAs and thus recommended to lower it according to ALARA principle.

Conclusions:

in general, radiographers have the knowledge and the tools to reduce the radiation dose to pediatric patients but few lack the skills to optimize the collimation, immobilization application and exposure factors. The ESD during CXR were within recommended values.

Acknowledgment to radiographers working in the hospitals: Al-Sabah, Al-Razi, Mubarak Al kabeer, Chest and Al-Farwanyia hospitals (NO funding).

Key Words: Pediatric radiography,; ESD measurements; dosimetry;

Funding Agency: none

The Robot Physician's (RP - 7) management and care in unstable ICU Oncology patients.

Alisher Agzamov, Hana AL Harbi, Huda Al Foudary.
Al Sabah Hospital, Al Adan Hospital and KCCC

Introduction:

Robotic use in ICU settings has been rising over the years. In particular, with the recent COVID-19 pandemic, there has been greater emphasis on the Robot Physician (RP – 7, in Touch Health, USA) use in the ICU, as it allows efficient, safe, and quality contactless care. The Robot Physician (RP) is a machine performing a series of actions autonomously or with external guidance. RP use on patients in oncology ICU or during procedures (intubation, ventilation, tracheostomy, cannulation, resuscitation, and dialysis). The timely assessment and treatment of ICU Oncology patients is important for specialists (1). We hypothesized that the use of Robot Physician's (RP-7: InTouch Health, USA – Photos: A1 and A2) ICU management and care in ICU can improve ICU physician rapid response to unstable ICU Oncology patients (2).

Methods:

RP in the ICU is used to provide ICU physician coverage. The ICU robots are used as a vehicle that enables fast face-to-face communication between Specialists when some of them are not present in the ICU and located remotely can also observe patients' vital signs, examine medical charts, and communicate with bedside staff. The robots are also used to allow providers to communicate with patients and families when they are away from the ICU. This is a prospective study of 2501 postoperative oncology patients with cancers of the brain, neck, liver, breast, uterus, pancreas and colon using a before-after, cohort-control design to test the effectiveness of RP. We have used RP to make multidisciplinary ICU rounds in the ICU and for Emergency cases. Data concerning several aspects of the RP interaction including the latency of the response, the problem being treated, the intervention that was ordered, and the type of information gathered using the RP were documented. The effect of RP on ICU length of stay and cost was assessed.

Results:

The use of the Robot Physician was associated with a reduction in latency of attending physician face-to-face response for routine and urgent pages compared to conventional care (RP: 10.2 +/- 3.3 minutes vs conventional: 210 +/- 40 minutes; $P < 0.001$). The response latencies to Oncology Emergency (8.0 +/- 2.8 vs 140 +/- 35 minutes; $P < 0.01$) and for Respiratory Failure (12 +/- 04 vs 110 +/- 45 minutes; $P < 0.001$) were reduced, as was the LOS for oncology patients (5 days) and ARDS (10 days). There was an increase in ICU occupancy by 29 % compared with the prerobot era, and there was an ICU cost savings of KD 4.2 million attributable to the use of RP.

Conclusions:

The use of the Robot Physician enabled rapid face-to-face ICU physician response to unstable ICU Oncology patients and resulted in decreased ICU cost and LOS. However, ICU Specialists who have used it most often perceive it as a useful tool that increases efficiency and patients care in the Oncology ICU.

References:

1. Gabor Kosa, Oleksii Morozov, Angelika Lehmann, Hans Pargger, Stephan Marsch, Patrick Hunziker. Robots and Intelligent Medical Devices in the Intensive Care Unit: Vision, State of the Art and Economic Analysis. University Hospital Basel, Switzerland. Published in: IEEE Transactions on M

Key Words: Robot Physician, Oncology ICU Patients, Management; Robot Physician - RP 7 and

Funding Agency: In Touch Health, USA

The Effect of Blue Light Wavelength Exposure on Mitochondrial Function and Acute Cytokine Expression in Serum

Abed BS* ¹, Al-Hussaini HA ², Al-Onaizi MA ²

¹ 5th-year Medical Student, Faculty of Medicine, Kuwait University, ² Department of Anatomy, Faculty of Medicine, Kuwait University

Introduction:

Natural sunlight has an approximate balance between long and short wavelengths, which is known to be beneficial for the human body. However, what is used commonly in offices and industries is Cool white LED with ranges of 420nm-450nm, which may have a different impact on the human body. The objectives of this study were to estimate serum cytokines expression levels in C57 mice exposed to blue light (450nm) and evaluate its effect on weight, serum glucose levels, and mobility.

Methods:

Two groups of C57 male mice aged 6 months were allocated into a control group exposed to daylight bulbs (halogen) and experimental group exposed to Blue LED light (450nm) at 20 cm 5hr/day for 8 weeks both in 12:12 light cycle animal units. Glucose and weight were measured once every week. Open field test (OFT) was conducted on the 8th week before sacrificing the animal. Mouse cytokine antibody array was used to evaluate the levels of 62 different cytokines in serum samples. Films were scanned and ImageJ was used to quantify signal densities, which were later normalized and used to plot the heatmap. Values that showed a 1.5-fold change were considered significant. Statistical significance was calculated using the independent t-test on GraphPad Prism.

Results:

All 62 cytokines were expressed in both groups, with an upregulated ≥ 1.5 -fold change in (IL-12 p40/p70, IL-17, IFN γ , IL-13, IGFBP-5, and IGFBP-6) cytokines. Serum glucose measurements showed no statistical significance, however unsteady variations were observed across all mice exposed to LED 450nm. Body weight measurements showed a statistically significant steady weight increase throughout the 8-week experiment in animals exposed to LED 450nm ($p \leq 0.001$). Results of OFT showed statistical significance ($p \leq 0.01$), where mice exposed to LED 450nm showed less mobility with less total distance travelled, and fewer number of entries as well as time spent in the central zone.

Conclusions:

Our study results showed that LED blue light (450nm) upregulates cytokine expression in mice. Steady increase in weight throughout the 8-week experiment with unsteady variations in serum glucose levels. Decreased mobility of mice exposed to LED 450nm with less total distance travelled, and fewer entries as well as time spent in the central zone.

Funding/Acknowledgments: This work was supported by Kuwait University, Research Grant No. [MA01_22].

Key Words: Blue LED Light; Cytokine Expression; Weight, Serum Glucose, and Mobility;

Funding Agency: Kuwait University, Research Grant No. [MA01_22]

Exploring The Efficacy of the Non-Erythropoietic Peptide ARA 290 on Visuospatial Acquisition and Cognitive Flexibility in db/db Mice

Alasousi DH* ¹, Alfadhli YA ², Alonaizi MA ³

¹ Department of Biochemistry, Faculty of Science, Kuwait University; ² 2nd year medical student, Faculty of Medicine, Kuwait University; ³ Department of Anatomy, Faculty of Medicine, Kuwait University

Introduction:

Type 2 diabetes (T2D) is a common metabolic disease associated with cognitive impairments. The development of automated touchscreen tasks for rodents allows the exploration of cognitive aspects in several metabolic diseases, including T2D. We recently showed therapeutic potential of the non-erythropoietic analogue of Erythropoietin (EPO), ARA 290, in Alzheimer's Disease (AD). However, the exact effects of EPO in modulating cognitive function in diabetes remains unexplored.

Objective Here, we assessed specific functions of cognition in db/db mice using touchscreen tasks and we asked whether ARA-290 has therapeutic potential in improving cognition.

Methods:

We tested wild type (WT) (n=10) and db/db mice (n=9) for cognitive function using touchscreen task called Pairwise Visual Discrimination (PVD). In this task, mice must identify the correct image (S+ stimulus) that is linked to a food reward and ignore the incorrect image (S- stimulus) (acquisition 1). Once criterion was achieved, the contingencies were reversed, and mice were retested to assess cognitive flexibility (reversal 1). Next, mice received ARA 290 (0.7nmol/kg) and were again subjected to same task (acquisition 2 and reversal 2) to assess ARA 290 effect on cognitive performance. Reaction times, correct, and incorrect choices were calculated. Student's t-test was used. One-way or two-way ANOVA was performed when comparing more than two sample means.

Results:

db/db mice were mildly impaired in acquisition performance, highlighted by the number of sessions taken before achieving the criterion (WT=8 vs db/db ≥11), number of trials completed, number of errors (WT=12.2% vs db/db=29.3% at session 8) and number of correction trials (WT=5 vs db/db=12 at session 8). In the reversal paradigm, db/db mice showed robust impairments in all parameters, suggesting impaired cognitive flexibility. ARA 290 showed no significant effects on improving acquisition and reversal performance in WT and db/db mice.

Conclusions:

We showed that specific cognitive domains are affected in T2D. Moreover, we provide evidence to show that, in contrary to AD, ARA 290 had no effect on improving cognitive functions in db/db mice, suggesting that unique mechanisms may underlie cognitive decline in T2D.

Acknowledgment We thank Animal Resources Center and Research Core Facility (SRUL02/13; GM01/15) at KU. This work was supported by grant no. RM01/19 to MAO through KU.

Key Words: Type 2 Diabetes; Cognitive Flexibility ; Visual Acquisition ;

Funding Agency: RM01/19

Anti-heparin/platelet factor4 antibodies induced immune thrombotic thrombocytopenia long time post COVID-19 vaccines: myth or fact?

AL-Mutawa MW^{*1}, Moussa AM¹, Jamal WY²

¹ Department of Anatomy, Faculty of medicine, Kuwait university, ² Department of Microbiology, Faculty of medicine, Kuwait university

Introduction:

Vaccine-induced thrombotic thrombocytopenia (VITT) is an immunological reaction, following the COVID-19 vaccines in a predictable time, in which abnormal antibodies (anti-heparin/platelet factor 4 (anti-HPF4)) are produced causing extreme platelets activation, leading to aggressive thrombosis which in turn, alter the coagulation markers. It is still unknown whether these antibodies can be formed in the long-term, causing coagulation problems. This study aims to investigate the effects of COVID-19 vaccines in term of blood coagulation in the long-term.

Methods:

Peripheral blood samples were collected from unvaccinated (control) and vaccinated individuals 12-months post-vaccination, grouped according to age category and type of vaccine. Platelets imaging (blood smear and transmission electron microscopy), platelets count by CBC test, platelets apoptosis markers (p53, caspase3 and cytochrome c) by western blot, coagulation markers (D-dimer, fibrinogen, INR) by STAGO MAX3, anti-HPF4 antibodies level by ELISA and normality of neutrophils were assessed. Blood samples were taken also from a case before and after vaccination. For statistical analysis, ANOVA was used, and significance was defined as a p-value of less than 0.05.

Results:

Results showed that all the tested parameters were normal and no significant differences between vaccinated groups and controls in the long-term ($p \geq 0.05$). Case study showed a significant increase in anti-HPF4 level shortly after vaccination ($p \leq 0.001$) and significant decrease ($p \leq 0.027$) in the long-term without effect on D-dimer levels.

Conclusions:

We concluded that VITT syndrome, if not occurred within 2 weeks (in average), may not develop in the long-term.

Acknowledgment: To CGS and research sector (YM04/23) for financial support, Electron Microscope Unit and Research Core Facility in faculty of medicine, Kuwait University.

Key Words: VITT; COVID-19 vaccines; anti-HPF4 antibodies;

Funding Agency: Collage of Graduate Studies, Research Sector Project No. (YM04/23)

Glucose intolerance induces anxiety-like behaviors independent of obesity and insulin resistance in a novel model of nutritional metabolic stress

Braysh K* ¹, Alkafeef S ⁵, Altarrah D ³, Dannoon S ⁴, Williams M ², Alzaid F ^{2,6}, Al-Onaizi M ^{1,2}

¹Department of Anatomy, Faculty of Medicine, Kuwait University, Kuwait City, Kuwait; ²Dasman Diabetes Institute, Kuwait City, Kuwait; ³Department of Social and Behavioral Science, Faculty of Public Health, Kuwait University, Kuwait City, Kuwait

⁴Department of Nuclear Medicine, Faculty of Medicine, Kuwait University, Kuwait City, Kuwait, ⁵Department of Biochemistry, Faculty of Medicine, Kuwait University, Kuwait City, Kuwait, ⁶INSERM UMR-S1151, CNRS UMR-S8253, Université Paris Cité, Institut Necker Enfants, Malades, Paris, France

Introduction:

Type 2 diabetes (T2D) and its comorbidities are a major public health concern. T2D impacts the central nervous system leading to neurocognitive impairments. Memory, depression, and anxiety are established comorbidities of T2D. However, the specific metabolic determinants of neurocognitive impairment remain undetermined. Here, we used a novel proprietary high-fat diet in which glucose intolerance precedes weight gain to decipher the metabolic determinants of neurocognitive effects.

Methods:

Male C57BL/6 mice were fed for 13 weeks either with laboratory-formulated 40% high fat diet (P-HFD; n=6), or commercially sourced 60% high fat diet (C-HFD; n=6) or normal chow diet with 10% fats (NCD; n=6). Long-term feeding (32 weeks) effect with P-HFD (NCD, n=9, P-HFD, n=24) was followed up in separate cohort. Metabolic parameters including body weight, glucose intolerance and insulin sensitivity were assessed. To investigate the effect of our novel diet on cognitive function, open field test, novel object recognition, and forced swim test were performed and compared to diabetic db/db mice. 18F-fluorodeoxyglucose (FDG-PET) imaging was used in 32 weeks P-HFD fed mice to determine its consequences on brain health and metabolism. Student's t-test was used. A one-way or two-way ANOVA was performed when comparing more than two sample means.

Results:

We show that this model exhibits anxiety-like behaviors ($p < 0.05$), without eliciting depression or recognition memory deficits. Long-term feeding leads to weight gain by 14% at week 32, brain glucose hypometabolism and impaired recognition memory alongside the early onset of anxiety-like behavior. Using genetic model of T2D (db/db) and diet-induced obesity, we show that additional insulin resistance and obesity are associated with depressive-like behaviors and recognition memory deficits in mice ($p < 0.05$).

Conclusions:

Our findings indicate that glucose intolerance alone can elicit anxiety-like behaviors. Here, we provide a novel nutritional model to characterize the discrete effects of glucose intolerance on cognition, behavior, and the physiology of metabolic disease.

Acknowledgment: This work was supported by grant No. RM01/19 to MAO through KU. FA was supported by KFAS grants RA AM-2022-009 and RA AM-2023-007; ANR-JCJC grant for the MitoFLAME Project ANR-19-CE14-0005. We thank Animal Resources Center (KU), Research Core Facility Grant No. SRUL02/13 and GM01/15, Grant No., GM18/01 for PET/CT and Nuclear Medicine Department staff at Mubarak Al-Kabeer Hospital.

Key Words: Type 2 Diabetes; Cognitive Impairment ; Glucose intolerance ;

Funding Agency: This work was supported grant No. RM01/19 to MAO through KU. FA was supported by KFAS grants RA AM-2022-009 and RA AM-2023-007; ANR-JCJC grant for the MitoFLAME Project ANR-19-CE14-0005.

Age Dependent Dynamics of Tau Pathology in Mouse Models of Diabetes

D'Souza L* ¹, Braysh K ¹, Williams MR ², Alzaid F ², Al-Onaizi M ¹

¹ Department of Anatomy, Faculty of Medicine, Kuwait University, ² Dasman Diabetes Institute, Kuwait

Introduction:

Insulin resistance due to diabetes has been linked to Alzheimer's disease, which is characterized by the formation of intracellular neurofibrillary tangles made up of hyperphosphorylated tau protein. Tau plays an important role in microtubule stabilization in neurons, which is essential for axonal transport and structure maintenance. The exact role of tau pathology in diabetes remains unclear. The objective of our study is to delineate the effect of metabolic dysfunction on Tau pathology using a genetic model of diabetes and a diet induced model of insulin resistance.

Methods:

The diabetes mouse model C57BL/6J-db/db was compared with age matched controls, and grouped as – young (1-3 months old) and aged (10-12 months old). For diet induced model, C57BL/6J mice were randomly assigned to be fed a normal chow diet (NCD) or a commercial high fat diet (HFDc), composed of 10.48% and 60% calories from fat respectively. OGTT and ITT were performed by measuring glucose levels up to 2 hours post administration. Body weights were recorded and mice were sacrificed after a short-term diet (11-13 weeks) and a long-term diet (27 weeks). Cerebral cortex and hippocampal tissue were collected and western blot analysis was performed against Tau, PhosphoTau (T231, S202/T205, S396), PP2Ac, PP2B, GSK-3b, Akt, b-Actin and GAPDH. Band intensities were quantified and statistical analysis was performed using the unpaired two-tailed Student's t-test. Only male mice were used in the study and n=3 for all conditions.

Results:

HFDc fed mice display higher body weights as compared to controls, and hyperglycaemia with insulin resistance. A significant reduction in the total Tau levels was only observed in the aged db/db cortex. Tau is phosphorylated at T231 and S202/T205 at early stages of tangle formation, followed by phosphorylation at S396 in the intermediate stages. We observed a significant increase in the levels of pTau in the cortex of aged db/db and HFDc fed mice, but no changes were observed in the young db/db mice. In all cases, decreased levels of Tau phosphatases, PP2B and PP2Ac were observed.

Conclusions:

Our study provides an overall view of the dynamic changes in tau pathology in diabetes - including changes in the major Tau kinases and phosphatases, using 2 different models.

Acknowledgements:

We thank the Animal Resources Centre and Research Core facility (SRUL02/13; GM01/15) at Kuwait University. Work was supported by grant RM01/19 to MAO through KU.

Key Words: Tau pathology; Diabetes; Ageing;

Funding Agency: Grant number: RM01/19; Funding Agency: Kuwait University

The Influence of Metabolic Alteration on Hippocampal Neuronal Cell Density

Khanafer NA* ¹, Samaro BH * ², Braysh K ³, Alzaid F ⁴, Alonaizi MA ³

¹ Department of Molecular Biology, Faculty of Science, Kuwait University ² Department of Biochemistry, Faculty of Science, Kuwait University ³ Department of Anatomy; Faculty of Medicine, Kuwait University ⁴ Dasman Diabetes Institute, Kuwait

Introduction:

Type 2 Diabetes (T2D) and obesity are common metabolic disease associated with increased risk of Alzheimer's disease (AD). Diets rich in saturated fats and refined carbohydrates contribute to excessive weight gain, increased risk of T2D development and negative effect on cognitive function. Growing evidence suggest the correlation between the neuronal loss and the high intake of saturated fats. The hippocampus, a crucial brain region involved in memory formation and learning, is susceptible to neurodegeneration by long-term consumption of high-fat diet (HFD). Metabolic stress can trigger the accumulation oxygen reactive species causing macromolecules damage and neuronal death eventually promoting neurodegenerative events. Objective In this study, we aim to investigate the effect of metabolic alteration on neuronal density in hippocampal regions using diet-induced obesity model and genetic model of diabetes (db/db).

Methods:

5-6 weeks old male C57BL/6 mice were fed for 15 weeks with commercial HFD containing 60% fat (n=3) and compared to normal chow diet (NCD) fed controls. 3-5 months db/db mice (n=3) were also used and compared to their aged-matched lean controls (n=3). Mice were sacrificed by perfusion, brain tissues were collected and processed for cresyl violet staining. Microscopic images were captured for hippocampal regions DG, CA1, and CA3 using a 40X objective on the Zeiss Axioscope 5 light microscope. Nissl+ cells were quantified by ImageJ and normalized to the area (mm²). For statistical analysis, Student's t-test was used.

Results:

Our results show that HFD causes a mild neuronal loss in hippocampus as compared to NCD, only significant decrease was seen in CA1 region (p<0.05). While in db/db mice, more robust reduction in number of the neurons was seen in DG hippocampal region.

Conclusions:

Our findings suggest that obesity whether genetically or diet- induced have a selective influence on the neuronal cell density in specific hippocampal regions. Acknowledgment The authors would like to thank the Animal Resource Center and Research Core Facility. This work is supported by Research grant no. RM01/19 to MAO through Kuwait University.

Key Words: Type 2 Diabetes; Metabolic Dysfunction; Neuronal Loss;

Funding Agency: RM01/19

Assessment of the Preception and Worries of Saudi Healthcare Providers About the Application of Artificial Intelligence in Saudi Health Facilities

Elnaggar MA, Alharbi ZA, Alanazi AM, Alsaiari SO, Alhemaiddani AM, Alanazi SF, Alanazi MM

College of medicine, jouf university, Sakaka. SAU

Introduction:

The subject of AI has experienced magnificent development and growth over the past two decades. AI has gained amazing applications in various fields, including medicine. AI is swiftly gaining the consideration of researchers worldwide. AI will eventually substantially impact patient care. And we should know that are healthcare providers ready for the AI evolution. This study is aimed at assessing the perception and worries of Saudi healthcare providers about the application of artificial intelligence (AI) in Saudi healthcare facilities.

Methods:

The study adopted a cross-sectional study involving 1026 Saudi healthcare providers between January 2023 and April 2023. The target population was healthcare providers across Saudi health facilities. Online questionnaires were administered through social media platforms. Data were analyzed using SPSS Statistics, version 26.0 (IBM Corp., Armonk, NY) to obtain important insights.

Results:

The results of this study indicated that more than half (55.2%) of the respondents had good knowledge of AI, with (48.1%) of them being familiar with the application of AI in their specialty. A good proportion of the participants (57.9%) knew at least one term about the difference between machine learning and deep learning. More than half (69.9%) of the participants indicated that they had at one point in time used speech recognition or transcription application in their work. A large section (73.3%) of healthcare providers believed that AI would replace them at their job. A vast majority (84.9%) of the participants agreed that collaboration between medical schools with engineering and computer science faculties could be a game changer to provide a road for incorporating AI into medical curricula. The mean perception of AI in this study was 37.6 (SD=8.41; range 0-241). Age, level of health, health profession, and working experience all significantly impacted the positive perception score ($p=0.021$; $p=0.031$; $p=0.041$; $p=0.026$). However, there was no significant association between gender, nationality, and Saudi regions with a mean positive perception score.

Conclusions:

There was a positive perception of AI among Saudi healthcare providers. Even though a substantial majority of Saudi healthcare providers were worried that AI would replace their jobs, the study revealed that AI serves as a crucial practitioner's tool rather than a physician's replacement. Funding/Acknowledgements: there is no funding or any acknowledgments.

Key Words: Artificial intelligence ; Saudi Arabia ; Healthcare;

Funding Agency: None

Tumor necrosis factor alpha deficiency alters metabolic, neurobehavioral responses to diet-induced obesity in mice

Najem R ¹, Alonaizi M ^{1,2}, Williams M ¹, Kandari A ^{1,3}, Jacob T ¹, Almulla F ¹, Ahmad R ¹, Alzaid F ^{1,4}

¹Dasman Diabetes Institute, Kuwait City, Kuwait, ²Department of Anatomy, Faculty of Medicine, Kuwait University, Kuwait City, Kuwait, ³Ministry of Health, Kuwait; ⁴INSERM UMR-S1151, CNRS UMR-S8253, Université Paris Cité, Institut Necker Enfants Malades, Paris, France.

Introduction:

Tumor necrosis factor (TNF)- α is a cytokine expressed by immune cells as part of an inflammatory response, and by other cell types, namely adipocytes, where it contributes to development of type 2 diabetes. Studies associated high TNF- α levels with cognitive effects common in patients with T2D, including depression and anxiety. Here, we investigate the effect of TNF- α deficiency on diet-induced obesity and related cognitive and behavioral phenotypes.

Methods:

7-to-9-week-old male B6129.S wild-type (WT) and TNF- α knockout mice (TNF-KO), were fed a normal chow (NCD) or a high fat diet (HFD) for 34 weeks. Mice were weighed weekly, and insulin and glucose tolerance tests (ITT/GTT) were carried out. Mice underwent behavioral testing by open field and novel object recognition (NOR) tasks. Two-way ANOVA was used, n=5/6 per group.

Results:

TNF-KO mice had lower body weight on NCD relative to WT mice and gained more weight on HFD relative to WT mice. This was due to differences in white adipose tissue weight. WT and TNF-KO mice on NCD had similar glucose tolerance, while TNF-KO mice on HFD were significantly less glucose tolerant compared to WT mice. ITT showed higher insulin resistance in TNF-KO mice on HFD. With behavior, WT mice on NCD showed higher levels of anxiety in comparison to the TNF-KO mice. Comparing diets, HFD has anxiogenic effects. In the NOR, TNF-KO mice were more likely to explore the novel object, indicating lower anxiety and better memory.

Conclusions:

TNF- α deficiency increases weight gain upon HFD, primarily in white adipose tissue. This was associated with aggravated insulin resistance and glucose intolerance. However, WT mice were more anxious, and TNF-KO mice had better memory. This confirms that TNF- α plays a role in the metabolic and cognitive adaptation to diet-induced obesity.

Acknowledgements

Dr. Nermeen Abukhalaf and Dr. Ashraf Madhoun from the Dasman Diabetes Institute Animal & Imaging Core Facility

Key Words: Tumor Necrosis factor alpha knockout cytokine proi; Cognitive and behavioural

Funding Agency: Kuwait Foundation for the Advancement of Sciences/ Dasman Diabetes Institute., RA AM-2022-009, RA AM-2023-007

High-Density Lipoprotein Protects Normotensive and Hypertensive Rats Against Ischemia-Reperfusion Injury by Differentially Regulating mTORC1 and mTORC2 Signaling

Alothman R, Al-Jarallah A, Babiker F

¹ Department of Biochemistry, Faculty of medicine, Kuwait university, ² Department of Physiology, Faculty of medicine, Kuwait university

Introduction:

Background: High density lipoprotein (HDL) protects against myocardial ischemia-reperfusion (I/R) injury. Mammalian target of rapamycin complexes 1 and 2 (mTORC1 and mTORC2) play opposing roles in the protection against I/R injury, whereby mTORC1 appears to be detrimental while mTORC2 is protective. The role of HDL and mTORC signaling in protecting against I/R in hypertensive rodents is however not clearly understood. In this study we investigated the involvement of mTORC1 and mTORC2 in HDL mediated protection against myocardial I/R injury in normotensive Wistar Kyoto (WKY) rats and spontaneously hypertensive rats (SHR)

Methods:

Hearts from WKY and SHR were subjected to I/R injury using a modified Langendorff system. Hemodynamics data were collected, and infarct size was measured. Rapamycin and JR-AB2-011 were used to test the role of mTORC1 and mTORC2, respectively. MK-2206 was used to test the role of Akt in HDL mediated cardiac protection. The expression levels and the activation states of mediators of mTORC1 and mTORC2 signaling and myocardial apoptosis were measured by immunoblotting and/or ELISA.

Results:

HDL protected hearts from WKY and SHR against I/R injury as indicated by significant improvements in cardiac hemodynamics and reduction in infarct size. HDL induced greater protection in WKY relative to SHR. HDL treatment attenuated mTORC1 signaling in WKY by reducing the phosphorylation of PS70K (mTORC1 substrate). In SHR however, HDL attenuated mTORC1 signaling by reducing the levels of Rag C (mTORC1 activator) and phospho-PRAS40 (mTORC1 inhibitor). HDL increased the phosphorylation of mTORC2 substrate Akt, specifically Akt2 isoform in SHR and to a greater extent in WKY. HDL induced protection was abolished in the presence of Akt antagonist and involved attenuation, caspases activation and cytochrome C release.

Conclusions:

HDL mediates cardiac protection via attenuation of mTORC1, activation of mTORC2-Akt2 and inhibition of myocardial apoptosis. HDL regulates mTORC1 and mTORC2 signaling via distinct mechanisms in normotensive and hypertensive rats. HDL attenuation of mTORC1 and activation of mTORC2-Akt2 signaling could be a mechanism by which HDL protects against myocardial I/R injury in hypertension.

Key Words: HDL; mTOR; Akt, ischemia, reperfusion, hypertension, apoptosis;

Funding Agency: the Research Sector (Grant No. YM04/18) and the School of Graduate Studies for funding the project

Newly Modified Tetrapyrroles: Promising Photosensitizers for Photodynamic Treatment of CancerAl-Harban AA* ¹, Ludmil B ¹, Shuaib AS ², Tovmasyan A ³¹ Department of Biochemistry, Faculty of Medicine, Kuwait University, ² Department of Physiology, Faculty of Medicine, Kuwait University, ³ Ivy Brain Tumor Center, Barrow Neurological Institute, Phoenix, AZ, USA.**Introduction:**

Photodynamic therapy (PDT) utilizes a light-absorbing compound (photosensitizer, PS) and irradiates with visible or near-infrared radiation at a specific wavelength. In the presence of molecular oxygen, this process generates singlet oxygen and other reactive oxygen species (ROS) that damage and kill target cells. The objective of this study was to investigate the effect of lipophilicity, position, and number of positive charges on cell proliferation, cellular uptake, quantum yield of singlet oxygen, and subcellular distribution.

Methods:

PSs with an identical tetrapyrrole core structure but varying positive charge states from 1+ to 3+, were investigated for cytotoxicity against the PII breast cancer cell line as a model system. Cell proliferation was determined by the sulforhodamine B assay and cellular uptake of PSs was assessed spectrophotometrically. Additionally, singlet oxygen quantum yield was determined using the chemical acceptor 9,10-anthracenediyl-bis(methylene)dimalonic acid (ABDA). Subcellular distribution was determined by confocal microscopy. All experimental procedures were replicated a minimum of three times, with each sample run in triplicates.

Results:

The number of positive charges, their position, and lipophilicity played key roles in cellular uptake and photo-cytotoxicity of the compounds. The most lipophilic PS 1+ had stronger PDT activity and uptake than the cis, trans amphiphilic 2+ and hydrophilic 3+. At 24hr incubation with PS, PS 2+ at trans conformation was more potent than its cis isomer, however, at the shorter incubation time of 1hr, the amphiphilic cis 2+ was most potent of all PSs. None of the compounds displayed dark toxicity at the tested concentrations. Singlet oxygen quantum yield was the highest for trans amphiphilic 2+, followed by the cis amphiphilic 2+, the hydrophilic PS 3+, and the lipophilic PS+. Partial co-localization in the mitochondria was observed for all four PSs, and both the lipophilic PS+ and hydrophilic PS 3+ also showed co-localization in the endoplasmic reticulum.

Conclusions:

We find the amphiphilic PS with 2+ in cis conformation has the highest photo-efficiency combined with low dark toxicity, making it a strong candidate for future PDT investigations. We also conclude lipophilicity, charge number, position, and molecule symmetry are all critical factors for determining PS uptake and subcellular distribution, and consequently, the outcome of PDT.

Key Words: Photodynamic Therapy; cancer; oxidative stress;

Funding Agency: College of Graduate Studies and Research sector (Grant YM08/20) and OMICSRU/RCF, projects SRUL02/13 & GM01/15, Kuwait University

Metallic Beauty: A Comprehensive Analysis of Heavy Metals in Cosmetic Products.

AlRasheedi NA *, AlRashidi FT

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

Introduction:

Women use at least 5 daily cosmetics, containing 160 ingredients, including heavy metals (HMs), some carcinogenic. These HMs, in direct skin contact, enter the bloodstream, accumulating in organs, and posing health risks. Despite Gulf Cooperation Council (GCC) standards, reports suggest neighboring countries exceed limits, raising health concerns. Our study aims to assess HM concentrations in commonly used cosmetics by Kuwaiti women.

Methods:

This study analyzed 52 cosmetic samples for HMs, categorized by market prices into high, intermediate, and low-end groups. Sample types included lipsticks (n=10), foundations (n=8), powders (n=6), blushers (n=8), eyeliners (n=5), eyebrow pencils (n=4), mascara (n=5), and concealers (n=6). Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-OES) facilitated the simultaneous analysis of 22 elements, each assigned a specific wavelength. HMs concentrations were calculated in parts per million (ppm). Data analysis employed Syngistix software (PerkinElmer, USA), with results compared to the GCC's defined acceptable values for HMs.

Results:

Aluminum predominated in all samples, especially in high-end powder and eye cosmetics (> 10,000 ppm). Intermediate-end products had one eyeliner with high aluminum levels (> 10,000 ppm). Low-end items showed increased aluminum in one blusher, two lipsticks, and one eyebrow powder (> 10,000 ppm). Nickel exceeded limits in 8 of 16 eye products. Arsenic surpassed limits in 1 of 4 intermediate-end and 9 of 10 low-end eye cosmetics. High-end arsenic levels were acceptable, while 2 of 4 low-end products exceeded limits. Lip cosmetics (high and intermediate) maintained acceptable concentrations.

Conclusions:

Analysis of 52 cosmetic samples revealed aluminum as the predominant heavy metal, notably surpassing 10,000 ppm in high-end powder and eye products. Nickel concentrations in eye items raised safety concerns, surpassing specified limits significantly. While arsenic generally meets acceptable limits, vigilance is warranted, particularly in low-end eye cosmetics. The findings emphasize the need for ongoing monitoring, stringent quality control, and regulatory measures in the cosmetic industry to ensure consumer safety.

Acknowledgment of research grants and facilities: Although not funded by specific grants, this project appreciates the invaluable support and resources extended by Kuwait University, which was crucial for the successful execution of our research.

Key Words: Heavy Metals; ICP-OES; Minerals;

Funding Agency: NONE

Can Neutrophil-Lymphocyte Ratio Predict the Development of Gestational Diabetes in Kuwait?

Eldesouqi SI *, AlRashidi FT, Shabeb MM

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

Introduction:

Gestational diabetes mellitus (GDM) is characterized by hyperglycemia during pregnancy, presenting risks for both mother and fetus. Persistent low-grade inflammation, driven by placental hormones and fat tissue, contributes to insulin resistance—the primary pathogenesis of GDM. The neutrophil-to-lymphocyte ratio (NLR), a hematological biomarker reflecting inflammatory balance, may predict GDM development. This study explores NLR as a predictive biomarker for GDM in Kuwait.

Methods:

In this prospective study, a cohort of 29 pregnant women participated; 13 were diagnosed with GDM for the first time, and 16 were healthy pregnant women. Data retrieval from archived records at AlSabah Maternity Hospital included medical records and complete blood count (CBC) results from participants' first and third trimesters who met the inclusion criteria. Statistical analysis employed one-way ANOVA for normally distributed data, presenting descriptive statistics as mean \pm standard deviation, $p < 0.05$ was significant. Ethical approval was obtained from the Ministry of Health and the Health Sciences Center.

Results:

In the GDM group, the mean age was 29.30 ± 1.46 , while the control group had a mean age of 31.18 ± 1.00 . Hematological parameter comparison revealed a significant increase in NLR during the first trimester for the GDM group ($p < 0.001$). Specifically, the GDM group exhibited a mean NLR of 5.49 ± 1.54 , contrasting with the control group's mean of 3.07 ± 0.67 . However, during the third trimester, no statistically significant difference in NLR was observed between the GDM (4.84 ± 2.14) and control group (4.02 ± 1.44) ($p > 0.05$). Additionally, the Pearson correlation test identified the correlation between NLR and HbA1c levels during both trimesters. A positive correlation emerged between GDM and NLR in the first trimester, with no correlation in the third trimester.

Conclusions:

The NLR measured in the first trimester emerges as a standalone predictor for GDM development. Given its cost-effectiveness, simplicity, and widespread availability, we advocate considering NLR as an early diagnostic tool for GDM among pregnant women in Kuwait.

Acknowledgment of research grants and facilities: While this project did not receive any specific grants, we acknowledge the invaluable support and resources provided by Kuwait University and the Kuwaiti Ministry of Health, which facilitated the successful execution of our research.

Key Words: Biomarker; Gestational Diabetes Mellitus; Neutrophil-Lymphocyte Ratio;

Funding Agency: NONE

Antifungal Photodynamic Therapy: Investigation of Porphyrin-based Photosensitizers Against *Candida albicans*

Kadhem ZH*, Alkafeef S, Benov L.

Departments of Biochemistry, College of Medicine, Kuwait University

Introduction:

The limited number of antifungal medications for treatment of fungal infections and development of resistance poses a demand for new therapeutic options. Photodynamic therapy (PDT) has demonstrated good antimicrobial activity and has been investigated as an alternative to conventional antifungal medications. It is based on the use of a non-toxic light-absorbing compound, called a photosensitizer (PS), which upon illumination with visible light produces reactive oxygen species that kill the target cells. Success of PDT depends mainly on the properties of PSs, stimulating the search for new, more efficient compounds. The aim of this study was to investigate the effect of lipophilicity, configuration, number and position of charges on PDT inactivation of *Candida albicans*.

Methods:

A series of porphyrin-based PSs, carrying from zero to four positive charges on the periphery of the tetrapyrrole ring, were screened for PDT efficiency against *Candida albicans*. Yeast viability was determined by plating and colony counting, and ability to proliferate was measured by assessing increase in cell density. Cellular uptake of the PSs was determined spectrophotometrically, and subcellular distribution was visualized using fluorescent confocal microscopy.

Results:

Results demonstrated that the most hydrophilic PS with 4+ charges and an amphiphilic PS with 2+ charges at cis position were the most effective at inhibiting *C. albicans* activity. In contrast, an analogous amphiphilic PS with 2+ charges at the trans configuration displayed low PDT efficiency. The two isomers differed similar way with respect to cellular uptake. None of the PS showed dark toxicity.

Conclusions:

Antifungal PDT efficacy is determined by lipophilicity, number, and position of positive charges on the PS molecule, likely through influence of PS cellular uptake and subcellular distribution. Funding Agencies: Kuwait University College of Graduate Studies and Research Sector project YM05/22 and Kuwait University OMICSRU/RCF project GM01/15.

Key Words: *Candida albicans*; Photodynamic therapy; Photosensitizer;

Funding Agency: Kuwait University College of Graduate Studies and Research Sector project YM05/22 and Kuwait University OMICSRU/RCF project GM01/15.

Hdl Attenuates Ang II-At1r-Egfr Signaling and Reverses Vascular Remodeling In Spontaneously Hypertensive Rats

AL-Jarallah A¹, Kalakh S^{1,2}, Akhtar S³, Yousif M⁴

Departments of Biochemistry¹ and Pharmacology⁴, College of Medicine, Kuwait University, Kuwait, School of Arts & Sciences, American International University, Al Jahra, Kuwait², College of Medicine, QU Health, Qatar University, Doha, Qatar³

Introduction:

"Angiotensin II (Ang II) signaling via activation of the angiotensin II type 1 receptor (AT1R) and transactivation of the epidermal growth factor receptor (EGFR) has been shown to enhance VSMCs proliferation contributing to vascular remodeling evident in spontaneously hypertensive rats (SHR) aorta. High-density lipoprotein (HDL) has been shown to reduce blood pressure in SHR, however the precise mechanism(s) is yet to be determined. We propose that HDL attenuates Ang II-AT1R-EGFR signaling and reverses vascular remodeling in SHR."

Methods:

Wistar Kyoto rats (WKY) and SHR were treated with HDL in vivo for one week. Vascular remodeling was histologically examined. VSMCs proliferation and the expression levels of AT1R, EGFR, extracellular signal regulated kinases 1/2 (ERK1/2), scavenger receptor class B type-I (SR-BI) and its adaptor protein PDZK1 were examined by immunofluorescence. VSMCs proliferation was further examined in vitro.

Results:

In vivo HDL treatment reduced blood pressure in SHR, increased aortic lumen diameter, reduced media thickness to lumen diameter ratio and decreased collagen contents in SHR. Furthermore, HDL treatment decreased the number of proliferating VSMCs and α -smooth muscle cell actin, reduced the expression of AT1R and EGFR and increased the expression of SR-BI adaptor protein, PDZK1, in SHR aorta. In isolated VSMCs, HDL attenuated Ang II-induced proliferation by reducing AT1R expression and decreasing Ang II-induced transactivation of EGFR. HDL effects were SR-BI dependent and were mimicked by different HDL subpopulations, reconstituted HDL, and lipid free apolipoprotein A-I.

Conclusions:

HDL attenuates Ang II-AT1R-EGFR signaling, reduces VSMCs proliferation, and reverses vascular remodeling in SHR. HDL modulation of vascular remodeling could be one mechanism by which HDL reduces blood pressure in SHR.

Key Words: HDL, angiotensin II, SR-BI, ; vascular remodeling, ; proliferation ;

Funding Agency: MB02/16

Read correction significantly improves eukaryotic protein detection in ONT readsHussain A Safar¹, Fatemah Alatar², Abu Salim Mustafa³

¹ OMICS Research Unit, Health Science Centre, Kuwait University, Kuwait; ² Serology and Molecular Microbiology Reference Laboratory, Mubarak Al-Kabeer Hospital, Ministry of Health, Kuwait; ³ Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait

Introduction:

Background: Whole-genome sequencing of eukaryotes is crucial for species identification, gene detection, and protein annotation. Oxford Nanopore sequencing serves as an affordable and rapid platform for sequencing eukaryotes; however, the relatively higher error rates require computational and bioinformatic efforts to produce more accurate genome assemblies. In this study, we evaluated the effect of three read correction tools on the genomes of four eukaryotic pathogens concerning completeness, gene detection, and protein annotation.

Methods:

Reads generated by Oxford Nanopore Technology (ONT) for four eukaryotic organisms—*C. albicans*, *C. gattii*, *S. cerevisiae*, and *P. falciparum*—were assembled using minimap2 and subsequently underwent three rounds of read correction using flye, medaka, and racon. The resulting consensus FASTA files were compared in terms of total length (in base pairs), genome completeness, gene detection, and protein annotation using QUAST, BUSCO, BRAKER1, and InterProScan, respectively.

Results:

Genome completeness was found to be dependent on the assembly method rather than the read correction tool. However, medaka outperformed flye and racon in this regard. In gene detection, racon significantly outperformed flye and medaka, while both racon and medaka showed significant improvements over flye in terms of protein annotation.

Conclusions:

Our findings demonstrate that three rounds of read correction significantly impact gene detection and protein annotation, with these improvements being dependent on assembly quality rather than assembly completeness.

Key Words: WGS; Eukaryotes; ONT;

Funding Agency: Not applicable

Atrial Fibrillation, Kuwait Single Center Registry

Sayed Almoosawy, Joud Albalool, Ebram Shenoda
Al Dabbous Cardiac Center, Adan Hospital, Kuwait

Introduction:

Management of AF is rapidly evolving to eradicate the malignant rise in disease burden and advocate for rhythm control to prevent longterm sequalae. National data are scarce. This retrospective study sheds the light on current practices from a large tertiary hospital in Kuwait. Objectives :prevalence of rhythm control strategy (RC)in management of AF .Assess Burden of comorbidities in patients with AF & appropriate oral anticoagulation prescription.

Methods:

Using patients electronic medical records, only patients with evidence of AF diagnosis were included. Baseline demographic and clinical data were collected. Also laboratory, transthoracic echocardiography (TTE) results. Statistical analysis was performed using Python 3.10. Categorical variables were presented as percentages and were assessed by the chi-squared test. Continuous variable reported as median values and compared using Mann-Whitney-Wilcoxon test. A p-value <0.05 was considered statistically significant.

Results:

The study included 395 patients ; Median age of 67 year [IQR 57-76] with 49% females. Patients with paroxysmal AF constituted 37% of our population. Age of patients offered RC was 64 years [IQR: 56-71] compared to 68 years [IQR :58-77] (P 0.004) in rate control (RA) strategy group. Females constituted 53 % of the RA group and citizens contituted 50% of population in both groups. Median CHADSVASc score 3 [IQR 2-4]in RC and 4 [IQR 2-5] in the rate control (RA) . LA length was larger in the RA compared to RC group. There was a significant difference in the type of oral anticoagulants prescribed. Warfarin was the most commonly prescribed medication. Of patients receiving reduced dose apixaban & rivaroxaban only 12% & 10% respectively met the reduced dose criteria. More than 60% of patients with AF in our study follow up in cardiology clinics. Speciality of the outpatient clinic follow up did not significantly affect management strategy. Despite lack of statistical significance, hospitalization for heart failure was more in RA than RC patients. Exclusion of patients with valvular AF only resulted in a significant difference in median CHADSVASc score between both groups.

Conclusions:

RC strategy consituted 27% of management of patients with AF with moderate stroke risk profile. Less patients are followed by electrophysiology specialists. A larger-scale study would be of a great value to investigate the trend towards increased HF hospitalizations in this cohort.

Key Words: Atrial Fibrillation; Rhythm control ; Ablation ;

Funding Agency: none

Knowledge, Attitudes, and Use of Weight Loss Medications (GLP-1 Agonists) of the General Population in Kuwait

Abed BS* ¹, Al-Ajmi AM ¹, Al-Enezi AF ¹, Al-Ajmi MA ¹, Al-Zufairi OF ¹, Al-Msaileem SD ¹, Al-Sabah RA ²

¹ 5th-year Medical Students, Faculty of Medicine, Kuwait University, ² Department of Community Medicine and Behavioural Sciences, Faculty of Medicine, Kuwait University

Introduction:

The prevalence of overweight and obesity is major public health issue in Kuwait. Several Weight loss medications (WLMs) like GLP-1 agonists are FDA approved as a pharmacological intervention to combat this epidemic. However, improper use of WLMs remains to be a problem. The study aimed to assess the knowledge and attitudes of the general adult population in Kuwait towards WLMs, to estimate the prevalence of WLMs use, and explore associations between WLMs and sociodemographic variables.

Methods:

This cross-sectional study was conducted using a self-administered questionnaire. A total of 498 adults aged 18 and above were recruited from the ministries complex and two major malls in Kuwait (Avenues and Assima mall). The questionnaire consisted of 5 sections: sociodemographic characteristics, lifestyle-related questions, knowledge regarding WLMs, attitude towards WLMs, and use of WLMs. Chi-square analysis and logistic regression were utilized to determine the correlation and association between sociodemographic characteristics with knowledge, attitude, and use of WLMs.

Results:

Of the surveyed participants, 61.4% showed poor knowledge, 52.3% demonstrated a negative attitude towards WLMs, and 22.1% reported the use of at least one type of WLM. Multivariate Logistic regression analysis of factors related to knowledge of WLMs showed that the significant covariates were sex, total monthly income, occupation, and the use of WLMs.

Conclusions:

Our study results showed that most participants had poor knowledge of and negative attitude towards WLMs. Approximately, 1 in 5 participants reported WLM use and 50% of them acknowledged that they acquired the drugs without a physician's prescription. Public health measures are encouraged to promote WLM awareness and regulate their safe use.

Acknowledgments: We would like to express our sincerest gratitude and thanks to Dr. Reem Al-Sabah and Mr. Abdullah Al-Majran, who for the entire duration of our study provided us with proper help, support, and guidance. We also would like to thank all the ministries and malls that granted us permission to visit their venues and carry out our data collection for their cooperation. Finally, we would like to thank all of our participants for giving us the opportunity to conduct this study.

Key Words: *Weight Loss Medications; Glucagon-like Peptide 1 Agonists ; General Population in*

Funding Agency: *NONE*

Prevalence of smoking, nicotine dependency and associated factors among Kuwait University students

Alawwad D*, Alsahli H, Almoosa M, Almutairi R, Alrashidi D, Awadh A, Akhtar S
5th year medical student, COM,

Introduction:

Nicotine, the primary psychoactive component in tobacco products, is highly addictive, leading to nicotine dependence (ND). ND prevalence varies worldwide. Kuwait lacks published data on the ND burden. Therefore, this cross-sectional study i) assessed the prevalence of ND among young smokers in Kuwait and ii) examined the factors associated with ND among young adults.

Methods:

In October 2023, this study was conducted among Kuwait University students, and data were collected using a self-administered questionnaire. ND was assessed using the Fagerstrom Test for Nicotine Dependence. Prevalences of smoking and ND were computed in all participants and among smokers, respectively. Factors investigated included sociodemographics and smoking-related practices. The multivariable logistic regression model was used to identify factors significantly and independently associated with ND status.

Results:

Of 1010 participants, 53.9% were 18-20 years old, and 69.8% were females. The prevalence of smoking and ND was 22.4% and 56.6% respectively. Furthermore, the respondents were significantly ($p = 0.002$) more likely to be nicotine-dependent if they had started smoking younger than 11 years of age (adjusted OR = 5.19; 95% CI: 1.02 – 26.38) or 11-14 years (adjusted OR = 3.04; 95% CI: 1.51 – 6.10). Furthermore, respondents had significantly ($p < 0.001$) higher odds of ND if they had been smoking for six or more years compared with those who had been smoking for less than one year (adjusted OR = 8.58; 95% CI: 3.37 – 21.83).

Conclusions:

In summary, a high prevalence (22.4%) of smoking in the total sample and a very high prevalence of nicotine dependence (56.6%) among the smokers in the sample was recorded. Smoking initiation at an early age and the longer smoking duration were significant determinants of nicotine dependence among smokers in this study. Focused intervention to prevent smoking initiation or smoking cessation in this vulnerable population is suggested. If implemented, future studies may evaluate the effect of such efforts.

Key Words: Tobacco smoke, ; Nicotine dependency ; Young adults;

Funding Agency: None

Prevalence and Factors Associated with Functional Foot Care Among Patients with Diabetes in Kuwait.

Al-Dalmani MA^{*1}, Al-Batineh AN², Shukkur M², Al-Mutairi RB¹, Al-Shammari MG¹, Al-Rashid EA¹, Al-Otaibi TM¹, Al-Dousari AM¹.

¹6th year medical student, Faculty of Medicine, Kuwait University, ²Department of Community Medicine, Faculty of Medicine, Kuwait University.

Introduction:

Diabetes is now an epidemic affecting both developed and developing countries. Globally, several different studies support the relationship between diabetes and foot complications. The aim of this study is to assess the prevalence of foot care among patients with diabetes in Kuwait and to evaluate the association between footcare practices and several socio-economic and demographic factors.

Methods:

Functional Foot care was the primary outcome measure and was defined using the Nottingham Assessment of Functional Footcare (NAFF), which is widely used to screen for foot care practices. Data were also collected through a questionnaire, involving three sections: socioeconomic and demographic variables, diabetes-related factors and lab investigations, and NAFF as a functional foot care assessment tool. Multivariate logistic regression modeling was used to assess the relationship between functional foot care and a number of covariants. This is a community-based cross-sectional study that covered all governorates in Kuwait. The study enrolled 232 eligible participants with diabetes aged 18 and above.

Results:

The prevalence of poor foot care among patients with diabetes was found to be 73% according to the NAFF score cut-off value (≤ 50), and 27% of the participants had a good foot care score >50 . Health regions were significantly associated with NAFF score with a p-value of 0.023. Smoking status and HbA1c were not significantly associated with functional foot care.

Conclusions:

This cross-sectional study suggests an alarmingly high prevalence of poor foot care among patients with diabetes aged 18 and above in Kuwait. The findings of this study demonstrate that the age and duration of diabetes were not significant. Surprisingly, body mass index was not statistically significant with functional foot care. Health care providers need to educate and motivate diabetic patients on proper foot care practice.

Acknowledgements: We gratefully thank our supervisors for their invaluable guidance throughout this research. We would also like to thank the dean of the faculty of medicine, health district directors, and Dasman Diabetes Institute.

Key Words: *diabetes mellitus, functional foot care., NAFF., Kuwait.,*

Funding Agency: *NONE*

The prevalence, knowledge and beliefs about irritable bowel syndrome among Kuwait University students

Al-Mutairi NF*, Al-Mutairi NH, Ziyab AH

Department of Community Medicine and Behavioral Sciences, College of Medicine, Kuwait University

Introduction:

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder characterized by altered bowel habits and abdominal pain in the absence of detectable structural abnormalities. IBS poses substantial burden on patients and health care services. Therefore, this study sought to assess: i) the prevalence of IBS among Kuwait university students, ii) the knowledge about etiology, symptoms, diagnostic and treatment modalities regarding IBS, and iii) the attitudes and beliefs about IBS.

Methods:

A cross-sectional study was implemented by enrolling undergraduate students from Kuwait University. A structured study questionnaire was used to collect data. Descriptive analyses were conducted to calculate frequencies and proportions of categorical variables. Prevalence estimates of IBS, and knowledge about etiology, symptoms, diagnosis and treatment modalities and beliefs about IBS were computed.

Results:

A total of 837 participants were enrolled into the study, with the majority being Kuwaitis (88.8%) and females (93.5%). The prevalence of self-reported physician-diagnosed IBS was estimated to be 25.4%. Of the total study sample, 94.4% of participants reported anxiety to be a cause of IBS, 95.3% stated that abdominal pain is a symptom of IBS, 88.2% reported that colonoscopy is used to diagnose IBS, and 83.5% reported regular exercise is used to manage and treat IBS. Regarding participants beliefs about IBS, majority of participants report that genetic factors are a cause of IBS (83.2%). Moreover, 69.3% of participants believe that IBS increases the risk of developing inflammatory bowel disease.

Conclusions:

This study showed that a large proportion of university students have received a diagnosis of IBS. Many participants had misconceptions regarding IBS. Thus, this study highlights the importance of public's health awareness about IBS.

Key Words: Irritable bowel syndrome ; Knowledge ; Beliefs ;

Funding Agency: None

Factors Affecting the Patient's Decision-Making Process When Selecting Physicians to Receive Medical Care

Asbeutah SA¹, Shaaban AM¹, Alhashime KM¹, Allaqawi MJ¹, AlRoumi SS¹, Moradi NS¹, Almazyed DM¹, Alonaizi LA¹, Alshaiji AJ¹, and Almousa ZM²

¹Seventh year medical student, Department of Community Medicine, Faculty of Medicine, Kuwait University, ² Department of Community Medicine, Faculty of Medicine, Kuwait University

Introduction:

The physician selection process by potential patients is of paramount importance to facilitate a harmonious doctor-patient relationship. The primary objective of our study was to evaluate patient priorities when selecting a physician in Kuwait. We also aimed to explore patient characteristics that affect the decision-making process when selecting a physician. Our final objective was to study whether the physician selection process differs when patients seek different specialties, and whether social media platforms play a role.

Methods:

This survey-based cross-sectional study utilized a questionnaire to obtain information about what respondents consider important in selecting a physician. The study recruited participants using snowball sampling, in which research participants recruit future subjects by forwarding the survey across social media. Participants had to be 18 or older and residing in Kuwait. Responses were collected over 6 days from 10/04/2022 to 16/04/2022.

Results:

The attributes that respondents scored important were specialization (8.78/10), waiting time for an appointment (8.47/10), experience (8.14/10), and malpractice records (8.33/10). Respondents did not place a high importance on personal characteristics, such as religion (2.72/10), ethnicity (2.7/10), or nationality (3.83/10). When looking at gender preference by subspecialty, however, most respondents prefer a female OBGYN (60%) and a male urologist (54%). Only 46 percent of respondents considered social media presence to be important when choosing a cosmetic surgeon, but females were twice as likely as males to consider social media important (adjusted OR 2.4:1). There was also a strong preference for the private sector in cosmetic specialties and OBGYN. Kuwaiti nationality, high income, and having insurance were associated with preference for the private sector. When looking for a physician, recommendations from friends is the most frequent source of information people used (67%), followed by referrals (64%). Instagram was the most used social media platform, with 34 percent of respondents using it frequently.

Conclusions:

This study demonstrated that patients in Kuwait value professional factors and convenience above other factors when choosing a physician, and that word of mouth is mainly used to look for a physician.

Key Words: Selecting a physician; Choice of physician; Choice of physician;

Funding Agency: NONE

Knowledge of Kindergarten Teachers About Autism in Kuwait

Ghadeer Aldallal, Shahad Redha, Nourah Alotaibi, Sharifa Aljohar, Hawraa Alabdullah, Tahraa Lari, Ali H. Ziyab

Department of Community Medicine and Behavioral Science, College of Medicine, Kuwait University

Introduction:

Autism is a neurological and developmental disability, affecting communication and behavioral abilities, which mostly develops early in life. Therefore, kindergarten teachers play a significant role in early identification of children with autism signs. The aim of our study was to assess knowledge of autism among kindergarten teachers and evaluate associated factors in Kuwait.

Methods:

A cross-sectional study enrolled kindergarten teachers in Kuwait's six governorates using stratified cluster sampling method. Data collection lasted from October 15 to 19, 2023. Knowledge and awareness questions were adapted from previous studies. Three knowledge/awareness scores (etiology awareness score, symptoms and signs knowledge score, and socio-demographic awareness score) were calculated for each participant by summing the percentage of knowledge items that each respondent answered correctly. Chi-squared test was used to assess differences in frequencies, and t-test was applied to test differences in scores mean according to prior training on frequencies, and t-test was applied to test differences in scores mean according to prior training on autism status.

Results:

A total of 1104 public kindergarten teachers were enrolled, covering 72 kindergartens across Kuwait. The majority of the teachers heard about autism (98.3%), however, only 12.9% received training focused on autism. About 37.1% of the teachers correctly disagreed that vaccination can cause autism. Additionally, a large proportion of participants (84.1%) were aware that children with autism do not look at other's eyes. Only 8.6% of respondents correctly answered that the majority of autistic cases suffer from mental retardation, while 70.7% of the teachers reported that autism appears at the early years of life. The three calculated scores were higher among teachers who have received prior training on autism compared to those who did not receive such a training (p-values <0.05).

Conclusions:

Our study provided insights on knowledge and awareness of kindergarten teachers on autism, and it revealed clear misconceptions that need to be corrected. Furthermore, the disparities between the knowledge/awareness of teachers who have received autism training and those who have not highlight the need for improved education and training programs.

Key Words: Autism; Knowledge; Kindergarten Teachers;

Funding Agency: None

Burden of Eczema Among Working Adults in Kuwait and its Association with Work Performance and Mental Health

Kazem LM*, Alawadhi AA, Alkandari FA, Hussain MJ, Dashti RH, Almeskati HF, Ziyad A

6th year medical students, Faculty of Medicine, Kuwait University, Dept of Community Medicine, College of Medicine

Introduction:

Eczema, also known as atopic dermatitis (AD), is a chronic relapsing skin disease that has a substantial economic, psychosocial, and clinical burden. Globally, eczema is estimated to affect 1 in 10 adults, but there is great heterogeneity across countries. In Kuwait, there is a lack of epidemiological data regarding eczema among adults. Therefore, this study aimed to estimate the prevalence of eczema among the working adult population in Kuwait and assess the severity and impact of eczema on quality of life and its associations with mental health impairment.

Methods:

This cross-sectional study recruited a total of 1196 adults working in ministries in Kuwait using cluster sampling. Current (in the past 12 months) eczema was defined according to the modified UK working party criteria. Moreover, eczema severity was measured using the Patient Oriented Eczema Measure (POEM) and AD-related quality of life was assessed using the dermatological life quality index (DLQI). Depression and anxiety symptoms were ascertained using the Patient Health Questionnaire-9 (PHQ-9) and the General Anxiety Disorder-7 (GAD-7) scores, respectively. A multinomial logistic regression model was used to estimate adjusted odds ratios for the association between current eczema status and anxiety and depression symptoms.

Results:

The prevalence of current eczema was estimated to be 9.3%. The majority of eczema subjects had an adulthood-onset form, with 41% reporting onset at age 20 years and above. According to POEM scoring of eczema severity, the majority (51%) were classified as moderate eczema, while mild and severe eczema groups were 15% and 29%, respectively. Based on the DLQI, more than half of eczema subjects reported that eczema had a very large (40%) to extremely large effect (15%) on their health-related quality of life. Eczema was associated with increased odds of having severe depression (OR = 3.28; 95% CI: 1.51-7.10) and severe anxiety (OR = 5.23, 95% CI: 2.79-9.82).

Conclusions:

Eczema affects a large proportion of working adults in Kuwait and impairs their quality of life. Symptoms of depression and anxiety were increased in participants with eczema compared to those without eczema. The results of this study highlight the importance of comprehensive bio-psycho-social interventions that aim to alleviate the burden on eczema.

Key Words: Eczema; Cross-sectional; Mental health;

Funding Agency: NONE

Knowledge About and Attitudes Towards HPV Infection and HPV Vaccination Amongst Adults in Kuwait.

Yassin BM* ¹, Kandari NA ¹, Alkadneri AM ¹, Almajed YA ¹, Mohammad AA ¹, Alturaifi SA ¹, Ahmad FS ¹, Bastaki H ².

¹ 6th year medical student, Faculty of medicine, Kuwait University; ² Department of Community Medicine, Faculty of medicine, Kuwait University

Introduction:

Human Papillomavirus (HPV) infection is the most common viral sexually transmitted disease. A safe and effective vaccine is available but is not yet part of the national vaccination program. This cross-sectional study aimed to assess the level of knowledge and attitudes of individuals aged 21 years and above about HPV infection and its vaccine, as well as their acceptance to take it for themselves (ages 9 to 45 years) or their children, provided a safe and effective vaccine was offered by the Ministry of Health (MOH).

Methods:

This cross-sectional study was conducted using a questionnaire offered to adults in both public and private sectors at 7 recruitment sites. The questionnaire assessed knowledge, attitudes, and acceptance. A total of 678 responses were collected. Chi-square analysis and logistic regression were utilized to determine the correlation and association of studied variables with knowledge of and attitudes towards HPV as well as acceptance of its vaccine.

Results:

About 18.1% of participants displayed good knowledge, 81.9% had good attitudes, and 48.5% accepted the HPV vaccine for themselves, with 37.7% willing to vaccinate their children. After adjustment, female gender (aOR:2.71, 95% CI:1.27-5.78), working in MOH (aOR:5.80, 95% CI:2.23-15.1), and being divorced/widowed (aOR:3.31, 95% CI:1.18-9.25) were positively associated with good knowledge. Female gender was associated with more negative attitudes (aOR:0.35, 95% CI:0.18-0.67). Positive attitudes were associated with acceptance of the vaccination for themselves (aOR:5.75, 95% CI:2.69-12.3) and their children (aOR:3.69, 95% CI:1.87-7.28). Having good knowledge (aOR:2.22, 95% CI:1.18-4.18) was positively associated with acceptance of vaccination of their children, whereas being a mother was negatively associated (aOR:0.51, 95% CI:0.27-0.97).

Conclusions:

Despite high levels of positive attitudes towards HPV and its vaccination, the low overall levels of knowledge and acceptance of HPV and its vaccine highlight the need for increased public health measures to raise the awareness among the population of Kuwait.

Funding and Acknowledgements: We would like to express our sincere thanks to Dr. Hamad Bastaki and Mr. Abdullah Al-Majran for their help and guidance. We would also like to thank all the participants, without whom this study would not have been successful. This study did not receive any external funding.

Key Words: HPV Infection; Attitudes in Kuwait; Vaccination Knowledge;

Funding Agency: NONE

The Effect of Scanning the Palate with Different Palatal Vault Depths and Implant Numbers on the Accuracy of Complete-arch Implant Digital Impressions

ALI KA ¹, Limmechokchai SU ², Savignano RO ², Goodacre CH ²

¹ Department of restorative Sciences, College of Dentistry, Kuwait University; ² General dentistry department, School of Dentistry, Loma Linda University³ Center for dental research, School of Dentistry, Loma Linda University, ⁴ Implant department, School of Dentistry, Loma Linda University

Introduction:

Whether stitching the palate during maxillary full arch intraoral digital scans of implants would improve scanning accuracy in jaws with different palatal vault depths is unclear. Moreover, implant number effect on the need to scan the palate has not been investigated. The aim of this study is to investigate the trueness and precision of implant full arch scans with and without stitching the palate with different palatal vault depths and the effect of implant number on the accuracy of palate-less full arch implant digital impression.

Methods:

Edentulous models with three different palatal depths (shallow, medium, and deep) and different implant numbers (4 and 6) were scanned 7 times: with and without the palate. Then, all scans were superimposed over the reference digital model from which the physical models were printed using geomagic software. Root mean square values of the deviations were considered to get trueness and standard deviations were considered for precision. ANOVA test and Tukey post hoc tests were used for statistical analysis.

Results:

The results showed no statistically significant difference between trueness ($p = .494$). and precision ($p < .001$) with scanning technique (with palate vs palateless) or implant number. Therefore, it is recommended to do a palate-less scan since it is efficient and convenient.

Conclusions:

In conclusion, the accuracy of implant edentulous full arch scans was not affected whether the palate was scanned or not in shallow, medium, or deep palatal vaults. The implant number did not affect the accuracy of full arch edentulous maxillary implant scans or affect the need to scan the palate.

Key Words: implant; digital; impression;

Funding Agency: No funding

Assessment of Stress-Related Salivary Biomarkers Levels in Clinical Dental Students at Kuwait University

AlKazemi G* ¹, AlAbraheem Z ¹, AlOmari Q ² Faridoun A ³

¹ 7th year dental student, College of Dentistry, Kuwait University; ² Department of Restorative Sciences, College of Dentistry, Kuwait University; ³ Department of General Dental Practice, College of Dentistry, Kuwait University

Introduction:

With the advancement of modern technology, saliva can be utilized to monitor the physiological changes of the human body both in the oral cavity and systemically, through the measurement of salivary biomarkers. The aim of this study was to analyze the salivary level of two biomarkers: salivary cortisol and alpha amylase at the beginning of the academic semester, as a baseline measure, and during the final objective structure clinical examination (OSCE), as a stressful condition. Moreover, to compare the participants' subjective stress perception based on the State Trait Anxiety Inventory questionnaire (STAI).

Methods:

Forty-nine dental students in years 5 to 7 were enrolled in the study. Two salivary samples were collected throughout the research process. The first sample was collected during the beginning of the academic semester as a baseline. The second sample was collected on the day of the OSCE. The students were also asked to complete the STAI questionnaire at the two time points. The levels of the two biomarkers were measured using Cortisol Enzyme Immunoassay Kit and Alpha-Amylase Kinetic Enzyme Assay Kit (Salimetrics, State College, PA) following the manufacturer's instructions. Paired t-tests were conducted to compare values of all three measures between the baseline and the stress condition.

Results:

The level of salivary cortisol ($\mu\text{g/dL}$) during stress was higher than that at baseline (0.81 ± 0.47 and 0.30 ± 0.23 , respectively). Similarly, the level of alpha amylase (U/ml) was higher during stress than that at baseline (207.17 ± 99.07 and 86.6 ± 54.98 , respectively). Additionally, the total scores for the STAI questionnaire were higher during the OSCE compared to the baseline measurement (60.34 ± 12.0 vs. 39.88 ± 12.19). All the differences between the stress condition and the baseline were statistically significantly different ($P < 0.001$).

Conclusions:

Our findings demonstrated a significant elevation in the concentrations of cortisol and alpha amylase during the OSCE periods in contrast to baseline levels. These findings are consistent with the increased STAI scores observed during the OSCE.

Funding: This research is self-funded.

Acknowledgement: We would like to thank clinical year dental students at Kuwait University for participating in this research. We would also like to thank Mohammed Arshad Reza from the Faculty of Medicine Research CORE Facility at Kuwait University for his help during the processing of samples.

Key Words: salivary biomarkers, salivary cortisol, salivary α ; stress; dental students;

Funding Agency: None

The Effect of Professional-Mechanical-Plaque-Removal on The Gingival Crevicular Fluid Levels of Interleukin 1-Beta Among Electronic Nicotine Delivery Systems Users and Non-Smokers with Gingivitis

Alkhalifah AB* ¹, Alfuraih NT¹, Joseph B², Baskaradoss JK³

¹ Undergraduate Dental Program, Faculty of Dentistry, Kuwait University; ² The University of Western Australia (M512), 35 Stirling Highway, 6009 Perth Australia; ³ Department of Developmental and Preventive Sciences, Faculty of Dentistry, Kuwait University

Introduction:

IL-1beta is a common biomarker to be analyzed while studying the inflammatory response of the periodontium to smoking. To date, there are no published studies that investigated the effect of ENDS use among young adults with gingivitis. Objectives: This study aims to compare the effect of professional-mechanical-plaque-removal (PMPR) on the expression of IL-1beta in the gingival crevicular fluid (GCF) among electronic nicotine delivery system (ENDS)-users and non-smokers (NS) with gingivitis.

Methods:

Self-reported current ENDS users and NS with gingivitis were included in this study. A questionnaire was used to collect demographic data and smoking history. PMRR was performed for all patients at the baseline visit (T0). Clinical measures, periodontal parameters [probing depth (PD), plaque index (PI), and bleeding on probing (BOP)], and GCF IL-1beta were measured at T0, after 1-week (T1) and after 3 weeks (T2).

Results:

38 individuals (18 NS and 20 ENDS users) participated in this study. PD was significantly higher in ENDS-users at baseline. In contrary, PI and BOP were similar in all groups at baseline. At T1 the PI was significantly lower for NS ($p=0.045$). At T2, there was no significant difference between the groups for any of the parameters assessed. For ENDS-users, the BOP was significantly lower at T1 as compared with their baseline values. For NS, the BOP at T1 and T2, and the PI at T1 were significantly lower as compared with the groups baseline values. There was no difference in the GCF IL-1beta levels in NS and ENDS-users at baseline, T1, and T2. At T2, there was a significant reduction in IL-1beta ($p < 0.05$) than baseline in both groups.

Conclusions:

Both groups responded similarly to PMPR. GCF IL-1beta levels were significantly higher at baseline ($P < 0.05$) as compared with their levels at T1 and T2 for both groups.

Acknowledgements: The authors thank the Oral Pathology Laboratory and the Oral Microbiology Research Laboratory (SRUL 01/14) for utilizing the equipment and other resources. The authors also thank all the participants in this study.

Key Words: E-Cigarettes ; Gingivitis ; Interleukin-1 beta ;

Funding Agency: NONE

Hidden Sugar for age group from Birth to Six Years Old-icy hills theory

Loulwah Al Mulla, Jaghan Kumar
MOH

Introduction:

Excess consumption of added sugars has been associated with a variety of health problems, dental caries, especially among children. Added sugars considered as the most important risk factor for early childhood caries. But there is very less information about the amount of added sugar, especially in children's food products in Kuwait. This study examined the presence and types of added sugars in the packaged food and beverage children's products available at a major Kuwaiti grocery retailer.

Methods:

All the major super market chains in Kuwait were enlisted. From this list, one supermarket chain was randomly selected using the lottery method. All the outlets of the selected super market chain in Kuwait was obtained by contacting the management of the super market chain. One outlet was randomly selected from the list for the collection of data. We used World Health Organization's (WHO's) definition of free sugars to identify added sugars in the current study. The nutrition facts table of all the children food items available for sale in November of 2023 were examined. We searched for 30 different added sugar terms in the ingredients lists of the food products. General terms such as "sugar" or "syrup" contained multiple varieties of added sugars. We standardized this information to total grams of sugar per 100 g or 100 mL of the product, using the serving size and serving size unit of measurement of each product. The food products were sorted into 10 categories and 30 subcategories. We used SPSS software version 22.0 to perform descriptive statistical analyses (counts, means, standard deviations and proportions) and to conduct t- tests to analyze differences in total sugar between products with and without added sugars.

Results:

We observed that the use of diverse terminology posed a challenge correctly identifying whether a product contains added sugar. We found that about two-thirds of the packaged children's food products examined in the supermarket retailer contained added sugar. Cerelac milk, the most popular baby food item had surprisingly high levels of added sugar. Many other products had high amounts of hidden sugars, which was also identified. The presence of added sugar was highest in the expected food products, including candy, sweet bakery products and soft drinks, but was also very high in food products that many consumers choose as "healthy" options, such as snack bars, cereal and juice. In general, mean amounts of total sugar were highest in the food categories that had a high presence of added sugar.

Conclusions:

A high proportion of the pre-packaged children's foods and beverages contain added sugar. Regular consumption of these products puts the child at high risk of development of dental caries. There is an urgent need to raise the awareness of the harmful effects of added sugar in children's products, both, among parents and policy makers.

Key Words: Hidden sugars; Lactose; Added sugar;

Funding Agency: None

Gingival Depigmentation using diode laser vs bur abrasion: bA Split-Mouth Randomized Clinical Trial- Pilot Study

Qali MQ¹, Al-mesbah SN², Al-Mulla AO³

¹Department of Surgical Sciences, College of Dentistry, Kuwait University

² Department of Restorative Sciences, College of Dentistry, Kuwait University

³ General Dentist, Ministry of Health, Kuwait

Introduction:

Gingival health and appearance are essential components of a charming smile. Gingival hyperpigmentation specifically can be an esthetic concern for some patients. Aim and objectives: To compare the clinical results, relapse and patient related outcomes of gingival depigmentation procedure using diode laser vs bur abrasion.

Methods:

This study is a split mouth randomized clinical trial. Inclusion criteria included systemically healthy subjects, aged 21 years or older with physiologic maxillary gingival hyperpigmentation. The exclusion criteria comprised of patients having plaque score >20% or periodontal disease. All patients completed phase one therapy that included oral hygiene instruction and full mouth scaling. Maxillary quadrants of each participant were randomly assigned into two groups via flipping a coin, a laser side, and an abrasion side. Patients were scheduled to be seen at 2 weeks, 3 months, 6 months and 1-year recall visits. Clinical examination, periodontal charting and intraoral photographs were taken on each follow up visit. Patients were also asked to report on pain and discomfort at the 2 weeks follow up using the pain analog scale.

Results:

A total of 17 patients were included in the study. All patients completed the 2 weeks and 3 months follow up visits. All patients reported more pain and discomfort from the gingival abrasion side, with 10 patients having moderate pain, and 7 patients having severe pain in comparison to the laser side. For the esthetic results, 5 patients didn't notice a difference between the two sides while 12 patients observed a difference in favor of the abrasion side. A percentage scale was used to assess patients' satisfaction with the esthetic results, in the abrasion group 75%-100% patients were very to completely satisfied, and 50%-75% of the patients were moderately to very satisfied with the esthetic result of the laser therapy. The deidentified photographs were analyzed by 3 blinded examiners at 3 time points (pre op, 2 weeks, and 3 months post op). The results showed that the bur abrasion has a superior esthetics results & slower repigmentation compared to the laser side. The spotted appearance of pigmentation was more common on the laser side.

Conclusions:

Gingival depigmentation with bur abrasion has shown a better esthetic result and slower repigmentation when compared to laser therapy. However, laser depigmentation was superior in post-operative pain and discomfort.

Key Words: Gingival Depigmentation ; Gingival Esthetics; Lasers vs Burs;

Funding Agency: None

A survey of antibiotic prescription practices amongst dentist treating children in the UK

Nazar S* ¹, Barry S ²

¹ Specialist in Paediatric dentistry, Ministry of Health, Kuwait; ²University Dental Hospital of Manchester.

Introduction:

The discovery of antimicrobial drugs heralded a paradigm shift in the management of bacterial infections. However, the advent of antibiotic resistant strains of previously susceptible bacteria represents a significant threat to global mortality. Amongst contributing factors is the inconsistent prescription of antibiotics in the paediatric dental setting. Objectives: to investigate antibiotic prescription practices amongst dentists treating children aged under 16 years in the UK.

Methods:

A piloted electronic questionnaire was distributed to members of the British Society of Paediatric Dentistry. The questionnaire explored participant's knowledge of both prophylactic and therapeutic antibiotic prescription in clinical and non-clinical scenarios.

Results:

This questionnaire was disseminated to the 454 members of the BSPD with a 45% response rate. A significant majority of respondents (93%) adhered to clinical guidelines in taking a full medical history for patients. Amoxicillin was the primary choice of antibiotic (93%) and metronidazole (63%) the choice for patients with allergies to penicillin-based antibiotics. The most common dosing strategy identified was oral amoxicillin 500 mg 3 times daily for 5 days. Most participants would prescribe antibiotics for the treatment of cellulitis (93%). It was further identified that the significant majority of respondents (87%) would not be influenced to prescribe antibiotics by patient expectation.

Conclusions:

The results of this study indicate that there exist inconsistencies regarding knowledge of antibiotic prescription, prescribing behaviours and adherence to clinical guidelines amongst dentists treating children in the UK. There is a clear need for further clarification of antibiotic prescription guidelines in the paediatric dental setting. Acknowledgment: We wish to express our sincere appreciations to the British Society of Paediatric Dentistry (BSPD) for their help in conducting this research and to the BSPD members who took the time to complete the questionnaire and participate in the study.

Key Words: paediatric dentistry; antibiotics; prescription;

Funding Agency: -

Comparative Analysis of Chemical Peels for Melasma Treatment Among Saudi Arabian Women: A Cross-Sectional Study.

Aleid AM ¹, Nukaly HY ², AlAlqam FB ³, Alzahrani MM* ⁴, Almulhim NA⁵, Almatrafi S⁶, Alajlan AH ⁷

¹King Faisal University, Department of Dermatology, Ahsa, SAU, ²Batterjee Medical College, College of Medicine and Surgery, Jeddah, Saudi Arabia, ³Vision Colleges, College of Medicine, Riyadh, Saudi Arabia, ⁴Albaha Faculty of medicine, Albaha University, Albaha province, Saudi Arabia, ⁵King Faisal University, College of Medicine and Surgery, AlAhsa, Saudi Arabia, ⁶King Saud Bin Abdulaziz University for Health Sciences, College of Medicine and Surgery, Jeddah, Saudi Arabia, ⁷King Saud University, College of medicine, Riyadh, Saudi Arabia

Introduction:

Melasma is a common hyperpigmentation disorder among Saudi Arabian women, and chemical peels are frequently utilized for its treatment. However, there is a lack of comparative studies focusing on the efficacy of different chemical peels in this population. This cross-sectional study aims to compare the outcomes of glycolic acid, salicylic acid, and trichloroacetic acid chemical peels for melasma treatment among Saudi Arabian women.

Methods:

201 Saudi women with melasma from various clinics in Saudi Arabia were enrolled. Groups were categorized by the received chemical peel: glycolic acid, salicylic acid, and trichloroacetic acid. Peel effectiveness was gauged through participant-rated impact on melasma severity using a scale (very effective to very ineffective). Recorded adverse effects post-peel. Analysis involved percentage calculations.

Results:

Among the participants, 36% received glycolic acid chemical peel, 45% received salicylic acid chemical peel, and 31% received trichloroacetic acid chemical peel. In terms of effectiveness, 62% of those who received glycolic acid reported it as effective or very effective, while 48% and 55% of participants reported effectiveness for salicylic acid and trichloroacetic acid, respectively. Regarding adverse effects, 24% of those who underwent glycolic acid peel experienced redness, 17% reported irritation, 12% reported swelling, and 9% experienced hyperpigmentation. For salicylic acid, the percentages were 19%, 15%, 10%, and 6%, respectively. Trichloroacetic acid had similar results, with 18% reporting redness, 12% reporting irritation, 8% reporting swelling, and 5% experiencing hyperpigmentation.

Conclusions:

Glycolic acid, salicylic acid, and trichloroacetic acid peels effectively reduced melasma severity in Saudi Arabian women, with glycolic acid demonstrating the highest effectiveness followed by trichloroacetic acid and salicylic acid. Adverse effects varied, slightly higher with glycolic acid. Larger studies are needed for confirmation, offering valuable guidance for dermatologists in peel selection for melasma treatment in this population. Acknowledgment: We would like to express our sincere gratitude and appreciation to Dr. Ahmad Hassan Alghamdi, the Dean of the Faculty of Medicine, for his invaluable support and encouragement throughout our research activities.

Key Words: MELASMA TREATMENT; CHEMICAL PEELS; MELASMA;

Funding Agency: None

Efficacy of Adalimumab in Improving Hidradenitis Suppurativa: Hyperbaric Oxygen Therapy as a Potential Adjuvant to Conventional Treatment? A Meta-Analysis of Randomized Controlled Trials

Houriah Nukaly, Waseem AlHawasawi, Ibrahim Albalawi, Reema Albalawi, Raghad Aldibane, Razan Alsuayri, Jannat Alamoudi, Bader Zimmo

1College of Medicine and Surgery, Batterjee Medical College, 2Department of Dermatology, King Fahad Armed Forces Hospital, Jeddah, 3College of Medicine and Surgery, Tabuk University, 4College of Medicine and Surgery, University of Tabuk, Tabuk, Saudi Arabia, 5Department of dermatology, McGill University, Montreal, QC, Canada, 6College of Medicine and Surgery, King Abdulaziz University, 7Department of Dermatology, King Abdulaziz University Hospital, Jeddah, Saudi Arabia

Introduction:

Hidradenitis suppurativa (HS) is a chronic inflammatory skin disease characterized by recurrent abscesses, nodules, and scarring in apocrine gland-bearing areas. Adalimumab, a tumor necrosis factor- α (TNF- α) inhibitor, has demonstrated efficacy in improving HS symptoms. Hyperbaric oxygen therapy (HBOT) has emerged as a potential adjuvant therapy for HS, with reported benefits in reducing inflammation and promoting wound healing.

Aim:

To assess the effect of Adalimumab on Hidradenitis Suppurativa Clinical Response (HiSCR75) score across the included studies after 12 months weekly treatment. We also aim to evaluate the efficacy of HBOT as an adjuvant therapy to current conventional therapy.

Methods:

Random-effects model meta-analysis utilizing the DerSimonian and Laird technique was conducted, which is based on the inverse variance method. The findings will be illustrated using forest plots. The heterogeneity of the comparisons was assessed using the Chi-square test (Cochran's Q), with a statistical significance level of $p = 0.005$ ($p < 0.005$) rejects the null hypothesis of homogeneity). We employed the I^2 statistic to determine the proportion of total heterogeneity beyond chance: less than 25% heterogeneity is considered low, 25% to 50% is moderate, and more than 50% is high. RevMan version 6 Software was used for statistical analysis.

Results:

The meta-analysis conducted to assess the effectiveness of Adalimumab in treating Hidradenitis Suppurativa, focusing on the Hidradenitis Suppurativa Clinical Response (HiSCR75) score after 12 weeks of treatment. When using Fixed Effects model, the analysis revealed a total of 253 events out of 514 cases in the Adalimumab group and 143 events out of 513 cases in the placebo group. Heterogeneity among the studies was low ($I^2 = 0\%$). The overall effect test showed a significant difference between Adalimumab and placebo ($Z = 6.64$, $P < 0.00001$), suggesting that Adalimumab significantly improves the HiSCR75 score. The risk ratio (RR) was 1.75 (95% CI: 1.48 to 2.06), indicating a 1.75 times higher likelihood of achieving HiSCR75 with Adalimumab compared to placebo. Individual study results varied, with Zouboulis et al. (2019) having the highest weight (59.7%).

Conclusions:

Adalimumab improves HiSCR75 scores after 12 weeks of treatment. Additionally, HBOT shows promise as an adjuvant for hidradenitis suppurativa (HS) and provides synergistic efficacy when combined with conventional therapy.

Key Words: Hidradenitis Suppurativa; Adalimumab; Hyperbaric Oxygen Therapy;

Funding Agency: none

Incident Management System Comparison: Hospital Incident Command System Versus Major Incident Medical Management and Support

Mzahim B^{1,2}, Alzahrani A¹, Alzahrani AA*³, Aldharman S⁴, Alkhamis W⁵, Almutairi BS⁶, Sabbagh AY^{1,7,8}, and Khan A^{9,10}.

¹ King Fahad Medical City, Riyadh Second Health Cluster, Riyadh, Saudi Arabia, ² Disaster Management and Emergency Dispatch Centre, King Fahad Medical City, Riyadh, Saudi Arabia, ³ 5th year medical student, College of Medicine, Taif University, Taif, Saudi Arabia, ⁴ College of Medicine, King Saud Bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia, ⁵ College of Medicine, Dar Al Uloom University, Riyadh, Saudi Arabia, ⁶ Presidency of State Security, Saudi Arabia, ⁷ Center of Research, Education, Simulation, and Enhanced Training, King Fahad Medical City, Riyadh, Saudi Arabia, ⁸ College of Medicine, Alfaisal University, Riyadh, Saudi Arabia, ⁹ Department of Emergency Medicine, College of Medicine, King Saud University, Riyadh, Saudi Arabia, ¹⁰ Global Center for Mass Gatherings Medicine, Ministry of Health, Riyadh, Saudi Arabia.

Introduction:

The Hospital Incident Command System (HICS) and Medical Major Incident Management System (MMIMS) provide an organizational framework for incident management to deal with threats or emergencies, including planning, developing, and adjusting that structure. HICS is used in the USA and MMIMS in the UK. This study aims to find and show the differences in Target Audience, Scope, Training, and Command Structure and the Roles of MMIMS and HICS.

Methods:

This research took place from March through June of 2022. From January 1, 1995, until June 15, 2022, all publications, books, guidelines, and manuals were extracted. We searched PubMed, Ovid, Springer, Scopus, Web of Science, and Google Scholar for articles. The inclusion criteria were articles published in peer-reviewed journals that were relevant to the research questions, and only assigned to the HICS in hospital and prehospital settings, the Hospital Emergency Operation Center, and health centers. Papers published before 1995, articles published in nonacademic journals, papers that were not relevant to the study issues, and duplicate publications were among the exclusion criteria. By using comparative analysis, this review of 59 publications identified several key differences between HICS and MMIMS.

Results:

Regarding Focus and Target Audience, (MMIMS) shines in orchestrating large-scale external emergencies, where multi-agency responses are crucial. In contrast, (HICS) excels in internal hospital crisis management, specifically designed for healthcare facilities and their staff. As for Training and Command Structure and Roles, HICS features a standardized five-function structure – Command, Operations, Planning, Logistics, and Finance/Administration – tailored towards within-hospital response, with training targeted at hospital personnel and emergency response roles within the facility. MMIMS, on the other hand, boasts a flexible command structure tailored to the complexities of outside-hospital incidents and uses a similar command structure but may incorporate additional roles like Triage and Transport officers. Its training empowers pre-hospital and field personnel to handle major events effectively.

Conclusions:

This comparison highlights the differences and the areas of application for these incident management systems. While MMIMS tackles large-scale external crises, HICS safeguards the internal operations of hospitals during emergencies. Both, however, share a commitment to coordinated response-optimized incident management.

Key Words: Disaster medicine; Hospital Incident Command System; Medical Major Incident

Funding Agency: NONE

Epidemiological Characteristics, Clinical Features and Laboratory Finding of Hypothyroidism Patients: A Hospital-Based Study

Wani FA ¹, Alrashed HA², Albalwan AS², Alfuhigi YM², Dilli MA², Alruwaili LD²

¹Associate Professor, Department of Pathology, College of Medicine, Jouf university, Sakaka, Saudi Arabia; ² 4th Year medical student, College of Medicine, Jouf university, Sakaka, Saudi Arabia

Introduction:

The prevalence of hypothyroidism is high in Saudi Arabia and the contributing factors are iodine deficiency and lack of balanced nutrition. This study aims to explore the epidemiological factors of hypothyroidism throughout the region of Aljof and examine the relationship of gender and age with the laboratory findings and clinical presentation.

Methods:

A Cross-sectional study was done in the hospitals of the Aljof region. Files of the patients diagnosed with hypothyroidism from the last 2 years were retrieved by non-probability consecutive sampling technique. The estimated sample size was 312. Statistical Package for Social Sciences version 23.0 software (IBM SPSS) was used for data entry and analysis.

Results:

The majority of the patients were females (78,52%) with the highest representation falling within the age range of 36 to 50 years. Significant differences were observed between male and female patients with respect to the FT4 levels, Hb levels, MCV, MCH, MCHC values, and RBC counts (p-values of <0.001). However, no significant differences were observed between male and female patients in the TSH levels and hematocrit values. Most of the patients were euthyroid (77.24%). However, the pattern of thyroid function status did not show significant differences with respect to the gender of participants and the different age groups (p-values of 0.447 and 0.775 respectively). The most common co-morbidities observed were hypertension 72 (23.07%) and diabetes mellitus 71 (22.75%). No significant association between the co-morbidities and pattern of thyroid function status was observed. The most common symptoms were epigastric pain 103 (33%), fatigue 99 (31.7%), constipation 72 (23.1%).

Conclusions:

We conclude that clinicians need to pay particular attention to screening for hypothyroidism among the female, particularly those below 50. Furthermore, high-risk population needs to be paid more attention for early diagnosis and treatment. Clinical features ranged from subtle to pronounced presentation, highlighting the need to have comprehensive screening protocols. We recommend targeted interventions and increased healthcare awareness for timely detection and treatment of hypothyroidism in this region. Acknowledgment: We would like to thank Mutaib Hospital and Jouf University for their support in this research.

Key Words: Hypothyroidism; Epidemiological; Thyroid hormones;

Funding Agency: NONE

Ethnicity and Gender Influence Genetic Variants Associated with Pancreatic Cancer Risk in KuwaitAbdullah Al-Qahtani¹, Bency John², Ali Al-Ali^{3,4}, Kusum Kapila²⁵, Mrinmay Kumar Mallik⁵, Rabeah Al-Temaimi^{2*}¹ Undergraduate medical program, College of Medicine, Kuwait University, Jabriya, Kuwait; ² Department of Pathology, College of Medicine, Kuwait University, Jabriya, Kuwait; ³ Department of Gastroenterology and Hepatology, Mubarak Al Kabeer Hospital, Jabriya, Kuwait; ⁴ Department of Medicine, College of Medicine, Kuwait University, Jabriya, Kuwait; ⁵ Department of Laboratory Medicine, Mubarak Al Kabeer Hospital, Jabriya, Ku**Introduction:**

Pancreatic cancer (PC) is one of the most lethal types of cancer with a 5-year survival rate of 5.5%. A recent genome-wide association study reinforced the association of several genetic variants with PC risk in a multi-ethnic population sample. We aimed to determine the frequency and association of these genetic risk variants with PC risk in Kuwait.

Methods:

DNA was extracted from a randomly sampled 127 Kuwaiti healthy controls for frequency estimation, and eighty multi-ethnic (55 Kuwaitis) sporadic PC fine-needle-aspirate cell block samples for association analysis. Genotyping of 4 variants (ABO rs505922, BCAR rs7190458, LINC-PINT rs6971499, HNF1B rs4795218) was performed using TaqMan genotyping assays. Data was analyzed using Fisher test, Chi-square test, and linear regression.

Results:

The frequency distribution of PC risk alleles for the 4 variants in the healthy Kuwaiti population sample was almost identical to those of European ancestry. Only rs4795218 is associated with PC risk in our PC cohort compared to 1000 genome project variant frequencies (Odds ratio 1.845, 95%CI: 1.07-3.2, $p = 0.032$). Considering Kuwaiti samples alone, ABO rs505922 associated with PC risk (β -0.11 95%CI: -0.21 – (-0.014), $p = 0.025$), and more significantly when adjusted for sex and age (β -0.115 95%CI: -0.21 – (-0.028), $p = 0.01$). Moreover, the rs505922C allele associated with PC risk in Kuwaiti females specifically (β -0.144 95%CI: -0.23 – (-0.058), $p = 0.001$) but not males.

Conclusions:

The Kuwaiti risk for sporadic PC based on these variants is similar to European populations. HNF1B rs4795218 sustained its association with multi-ethnic PC risk, whereas ABO rs505922 sustained PC risk association only in Kuwaitis, more significantly in Kuwaiti females. Ethnicity and possibly gender affects PC risk in populations which should be factored in when performing sporadic PC risk estimations.

Key Words: Pancreatic Cancer, Genetic risk, Ethnicity, Geneti; Pancreatic Cancer, Genetic risk,

Funding Agency: None

Analysis of Candidate microRNA Biomarkers in Pancreatic Cancer Tissues

Abdulkarim B*, John B, Al-Ali A, Kapila K, Mallik MK, Al-Temaimi R

¹ Undergraduate medical program, College of Medicine, Kuwait University, Jabriya, Kuwait; ² Department of Pathology, College of Medicine, Kuwait University, Jabriya, Kuwait; ³ Department of Gastroenterology and Hepatology, Mubarak Al Kabeer Hospital, Jabriya, Kuwait; ⁴ Department of Medicine, College of Medicine, Kuwait University, Jabriya, Kuwait. ⁵ Department of Laboratory Medicine, Mubarak Al Kabeer Hospital, Jabriya, Kuwait.

Introduction:

Pancreatic cancer (PC) is one of the most aggressive cancers, and accounts for 4.5% of all cancer deaths worldwide. Despite advances in molecular diagnostic technologies, the diagnosis of PC still relies on imaging technologies and morphological assessment of fine needle aspirates (FNA). MicroRNA (miRNA) application in PC diagnostics has been suggested, however, current evidence is lacking in supporting their specificity to PC. Our aim was to investigate the association of selected miRNAs with PC and correlate their expression with that of their candidate targets.

Methods:

Total miRNA was extracted from 73 PC FNA cell block sections and 4 commercially and locally sourced healthy pancreas tissues. Extracted miRNAs were converted to cDNA using TaqMan Advanced miRNA cDNA Synthesis Kit. TaqMan advanced miRNA assays were used to determine fold expression of miR-216a-3p, -217-5p, -221-3p, -222-3p, and miR-196a-5p. MiRNA potential targets were ascertained using immunocytochemistry.

Results:

MiR-196a-5p was the only miRNA that was significantly upregulated in PC when compared to healthy pancreatic tissue expression ($\beta = -0.05$, 95%CI: -0.065 – (-0.035); $p < 0.001$). Comparing miRNA fold expression change in relation to each other, miR-221-3p and miR-222-3p fold expressions were strongly correlated ($r = 0.897$, $p < 0.001$). Similarly, miR-196a-5p fold expression strongly correlated with miR-221-3p ($r = 0.688$, $p < 0.001$) and moderately with miR-222-3p ($r = 0.489$, $p < 0.001$) fold expressions. In addition, miR-196a-5p fold expression weak positive correlation with tumor stage ($r = 0.32$, $p = 0.034$). MiR-217-5p fold expression directly influenced its potential target KRAS's expression. Similarly, miR-196a-5p fold expression directly affected its potential target NFKBIA's expression.

Conclusions:

Our study showed that miR-216-3p is not a suitable biomarker for PDAC, whereas miR-217-5p and miR-196a-5p have suitable specificity to PC and thus are of diagnostic potential and should be used in a diagnostic miRNA panel for PC. Moreover, KRAS and NFKBIA are targets for miR-217-5p and miR-196a-5p respectively, thus these miRNAs regulate tumor progression and may have applications in personalized therapy choice and response monitoring.

Key Words: Pancreatic cancer; MicroRNA; KRAS / NFKBIA;

Funding Agency: Kuwait University Research Sector grant number MG01/21

Genetic Landscape and Clinical outcomes of Autosomal Recessive Polycystic Kidney Disease in Kuwait: Exploring Genetic Diversity and Its Impact on Clinical Presentation

Alhaddad ME ¹, Alali M ², Bastaki L ², John SE ³, Bahbahani Y ⁴, Ali H ^{1,3}

¹ Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, Health Sciences Center (HSC), Kuwait University, Jabriya, Kuwait, ² Next Generation Sequencing Laboratory, Kuwait Medical Genetics Center, Ministry of Health, Sulaibikhat, Kuwait,

³ Department of Genetics and Bioinformatics, Dasman Diabetes Institute (DDI), Dasman, Kuwait, ⁴ Division of Nephrology, Mubarak Al-Kabeer Hospital, Ministry of Health, Jabriya, Kuwait

Introduction:

Autosomal Recessive Polycystic Kidney Disease (ARPKD) is a rare genetic disorder distinguished by kidney cysts, showcasing a complex clinical and genetic heterogeneity. Its severity spans from prenatal or neonatal diagnosis, with rapid progression leading to early mortality, primarily attributed to respiratory compromise and renal failure. The aim of this study is to explore the genetic landscape of ARPKD in Kuwait and examine the intricate relationship between genes and phenotypes to enhance our understanding and contribute towards more efficient management strategies for this condition.

Methods:

A total of 60 suspected ARPKD cases from all ethnicities and ages range from birth to 70, which include 33 males, 15 females, and the remaining 12 were not specified gender due to congenital anomalies and soon after birth death, from 44 different families were recruited at the Kuwait Medical Genetic Center for this study. Genetic analysis was performed using whole exome sequencing via next-generation sequencing technology (NGS) and confirmed through Sanger sequencing. Comprehensive clinical data were collected from the suspected ARPKD cases.

Results:

Mutations were identified in 31 of 60 cases (51.7%) from 17/44 families (38.6%). Relatedness was indicated by identical genetic mutations shared among several families. 12 genetic mutations were found: 8/12 (66.7%) in the PKHD1 gene, including one novel truncating variant; 1 (8.3%) in the NPHP3 gene; 1 (8.3%) in the VPS13P gene; 1 (8.3%) in the CC2D2A gene; and 1 (8.3%) in the ZNF423 gene. Among the 60 suspected ARPKD cases, 21 (35%) had passed away, with 20 (33.3%) dying within hours to the first month of life and only 1 (1.7%) between 2-12 months of age. The remaining 39 (65%) are alive, displaying various clinical features. The study cohort exhibited diverse clinical features, including systematic hypertension (5%), pulmonary hypoplasia (11.7%), dysmorphic features (40%), cardiac problems (8.3%), cystic liver (5%), Potter syndrome (13.3%), developmental delay (8.3%), and enlarged cystic kidneys in all suspected cases.

Conclusions:

In conclusion, this study reveals the genetic intricacies of Autosomal Recessive Polycystic Kidney Disease (ARPKD) in Kuwait. It emphasizes the observed genetic heterogeneity leading to diverse clinical presentations and outcomes. This highlights the necessity for personalized approaches in diagnosis and treatment, offering crucial insights into managing this rare kidney disorder

Key Words: ARPKD; Genetics ; Renal ;

Funding Agency: the KFAS research grant (PR17-13MM-07, to H.A.)

Leukocyte mitochondrial DNA copy number is a potential non-invasive biomarker for psoriasisAlwehaidah MS^{*1}, AlFadhli S¹, Al-Kafaji G²

¹Department of Medical Laboratory, Faculty of Allied Health, Kuwait University, State of Kuwait; ²Department of Molecular Medicine and Al-Jawhara Centre for Molecular Medicine, Genetics, and Inherited Disorders, College of Medicine and Medical Sciences, Arabian Gulf University, Manama, Kingdom of Bahrain.

Introduction:

Abnormalities in the mitochondria have been linked to psoriasis, a chronic immune-mediated inflammatory skin disease. The mitochondrial DNA (mtDNA) is present in thousands of copies per cell and altered mtDNA copy number (mtDNA-CN), a common indicator of mitochondrial function, has been proposed as a biomarker for several diseases including autoimmune diseases.

Objective. In this case-control study, we investigated whether the mtDNA-CN is related to psoriasis, correlates with the disease duration and severity, and can serve as a disease biomarker.

Methods:

Relative mtDNA-CN as compared with nuclear DNA was measured by a quantitative real-time polymerase chain reaction in peripheral blood buffy coat samples from 56 patients with psoriasis and 44 healthy controls. The receiver operating characteristic (ROC) curve analysis was performed to evaluate the value of mtDNA-CN as a biomarker.

Results:

We found that the mtDNA CN was significantly decreased in patients with psoriasis compared to healthy controls (93.6 ± 5.3 vs. 205 ± 71 ; $P=0.04$). Sub group analyses with stratification of patients based on disease duration under or over 10 years and disease severity indicated that the mtDNA-CN was significantly lower in patients with longer disease duration (74 ± 4.3 in disease duration >10 years vs. 79 ± 8.3 in disease duration <10 years, $P=0.009$), and higher disease severity (72 ± 4.3 in moderate-to-severe index vs. 88.3 ± 6 in mild index, $P=0.017$). Moreover, the mtDNA-CN was negatively correlated with the disease duration and disease severity ($r = -0.36$, $P=0.006$; $r = -0.41$, $P=0.003$ respectively). The ROC analysis of mtDNA-CN showed an area under the curve (AUC) of 0.84 (95% confidence interval: 0.69-0.98; $P=0.002$) for differentiating patients from healthy controls.

Conclusions:

Our study suggests that low mtDNA-CN may be an early abnormality in psoriasis and associates with the disease progression. Our study also suggests that mtDNA CN may be a novel blood-based biomarker for the early detection of psoriasis.

Key Words: Psoriasis; mtDNA; copy number ;

Funding Agency: None

Genetics

48

Aberrant FOXP3 promoter methylation in multiple sclerosis patients

Alkhawaja A^{*1}, Alroughani R², Al-Temaimi R³

¹4th year medical student, College of Medicine, Kuwait University; ²Neurology department, Al-Amiri Hospital, Kuwait; ³Human Genetics Unit, Department of Pathology, College of Medicine, Kuwait University

Introduction:

FOXP3 is a forkhead transcription factor protein that controls T lymphocyte tolerance to self-antigens. Activated CD4+ T-cells have a key role in multiple sclerosis (MS) pathogenesis, and FOXP3 level is reduced in MS sera. Objective: To determine the methylation status of the FOXP3 promoter in MS patients.

Methods:

Genomic DNA was extracted from whole blood samples of twenty early-stage MS patients and ten healthy controls and treated with sodium bisulfite (SB) to convert unmethylated cytosines into uracil bases. Methylation-specific polymerase chain reaction (PCR) amplification of the FOXP3 promoter region was performed on SB-treated and untreated DNA. PCR products were resolved on 1.5% agarose gel. Comparative image densitometry was performed using ImageJ software.

Results:

Eighteen (90%) of MS patients had variable methylation patterns of the FOXP3 promoter (Mean 45.8% \pm 31.2), whereas all the healthy controls were unmethylated (100%). MS patients on Natalizumab treatment had lower FOXP3 promoter methylation compared to other MS treatments ($p = 0.001$). Moreover, 90.1% of overweight/obese MS patients had high methylation of the FOXP3 promoter, whereas 80% of average-weight MS patients had low FOXP3 promoter methylation.

Conclusions:

The FOXP3 promoter is methylated in MS patients at varying degrees but not in healthy controls. Natalizumab appears to reverse the methylation of the FOXP3 promoter in MS patients. Being an overweight MS patient may exacerbate MS pathogenesis by increasing the methylation of the FOXP3 promoter.

Key Words: Multiple Sclerosis; Epigenetics; FOXP3;

Funding Agency: NONE

Link between HLA Class II Gene Variants and Type 1 Diabetes in Kuwaiti Children: An Analysis of Alleles and Haplotypes

Dashti M¹, Nizam R¹, Jacob S¹, Al-Kandari H^{2,3}, Al Ozairi E⁴, Thanaraj TA¹, Al-Mulla F¹

¹ Department of Genetics and Bioinformatics, Dasman Diabetes Institute, Dasman, Kuwait; ² Department of Population Health, Dasman Diabetes Institute, Dasman, Kuwait; ³ Department of Pediatrics, Farwaniya Hospital, Ministry of Health, Sabah Al Nasser, Kuwait; ⁴ Clinical Care Research and Trials, Dasman Diabetes Institute, Dasman, Kuwait; ⁵ Faculty of Medicine, Kuwait University, Jabriya, Kuwait

Introduction:

Type 1 diabetes (T1D) is a globally prevalent complex autoimmune disease. It arises from a combination of genetic and environmental factors in genetically predisposed individuals. The Human Leukocyte Antigen (HLA) genes are notably involved in the development of T1D, with certain haplotypes increasing the disease risk. Early identification of these risk haplotypes can enhance genetic screening, particularly in challenging subgroups for early T1D detection.

Methods:

In this study, 95 Kuwaiti children with T1D and 150 control subjects were analysed using next-generation sequencing to investigate the relationship between HLA class II alleles, haplotypes and T1D.

Results:

The study confirmed significant links with alleles at HLA-DRB1, HLA-DQA1, and HLA-DQB1 loci. Specifically, DRB1*03:01:01, DQA1*05:01:01, and DQB1*02:01:01 were associated with a increased risk, whereas DRB1*11:04:01, DQA1*05:05:01, and DQB1*03:01:01 offered protection. The haplotype DRB1*03:01:01~DQA1*05:01:01~DQB1*02:01:01 showed the strongest link to increased T1D risk, and the DRB1*11:04-DQA1*05:05-DQB1*03:01 haplotype was uniquely protective against the disease.

Conclusions:

These findings not only corroborate but also expand our understanding of HLA genes' role in T1D among Kuwaiti children. The identified risk alleles and haplotypes potentially affect HLA structure and function, influencing disease onset and offering opportunities for early intervention through population-wide screening initiatives.

Key Words: HLA; type 1 diabetes; alleles;

Funding Agency: Kuwait Foundation for the Advancement of Sciences (KFAS; grant RA-2014-024 and RA HM-2019-009)

Mitochondrial DNA Variants and T2D Susceptibility in Kuwaiti and Qatari Natives

Dashti M, Ali N, Alsaleh H, Nizam R, Thangavel A.T, Almulla F
Genetics and Bioinformatics, Dasman Diabetes Institute

Introduction:

The role of mitochondrial dysfunction in the development of type 2 diabetes (T2D) has been increasingly recognized, particularly in terms of diminished insulin secretion by pancreatic beta cells and reduced oxidative phosphorylation in tissues sensitive to insulin. Numerous studies globally have investigated the correlation between various mitochondrial DNA (mtDNA) haplogroups, including F, D, M9, N9a, and specific variants (notably mtDNA 3243 A>G and 16189 T>C), with the prevalence of T2D. It's important to note variations in these associations across different populations. Given the high incidence of T2D in the Gulf Cooperation Council (GCC) countries, this study focuses on the relationship between mitochondrial haplogroups and T2D in the Arab population of this region.

Methods:

In this study, we analyzed mitochondrial haplogroups and variants in a sample of 1,112 individuals native to Kuwait and Qatar, utilizing whole exome sequencing data. This group included 685 individuals with T2D and 427 without the disease.

Results:

Our findings suggest a protective role for the mitochondrial haplogroup H against T2D, showing statistical significance (odds ratio [OR] = 0.65; P = 0.022). This association remains robust after adjustments for age, gender, and body mass index (BMI) (OR = 0.607; P = 0.021). Additionally, certain mtDNA variants showed a notable correlation with T2D risk, taking into account various covariates.

Conclusions:

This research underscores the protective influence of the H haplogroup, previously identified as a factor reducing obesity risk in Kuwaiti Arabs, against T2D in the Arab population of GCC countries. Moreover, the mtDNA variants identified are linked to genes involved in cellular energy production, offering further insight into the genetic underpinnings of T2D.

Key Words: Mitochondria; type 2 diabetes; haplogroups;

Funding Agency: Kuwait Foundation for the Advancement of Sciences (RA-HM-2019-025)

Navigating the Complexities of PKD1 Duplicated Regions: Impact on the Clinical Effectiveness of Whole Exome Sequencing in Autosomal Dominant Polycystic Kidney Disease Diagnosis

Hamad Ali^{1,2,3*}, Fahd Al-Mulla³, Mohamed Abu-Farha³, Jihad Abubaker³, Akram M. Asbeutah⁴, Sajjad Ahmed⁵, Medhat Naim², Naser Hussain², Lauren M. Seaburg⁶, Christina Heyer⁶, Peter C. Harris⁶

¹MLS Department, Faculty of Allied Health Sciences, Health Sciences Center (HSC), Kuwait University, Kuwait. ²Department of Nephrology, Mubarak Al-Kabir Hospital, Ministry of Health, Kuwait, ³ Department of Genetics and Bioinformatics, Dasman Diabetes Institute (DDI), Kuwait, ⁴Department of Radiological Sciences, Faculty of Allied Health Sciences, Health Sciences Center, Kuwait University, ⁵Institute of Ophthalmology, University College London (UCL), London, United Kingdom, ⁶Division of Nephrology and Hypertension, Mayo Clinic, Rochester, USA

Introduction:

Autosomal dominant polycystic kidney disease (ADPKD) is a genetic renal disorder, marked by the formation of multiple fluid-filled cysts in the kidneys, primarily due to mutations in the PKD1 or PKD2 genes. The genetic diagnosis of ADPKD is challenging due to the presence of PKD1 pseudogenes near the original gene, which share significant similarity. As next-generation sequencing (NGS) technologies like whole exome sequencing (WES) and whole genome sequencing (WGS) become more accessible and affordable, their application in identifying ADPKD mutations for both diagnostic and research purposes has expanded. However, the effectiveness of NGS technologies compared to the traditional gold standard, Sanger sequencing, in detecting ADPKD mutations remains a topic of inquiry.

Methods:

Our study assessed the performance of WES, WGS, and targeted enrichment methods in identifying mutations in the PKD1 and PKD2 genes. Patients were clinically examined using ultrasonography and renal function tests.

Results:

The findings revealed that WES identified PKD1 mutations in ADPKD patients with only 50% sensitivity, attributed to lower sequencing depth and quality in the duplicated regions of PKD1 (exons 1-32) compared to WGS and targeted enrichment techniques.

Conclusions:

This study underscores significant limitations of WES in diagnosing ADPKD. Improving the sequencing depth, quality, and sensitivity of WES, particularly in the duplicated regions of PKD1, is essential for its potential diagnostic or research utility.

Key Words: Genetics; Nephrology; exome;

Funding Agency: This study has been funded by Kuwait University Research Grants NM01/13 and SRUL02/13, Kuwait Foundation for the Advancement of Science grant PR17-13MM-07 and Mayo PKD center DK090728.

Leveraging Dysregulation in Urinary Exosomal small RNAs Profiles for Autosomal Dominant Polycystic Kidney disease therapeutic Insights

Hamad Ali^{1,2,3*}, Md. Zubair Malik², Mohamed Abu-Farha⁴, Jehad Abubaker⁴, Preethi Cherian⁴, Rasheeba Nizam², Sindhu Jacob², Yousif Bahbahani^{3,5}, Medhat Naim³, Thangavel Alphonse Thanaraj², Fahd Al-Mulla⁶

1 Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, Health Sciences Center (HSC), Kuwait University, Jabriya, Kuwait. 2 Department of Genetics and Bioinformatics, Dasman Diabetes Institute (DDI), Dasman, Kuwait. 3 Division of Nephrology, Mubarak Al-Kabeer Hospital, Ministry of Health, Jabriya, Kuwait. 4 Department of Biochemistry and Molecular Biology, Dasman Diabetes Institute (DDI), Dasman, Kuwait. 5 Medical Division, Dasman Diabetes Institute (DDI), Dasman, Kuwait. 6 Department of Translational Medicine, Dasman Diabetes Institute (DDI), Dasman, Kuwait

Introduction:

Autosomal dominant polycystic kidney disease (ADPKD) is the most prevalent monogenic renal disease that is characterized by the presence of fluid-filled cysts that develop bilaterally in the kidneys leading progressively to end stage renal disease. Currently there is a need for ADPKD early biomarkers and therapeutic approaches.

Methods:

We profiled human urinary extracellular vesicles small RNAs by small RNA sequencing in patients with ADPKD and compared their differential expression considering healthy control individuals.

Results:

Analysis to identify differentially expressed microRNAs (DE-miRNAs) and PIWI-interacting RNAs (pi-RNA) revealed that miR-320b, miR-320c, miR-146a-5p, miR-199b-3p, miR-671-5p, miR-1246, miR-8485, miR-3656, has_piR_020497, has_piR_020496 and has_piR_016271 were significantly upregulated in ADPKD patient urine extracellular vesicles and miRNA-29c was significantly downregulated. Using miRNet, we predicted 695 target genes for upregulated miRNAs and 254 target genes for downregulated miRNAs. We constructed the DE-miRNA-target gene regulatory network and analyzed its topological properties for high degree and bottleneck to pick up five 'driver' target genes (namely MCL1, EDC3, FMNL3, NACC1 and KCTD15) and five 'key' DE-miRNAs (namely miR-320c, miR-146a-5p, miR-199b-3p, miR-671-5p and miR-29c-3p). Functional analysis revealed that the target genes were mainly involved in ADPKD-related biological processes such as cell proliferation, nephron development, hypoxia, nephrogenesis, cell migration, cell differentiation, fibrosis, kidney development, DNA damage, and cell cycle. Finally, we validated the urinary extracellular vesicles miRNA expression profiles of the five key DE-miRNAs using publicly available data from the GEO database on human ADPKD cysts (including tissues from MCT and cysts of different sizes).

Conclusions:

Our findings make significant contributions to the understanding of ADPKD pathogenesis and to the identification of novel biomarkers and potential drug targets aimed at slowing disease progression in ADPKD.

Key Words: Genetics; Nephrology; Small RNA;

Funding Agency: This study has been funded Kuwait Foundation for the Advancement of Science grant PR17-13MM-07.

Genetic Mapping of Autosomal Dominant Polycystic Kidney Disease in Kuwait: Bridging the Genotype-Phenotype Gap

Hamad Ali^{1,2,3*}, Medhat Naim³, Yousif Bahbahani^{3,5}, Mohamed Abu-Farha⁴, Jehad Abubaker⁴, Anwar Mohammad⁴, Naser Hussain³, Sumi Elsa John², Thangavel Alphonse Thanaraj², Mohammad Al-Ali⁶, Fahd Al-Mulla⁷

¹ Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, Health Sciences Center (HSC), Kuwait University, Jabriya, Kuwait. ² Department of Genetics and Bioinformatics, Dasman Diabetes Institute (DDI), Dasman, Kuwait. ³ Division of Nephrology, Mubarak Al-Kabeer Hospital, Ministry of Health, Jabriya, Kuwait. ⁴ Department of Biochemistry and Molecular Biology, Dasman Diabetes Institute (DDI), Dasman, Kuwait. ⁵ Medical Division, Dasman Diabetes Institute (DDI), Dasman, Kuwait. ⁶ Next Generation Sequencing Laboratory, Kuwait Medical Genetics Center, Ministry of Health, Sulaibikhat, Kuwait. ⁷ Department of Translational Medicine, Dasman Diabetes Institute (DDI), Dasman, Kuwait

Introduction:

Autosomal dominant polycystic kidney disease (ADPKD), the most common hereditary kidney disorder, is characterized by the development of numerous cysts in the kidneys, leading to increased kidney size and gradual functional decline, potentially culminating in end-stage renal disease. The study in Kuwait, with its significant family sizes, offers a unique opportunity to explore the genetic diversity and phenotypic variations of ADPKD. The goal of this research is to exhaustively catalogue the pathogenic variants associated with ADPKD in Kuwaitis, employing various genetic testing methods, and to examine the range of ADPKD symptoms, focusing on kidney function, size, and overall renal health.

Methods:

The study involved 126 ADPKD patients, including individuals from 11 large families and 25 unrelated cases. Genetic diagnosis employed targeted next-generation sequencing (tNGS), long-range PCR, Sanger sequencing, and multiplex ligation-dependent probe amplification. Clinical assessments included renal function tests and ultrasonographic measurements of kidney size. We fitted generalized additive mixed effects models with random intercepts for each individual to analyze repeated measures of kidney function across mutation type (PKD1 truncating vs. non-truncating). We then calculated survival time to kidney failure in a cox proportional hazards model. Models were adjusted for sex, age at visit and birth year.

Results:

In this study, 29 different ADPKD-causing mutations were identified across 36 families, with an overall genetic diagnosis rate of 112/126 (88.9%), including 80.6% in familial cases. The PKD1 gene was implicated in 77.8% of these families, with 60.7% of these cases involving truncating mutations, and a single family had a pathogenic IFT140 gene variant. Notably, 69% of these mutations are newly identified, including one case of TSC2-PKD1 contiguous gene syndrome. Patients with PKD1 truncating mutations had a more rapid rate of eGFR decline (-4.7 ml/min/1.73m² per year; 95%CI -5.0, -4.4) compared to patients with PKD1 non-truncating mutations (-3.5 ml/min/1.73m² per year; 95%CI -4.0, -3.1) (P for interaction < 0.001). Kaplan-Meier survival analysis of time to kidney failure showed that patients with PKD1 truncating mutations had a shorter renal survival time (median 51 years) compared to those with non-truncating mutations (median 56 years) (P for log-rank = 0.008).

Conclusions:

This research provides the first comprehensive genetic profile of ADPKD in Kuwait, highlighting the genetic complexity and diverse clinical presentations of the disease. Genetic testing for ADPKD can enhance patient care by aiding in disease prognosis, guiding treatment plans, and facilitating genetic counseling. Early detection of these particular mutations can lead to prompt clinical intervention or more intensive monitoring strategies.

Key Words: Genetics; Nephrology; eGFR;

Funding Agency: This study has been funded Kuwait Foundation for the Advancement of Science grant PR17-13MM-07.

Genetic Insights into Morbid Obesity: Case-Control Analysis of Exome Data in Kuwaiti Population.

John SE*, Channanath AM, Malik M, Nizam R, Dashti M, Alhusayan M, Al-Mulla F, Thangavel AT
Genetics and Bioinformatics, Dasman Diabetes Institute, 15462, Dasman, Kuwait

Introduction:

Kuwait grapples with a global high-ranking obesity burden, attributed partly to post-oil era lifestyle changes and a significant genetic influence. Despite widespread acknowledgment of this issue, there remains a lack of research investigating the genetic foundations of morbid obesity in Kuwait and the Middle East. Existing studies, primarily centered on European populations, contribute to a substantial knowledge gap concerning genetic determinants unique to Kuwait and the Middle East. In this study, we aimed to address this gap by identifying candidate genes and variants from an exome sequenced case control analysis of morbid obese against healthy controls from Kuwait.

Methods:

We conducted exome sequencing on 67 morbidly obese (BMI >40kg/m²) and 68 healthy control individuals (BMI ≤ 25kg/m²) from Kuwait (average coverage: 45X). Quality-filtered single nucleotide variants (SNVs) were assessed, retaining functional variants (missense and loss-of-function) shared by at least two cases and absent in controls. Common variants present in global allele frequency databases were removed, as were variants classified as not damaging in SIFT, PolyPhen and ClinVar. The shortlisted variants were annotated using the DAVID software for identifying the diseases and pathways they are involved in.

Results:

Our study included 67 morbidly obese individuals and 68 healthy controls from Kuwait, showing a significant mean BMI difference: 45.7 kg/m² in morbidly obese and 22.65 kg/m² in controls. We identified 486 variants from 458 genes. These genes were used to perform functional annotation clustering using DAVID for GAD and OMIM disorders. We found a significant cluster of genes related to various cardiometabolic disorders, including coronary artery disease hypertension, hypercholesterolemia, and type 2 diabetes. Based on their associations with body mass index (BMI), lipoprotein levels, and cardiomyopathy, we observed the top cluster of 39 variants associated with cardiometabolic disorders highly prevalent in the Kuwaiti population. Of these, 28 variants were also observed in morbid obese individuals from Qatar. We selected seven variants for targeted resequencing to establish their association in a larger cohort.

Conclusions:

Candidate genes identified in this study underscore the strong genetic connection between morbid obesity and the high prevalence of cardiometabolic disorders in the Kuwaiti population, paving the way for further investigations into potential therapeutic interventions. Acknowledgement: The authors acknowledge the Kuwait Foundation for Advancement of the Sciences for funding this study.

Key Words: Genetics; Exome Sequencing; Morbid Obesity;

Funding Agency: Kuwait Foundation for Advancement of the Sciences

Impact of Oral Microbiota on Obesity Status in Kuwaiti Adolescents.Shbib MM^{*1}, Nizam R², Malik MZ², Alqaderi H², Thanaraj TA²¹ Graduate students from Faculty of Allied Health Sciences, Kuwait University, ² Dasman Diabetes Institute, Kuwait**Introduction:**

Obesity is a preventable, non-communicable disease caused by an abnormally high body mass index (BMI) and a high body fat percentage. It has been widely associated with multiple genetic, immunological, and environmental factors. Recent years have witnessed an unprecedented progress in understanding the potential impact of the salivary microbiome on obesity. Previous studies have shown that salivary microbial dysbiosis can have an impact on key metabolic, inflammatory, and hormonal profiles modulating central adiposity. In the present study we aimed to identify and characterize the composition of salivary microbiome in a cohort of Kuwaiti children and investigate its impact on obesity.

Methods:

DNA was extracted from 2ml saliva of 60 healthy Kuwaiti adolescents categorized based on their BMI into normal weight, obese, overweight, and underweight. Meta-transcriptome libraries were prepared following Illumina's 16 S RNA sequencing protocol. A total of 5 ng/μL of microbial DNA was amplified using gene-specific primers that target the bacterial 16S rRNA V3 and V4 regions. The sequence data obtained were analyzed using QIIME and Microbiomeanalyst package.

Results:

Microbial diversity across each tested group differed significantly as depicted by the alpha and Beta diversity. The overweight group showed higher number of distinct taxa than compared to other tested groups. The mean microbial composition of each study group was estimated and taxonomic profiling at the phylum, class, family, and genus level were carried out revealing that Firmicutes is the most abundant phyla in Kuwaiti children saliva, while Streptococcaceae is the most abundant families of microbiota in our samples. In our study group Streptococcus, Veillonella and Porphyromonas are the top priority microbial biomarkers regulating obesity in children.

Conclusions:

We observed an inverse relationship between oral bacterial diversity and obesity status in Kuwaiti children. Obese/Overweight group showed comparatively low microbial taxa compared to normal weight. We identified four potential microbial biomarkers associated with obesity namely Streptococcaceae, Prevotellaceae, Veillonellaceae and Neisseriaceae. Acknowledgment: This study was supported and funded by Kuwait Foundation for the Advancement of Sciences (KFAS), grant number RA-HM-2017-025.

Key Words: salivary microbiome; obesity; Kuwait;

Funding Agency: *Funding Agency: Kuwait Foundation for the Advancement of Sciences (KFAS), grant number RA-HM-2017-025.*

Genetics

56

Identification of potential therapeutic target associated with coronary artery disease in type 2 diabetes patients: system biology approach.

Zubbair Malik MD, Mohammed Dashti, Mohammed Alhusayan, Sumi Elsa John, Arshad Channanath, Fahd Al-Mulla, Thangavel Alphonse Thanaraj

¹Department of Genetics and Bioinformatics, Dasman Diabetes Institute, Kuwait City, Kuwait.

Introduction:

T2D and CAD are both systemic diseases that affect the immune system and increase the risk of death when they co-occur. However, the current treatments for this co-morbid condition are not very effective, partly because the link between T2D and CAD is not well understood. Therefore, we propose to conduct a comprehensive study to explore the genes that are co-expressed in T2D and CAD, which may reveal the common underlying mechanisms of these diseases and help identify potential biomarkers and targets for their treatment.

Methods:

We retrieved gene expression data for CAD and T2D patients from the NCBI-GEO repository (<https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi>). We used the microarray data from GSE13760 (Denmark cohort) for T2D and from GSE20680 (USA cohort) for CAD. We included 10 T2D and 11 control samples from GSE13760 and 99 control and 87 CAD samples from GSE20680. We found co-expressed DEGs in CAD and T2D by intersecting the differential gene sets from both diseases. We analyzed the pathways and networks shared by these DEGs.

Results:

We performed differential expression analysis of genes (DEGs) in type 2 diabetes (T2D) and coronary artery disease (CAD) patients versus healthy controls. We found 451 DEGs in T2D and 644 DEGs in CAD. Among them, 32 DEGs were common to both diseases. These DEGs were enriched in pathways that were involved in immune activation and cross-talk. These pathways may partly explain the co-occurrence of T2D and CAD. We also identified eight key genes (TLR4, IGF1, UBB, MAPK1, CCND1, MYC, JUN and MMP9) that were central to the molecular network and had good diagnostic potential for both diseases. Moreover, we predicted the microRNAs (miRNAs) and transcription factors (TFs) that regulated these key genes.

Conclusions:

We discovered important genes that could be involved in both T2D and CAD. This could help us learn more about the links between CAD and T2D and develop new ways to treat or prevent them. However, we still need to do more experiments and clinical trials to confirm our findings.

Acknowledgement: The authors acknowledge the Dasman Diabetes institute.

Key Words: *Coronary artery disease; type 2 diabetes; Network medicine;*

Funding Agency: *NONE*

Enzymatic Testing for Mucopolysaccharidosis Type I in Kuwaiti Newborns: A Pilot Study Toward Newborn Screening

Alsharhan H^{1,2,3}, Haidar MZ², Qadoura B⁴, Ayed M⁵, Dhaunsi GS², Alkandari H¹

¹Department of Pediatrics, Farwaniya Hospital, Ministry of Health, Sabah Al-Nasser, 92426, Kuwait; ²Department of Pediatrics, Health Sciences Centre, College of Medicine, Kuwait University, P.O. Box 24923, Safat 13110, Postal code 90805, Kuwait

³Kuwait Medical Genetics Center, Ministry of Health, Sulaibikhat, 80901, Kuwait, ⁴Department of Pediatrics, Amiri Hospital, Ministry of Health, Kuwait, ⁵Department of Neonatology, Farwaniya Hospital, Ministry of Health, Kuwait

Introduction:

Mucopolysaccharidosis type I (MPSI) is an autosomal recessive lysosomal storage disorder characterized by deficient or absent α -L-iduronidase (IDUA) enzyme activity due to pathogenic variants in IDUA gene. Early treatment with hematopoietic stem cell transplantation and/or enzyme replacement therapy is associated with improved outcomes in this progressive multisystem disease. The diagnosis is usually delayed due to late presentation and nonspecific symptoms resulting in high morbidity and mortality. The incidence of MPSI is unknown in Kuwait. This pilot study was undertaken to screen MPSI in all Kuwaiti neonates born at Farwaniya Hospital (FH) over 12-months after parental consent. This study examined the incidence of MPSI in a major center for inclusion in the national newborn screening program to enable its early detection and adequate treatment.

Methods:

All Kuwaiti neonates born at FH from December 2021 to December 2022, were screened for MPSI. The screening consisted of determining IDUA enzyme activity in dried blood spots-derived samples by Tandem Mass Spectrometry. A follow-up genetic analysis of IDUA is planned to screen the cases with diminished IDUA enzyme activity as second-tier testing.

Results:

618 newborns, including 331 (54%) males and 287 (46%) females, were screened. Twenty of them had deficient IDUA enzyme activity but showed negative genetic testing for IDUA. However, we have diagnosed one additional female baby with MPSI, who belonged to FH, but the parents chose to deliver in a private hospital. She presented at age three months with recurrent upper airway infections, snoring and extensive Mongolian spots. The molecular study revealed previously reported pathogenic nonsense variant in IDUA Arg628Ter, associated with severe phenotype. That being included, MPSI is estimated to be about 0.2% of all screened cases in Kuwait.

Conclusions:

Our study is the first to evaluate the incidence of MPSI in Kuwait. Given the single center, small number of screened babies and the short study duration thus far, it is premature to calculate the incidence of MPSI. Further studies including screening newborns in all maternity hospitals in Kuwait are needed to calculate the actual incidence of MPSI. Our data supports including MPSI in national newborn screening to allow early initiation of treatment and improve disease outcome

Key Words: Mucopolysaccharidosis; lysosomal storage disorder ; newborn screening;

Funding Agency: Kuwait University Grant No. MK02/21.

Provider Cost and Economic Burden of the COVID-19 Pandemic in the State of Kuwait

Nur AM* ¹, Aljunid SM ², Almari M¹

¹ Department of Health Policy and Management, College of Public Health, Kuwait University, ² Department of Community Medicine, International Medical University, Kuala Lumpur, Malaysia

Introduction:

The coronavirus disease 2019 (COVID-19) pandemic has significantly increased the financial strain on global health care systems. It is unknown how much the cost of COVID-19 pandemic in the State of Kuwait, particularly in the health sector. The aim of this study is to determine the economic burden of COVID-19 in Kuwait.

Methods:

This retrospective study identified the cost incurred for treating COVID-19 inpatients admitted to a General Hospital in Kuwait, a designated COVID-19 treatment center by the Kuwait Government during pandemic. A step-down approach was done to estimate the healthcare provider cost per patient per admission. Patient cost (loss of productivity due to hospitalization, institutional and home quarantine) was calculated using human capital approach. The national economic burden of COVID-19 was estimated using costing data from a general hospital for the entire nation.

Results:

485 COVID-19 patients were involved in the research. KD 2216 (USD 7,344) was the average cost per patient per admission. The ICU accounted for 20.6% of the total cost, the physician and nursing staff for 42.1%, and the laboratory services for 10.2%. The estimated annual cost of care for COVID-19 patients in Kuwait was KD 147.4 (USD 488.5) million, or 5.5% of the MOH budget for 2021, given that 9.03% (383,731) of the population had positive COVID-19 PCR results in 2021. The range of the estimated national economic burden, considering both the best and worst-case scenarios, is KD 73.6 (USD 244.2) million to KD 221.0 (USD 732.7) million.

Conclusions:

COVID-19 has a significant financial impact even in the absence of patient-borne societal costs and other expenses associated with COVID-19 mitigation.

Key Words: COVID-19; Provider Cost; Economic Burden;

Funding Agency: Kuwait Foundation for the Advancement of Sciences (KFAS), Funding [No: PN20-17IC-06-CORONAPROP-89].

Essential thrombocythemia in Kuwait: Cross-sectional StudyAlazmi RM* ¹, Alshemali RK ¹, Awad MA ¹, Alshemmari SF ²¹ 4th year medical students, Faculty of medicine, Kuwait University; ² Department of Medicine, Faculty of Medicine, Kuwait University**Introduction:**

Essential thrombocythemia (ET) is a persistent myeloproliferative disorder characterized by abnormal megakaryocytes in the bone marrow, resulting in an excessive production of platelets. Elevated platelet levels increase the risk of thrombosis events and the development of secondary forms of acute leukemia. This condition is more frequently observed in older individuals with genetic mutations. This study aimed to determine the prevalence of ET among patients at the Kuwait Cancer Centre in Shuwaikh. This study was conducted to assess the prevalence of ET among patients in Kuwait at Kuwait Cancer Center (KCC), to identify the most common mutations associated with ET patients, and to determine the most experienced symptoms that accompany ET patients.

Methods:

A retrospective cross-sectional investigation was conducted, involving the review and analysis of records from 142 patients with myeloproliferative neoplasm from Kuwait Cancer Centre spanning the years 2012 to 2022. These cases include 121 patients with essential thrombocythemia that are diagnosed by PCR. Variables examined included age, gender, nationality, risk factors, mutations, chronic diseases, symptoms, and complete blood counts (CBC).

Results:

The findings indicated that, among the 142 patients, 121 were diagnosed by ET. Analysis of the data revealed a higher prevalence of ET in males (59.6%) compared to females (48.8%). Kuwaiti nationals exhibited the highest incidence rate at 41.2%, primarily within the 40–59 age group (45.45%). About 29% of patients had identifiable risk factors, such as age above 60 and a high platelet count. The CALR mutation was the most common at 73.6%. Chronic conditions, including hypertension, were present in 14% of patients. The predominant symptom was splenomegaly (19%), followed by pruritus (11.6%). Arterial and venous thrombosis occurred in 9.1% and 2.5% of cases, respectively. Regarding CBC, the mean platelet count was 736.86, and the mean values for hemoglobin (Hb) and white blood cell count (WBC) were 127.25 and 8.772, respectively.

Conclusions:

Our findings support the inclusion of indicators of aging, high platelet count, and genetic mutations as risks factors of ET. Kuwaiti nationals, particularly within the 40-59 age group, demonstrated the highest incidence rate at 41.2%. Notably, arterial and venous thrombosis occurred in 9.1% and 2.5% of cases, respectively. These findings contribute valuable insights into the demographic, clinical, and hematologic aspects of ET, shedding light on its prevalence, associated risk factors, and common manifestations within the studied population.

Key Words: Essential thrombocythemia ; Kuwait ; Genetic mutations ;

Funding Agency: None

Interprofessional Education and Collaborative Practice in Kuwait: Attitudes and Barriers from FacultyKatoue MG* ¹, Awad AI ², Dow AW ³, Schwinghammer TL ⁴

¹ Department of Pharmacology and Therapeutics, College of Pharmacy, Kuwait University, Kuwait; ² Department of Pharmacy Practice, College of Pharmacy, Kuwait University, Kuwait; ³ Seymour and Ruth Perlin Professor of Medicine and Health Administration, Center for Interprofessional Education and Collaborative Care and Department of Internal Medicine, Virginia Commonwealth University, Richmond, Virginia, USA; ⁴ Department of Clinical Pharmacy, West Virginia University School of Pharmacy, Morgantown, WV, USA

Introduction:

The delivery of optimal patient care, with its focus on high quality, affordable care and efficient use of resources requires interprofessional collaboration among healthcare professionals. Interprofessional education (IPE) has been adopted in many educational systems to prepare health students for team-based practice, but its implementation is still limited in many countries including Kuwait. The aim of this study was to explore the attitudes of faculty members (academic staff and academic support staff) at Kuwait University Health Sciences Center (HSC) towards collaborative practice and IPE, their training needs, and perceived barriers to implementing IPE in their teaching.

Methods:

A descriptive, cross-sectional survey of faculty members at Kuwait University HSC was conducted. The survey was based on validated survey instruments including the Attitudes Towards Health Care Teams Scale (ATHCTS), Readiness for Interprofessional Learning Scale (RIPLS) instrument, and an instrument for the assessment of attitudes towards interprofessional learning in the academic setting.

Results:

Two hundred and ten individuals completed the survey (60% response rate). Respondents expressed positive attitudes towards interprofessional healthcare teams, IPE, and interprofessional learning in the academic setting (median [IQR] overall attitude for each scale was 4.0 [1.0] on a scale of 5). Overall attitudes were significantly more positive among assistant professors, females, and faculty members with ≤ 10 years of experience ($p < 0.05$). The majority of respondents (85.7%) ranked small group learning as the preferred teaching method for IPE. Most respondents (91.9%) indicated their willingness to be trained to implement IPE. The top selected aspects of faculty members' training needs were active learning methods (60.0%), teamwork skills (47.6%), and assessment methods for IPE (41.0%). A longitudinal curriculum was less popular than discrete IPE experiences. The top reported barriers to implementing IPE were leadership challenges (86.6%), curriculum challenges (82.4%), teaching challenges (81.4%), and resistance to change (80.5%).

Conclusions:

Faculty members at Kuwait University HSC expressed overall positive attitudes towards interprofessional healthcare teams and IPE. These findings have important implications for developing strategies to engage faculty members in effective IPE initiatives and the advancement of IPE curriculum in Kuwait.

Key Words: interprofessional education; interprofessional collaborative practice; professional

Funding Agency: None

Skin Tone and Disease Diagnosis: A Study of Medical Students in Kuwait

Mahdi GA, Ghanem RA, Mahfouz WS, AlHaddad SK*, AlHayyan WF, AlMoosa AI, Shehab HF, AlRashied AJ, Garashi AN, Kankouni MW, Ziyab A

Medical students (clinical years students) at the Faculty of Medicine, KUNIV;Community Medicine, College of Medicine

Introduction:

Healthcare disparities linked to skin tone persistently afflict individuals of color, causing them a greater disease burden compared to those with lighter skin tones. A significant contributor to this inequality is the underrepresentation of skin of color (SoC) in medical education. This cross-sectional study aimed to evaluate the accuracy and confidence of medical students at Kuwait University in diagnosing dermatologic manifestations of various diseases across a spectrum of skin tones. The goal was to assess the adequacy of medical education concerning individuals of color, which is particularly important given Kuwait's ethnically diverse population.

Methods:

Medical students from their second to seventh year of education participated in a web-based questionnaire. They were asked to identify and rate their confidence in diagnosing dermatologic manifestations of six diseases (chickenpox, Lyme disease, psoriasis, systemic lupus erythematosus, basal cell carcinoma, and atopic dermatitis) in both individuals with light skin and SoC. McNemar's test was employed to compare the proportions of correct diagnoses made by the same students across different skin tones (light skin vs. SoC).

Results:

Out of 855 eligible students, 653 (76.4%) participated in the study. Diagnostic accuracy for light skin was notably higher than for darker skin tones for conditions such as chickenpox (74.6% vs. 47.9%, $P<0.001$), Lyme disease (79.8% vs. 23.1%, $P<0.001$), systemic lupus erythematosus (73.5% vs. 55.0%, $P<0.001$), and basal cell carcinoma (51.6% vs. 24.0%, $P<0.001$). In contrast, accuracy was similar for psoriasis (71.2% vs. 67.4%, $P=0.099$) and atopic dermatitis (51.3% vs. 47.2%, $P=0.160$) across skin tones. Additionally, students' self-rated confidence in their visual diagnosis was higher in light skin compared to SoC, and both their confidence and diagnostic accuracy increased with more years of study. Furthermore, 57% of students reported minimal exposure to dermatologic manifestations of diseases on darker skin in their study curriculum.

Conclusions:

This study highlights some of the deficiencies in medical education regarding SoC, with students demonstrating more accurate diagnoses on lighter skin. It emphasizes the need for curricular changes to include a wider range of skin tones and to increase the focus on SoC, which is vital for delivering equitable healthcare in a diverse society.

Key Words: Medical Education ; Healthcare Equity ; Skin of Color;

Funding Agency: NONE

Solid Pancreatic lesions Visualized on Endoscopic Ultrasound (EUS) in the Gulf Council Countries (GCC): An International Multicenter Study

Alali AA ¹, Alghamdi S ², Albeshir M ³, Shastari Y ⁴, Aljahdali E ², Ghaith J ⁵, Rammal AA ⁶, Bamakhrama K ⁷

¹ Department of Medicine, Faculty of Medicine, Kuwait University; ² King Abdulaziz University, Jeddah, Saudi Arabia; ³ King Fahad Specialist Hospital, Dammam, Saudi Arabia; ⁴ NMC Clinic, Abu Dhabi, UAE; ⁵ Cleveland Clinic Abu Dhabi, Abu Dhabi UAE; ⁶ King Saud Bin Abdulaziz University for Healthy Sciences, Jeddah, Saudi Arabia; ⁷ Rashid Hospital, Dubai UAE

Introduction:

Background: The assessment of pancreatic lesions has become a common indication for endoscopic ultrasound (EUS). Solid lesions within the pancreas may exhibit either benign or malignant characteristics. In the west, the prevalence of solid lesions detected via EUS is well-documented, with adenocarcinoma being the most common type. However, specific data for the Gulf Council Countries (GCC) of solid pancreatic lesions is currently lacking. This study aims to determine the prevalence of solid pancreatic lesions detected by EUS across the GCC and to assess the clinicopathological characteristics of EUS diagnosed pancreatic lesions in the region.

Methods:

This is a retrospective international multicenter analysis of solid pancreatic lesions assessed with EUS. Preliminary data of lesions identified from Jan 2022-Dec 2022 were included. Epidemiological and clinicopathological factors were analyzed.

Results:

A total of 193 patients (38.3% female, mean age 60 years [SD: 13]) at 7 tertiary care centers were included. Of these patients, 28% were smokers, while 5.7% reported alcohol intake. Mean BMI was 26.5% (SD=6.2) and 3.6% had positive family history of pancreatic cancer in a first-degree relative. The most common symptoms were abdominal pain (67.4%), weight loss (50.8%) and jaundice (32.6%). Only a minority (15.5%) reported no symptoms at time of EUS. On EUS, mean lesion size was 40.5mm x 34.6mm (SD 18.4). Lesions were located most frequently in the head of pancreas (59.6%) followed by body (30%). Pancreatic duct was normal in 34.2% (66/193), while duct dilation being the most commonly reported abnormality (24.3%, 47/193). Most common pathological diagnosis was adenocarcinoma (66.3%), followed by neuroendocrine tumor (10.8%), benign tissue (9.8%), and others (5.2%). Mean age of patients diagnosed with adenocarcinoma was 63 years (SD 13).

Conclusions:

This is the first international multicenter study reporting epidemiologic data of solid pancreatic lesions evaluated by EUS in the GCC. Adenocarcinoma is the most frequent cause of solid pancreatic masses, with a lower age of diagnosis compared to those reported in other parts of the world. Future studies should try to identify risk factors for pancreatic cancer in GCC region.

Key Words: EUS; pancreatic cancer; endoscopy;

Funding Agency: None

TC-325 Alone is More Efficacious than Standard Endoscopic Hemostatic Modalities when Managing Patients Presenting with Malignant Gastrointestinal Bleeding: Meta-analysis of Individual Patient Data of Randomized Controlled Studies

Alali AA ¹, Pittayanon R ², Martel M³, Martins BC ⁴, Almadi MA ⁵, Barkun AN ⁶

¹Department of Medicine, Faculty of Medicine, Kuwait University, Jabriya, Kuwait; ²Department of Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand; ³Research Institute of the McGill University Health Centre, Montreal, QC, Canada; ⁴Endoscopy Unit, Instituto do Cancer do Estado de Sao Paulo ICESP, Hospital das Clinicas HCFMUSP, Faculdade de Medicina da Universidade de Sao Paulo, Sao Paulo, Brazil; ⁵Division of Gastroenterology, King Khalid University Hospital, King Saud University, Riyadh, Saudi Arabia; ⁶Division of Gastroenterology, The McGill University Health Center, Montreal General Hospital, McGill University, Montreal, Canada

Introduction:

Background: Novel topical hemostatic agents (THA) have shown promising results in treating patients with non-variceal gastrointestinal (GI) bleeding. However, data are limited as to their role in malignant GI bleeding. Practice guidelines made no recommendations for the preferred endoscopic therapy for malignant GI bleeding due to scarce data. The aim of this study was to perform individual patient data (IPD) meta-analysis assessing the effectiveness of THA in malignant GI bleeding.

Methods:

We performed a literature search of OVID MEDLINE, EMBASE, and ISI Web of Knowledge databases through November 2023. Randomized controlled trials (RCTs) assessing the efficacy of THA compared to standard endoscopic therapy (SET) in malignant GI bleeding were included. The original patient-level data from included trials were obtained from the principal investigators. PRISMA guidelines were followed. The quality of the evidence was evaluated using Cochrane tool, while the certainty of evidence was assessed using the GRADE approach. The primary outcome was immediate hemostasis, while secondary outcomes were further bleeding and 30-day rebleeding. Other outcomes included all-cause mortality, technical success, adverse events, and need for additional non-endoscopic treatment. Odds ratios (ORs) as outcome measure were pooled using logistic regression models.

Results:

A total of 985 citations were identified and 3 RCTs with a total of 160 patients were included; all assessed TC-325 (Hemospray™). TC-325 achieved immediate hemostasis more often than SET (OR 46.6 (5.89; 369.1)) with moderate level of certainty. Further bleeding (OR= 0.11 (0.05; 0.26)) and 30-day rebleeding (OR= 0.28 (0.11; 0.70)) were both significantly lower with TC-325 compared to SET with low level of certainty. All-cause mortality, technical success, and need for additional non-endoscopic treatment did not differ between the 2 groups. There were no adverse events reported in either group. Subgroup analysis confirmed the superior outcomes using TC-325 in patients with upper GI bleeding, but the limited data precluded analysis for the lower GI bleeding subgroup.

Conclusions:

Based on IPD meta-analysis of RCTs, TC-325 is more effective than standard endoscopic therapy in the initial management of patients presenting with malignant GI bleeding. TC-325 is the preferred first-line endoscopic therapy for malignant GI bleeding and should be incorporated in future practice guidelines.

Key Words: malignancy; GI bleed; endoscopy;

Funding Agency: None

Early Precut Sphincterotomy vs. Delayed Precut Sphincterotomy To Reduce Post-ERCP Pancreatitis: Multicenter Randomized Controlled Trial

Alali AA ¹, Maher A ², Alboraie M ², Maharshi S ³, Sharma SS ³

¹Department of Medicine, Faculty of Medicine, Kuwait University; ²Department of Internal Medicine, Al-Azhar University, Cairo, Egypt; ³Department of Gastroenterology, SMS Medical College and Hospitals, Jaipur, India

Introduction:

Deep biliary cannulation is essential for any therapeutic biliary intervention during Endoscopic Retrograde Cholangiopancreatography (ERCP). Prolonged cannulation attempts are associated with increased risk of post ERCP pancreatitis (PEP) reaching a rate of 10-15% with associated increased morbidity and mortality. Precut sphincterotomy using needle knife facilitates access to biliary tree, however it is usually deployed as a rescue method after failed standard methods. Delayed precut sphincterotomy is associated with increased risk of PEP, but the impact of early precut sphincterotomy remains unclear. The aim of this study is to compare the safety and efficacy of early precut sphincterotomy among patients undergoing ERCP.

Methods:

This was a multicenter randomized controlled study conducted in 3 centers in Kuwait, Egypt, and India during the period of September 2020 to May 2022. Adult patients (>18 years) undergoing ERCP for a biliary indication were considered for inclusion. After obtaining informed consent, patients were randomized into one of 2 arms: early precut after 2 failed attempts of standard cannulation (group A), or standard cannulation with precut allowed after 5 attempts (group B). The primary objective was to compare the incidence of PEP between the 2 groups. Secondary outcomes included overall cannulation rate, other adverse events, and cannulation time (Study registration number 1826/2021).

Results:

Overall, 104 patients were randomized to group A (n=52) and group B (n=52). The mean age was 46.4 years (SD 16.4), and majority were females (55.8%). There was no difference in baseline characteristics among the 2 groups. Development of PEP was significantly higher among standard cannulation arm compared to early precut (15.4% vs. 3.9%, p=0.04). Time to cannulation was significantly longer in the standard cannulation group (6.8 vs 4.1 mins, p<0.05). There was no difference in the rate of initial successful cannulation, bleeding, or perforation but cholangitis occurred more frequently among standard cannulation group (0% vs 7.7%, p=0.04).

Conclusions:

Early precut sphincterotomy results in lower risk of PEP compared to standard cannulation techniques without increasing the risk of other adverse events. Endoscopists should avoid prolonged cannulation attempts and utilize precut sphincterotomy technique early to avoid increasing the risk of post ERCP.

Key Words: ERCP; precut; pancreatitis ;

Funding Agency: None

Transesophageal Endoscopic Ultrasound with Fine Needle Biopsy of Centrally Located Lung Parenchymal Lesions, safety and yield

Aljabri J ¹, Alali AA ², Al-Elaewah A ³, Abdulsalam M ³, Al-Ghunaim E ³, Shehab D³, Khoder A ³, Khadadah^{1,3}

¹Respiratory unit, Department of medicine, Mubarak Al-kabeer hospital, Jabriyah, Kuwait; ²Department of medicine, Faculty of medicine, Kuwait University; ³Thoracic surgery and interventional pulmonology unit, Chest hospital, Kuwait

Introduction:

Parenchymal lung lesions needing biopsy are being increasingly identified. It remains challenging sampling some of these lesions, particularly centrally located parenchymal lung lesions. Conventional techniques such as transthoracic biopsy or bronchoscopy-endobronchial ultrasound occasionally are unable to reach these lesions due to their distance away from central airways or surrounding vascular structures. Transesophageal endoscopic ultrasound using fine needle biopsy (EUS-FNB) can overcome some of these challenges, but its role and safety in lung parenchymal lesion biopsy remains undefined.

Methods:

A retrospective case series was conducted of patients with centrally located parenchymal lung lesion undergoing EUS-FNB from the period of November 2020 to December 2022. The indication for the procedure, diagnostic yield, and adverse events were reviewed.

Results:

A total of 19 patients were identified and included in the analysis. The mean age was 59.4 (\pm 7.0) years of which 52.6 % (n=10) were male. The indication for all cases for EUS-FNB was need for biopsy and lesion that difficult to reach by endobronchial ultrasound biopsy that required larger amount of material for analysis, after discussion in multidisciplinary team meeting. Conscious sedation was used for 94.7% (n=18) of the procedures. The mean tumor size was 5.5cm (\pm 2.2 cm). The majority were located in either the right upper lobe, or in either lower lobe (26.3% each). All lung lesions were biopsied using 22G FNB needle with a median of 3 passes (range 1-4). Transesophageal EUS-FNB yielded tissue for diagnosis in 94.7% (n=18) of patients; 8 lung adenocarcinoma, 2 small cell lung cancer, 1 lung squamous cell carcinoma, 3 metastatic carcinoma, 2 sarcomas and 2 benign etiologies (sarcoidosis and lung abscess). One patient had non-diagnostic sampling and was found to have metastatic sarcoma on follow-up. There was one reported mild adverse event: asymptomatic small pneumothorax that resolved spontaneously. There were no other complications reported during immediate, 1- and 2-week post procedure follow up.

Conclusions:

For carefully selected patients transesophageal EUS-FNB is an alternative and safe diagnostic sampling modality that provides high diagnostic yield for patients with centrally located parenchymal lung lesions that may be difficult to reach by conventional biopsy techniques. Further larger prospective studies are needed to further support this observation.

Key Words: EUS; lung cancer; biopsy;

Funding Agency: None

Medicine

66

Safety and Efficacy of Periclavicular Brachial Plexus Block for Upper Extremity Surgeries: A Network Meta-Analysis of Randomized Clinical Trials

Alhindi NI^{*1}, Mortada HH², Almalki ZT¹, Attar AF¹, Alharbi OM¹, Alamri SA¹, Halawani AA¹, Bamakhrama BA^{3,4}, Alsuhaim MA⁴, Alnjaim NA², Fadel ZT³

¹ Faculty of Medicine, King Abdulaziz University, Rabigh, Saudi Arabia, ²Division of Plastic Surgery, Department of Surgery, King Saud University Medical City, King Saud University Medical City and Department of Plastic Surgery & Burn Unit, King Saud Medical City, Riyadh, Saudi Arabia; ³Division of Plastic and Reconstructive Surgery, Department of Surgery, King Abdulaziz University, Saudi Arabia⁴, Department of Plastic and Reconstructive Surgery, National Guard Hospital, Jeddah, Saudi Arabia

Introduction:

Upper extremity surgeries often necessitate regional anesthesia techniques for optimal postoperative pain management and faster rehabilitation. The periclavicular brachial plexus block (PBPB) has emerged as a promising alternative to traditional approaches. The purpose of this study is to evaluate the efficacy and safety of different approaches of BPBP in patients undergoing upper extremity surgeries for achieving the best pain management.

Methods:

This network meta-analysis adhered to the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines. A comprehensive search was conducted across multiple databases, including Embase, MEDLINE, and Cochrane. With no timeframe limitation. Primary outcomes included postoperative pain scores and opioid consumption. Secondary outcomes consisted of block onset time, duration of analgesia, and adverse events.

Results:

Following meticulous selection processes, 44 RCTs, published between 1994-2023, were included in this review, encompassing a sample of 3,684 participants. Among the comparable successes across brachial plexus blockade approaches, failure of achieving complete block is found to be insignificant and all techniques of brachial plexus block have the same success rate of achieving complete block. The overall complication was found to be significantly lower in the retroclavicular compared to supraclavicular (IV= 0.13, CI 95%, 0.02: 0.71), interscalene (IV= 42.14, CI 95%, 4.25: 417.13). The need for rescue opioids were found to be significantly lower in the retroclavicular compared to supraclavicular (IV= 0.36, CI 95%, 0.13: 0.98) and interscalene (IV= 3.45, CI 95%, 1.08: 11.03) approach

Conclusions:

Retroclavicular block seems to be the optimal method for providing adequate, efficient, and safe anesthesia for the upper extremity. Caution must be taken when adopting interscalene brachial plexus block as it is found to be associated with significant complication rate compared to other approaches.

Key Words: Brachial Plexus; Periclavicular; Nerve block;

Funding Agency: Not applicable

Establishing a Model of Systemic Inflammation to Assess the Efficacy of Pulmonary Surfactant on Inflammation-Induced Tissue Damage

Alobaid DA*¹, Alonaizi MA², Alzaid FN³, Braysh K², Samaro BH⁴

¹ 4th year medical student; Faculty of Medicine, ² Department of Anatomy; Faculty of Medicine, Kuwait University, ³ Dasman Diabetes Institute, Kuwait ⁴ 4th year biochemistry student; Faculty of Science, Kuwait University

Introduction:

Inflammation is a key mechanism underlying several diseases. Inflammation initially begins as a defense mechanism, but if not regulated appropriately, it can lead to deleterious effects. Pulmonary surfactant contains properties that aid in host immunity, especially in cases of lung infections. The surfactant proteins A and D (SP-A and SP-D) are the main components that work in synergy with host immunity to combat infection and help recovery by enhancing pathogen clearance/phagocytosis, as well as releasing anti-inflammatory cytokines to dampen the inflammation. There have been limited studies conducted to see if the effect of exogenous surfactant - specifically that with proteins SP-A and SP-D - can be used therapeutically in cases of inflammation or infection.

Objectives: We primarily aimed to look at the efficacy of surfactant containing SP-A and SP-D in mitigating inflammation in mice exposed to Lipopolysaccharide (LPS) induced systemic infection. Prior to doing so, we aimed to establish a model of systemic inflammation to serve as a baseline for the surfactant study.

Methods:

To create the baseline model, a murine model of LPS-induced inflammation was used. We intraperitoneally injected a group of experimental C57Bl/6 mice with 5 mg/kg of LPS (n=15). Here we used two different vehicle controls; one group was injected with saline after LPS administration, another was only injected with glucocorticoids and no LPS. Two hours after administration, blood samples were evaluated for appropriate inflammatory markers. All mice were euthanized, and all major organs were harvested for further analysis. Statistical analysis was performed using the unpaired two-tailed Student's t-test on GraphPad.

Results:

We first show that LPS induced systemic inflammation in a dose-dependent manner ($P < 0.05$). Glucocorticoid administration dampened the inflammatory response in LPS-injected mice and modulated key cytokines and inflammatory markers ($P < 0.05$). These findings serve as a baseline report with reference values that can be utilized when comparing SP-A and SP-D efficacy on systemic inflammation.

Conclusions:

Findings from this study will serve as a baseline and will allow us to test the efficacy of surfactant in controlling infection and inflammation clearance in LPS infected mice.

Acknowledgments: I would like to thank the Research Core Facility and the Animal House for their contributions and generous support towards this research.

Key Words: Inflammation; Lipopolysaccharide; Pulmonary Surfactant;

Funding Agency: NONE

Exploring Knowledge and Competency of Physicians in Managing Celiac Disease in Kuwait: A Cross-Sectional Survey

Alrashidi RS*, Chaudhary NT, Alenezi RT*, Alenezi RT, Aladwani NA, Alazemi FY, Alanzi AF, Qasem WA

¹6th year Medical Student, Faculty of Medicine, Kuwait University; ²Department of Community Medicine and Behavioral Sciences, Faculty of Medicine, Kuwait University; ³Department of Surgery, Mubarak Alkabeer Hospital, Ministry of Health.

Introduction:

Celiac disease (CD) is an autoimmune disorder that occurs in genetically predisposed individuals, and it is triggered by ingesting the protein gluten, which results in intestinal inflammation and damage. In addition, the diagnosis rates of CD are increasing due to a rise in the incidence of the disease. If CD is left undiagnosed, several complications, such as malabsorption and malnutrition, can arise.

Objective: To investigate the level of awareness of CD among physicians in Kuwait to detect the disease early and avoid misdiagnosis.

Methods:

A questionnaire containing 42 items regarding the knowledge of CD was personally distributed to 284 physicians of different ranks and specialties within general hospitals and randomly selected polyclinics in the six health governorates in Kuwait. The highest achievable score was 35. Participants' CD knowledge was classified as: low if they scored <15 points or high if they scored ≥15 points.

Results:

There was a significant association between certain medical specialties and the level of awareness of CD. This study revealed that 60.7% of internal medicine physicians had scores ≥15 points (high knowledge), making them the specialty group with the highest scores. The lowest scoring group was family medicine physicians, where 52.8% had scores <15 points.

Conclusions:

The level of awareness of CD is low among a significant number of physicians in Kuwait. Efforts should be made in the future to combat this low awareness by launching an annual national campaign for CD and providing educational seminars.

Key Words: awareness; physician; celiac disease;

Funding Agency: non

Microglial Morphological Heterogeneity Implications in Diet-Induced Inflammation in the Hippocampus

Fares Alhawaj* Mohammed Alonaizi# KAwthar Braysh Anwar Kandari Michayla Williams Fawaz Alzaid

¹ Department of Anatomy, Faculty of Medicine, Kuwait University, ² Department of Bioenergetics and Neurometabolism, Dasman Diabetes Institute

Introduction:

Type 2 diabetes (T2D) is associated with several metabolic and cognitive abnormalities. Neuroinflammation has been shown to drive cognitive decline. Microglia, the resident immune cells of the central nervous system are central to neuroinflammation. When inflamed, they undergo changes in their shape and marker expression. Current research has yet to agree on delineating the exact changes in microglia as they gradually become reactive, the research on microglial morphology in T2D is significantly understudied. Therefore, we studied those changes in models of T2D.

Objectives

- Establish associations between microglia morphotypes, their activation status, and in vivo metabolic state.
- Determine whether the microglial shape is a good predictor of their activation status in models of T2D.

Methods:

C57Bl6/J mice (n=4) were put under high-fat diet for 11 weeks. We then ran oral glucose tolerance test (OGTT) and insulin tolerance test (ITT). After sacrifice, the harvested brains were used for image analysis using confocal microscopy. We stained sagittal sections containing the hippocampus for Iba1, to visualize the microglia, and DAPI for nuclei. Using Fiji tools and plugins, we processed the images and ran fractal analysis on each cell. Fractal analysis calculated the fractal dimension, lacunarity, density, span ratio, circularity, perimeter, and area. We then drew correlations between the metabolic phenotypes and morphotypic data. Finally, brains from an additional five mice, fed normal chow diet were analyzed in by confocal microscopy and cytometry correlate change in microglia patterns and their inflammatory state.

Results:

Our data show a tendency for microglia to display more lacunarity, and span ratio, and less density under HFD conditions. OGTT positively correlates with density, and negatively with perimeter and area. From correlations with FACS, forward scatter (cell size) is negatively correlated with the fractal dimension and area. CD115 is positively correlated with lacunarity and density.

Conclusions:

Diet-based predispositions are implicated in inflammation-driven hippocampal pathologies. Further studies are required to determine the extent to which fractal analysis can represent microglial status in models of T2D.

Acknowledgements

We thank the Animal Resources Centre and Research Core facility (SRUL02/13; GM01/15) at Kuwait University. Work was supported by grant RM01/19 to MAO through KU.

Key Words: Microglia; Inflammation; Fractal Analysis;

Funding Agency: SRUL02/13; GM01/15: Animal Resources Centre and Research Core facility, Kuwait University RM01/19: Mohammed Alonaizi, Kuwait University.

Evaluation of the Efficiency of the ‘Home Mechanical Ventilation Program’ in Preventing Rehospitalizations of Discharged ICU Patients in a Tertiary Institution

Firas Kseibi, Eiad Kseibi, Mohamed Tlayjeh, Wael Kalou, Adel Kalou, Jad Attari, Abduljalil El, Sibai

King Faisal Specialist Hospital & Research Center

Introduction:

Background: In Saudi Arabia, home mechanical ventilation is underutilized, particularly in the context of end-of-life care. The Home-Ventilation Program (HMVP) initiated by King Faisal Specialist Hospital (KFSH&RC) in 2008 provides 24/7 ventilator care to patients discharged from the Intensive Care Unit (ICU). This study aims to assess the success of HMVP in maintaining patients on mechanical ventilation within their homes, outside the hospital setting.

Methods:

A retrospective review of medical records from 2008 to 2023 will include all adult and pediatric patients enrolled in HMVP. Demographic information, clinical data, and outcomes will be collected using Case Record Forms. Statistical analysis will report categorical variables as proportions and continuous variables as means or medians.

Results:

The study will explore socioeconomic effects, epidemiological associations, ER visits, hospital readmission rates, length of stay, and mortality. The goal is to predict future admission and discharge averages based on historical data. The expected duration of the study is 6 months. Ethical Considerations: Informed consent will be waived due to the non-invasive nature of data collection. The Research Advisory Committee will review and approve the protocol. Subject confidentiality will be maintained through the use of Study Identification Numbers (SID). Literature Review: International studies demonstrate the success of home mechanical ventilation programs in improving patient outcomes, reducing rehospitalizations, and enhancing adherence. Financial savings and increased patient adherence rates are reported, supporting the global trend of implementing such programs.

Conclusions:

This research seeks to contribute to the understanding of the effectiveness of HMVP in the Saudi Arabian context. The findings may inform healthcare policies, improve patient care, and encourage the expansion of home mechanical ventilation programs in the region.

Key Words: Mechanical Ventilation; Intensive Care Unit; Mortality;

Funding Agency: NONE

ChatGPT Knowledge Evaluation in Basic and Clinical Medical Sciences: Multiple Choice Question Examination-Based Performance

Sultan Ayoub Meo¹, Abeer A. Al-Masri¹, Metib Alotaibi², Muhammad Zain Sultan Meo³, Muhammad Omair Sultan Meo

^{3,1}Department of Physiology, College of Medicine, King Saud University; ²University Diabetes Unit, Department of Medicine, College of Medicine, King Saud University, Riyadh; ³College of Medicine, Alfaisal University, Riyadh

Introduction:

The Chatbot Generative Pre-Trained Transformer (ChatGPT) has garnered great attention from the public, academicians, and science communities. For the use of ChatGPT in education, research and healthcare, different perspectives exist with some level of ambiguity around its acceptability and ideal uses. However, literature is acutely lacking in establishing a link to assess the intellectual levels of ChatGPT in the medical sciences. Therefore, the present study aimed to investigate the knowledge level of ChatGPT in medical education both in basic and clinical medical sciences, multiple-choice question (MCQs) examination-based performance and its impact on the medical examination system.

Methods:

Initially, a subject-wise question bank was established with a pool of multiple-choice questions (MCQs) from various medical textbooks and university examination pools. The research team members carefully reviewed the MCQ contents and ensured that the MCQs were relevant to the subject's contents. Each question was scenario-based with four sub-stems and had a single correct answer. 100 MCQs in various disciplines, including basic medical sciences (50 MCQs) and clinical medical sciences (50 MCQs), were randomly selected. The MCQs were manually entered one by one, and a fresh ChatGPT session was started for each entry to avoid memory retention bias. The task was given to ChatGPT to assess the response and knowledge level of ChatGPT. The first response obtained was taken as the final response. Based on a pre-determined answer key, scoring was made on a scale of 0 to 1, with zero representing incorrect and one representing the correct answer.

Results:

ChatGPT obtained 37/50 (74%) marks in basic medical sciences and 35/50 (70%) marks in clinical medical sciences, with an overall score of 72/100 (72%) in both basic and clinical medical sciences.

Conclusions:

The ChatGPT obtained a satisfactory score in basic and clinical medical science examinations. This study's findings suggest that ChatGPT may be able to assist medical students and faculty in medical education settings since it has potential as an innovation in the framework of medical sciences and education. Acknowledgments: The authors extend their appreciation to the "Deputyship for Research and Innovation, Ministry of Education in Saudi Arabia for funding this research work through project no (IFKSUOR3-4-3)".

Key Words: ChatGPT; knowledge; ; intellect level; medical education;

Funding Agency: Funding: Deputyship for Research and Innovation, Ministry of Education, Saudi Arabia (IFKSUOR3- 4-3)

In-vitro synergy testing of ceftazidime-avibactam with aztreonam for the treatment of carbapenem resistant Enterobacterales

Abdulla A ¹, AlShalabi H ¹, Mokaddas E ^{1,2}

¹ Laboratory Department, Ibn Sina Hospital, Kuwait;

² Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait

Introduction:

Infections due to carbapenem- resistant Enterobacterales (CRE) have limited therapeutic options. Our study evaluated a practical laboratory method of testing for clinically significant synergy between ceftazidime-avibactam(CAZ/AVI) with aztreonam (ATM).

Methods:

A total of 21 carbapenem-resistant Enterobacterales isolated were subjected to genome analysis by EazyplexR SuperBug CRE (AmplexDiagnostics GmbH). Of those, 16 were *Klebsiella pneumoniae* and 5 were *Escherichia coli* isolates. The minimum inhibitory concentrations (MIC) of those isolates was determined for CAZ/AVI alone using E-test (bioMerieux) and BD Phoenix (Becton Dickinson), for ATM using BD Phoenix only. Gradient strip cross method was used for synergy testing between CAZ/AVI and ATM. In strip-cross method, the ATM strip is placed over the inoculated agar surface and CAZ/AVI strip is placed perpendicular to the ATM strip at an intermediate susceptibility breakpoint of ATM (8 µg/L). After overnight incubation, an ATM MIC value of ≤ 4 µg/ml is interpreted as susceptible according to the CLSI.

Results:

Of the 21 isolates tested, 17 (81%) were NDM producers and 4 (19%) were OXA producers (2 Oxa 48 and 2 Oxa 181). All the NDM producers were found to be resistant to CAZ/AVI (> 8/4 µg/ml) and ATM (> 4µg/ml) by the BD Phoenix susceptibility testing method. NDM producers were resistant to CAZ/AVI by E-test method as well. All the four OXA producers were susceptible to CAZ/AVI by both E-test and Phoenix. All the 21 isolates demonstrated synergy by the gradient strip cross method showing MIC value of ≤ 4 µg/ml.

Conclusions:

The combination of CAZ/AVI and ATM demonstrated significant synergy in all our isolates. The gradient strip cross method provides a rapid and practical laboratory approach for testing synergy. With the ever-increasing resistance among bacteria and limited therapeutic options available, the data presented can aid in the management of CRE infection using this new therapeutic combination.

Key Words: Ceftazidime/ avibactam; Aztreonam; Synergy;

Funding Agency: None

Performance comparison of Etest, MICRONAUT-AM EUCAST and CLSI antifungal susceptibility testing methods for clinical *Candida kefyr* isolates

Ahmad S* ¹, Alfouzan W ¹, Meis JF ^{2,3,4}, Parker JE ⁵, Kelly SL ⁶, Asadzadeh M ¹

¹ Department of Microbiology, Faculty of Medicine, Kuwait University, Safat, Kuwait; ²Department of Medical Microbiology and Infectious Diseases, Canisius-Wilhelmina Hospital, Nijmegen, the Netherlands; ³ Center of Expertise in Mycology Radboudumc/Canisius Wilhelmina Hospital, Nijmegen, the Netherlands; ⁴ Department I of Internal Medicine and Excellence Center for Medical Mycology, Faculty of Medicine, University Hospital Cologne, Cologne, Germany; ⁵ Molecular Biosciences Division, School of Biosciences, Cardiff University, Cardiff, United Kingdom; ⁶ Institute of Life Science and College of Medicine, Swansea University, Swansea, Wales, United Kingdom

Introduction:

Accurate antifungal susceptibility testing (AST) of clinical yeast species is crucial for proper patient management. This study evaluated susceptibility testing of clinical *Candida kefyr* isolates against fluconazole, voriconazole, micafungin and amphotericin B (AMB) by Etest, MICRONAUT-AM EUCAST assay (Micronaut) and microdilution reference method according to Clinical and Laboratory Standards Institute guidelines (CLSI) and correlated AMB AST data with alterations in ERG2/ERG3 genes and total cell sterol levels.

Methods:

Clinical *C. kefyr* isolates (n=74) identified by phenotypic and molecular methods were tested. Essential agreement (EA, + 2 dilution) between these methods and categorical agreement (CA) based on the epidemiological cut-off values of <1.0 µg/ml, <0.03 µg/ml, <0.5 µg/ml and <1.0 µg/ml for defining wild-type isolates for fluconazole, voriconazole, micafungin and AMB, respectively, were determined. Results for AMB were correlated with ERG2 and ERG3 mutations and total cell ergosterol levels.

Results:

CA of >97.3% was recorded between any two methods while, EA varied between 89.2%-97.3%, 98.6%-100% and 87.8%-98.6% for fluconazole, voriconazole and micafungin, respectively. For AMB, CA and EA between CLSI and Micronaut were 95.9% (3 major errors) and 87.8%, CLSI and Etest were 94.6% (4 major errors) and 85.1% and between Micronaut and Etest were 98.6% and 73.0%, respectively. Nonsynonymous ERG2/ERG3 mutations were found in 7 of 8 isolates non-wild-type isolates for AMB and lacked ergosterol.

Conclusions:

Our data show that Etest is a simple and excellent alternative to the EUCAST or CLSI methods for AST of *C. kefyr* isolates for fluconazole, voriconazole, micafungin and AMB. Excellent CA and EA between Etest and Micronaut but not with CLSI for AMB with concomitant ERG2/ERG3 alterations and altered sterol profiles are consistent with reduced minimum inhibitory concentration (MIC) determination for AMB by the reference method.

Key Words: *Candida kefyr*; Antifungal susceptibility testing; MICRONAUT-AM assay;

Funding Agency: KURS grant MI02/20 supported this study

High Protein Diet Increases the Risk of Allergic Sensitization But Not Asthma In Mice Through Modulation Of The Cytokine Milieu Toward Th2 Bias

Al-Herz W* ¹, Azizieh F ², Raghupathy R ³

¹ Department of Pediatrics, College of Medicine, Kuwait University, ² Department of Mathematics and Natural Sciences, Gulf University for Science and Technology, ³ Department of Microbiology, College of Medicine, Kuwait University.

Introduction:

The role of different nutrients on allergic sensitization is not clear. In this study we aimed to determine the effect of high protein diet on allergic sensitization, cytokines profile and asthma in mice.

Methods:

Seven to eight-week old female BALB/c mice were fed either normal (ND) or high protein (HP) diet and were sensitized with ovalbumin intraperitoneally followed by intranasal challenge. Allergic sensitization was tested by measuring anti-OVA IgE, IgG1 and IgG2a antibodies. Cytokines levels were tested by multiplex ELISA in splenocyte supernatants after stimulation. Airway inflammation was tested by measuring total and differential cell counts in bronchoalveolar lavage fluid and by measuring bronchial mucus production, goblet cell hyperplasia and perivascular and peribronchial inflammation severity scores by histologic examination.

Results:

Mice fed HP diet had a significant increase in weight and higher levels of OVA-specific IgE and IgG1 antibodies compared to the ND group. In addition, they showed a selective Th2 bias in cultured splenocyte supernatants compared to the ND group. However, the level of airway inflammation was comparable between both groups.

Conclusions:

HP diet increases the risk of allergic sensitization though increase in Th2 cytokines. Efforts should be made to define the upper limit of protein in the diet that does not predispose to allergic sensitization. The effect of diet on health should remain a focus of research for the establishment of optimal health and resilience.

Key Words: High protein diet; Allergy; Cytokines;

Funding Agency: Kuwait Foundation for the Advancement of Science (KFAS) project number PR19-13SL-02.

Effect of HMGB1 and HBD-3 levels in the diagnosis of sepsis- A comparative descriptive studyAl-Mansour N ¹, Al-Mahmeed A ¹, Bindayna K ¹¹ Microbiology, Immunology and Infectious Diseases, College of Medicine and Medical Sciences, Arabian Gulf University, Bahrain**Introduction:**

Sepsis is a life-threatening condition characterized by a dysregulated host response to infection. Early and accurate diagnosis of sepsis is crucial for timely intervention and improved patient outcomes. In recent years, there has been growing interest in identifying reliable biomarkers to aid in the diagnosis of sepsis. This study aims to evaluate the levels of two potential biomarkers, high-mobility group box 1 (HMGB1) and human beta-defensin 3 (HBD-3) and compare their diagnostic efficacy in sepsis. Objectives: This study aimed to evaluate the levels of two potential biomarkers, high-mobility group box 1 (HMGB1) and human beta-defensin 3 (HBD-3) and evaluate their diagnostic validity in sepsis.

Methods:

In this case-control study, the plasma concentration of HMGB-1 and HBD-3 was measured using an enzyme-linked immunosorbent assay (ELISA). Two groups, totaling 144 people, were formed; 66 patients treated in the ICU for sepsis were included in the target patients' group. 78 Blood donors from the Salmaniya Medical Complex Blood Bank who had no prior infection or inflammatory disease made up the control group. The statistical computations were performed using the STATA 8® statistical software tool (StataCorp LP, College Station, TX, USA).

Results:

In patients' mean HMGB-1 levels were 2.1442 ng/ml, compared to 0.62141 ng/ml in the control group. The mean HBD-3 level was 1068.453 ng/ml in sepsis patients versus 589.935 ng/ml in controls. A significant difference between the two groups has been observed in both biomarkers ($P < 0.05$). The sensitivity and specificity of HMGB-1 was 75.8% and 41.3%, respectively. The sensitivity and specificity of HBD-3 were 63.6% and 93.5%, respectively. To strengthen the outcome information, the results of control group in both target biomarkers is considered as normal baseline.

Conclusions:

The levels of HMGB-1 and HBD-3 between healthy and septic subjects varied significantly. HMGB-1 and HBD-3 levels in the blood tested together might accurately identify sepsis. These findings contribute to the growing body of evidence supporting the utility of biomarkers in sepsis diagnosis and may ultimately aid in the development of more effective diagnostic strategies for sepsis management. Funding: The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the Arabian Gulf University to Prof. Khalid Bindayna (E21-PI-10/17).

Acknowledgements: Thanks to everyone who participated in this research, including patients, volunteers, and medical staff.

Key Words: Sepsis; HMGB1; HBD-3;

Funding Agency: by the Arabian Gulf University to Prof. Khalid Bindayna (E21-PI-10/17).

Discordance in Phenotypic and Genotypic Susceptibility Testing for Streptomycin due to Nonsynonymous/Nonsense/Deletion Frame-shift Mutations in *gidB* among Clinical *Mycobacterium tuberculosis* Isolates in Kuwait

Al-Mutairi NM*, Ahmad S, Mokaddas E

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

Introduction:

Background: Increasing reports of resistance to newer anti-tuberculosis the drugs have prompted the search for other alternative drugs. Streptomycin could be used for the treatment of drug-resistant tuberculosis if susceptibility of *Mycobacterium tuberculosis* isolate to streptomycin could be accurately detected. This study performed phenotypic and genotypic susceptibility testing of 118 *M. tuberculosis* isolates for streptomycin.

Methods:

Sixty-eight multidrug-resistant and 50 pansusceptible *M. tuberculosis* isolates cultured from 85 pulmonary and 33 extrapulmonary samples were used. Phenotypic drug susceptibility testing (DST) was performed using the mycobacteria growth indicator tube (MGIT) 960 System. Genotypic DST was done by GenoTypeMTBDRplus assay and PCR-sequencing of *rpsL*, *rrs* and *gidB* genes. Multidrug-resistant isolates were genotyped by spoligotyping.

Results:

Phenotypic DST results identified 61 of 68 multidrug-resistant isolates as resistant to the streptomycin while 50 isolates were susceptible to all four drugs tested. Genotypic resistance testing for rifampicin and isoniazid yielded expected results. None of the 50 pansusceptible isolates contained a mutation in *rpsL* or *rrs*, while 47, 2 and 1 STR-resistant isolate contained an *rpsL*, *rrs* and *rpsL* + *rrs* mutation, respectively. Of the remaining 11 STR-resistant isolates, 9 isolates contained deletion frame-shift/nonsynonymous mutations in *gidB*. Surprisingly, 13 pansusceptible isolates also had deletion frame-shift/nonsense/nonsynonymous mutations in *gidB*.

Conclusions:

Our data show that, similar to rifampicin, ethambutol and pyrazinamide, streptomycin also exhibits discordant phenotypic and genotypic DST results for some *M. tuberculosis* isolates. Hence, streptomycin should be included in therapy regimens only if phenotypic and genotypic resistance testing indicate susceptibility to avoid amplification of resistance and toxic side effects.

Key Words: Mycobacterium tuberculosis; Streptomycin; Phenotypic & Genotypic susceptibility

Funding Agency: none

Occurrence of pathogenic and allergenic molds in the outdoor and indoor environment in and around a major hospital in Kuwait

Asadzadeh M, Ahmad S, Khan Z

Department of Microbiology, Faculty of Medicine, Kuwait University

Introduction:

Aspergilli and other molds are prevalent in the environment and are an important source of opportunistic infections and seasonal allergies in susceptible patients. This study determined the occurrence, species distribution and antifungal susceptibility profile of various molds in outdoor/indoor air in and around a major hospital in Kuwait.

Methods:

Fortnightly sampling was performed with Anderson air sampler in indoor air of medical/surgical wards/ICUs and outdoor (ground and ~60 feet above ground-level) air near a major hospital. Malt extract agar plates were exposed for 20 min, incubated at 30°C for up to 5 days and colony forming units (CFU)/cubic meter were calculated. Molds were identified by colony and microscopic characteristics up to generic/section level and/or by PCR-sequencing of rDNA/ β -tubulin/calmodulin genes. Antifungal susceptibility testing was done by Etest.

Results:

A total of 6719 CFUs were obtained from outdoor (n=4406) and indoor (n=1773) environment. Fungal areospora included >20 genera including *Cladosporium* spp. (n=2311), *Aspergillus* spp. (n=1327), *Penicillium* spp. (n=1325), *Paecilomyces* spp. (n=473), *Alternaria* spp. (n=218), *Bipolaris* spp. (n=133) and other molds (n=193). Isolation frequency was higher in October/November which coincides with the peak allergy season in Kuwait. Clinically important aspergilli included all four *Aspergillus* sections (Nigri, n=862; Flavi, n=182; Fumigati, n=166 and Terrei, n=58) and β -tubulin/calmodulin gene sequencing identified 10 rare aspergilli. Itraconazole-resistant *A. fumigatus* isolates were also recovered.

Conclusions:

More than 20 fungal genera were isolated, and their isolation frequency was higher during peak allergy season in Kuwait. *Cladosporium* spp., *Penicillium* spp. and *Aspergillus* spp. were found in indoor hospital air. Presence of triazole-resistant *A. fumigatus* in the Kuwaiti environment may provide a reservoir for difficult to treat invasive infections in susceptible patients.

Key Words: Environmental molds; Allergy; Triazole resistance;

Funding Agency: Unfunded

Antibiotics Resistance Profile of Clinical Isolates of *Pseudomonas aeruginosa* Obtained from Farwaniya Hospital in Kuwait Using Phenotypic and Genotypic Methods

¹ Al-Thaferi RS*, ^{2,3} Alfouzan WA, ³ Mustafa AS

¹ MSc student, Department of Microbiology, College of Medicine, Kuwait University, Kuwait; ² Microbiology Unit, Department of Laboratory Medicine, Farwaniya Hospital; ³ Microbiology Department, College of Medicine, Health Science Centre, Kuwait University, Kuwait

Introduction:

Pseudomonas aeruginosa is a common causative agent of nosocomial infections. The World Health Organization (WHO) has recognized *P. aeruginosa* as a multidrug-resistant bacterium that presents a global threat to hospitalized patients in intensive care units (ICU) or on medical devices. The aim of this study was to evaluate the prevalence of multidrug-resistant (MDR) *P. aeruginosa* isolates along with their susceptibility profile, and to determine the basis of resistance in MDR isolates by detecting the resistance-causing genes using PCR and whole-genome sequencing (WGS) by Nanopore sequencing method.

Methods:

A total number of 100 samples including respiratory, urine, and blood samples were obtained from patients admitted to ICU and wards in Farwaniya Hospital who had *P. aeruginosa* infections. The samples were cultured on MacConkey agar and MacConkey agar supplemented with meropenem. Identification and sensitivity/resistance tests were performed for each isolate using the VITEK® 2 system. Each isolate was also tested for susceptibility to specific antibiotics by the broth microdilution method. Seventeen antimicrobial agents were used for susceptibility tests. Detection of resistance genes was performed by two genotypic methods, i.e., PCR followed by agarose gel electrophoresis, and the analysis of WGS data by artificial intelligence using machine learning.

Results:

Among 100 samples, 82 were from patients in wards and 18 from ICU. The aminoglycoside group of antibiotics demonstrated maximum sensitivity against *P. aeruginosa*, with declining susceptibility to carbapenems, and ciprofloxacin. Among the MDR isolates, 14 MDR *P. aeruginosa* were detected among wards while 1 isolate from the ICU using phenotypic methods (the VITEK® 2 system and broth microdilution methods). Several resistance genes were identified, including bla-VEB-1, bla-VEB-9, bla-NDM, bla-VIM-2, bla-VIM-30, bla-VIM-9, bla-IMP, bla-OXA50, bla-OXA1, bla-OXA10, aph(3')-II b, aph(3')-I b, aac(6')-Ib, ant(3'')-Ia, and qnr S using genotypic methods (PCR and WGS). Among the MDR isolates, only 27% of the resistance genes detected by WGS had been detected by PCR.

Conclusions:

Both phenotypic and genotypic methods can be used to identify MDR *P. aeruginosa*. However, WGS was found better than PCR in detecting antibiotic resistance genes. Hence, WGS can replace PCR for the detection of MDR genes.

Key Words: *P. aeruginosa*; multidrug-resistant ; whole genome sequencing;

Funding Agency: College of Graduate Studies and Research Sector (Project Number: YM02/23).

Premarital screening of the viral hepatitis among Saudi nationalsAlzahrani AA ¹, ALTALHI YA ¹, Alghamdi AS ¹, Muhandis SM ², Al Aboud DM ³, Shehab GM ⁴, Abdel-Moneim As ⁵¹ College of Medicine, Taif University, Al-Taif, Saudi Arabia, ² Blood Bank Center, Ministry of Health, Al-Taif, Saudi Arabia, ³Department of Medicine, College of Medicine, Taif University, Al-Taif, Saudi Arabia, ⁴ Department of Biochemistry, College of Medicine, Taif University, Al-Taif, Saudi Arabia, ⁵ Department of Microbiology, College of Medicine, Taif University, Al-Taif, Saudi Arabia**Introduction:**

Viral hepatitis, including hepatitis B (HBV) and hepatitis C (HCV), represents a significant public health concern worldwide. In Saudi Arabia, premarital screening programs have been implemented to prevent the transmission of blood-borne viral infections. The objective of this study was to screen the incidence of blood-borne viral hepatitis among Saudi nationals as part of the premarital screening program.

Methods:

A retrospective longitudinal study was conducted using 91,000 medical records from a single center in the Western region of Saudi Arabia. The study included individuals who underwent premarital examination between 2016 and 2021 for the presence of hepatitis B (HBV) and hepatitis C (HCV) viruses. Serological tests were used as screening and confirmatory tests. HBV surface antigen (HBs Ag) was used as a screening test, while HBV core antibody (HBc Ab) was used as a confirmatory test for HBV infection. For HCV, anti-HCV antibodies were used as a screening test, and HCV RNA detection using real-time reverse transcriptase polymerase chain reaction (RT-PCR) was used as a confirmatory test.

Results:

Among the screened individuals, the study reported a presence of 0.42% HBV infections (378/91,000) indicated by the presence of both HBs Ag as a screening test and HBc Ab as a confirmatory test. Additionally, 0.23% (208/91,000) of cases were found to be exposed to HCV, including 0.05% (49/91,000) active HCV cases positive for HCV RNA, confirming the infection, and 0.17% (159/91,000) individuals with positive HCV antibodies but no detectable HCV RNA.

Conclusions:

The study concluded that there is a low prevalence of HBV and HCV among Saudi citizens who underwent premarital screening. These findings highlight the importance of using HBV surface antigen detection as a screening test and HBV core antibody detection as a confirmatory test for HBV, while anti-HCV antibodies are effective as a screening test for HCV with HCV RNA detection serving as a confirmatory test. Premarital screening plays a crucial role in preventing the transmission of blood-borne viral infections. The results provide valuable data for public health authorities and contribute to the understanding of the epidemiology of viral hepatitis in Saudi Arabia.

Acknowledgment: This study was supported by the Deanship of Scientific Research, Taif University.

Key Words: HBV, Saudi Arabia; HCV; pre-marital;

Funding Agency: Deanship of Scientific Research, Taif University

Tryptophan metabolite ITE attenuates LPS-induced MMP-9 expression in monocytic cells via NF- κ B/AP-1 Axis

Fatemah Bahman¹, Nadeem Akhter¹, Shihab Kochumona¹, Hana Drobiova², Taxy Jacob¹, Fahd Al-Mulla³, Rasheed Ahmad
Dasman Diabetes Institute

Introduction:

Background: MMP-9 and LPS are elevated in obesity and participate in metabolic dysfunction. ITE, an endogenous aryl hydrocarbon receptor (AhR) ligand, plays an important role in inflammation. Herein, we investigated whether ITE could suppress LPS-induced MMP-9 expression, and if so, which signaling pathway was involved.

Methods:

Human monocytic THP-1 cells and primary monocytes were incubated with LPS in the presence of a vehicle or ITE. MMP-9 mRNA and protein were determined by real-time RT-PCR and ELISA, respectively. MMP-9 biological activity was determined by zymography. NF- κ B or AP-1 binding to the promoter region of MMP-9 was determined by ChIP-qPCR.

Results:

Here, we report that ITE suppresses LPS-induced MMP-9 gene expression and protein ($P = 0.0001$). ITE decreases the LPS-induced phosphorylation of JNK, c-Jun, ERK1/2, and NF- κ B. Increased NF- κ B/AP-1 activity resulting from LPS stimulation, was decreased by ITE ($P < 0.0001$). Moreover, ChIP-qPCR analysis revealed that increased LPS-induced binding of NF- κ B or AP-1 at the MMP-9 promoter region was inhibited by ITE, resulting in suppression of MMP-9 gene expression.

Conclusions:

Our results show that ITE reduces LPS-induced MMP-9 gene expression, through the activation of NF- κ B/AP-1 transcription factors. Thus, ITE has a potential mechanism for attenuating MMP-9-associated inflammatory disorders.

Key Words: ITE; Aryl hydrocarbon receptor (AhR), ; matrix metalloproteinase-9 (MMP-9),;

Funding Agency: kfas

Cytokine Production Patterns in Elderly Sarcopenic Subjects Suggest a Pro-inflammatory Bias

Ibrahim R* ¹, Boutaiban D ¹, Aldowaisan R ¹, Azizieh F ², Essa S ³, Shehab D ⁴, Al-Jarallah K ⁴, Raghupathy R ³

¹ Third Year Medical Students, College of Medicine, Kuwait University, ² Department of Mathematics and Natural Sciences, Gulf University of Science and Technology, Kuwait, ³ Department of Microbiology, College of Medicine, Kuwait University, ⁴ Department of Medicine, College of Medicine, Kuwait University.

Introduction:

Sarcopenia, an age-related syndrome, is characterized by a decline in skeletal mass and strength. Its diagnosis is confirmed by the presence of low muscle mass and function. Although sarcopenia is highlighted as a characteristic of biological aging, immunologic effectors are proposed to contribute to this condition. As the aging process is accompanied by a rise in low-grade inflammation, there is significant cross-talk between the cytokines involved in aging and those observed in sarcopenic patients. Understanding the roles of cytokines associated with sarcopenia will allow the development of better diagnostic and monitoring tools to provide for the unmet medical needs of older individuals. In this study, we compared the levels of pro- and anti-inflammatory cytokines produced by peripheral blood mononuclear cells (PBMC) in elderly patients with sarcopenia and healthy individuals with normal muscle mass. The objective of this study was to identify potential biomarkers of sarcopenia and muscle health.

Methods:

This study was approved by the HSC Ethical Committee. Blood samples were collected from four groups of sixty-four elderly subjects with sarcopenia and age-matched subjects without sarcopenia. PBMC from the blood samples were separated by density gradient sedimentation and the separated peripheral blood cells were then suspended in tissue culture medium, counted using a hemocytometer, and seeded in a 96-well-plate. The PBMC were activated with the mitogen phytohemagglutinin; following an incubation period of 24 and 96 hours at 37°C in a 5% CO₂ environment, culture supernatants were harvested and levels of selected pro- and anti-inflammatory cytokines were assessed by multiplex flow cytometry (MACSplex Cytokine Assay).

Results:

PBMC from elderly subjects with sarcopenia produced higher levels of the pro-inflammatory cytokines IFN-alpha, IFN-gamma, IL-2, IL-12, IL-17A, TNF-alpha, and lower levels of the anti-inflammatory cytokines GM-CSF, IL-4, IL-5, IL-6, IL-9, IL-10 compared to those with normal muscle mass and function. Ratios of pro-inflammatory cytokines to anti-inflammatory cytokines suggest a stronger bias towards a pro-inflammatory cytokine profile in elderly patients with sarcopenia.

Conclusions:

Our data indicate a clear pro-inflammatory cytokine bias in elderly subjects with sarcopenia. This finding is relevant to understanding the pathogenesis of this condition and to the development of immunologic management strategies.

Key Words: Sarcopenia; Cytokines; Biomarker;

Funding Agency: NONE

Enhancing the *Eubacterium rectale* Population in the Gut Microbial Community

Kandari AH^{*12}, Martin JC², Hayes H², Raikos V³, Scott KP²

¹Dasman Diabetes Institute, Kuwait. ²The Rowett Institute, University of Aberdeen;

³Department of Nutrition and Dietetics Sciences, Hellenic Mediterranean University, Greece

Introduction:

Background: The large intestine contains a diverse bacterial community, dominated by obligately anaerobic bacteria followed by facultatively anaerobic bacteria. Most of these anaerobic bacteria have significant roles within the gastrointestinal ecosystem, including substrate utilisation and metabolite production, such as short-chain fatty acids (SCFA). *Eubacterium rectale* is one of the major bacterial species isolated from human faeces and when grown on starch or other plant-derived polysaccharides, it produces butyrate as major fermentation products.

Objective: A novel anaerobic bacterial isolate of *E. rectale*, was tested for its ability to grow utilising different sources of carbohydrates in defined media, for producing a range of SCFA, and for surviving in yogurt as a model food system.

Methods:

In this study, the novel *E. rectale* strain was identified by using 16S rRNA gene sequencing and SCFA production during growth on its rich growth medium. The change of the pH, gas production and SCFA composition were measured after growing *E. rectale* on basal medium supplemented with a range of test substrates. Survival of the strain under different pH conditions and in yogurt were tested, to investigate food formulation to deliver this strain as a probiotic.

Results:

E. rectale had high production of butyrate and lactate in its rich growth medium and produced different amounts of butyrate, formate and lactate after degrading β -glucan as carbon source. It also showed high optical density, change in the pH and high gas production after growth on most tested substrates. *E. rectale* did not survive in yogurt, due to the combines effects of low pH of the yogurt and the inhibitory effect of the yogurt starter culture to this isolate.

Conclusions:

The study indicated that *Eubacterium rectale* has a high degradative activity on most carbohydrates, producing a range of SCFA, and shows potential for the development as a next generation probiotic.

Acknowledgments: The Rowett Institute, University of Aberdeen, receives financial support from the Scottish Government Rural and Environmental Sciences and Analytical Services (RESAS).

Dr. Anwar Kandari receives financial support from Dasman Diabetes Institute (DDI), Kuwait.

Key Words: Gut Bacteria; *Eubacterium rectale* ; Gut Microbiota;

Funding Agency: NONE#

Genetic Characterization of Human Respiratory Syncytial Virus Group A and B in Kuwait Using Whole-genome Sequencing Reveals the Circulation of New Lineages

Madi NM* ¹, Safar H ², Al-Adwani A ¹, Sadeq MA ³, Al-Turab M ¹

¹ Department of Microbiology, College of Medicine, Kuwait University; ² Research Core Facility and OMICS Research Unit, College of Medicine, Kuwait University, Kuwait; ³ Jaber Al-Ahmad Armed Forces Hospital, MOH, Kuwait

Introduction:

The human respiratory syncytial virus (RSV) is considered one of the most common viruses to infect children globally. It is increasingly recognised as an important pathogen of acute respiratory tract infections (ARTI) in adults, especially the elderly. The sequence analysis of RSV shows extensive sequence variability within and between RSV groups A and B globally; however, there is no information on the genomic analysis of the whole RSV genome in Kuwait. Therefore, this study aimed to sequence the entire genome of RSV strains isolated from patients with ARTI in Kuwait to characterise and understand the genetic diversity and evolution of RSV in Kuwait.

Methods:

Between January 2020 and September 2022, 7093 respiratory samples were collected from hospitalised infants, children and adults and were analysed for respiratory viruses by multiplex Real-Time PCR. Whole-genome sequencing using the Oxford Nanopore sequencing technology was performed on 84 RSV-positive samples and analysed using bioinformatic tools.

Results:

The results revealed a higher prevalence of group A (76%) than group B (24%) RSV isolates. Phylogenetic analysis showed that RSV-A strains clustered with GA2.3.5 sub-genotype and RSV-B strains clustered with GB5.0.5a sub-genotype and that new lineages of RSV-A and RSV-

B circulated in Kuwait during this period. The level of genetic variability was higher among the group A viruses than group B viruses, and the highest rate of SNP was detected in the G gene in both RSV-A and RSV-B (15% and 11%, respectively). The rate of synonymous and missense mutations was high in genes other than the G protein-coding gene, indicating increased variability of RSV in the entire genome. We detected several known and unique molecular markers in the genes encoding important viral proteins in RSV-A and B, including G, L, M2-2, F, P, N, NS2, NS1, M, and SH proteins.

Conclusions:

This is the first study in Kuwait to characterise the genomes of RSV A and B to identify the circulating genotypes, subgenotypes, and lineages of RSV, to comprehend the genetic diversity and the evolution of the virus, and to identify imported genetic markers associated with specific genotypes. Crucially, these data will help global efforts to develop accurate diagnostic tests and effective vaccines and therapies against RSV.

Key Words: Respiratory syncytial virus; whole-genome sequencing; Kuwait;

Funding Agency: This study was funded by Research Sector, Kuwait University project No: MI01/19

Prevalence, Etiology and Antibiotic Susceptibility Patterns of Urinary Tract Infections among neonates at Maternity Hospital in Kuwait: A Six-Year Study

Moghnia OH^{*1}, Alotaibi HS ², Al Haqqan AM ², Pathan SS ², Abdulaziz NE ² Sokhn E ³, Mohammed HY ⁴, Al-Sweih NA^{1,2}.

¹ Department of Microbiology, Faculty of Medicine, Kuwait University, ² Microbiology Laboratory, Maternity Hospital, Ministry of Health, ³ Department of Microbiology, Beirut Arab University, ⁴ Faculty of Medicine, Kuwait University - Kuwait (Kuwait)

Introduction:

Urinary tract infections (UTIs) are among the most common infections in neonates. Understanding the pattern of antibiotic susceptibility and the etiology of common uropathogens is essential for early diagnosis and effective treatment of UTIs. This study aims to identify the etiology and determine the local antibiotic susceptibility patterns of uropathogens causing UTIs in hospitalized neonates over 6 years.

Methods:

A retrospective cross-sectional descriptive study was conducted on neonates referred to the neonatal intensive care units (NICUs) and special care units (SCUs) at Maternity Hospital, Kuwait, from January 2017 to December 2022. Significant isolates from urine samples of symptomatic neonates with UTIs were analyzed and identified by conventional methods and VITEK 2 identification card system. Antimicrobial susceptibility testing was performed using VITEK 2 system following the clinical and laboratory standard institute (CLSI, 2020) guidelines.

Results:

Out of 3996 urine samples processed, 282 (7%) tested samples yielded significant bacteriuria, mostly from male neonates 185 (65.6%). The rate of UTIs was higher in SCUs 150 (53.2%) compared to NICUs 132 (46.8%). Out of total positive urine culture isolates, Gram-negative isolates were the most common 141 (50%), followed by Yeasts 84 (29.8%) and Gram-positive organisms 57 (20.2%). The most common uropathogens were *Klebsiella pneumoniae* 50 (17.7%), followed by *Escherichia coli* 47(16.8%), *Candida albicans* 39 (13.8%), *Enterococcus faecalis* 34 (12%), *Staphylococcus Coagulase-negative* 17 (6%) and others 95 (33.7%). High resistance rates were observed among Enterobacterales against ampicillin, cephalothin, cefuroxime, cefotaxime, nitrofurantoin, amoxicillin/clavulanic acid, ceftazidime and trimethoprim-sulfamethoxazole. The highest resistance rates were detected against penicillin and oxacillin among coagulase-negative *Staphylococcus* and erythromycin among *E. faecalis*. A total of 31 (62%) and 14 (29.7%) of *K. pneumoniae* and *E. coli*, respectively, were ESBL producers.

Conclusions:

Our findings showed a high prevalence of Gram-negative isolates as predominant causative agents of UTIs in neonates at Maternity Hospital. Reduced antibiotic susceptibility to commonly used antibiotics poses a notable challenge in the clinical management of neonates with UTIs. This study underscores the importance of proactive surveillance in monitoring causative organisms and antibiotic susceptibility in neonates.

Key Words: Neonates; Antibiotic resistance; Uropathogens ;

Funding Agency: unfunded

High prevalence of novel sequence types of *Streptococcus pneumoniae* causing invasive diseases in Kuwait in 2018

Mokaddas E, Asadzadeh M*, Sayed S, Albert MJ

Department of Microbiology, College of Medicine, Kuwait University, Jabriya, Kuwait.

Introduction:

Streptococcus pneumoniae causes severe conditions like sepsis, pneumonia, and meningitis globally, leading to substantial morbidity and mortality, particularly in young children and the elderly. Typing of *S. pneumoniae* is essential for studying the epidemiology of *S. pneumoniae* infections. MLST (multilocus sequence typing) is a technique that allows to study the genetic diversity of bacterial populations by analyzing sequence types (ST). It has performed a crucial role in investigating the emergence and spread of highly virulent *S. pneumoniae* genotypes globally. Such data for *S. pneumoniae* are lacking for the countries of the Arabian Peninsula including Kuwait. The aim of the study was to determine the serotypes, susceptibility profile, and genotypic heterogeneity of 31 *S. pneumoniae* isolates obtained from invasive infections in Kuwait in 2018 using MLST.

Methods:

We determined the STs of all 31 strains of *S. pneumoniae* from invasive diseases received at a reference laboratory from various health centers in Kuwait during 2018 by MLST using published methods. The relationship among the isolates was determined by phylogenetic analysis. We also determined the serotypes by Quellung reaction, and antimicrobial susceptibility by Etest against 15 antibiotics belonging to 10 classes.

Results:

Among the 31 isolates, 28 distinct STs were identified, including 14 new STs (45.2%) and five rare STs (16.1%). Phylogenetic analysis indicated that 26 isolates (83.9%) were unrelated singletons. The Kuwaiti isolates demonstrated a relatedness to strains from neighboring countries, as inferred from unpublished data available at the PubMLST website. Notably, a considerable number of our isolates displayed resistance to penicillin, erythromycin, and azithromycin, with some exhibiting multidrug resistance. Additionally, virulent serotype 8-ST53 and serotype 19A, featuring new STs, were identified.

Conclusions:

Our study detected an unusually large number of novel STs which may indicate Kuwait providing a milieu for the evolution of novel STs by mixing strains from a large expatriate resident population from different parts of the world. This first report from the Arabian Peninsula justifies the continuous monitoring of *S. pneumoniae* STs for the possible evolution of new virulent clones.

Key Words: *Streptococcus pneumoniae*; MLST; Serotype;

Funding Agency: Unfunded

Species identification, genome characterization, and detection of antimicrobial resistance genes in neonatal bacterial isolates using Oxford Nanopore Technology

Nasser K* ¹, Safar HA ², Alatar F ¹, Al-Ajmi R ³, Al-Fouzan W^{3,4}, Mustafa AS ³

¹ Microbiology Department, Mubarak Al Kabeer Hospital, Ministry of Health, Kuwait, ² OMICS Research Unit, Health Science Centre, Kuwait University, Kuwait, ³ Microbiology Department, Faculty of Medicine, Kuwait University, Kuwait, ⁴ Microbiology Department, Farwaniya Hospital, Ministry of Health, Kuwait.

Introduction:

Oxford Nanopore Technology (ONT) is a third-generation sequencing technology that utilizes ion pores for nucleic acid sequencing. ONT platforms are portable, scalable, and highly implementable in both clinical laboratories and field settings. This technology has capabilities of processing microbial samples without culturing with fast turnaround times and real time data analysis. Long-read technology sequencing used in ONT aids in sequence gap reduction, leading to more genome completeness, less base mismatching, less misidentification, and higher sample information yield. The objective of this study was to sequence the genomes of bacterial samples using MinION equipment based on ONT platform for species identification, sequence annotation, gene detection, plasmid identification, and antimicrobial resistance detection in clinical isolates from neonates.

Methods:

Twelve clinical isolates obtained from neonates admitted to Farwaniya Hospital, Kuwait were used to identify species by a phenotypic method using VITEK2 system. Subsequently, genomic DNA (gDNA) isolated from individual specimens were analyzed for 16S rDNA sequencing using MicroSeq 500 16S rDNA kit (Qiagen) for species confirmation. In addition, gDNA from all isolates were purified with Monarch kit (New England Biolabs), and 1 ng of purified DNA was used for library preparation using ONT Ligation Sequencing Chemistry, followed by sequencing in MinION flow cells. Sequence reads were analysed using EPI2ME Agent, QUASt, Bakta, and Staramr for genome identification, assembly quality, genome annotation, and plasmid as well as antimicrobial gene identification.

Results:

The strain identification using ONT was compatible with the results of Vitek2 and 16S rDNA sequencing. Total genome length (bp) was reliable in all samples along with number of contigs-except in one sample. Bakta was able to perform genome annotation for all samples. Staramr was able to detect both antimicrobial resistance genes and their resistant phenotypes, as well as resistance genes present in plasmids.

Conclusions:

Oxford Nanopore Technology is a suitable platform for species identification, genome characterization, and detection antimicrobial resistance genes in clinical bacterial isolates.

Key Words: ONT, Bioinformatics; Species identification, Genome characterization;

Funding Agency: None

The Detection of The Viral Nucleic Acid of Latent Viruses in Peripheral Blood Mononuclear Cells and Neutrophils in Healthy Subjects.

Sahar Essa, Wassim Chehadah, Marwa Alkhabaz, Shiji George
Department of Microbiology, College of Medicine, Kuwait University

Introduction:

Herpesviruses, which include cytomegalovirus (CMV), herpes simplex viruses (HSV-1 & HSV-2), Epstein bar virus (EBV), and varicella-zoster virus (VZV) characteristically establish latent infections in their hosts. Effective clearance of herpesvirus infections through immune responses is usually followed by the permanent presence of the viral genome in the host cells in a state of reproductive latency. So far, it's unknown whether peripheral blood mononuclear (PBMCs) and neutrophils can serve as a site for herpesvirus latency. In this study, we intended to detect the presence of latent herpesvirus genomes in PBMCs and neutrophils.

Methods:

Eight milliliters of venous blood were taken from all participants. Ethical approval from the College of Medicine was obtained and written informed consent was acquired from all subjects. Previous infections with these viruses (CMV, HSV-1, EBV, and VZV) were detected by ELISA IgM and IgG antibody detection techniques. The viral genomes for CMV, HSV-1&2, EBV, and VZV were investigated in the serum, neutrophils, and PBMC of 100 healthy individuals by nested polymerase chain reaction techniques (PCR). We were able to generate new data on the prevalence of these viruses in Kuwait and the latency state of their viral genomes in PBMCs and neutrophils.

Results:

The IgM screening was negative for all the viruses. The CMV IgG was detected in 79%, HSV IgG in 54%, EBV IgG in 72%, and VZV IgG in 100% of the subjects. The CMV genome was found in 2% of serum samples. In the PBMC, the CMV genome was detected in 4% and the HSV genome in 3% of the samples. As for the neutrophils, the CMV genome was detected in 4%, the HSV genome in 2% and EBV genome in 1% of the samples.

Conclusions:

The prevalence of CMV is 79%, HSV is 54%, EBV is 72%, and VZV is 100% in the Kuwait population. Our result shows that PBMCs serve as a site of latency for CMV and HSV. On the other hand, the neutrophils serve as a site of latency for CMV, HSV, and EBV.

Key Words: Latent viruses; Peripheral blood mononuclear cells; Neutrophils;

Funding Agency: None

Comparative Evaluation of Four Genomic DNA Isolation Methods for Whole Genome Sequencing of *Staphylococcus aureus* using Nanopore Technology

Alatar FA, Boswihi SS, Safar HA, Udo EE, Mustafa AS

¹ Serology and Molecular Microbiology Reference Laboratory, Mubarak Hospital, Ministry of Public Health, Kuwait. ² Department of Microbiology, Faculty of Medicine, Kuwait University. ³ OMICS Research Unit, Health Science Centre, Kuwait University, Kuwait

Introduction:

Whole genome sequencing (WGS) analyzes the entire genome of cells and provides information about mutations, indels, copy number changes, structural rearrangements, etc. This technology has the potentials to revolutionize public health settings for investigating hospital outbreaks and detecting antimicrobial resistance patterns allowing better infection control measures and improved patient care. *Staphylococcus aureus*, a major human pathogen, is commonly acquired in hospitals and healthcare settings. *S. aureus* poses a major threat due to the emergence of multi-drug resistant strains. In this study, we evaluated the effect of four different genomic DNA (gDNA) extraction methods for *S. aureus* on WGS output regarding genome completeness, genome fragmentation, mismatch, antimicrobial resistance genes and plasmid identification using Oxford Nanopore technology.

Methods:

We employed four different methods to extract DNA from *S. aureus* ATCC 29213: 1) modified cetyl trimethylammonium bromide (CTAB), 2. modified DNA gel extraction, 3. in-house method, and 4) commercial Kit. The isolated gDNA was used for library preparations by ligation sequencing kit following the manufacturer's protocol. The libraries were loaded. The sequencing reads generated by MinIon Mk 1C device were analysed by multiple pipelines. Minimap2 was used to assemble the sequencing reads against the reference genome. QUAST was performed for evaluating assembly quality, BUSCO was used for detecting genome completeness and fragmentation, and Staramr was used to detect antimicrobial resistant genes and plasmid identification.

Results:

The total length (bp) of *S. aureus* was most prominent in gDNA extracted by gel method, followed by commercial DNA extraction kit. The lowest number of mismatches were found with gDNA extracted by the commercial kit and modified CTAB methods. Complete single genome copies were obtained from gDNA extracted by the modified CTAB and commercial kit. The highest genome fragmentation was noticed in the gDNA extracted by the in-house method. No difference in antimicrobial gene detection and plasmid identification was noticed with different extraction methods.

Conclusions:

This study showed complete genome assembly using two gDNA isolation methods, i.e., the modified CTAB and commercial Kit for Oxford Nanopore sequencing, and hence, these methods are recommended for WGS of Gram-positive bacteria.

Key Words: Oxford Nanopore Technologies; *Staphylococcus aureus*; gDNA extraction ;

Funding Agency: none

Prevalence of Microbial infections pre- and post-COVID-19 at a tertiary care hospital in KuwaitShetty S ¹, AlShalabi H ¹, Mokaddas E ^{1,2}¹ Laboratory Department, Ibn Sina Hospital, Kuwait, ² Department of Microbiology, Faculty of Medicine, Kuwait University, Kuwait**Introduction:**

The COVID-19 pandemic has led to an increase in healthcare-associated infections due to disproportionate use of antibiotics, longer hospital stays and excessive invasive procedures. This has also aggravated antimicrobial resistance among the bacterial isolates. Therefore, we decided to determine the prevalence of the most common microbial infections before and after COVID-19 at our tertiary care center.

Methods:

This retrospective study was done at the Microbiology Laboratory in Ibn Sina hospital and its allied centers on all specimens including blood, respiratory samples, wound swabs and urine received during the years 2019 to 2021. The antibiogram of most common microbial organisms in the three years were analyzed. The number of isolates that were extended spectrum β lactamase producers (ESBL), multidrug-resistant (MDR) *Acinetobacter baumannii* and *Pseudomonas aeruginosa*, carbapenem resistant Enterobacteriaceae (CRE) and Methicillin resistant *Staphylococcus aureus* (MRSA) was also evaluated.

Results:

A total of 6598, 6878 and 7143 organisms were isolated in the years 2019, 2020 and 2021 respectively. The types of specimens collected were blood (11%), respiratory secretions (23%), swabs (32%) and urine (34%). Over the three years, Gram-positive and Gram-negative bacteria constituted 12.5% and 87.5%, respectively. The five most common Gram-negative isolates namely *Escherichia coli*, *Klebsiella pneumoniae*, *Enterobacter* spp, *Pseudomonas aeruginosa* and *Acinetobacter baumannii* were analysed. *Staphylococcus aureus* was the most common clinically significant Gram-positive organism that was evaluated. The rate of ESBLs, CREs and MDRs were found to be substantially higher during the post-covid phase (50%, 12%, 62%) compared to the pre-covid period (41%, 5%, 53%) respectively. The prevalence of Methicillin resistant *Staphylococcus aureus* (MRSA) infections also increased from 54% in the year 2019 to 62% in 2021.

Conclusions:

Our results suggest an overall increase in the number of bacterial isolates post-Covid-19 as compared to the pre- COVID phase. There was also an increase in the number of multi-drug resistant organisms. This may be due to the increased antibiotic pressure during COVID19.

Key Words: Covid-19; Microbial infections; Antimicrobial susceptibility;

Funding Agency: None

Genetic Insights into Antibiotic Resistance: Exploring Hygiene Practices among Healthcare Students through a Comparative Analysis of Medical and Dental Students' Hands and Smartphones

Deema AlAteeqi¹, Maryam AlNaser¹, Dana Daboul¹, Dr. Muawia Qudeimat², Maribasappa Karched³

¹ Graduate (DMD), Faculty of Dentistry, Kuwait University, ² Professor, Department of Developmental and Preventive Sciences, Faculty of Dentistry, Kuwait University, ³ Associate Professor, Department of Bioclinical Sciences, Faculty of Dentistry, Kuwait University

Introduction:

Objectives: To evaluate the differences in the prevalence of bacteria and antibiotic resistance genes on the smartphones and hands of clinical dental and medical students during the COVID-19 pandemic.

Methods:

Thirty dental and 32 medical clinical-years-students were recruited. A sterile cotton swab was used to obtain samples from the students' smartphones and hands. The samples were cultured on Columbia Blood Agar and McConkey Agar plates. The total bacterial colony-forming units (CFU) were recorded. Each plate was subsequently sub-cultured, and the crude DNA was subject to a quantitative real-time polymerase chain reaction for the identification of the antibiotic resistance genes *tem-1*, *shv*, *blaZ*, and *mecA*. After sample collection, a questionnaire addressing smartphone usage and hand hygiene practices was distributed.

Results:

Compared to 7% of the dental students, 56% of the medical students reported washing their hands >6 times/day ($P<0.0001$). A significantly higher number of bacterial CFU was found on the smartphones of dental (mean=89±129 CFU/plate) compared to medical students (mean=35±53 CFU/plate) ($P=0.04$). On the other hand, there were no statistically significant differences in the CFU counts that were present on the hands of dental (mean=96±229 CFU/plate) compared to medical students (mean=17±37 CFU/plate). The resistance gene *tem-1* was significantly less prevalent on the hands of dental compared to medical students (25% and 66%, respectively) ($P<0.0001$). Also, *shv* gene was significantly less prevalent on the hands of the dental compared to medical students (25% and 55%, respectively) ($P=0.01$).

Conclusions:

A high prevalence of bacterial counts and antibiotic resistance genes were observed on the hands and smartphones of both study groups. There is a lack of knowledge and adherence to infection control protocols among both study groups. The data from this study emphasize the importance of hand hygiene and smartphones disinfection in a healthcare setting.

Key Words: *infection control; hand hygiene; smartphone;*

Funding Agency: -

Quality check of primers in HPRP module of PF2D Fractionation system using eluates of primers purified in RP-Oligo purification cartridges

Kandanath BM, Thomas BT, M A Sheikh
Research Core Facility, FOM, KU

Introduction:

To check the quality of synthesized primers in the HPRP module of the PF2D Fractionation system using the eluates of primers purified in Reverse Phase Oligo purification cartridges. Crude synthetic oligonucleotides are purified by either Trityl On or Off methodologies. In the trityl On practices the final 5' DMT protecting group is retained on the nucleoside and removed during purification. But in Trityl Off method the 5' protecting group is cleaved during the final cycle in the synthesis. While both trityl On and trityl Off techniques are compatible with serial liquid chromatography. An advantage feature of trityl On separation is the lipophilic properties of DMT group which can serve to enable discrimination between the protected full length sequence and unprotected ones. The trityl On purification heightens the risk of nucleic acid damage due to the potential of depurination.

Methods:

B actin primers (forward and reverse) are synthesized by Trityl On and Off method. The synthesized primers were deprotected and incubated. The primers were then purified accordingly with trityl On and off method protocols. Reverse phase OPCs are used which are equilibrated using Acetonitrile then loaded with trityl off oligonucleotide (free of organic solvents) then eluted using 20% Acetonitrile. For trityl On method after equilibration the synthesized crude primer is passed through the reverse column followed by 5M NH₄OH and then 2-5% of TFA is added in the syringe barrel and incubated for 5 minutes and flushed out. In 7500 ABI Real time PCR relative quantitation with Trityl Off and On primers was done with 4 different DNA samples in duplicates.

Results:

The trityl On and off synthesized and purified primers showed high concentration and acceptable purity. Despite of the higher concentration and purity of trityl On synthesized oligos the Trityl off synthesized oligos showed a positive reaction with an average Ct of 19 in 0.2 threshold in the real time PCR assay. Trityl On synthesized primers showed an undetermined reaction.

Conclusions:

Trityl Off purification will be the best method for the stability of primers. The trityl on protocol requires a balance of purine hydrolysis at the time of detritylation.

Key Words: Primers; Fractionation; Quality check;

Funding Agency: SRUL02/13

Characteristics and Management of Chronic Kidney Disease in Kuwait A multicenter study of ethnically diverse cohort

Ali AlSahow ¹, Anas AlYousef ², Bassam AlHelal ³, Ahmed AlQallaf ⁴, Heba AlRajab ⁵, Yousif Bahbahani ⁶, Abdulrahman AlKandari ¹, Gamal Nessim ⁶, Ahmad Mazroue ², Noha Dewidar ¹, Mohamed Sherif ⁵, Hisham Zamel ³, Ahmed Ezzeldine ⁷, Ahmad Atef Mekky ⁴, Rajeev Kumar ⁸.

Division of Nephrology, Jahra Hospital, Kuwait, ² Division of Nephrology, Amiri Hospital, Kuwait, ³ Division of Nephrology, Adan Hospital, Kuwait, ⁴ Division of Nephrology, Jaber Hospital, Kuwait, ⁵ Division of Nephrology, Farwaniya Hospital, Kuwait, ⁶ Division of Nephrology, Mubarak Hospital, Kuwait, ⁷ Division of Nephrology, Sabah Hospital, Kuwait, ⁸ BRA IRCH, All India Institute of Medical Sciences, Delhi, India.

Introduction:

Little is known about prevalence & management of advanced CKD in Kuwait, despite a high prevalence of DM, HTN, obesity & other factors that cause &/or aggravate CKD progression. In addition, Kuwait has a large expatriate community with a restricted access to free public health services compared to Kuwaitis & their income & living standards are generally lower than that of Kuwaitis.

Methods:

Demographics, comorbidities, lab data, and medications of adult non-dialysis CKD patients with eGFR < 60 attending nephrology clinics in public hospitals in Kuwait from 1 January to 31 December 2022 collected.

Results:

Total number of reviewed cases was 2610 (eGFR: 30.8; age: 62.6; > 65 of age: 47.0%; males: 56.7%; Kuwaitis: 62.1%). This represents 0.06% of the total population of the country. Kuwaiti patients were older (63.94 vs 60.3), with slightly lower mean eGFR (30.4 vs 31.5), and less males (49.8% vs 67.9%) than non-Kuwaitis. The two groups had similarly high rates of DM (68%), HTN (88.8%), CAD (37%), BMI > 30 (28%), and smoking (15.6%). DKD as causes of CKD was higher in Kuwaitis (59.3% vs 52%), but CKD due to unknown cause were higher in non-Kuwaitis.

Kuwaiti patients had lower mean BP (137.2/76.5 vs 139.1/78.9), lower mean HbA1c in diabetics (7.59 vs 7.82), and also a better lipid profile despite a higher mean BMI (29.6 vs 28.9). Potassium was similar in both groups, even in patients on RAASi, however, potassium was higher in diabetics (4.61 vs 4.5 in non-diabetics). Parathyroid hormone was higher in Kuwaitis (.6 vs 16) with higher phosphate but similar calcium values. Uric acid levels were normal with no difference between the two groups.

Only 50.5% of patients were on aspirin, and 39.6% on anti-hyperuricemia therapy, but more than 85% were on anti-dyslipidemia agents. Insulin was prescribed for 60.3% of diabetics, while metformin in less than 20%, with no difference between the two groups. SGLT2i used in only 22.6% of patients (76% were Kuwaitis).

For HTN, centrally acting agents & dihydropyridine CCB were the most frequently used agents, followed by RAASi and β B. All used more frequently in Kuwaitis. α blockers, non-dihydropyridine CCB, & vasodilators used more frequently in non-Kuwaitis.

Conclusions:

- 1- Low number of CKD3-5 under nephrology care is alarming & calls for better education, screening & referral policy.
- 2- Non-Kuwaitis develop same comorbidities & with a restricted access to public health services & lower income leading to less healthy diet suboptimal management, They develop higher BP, higher HbA1c, & worse lipid profile.
- 3- The low RAASi & SGLT2i utilization rates are alarming & demands immediate action to improve it.
- 4- Choices of antihypertensives calls for revision of protocols to improve RAASi & thiazides utilization.

Key Words: Acute kidney injury; Extracorporeal membrane oxygenation; Mortality;

Funding Agency: NONE

The Response of Glioblastoma Cell Lines To Epigenetic Targeting Chemotherapeutics

Barakat F*¹, Garret M², Albano R², Plas D R³

Alfaisal University College of Medicine¹, Department of Neurosurgery², University of Cincinnati College of Medicine², Department of Cancer Biology, University of Cincinnati³

Introduction:

Glioblastoma multiforme (GBM) is the most common malignant adult brain tumor. Standard Glioblastoma multiforme (GBM) is the most common malignant adult brain tumor. Standard GBM treatment includes maximal safe surgical resection with combination radiotherapy and GBM treatment includes maximal safe surgical resection with combination radiotherapy and adjuvant temozolomide (TMZ) chemotherapy. Alarming, patient survival at five-years is below adjuvant temozolomide (TMZ) chemotherapy. Alarming, patient survival at five-years is below 10%. The vast majority of glioblastomas develop rapidly de novo in elderly patients, without 10%. The vast majority of glioblastomas develop rapidly de novo in elderly patients, without clinical or histologic evidence of a less malignant precursor lesion and are known as primary clinical or histologic evidence of a less malignant precursor lesion and are known as primary glioblastomas. Secondary glioblastomas progress from low-grade diffuse astrocytoma or anaplastic glioblastomas. Secondary glioblastomas progress from low-grade diffuse astrocytoma or anaplastic astrocytoma. The Cancer Genome Atlas (TCGA) research network performed whole genome astrocytoma. The Cancer Genome Atlas (TCGA) research network performed whole genome sequencing of GBM tumors and found that GBM recurrence is linked to epigenetic mechanisms sequencing of GBM tumors and found that GBM recurrence is linked to epigenetic mechanisms and pathways. Epigenetics play a role in the etiology and standard of care of therapy of and pathways. Epigenetics play a role in the etiology and standard of care of therapy of glioblastomas. In this paper, we study if DNA methylation, histone alteration, and Bromodomain glioblastomas. In this paper, we study if DNA methylation, histone alteration, and Bromodomain inhibitors (BET) group of 7 drugs will show a dose dependent effect on patient donated GBM inhibitors (BET) group of 7 drugs will show a dose dependent effect on patient donated GBM spheroids. After growing 12 patient donated GBM cell lines, we optimize the growth curve spheroids. concentration of each cell line by reading it through MTS assay. Next, we grew each cell line at the concentration obtained earlier and pipette each of the drug in descending concentration and check the metabolism response in GBM spheroids to each of the drug after 7 days through a MTS assay. The results revealed a dose-dependent response to 5 out of 7 drugs but the number of cells in the plate after adding the drugs differed which means that some drugs were more potent than others different drug-drug potency. The specific agents should be prioritized for investigation of glioma stem like cellular properties in glioblastoma spheroid cultures. In conclusion, future research directions in the area of epigenetics and its applications in GBM treatment should be discussed. This study has potential limitations. First, as it is a laboratory based research this makes it susceptible to human-based errors in pipetting and other techniques. Second, the scope of discussion is limited since it only tests the response of 12 patient donated cell lines.

Methods:

After growing 12 patient donated GBM cell lines, we optimize the growth curve concentration of each cell line by reading it through MTS assay. Next, we grew each cell line at the concentration obtained earlier and pipette each of the drug in descending concentration and check the metabolism response in GBM spheroids to each of the drug after 7 days through a MTS assay.

Results:

The results revealed a dose-dependent response to 5 out of 7 drugs but the number of cells in the plate after adding the drugs differed which means that some drugs were more potent than others different drug-drug potency.

Conclusions:

The specific agents should be prioritized for investigation of glioma stem like cellular properties in glioblastoma spheroid cultures. In conclusion, future research directions in the area of epigenetics and its applications in GBM treatment should be discussed. Limitations: This study has potential limitations. First, as it is a laboratory based research this makes it susceptible to human-based errors in pipetting and other techniques. Second, the scope of discussion is limited since it only tests the response of 12 patient donated cell lines.

Acknowledgement: Spirit Program, International office, College of Medicine Alfaisal University, Riyadh.

Key Words: Glioblastoma; Epigenetics; Response;

Funding Agency: NONE

Intracranial & Extracranial Internal Carotid Artery Doppler Findings in Kuwaiti Children with Sickle Cell Disease

Asbeutah AM* ¹, Asbeutah SA ², Zahra A ³, AlMajran AA ⁴, Adekile AD ^{3,5}

¹ Department of Radiologic Sciences, Faculty of Allied Health, Kuwait University; ² Health Sciences center, Faculty of Medicine, Kuwait University; ³ Pediatric Hematology Unit, Mubarak Al-Kabeer Hospital, Kuwait; ⁴ Department of Behavioral Sciences & Community Medicine, Faculty of Medicine, Kuwait University; ⁵ Department of Pediatrics, Faculty of Medicine, Kuwait University

Introduction:

The time-averaged mean of the maximum velocity (TAMMV), obtained by transcranial Doppler imaging (TCDI), is frequently elevated in the intracranial internal carotid artery (iICA) in patients with sickle cell disease (SCD) and it is a risk factor for stroke. Extracranial internal carotid artery (eICA) stenosis is also an independent risk factor for stroke in SCD. The present study investigated the relationship between TAMMV in the iICA and eICA and with other anthropometric and laboratory variables.

Methods:

This was a cross-sectional study of steady state Kuwaiti SCD patients. TCDI was performed with a GE er7, USA ultrasound machine with a 1-3 MHz phased-array transducer for iICA and 9L 3.3-10MHz linear array transducer for eICA. Complete blood count (including reticulocytes), serum bilirubin and lactate dehydrogenase were all done with routine methods. The correlation of TAMMV in the two ICAs with age and laboratory parameters was investigated. Linear regression analysis was done to examine the relative contributions of these parameters to TAMMV in the iICA and eICA individually.

Results:

59 patients were studied. None of the patients had abnormal TAMMV either in the iICA or the eICA. There was no significant correlation between TAMMV in the iICA and eICA. Age, platelets, neutrophil count (ANC), LDH, and bilirubin did not correlate significantly with TAMMV in the iICA, but they did in the eICA ($P < 0.05$). Linear regression also confirmed this relationship in the eICA.

Conclusions:

There is more relationship between markers of SCD severity and TAMMV in the eICA in Kuwaiti patients with SCD. This requires further studies.

Funding/Acknowledgements: I hereby acknowledge the support of Kuwait University Research Administration in granting the Project (Grant No. NR02/21) and facilitating the research implementation.

Key Words: Sickle cell disease; Duplex ultrasound extracranial internal carotid ar; transcranial

Funding Agency: *The study was supported by Kuwait University-Research Sector Grant No. NR02/21.*

Assessment of Radioactivity in Plant-Based Milk in Kuwait

Sabika Alnuaimi, Aisha Albouloshi, Omar Albouloshi

CRISES MANAGEMENT AND DECISION SUPPORT PROGRAM ENVIRONMENT AND LIFE SCIENCES RESEARCH CENTER

Introduction:

Milk is exposed to food contaminants and radioactive contaminants such as polonium or radio-lead. Controlling and monitoring radioactive elements in the environment and in foods is critical for managing levels of radiation exposure, whether directly or indirectly. At present, almost every country in the Gulf region has either a civil nuclear program in progress or a project under consideration, which is expected to supply energy. In this study, the levels of radioactivity in plant milk Gamma emitter and alpha emitter will be investigated, specifically ²¹⁰Po. ²¹⁰Po is the most significant radionuclide naturally occurring in foods which is the daughter of the primordial radionuclide ²³⁸U. ²¹⁰Po decays by alpha rays with a half-life of 138 days.

Methods:

The samples were bottled in cylindrical containers that can be filled up to 400 ml. Samples were properly sealed to prevent any radionuclides from escaping, and the samples were then left for 14 days in the fridge to reach equilibrium between the natural radionuclides from the ²³⁸U decay chain. After that, the samples were mounted on an HPGe detector and measured overnight to collect sufficient statistics spectrum with low error on the identified radionuclide peaks. After that, the gamma measurements and analyses were completed. The four milk samples have been undergoing radiochemical analysis for polonium determination. Each milk sample has been replicated in addition to one blank sample.

Results:

The natural radionuclide ⁴⁰K was detected in all samples with a maximum value of 84.3 ± 3.7 which was in Soy milk imported from Belgium, and a minimum value of 16.9 ± 1 which was almond milk imported from Italy. On the other hand, Artificial Radionuclides Detection of limits are ¹³⁷Cs 0.472 Bq/Kg was detected in a negligible amount. The average ²¹⁰Po concentration ranged from $(31.5 \pm 4 - 75.8 \pm 5)$ mBq/l which is considered low and comparable to other international data on fresh milk.

Conclusions:

The presence of naturally occurring radionuclides in plant-based milks turned out to be as expected. Due to its natural abundance, the detection of ⁴⁰K in all samples was particularly estimated. Like other worldwide data on fresh milk, the average concentration of ²¹⁰Po detected was deemed to be low.

Key Words: Plant based milk; Radiation; Alpha rays;

Funding Agency: 14000

Evaluation of Adenosine-induced Splenic Switch-off in Tc-99m Myoview Myocardial Perfusion Studies as Marker of Stress Adequacy by Semiquantitative Analysis of Acquired SPECT/CT Images

¹ Alkandery NF, ¹ Aldhafiri DA, ¹ Alshammari FR, ¹ Bouzabar MM, ¹ Humoud HB, ^{2,3} Loutfi I

¹ 7th year medical student College of Medicine, Depts of Nuclear medicine ² College of Medicine-Kuwait University and ³ Mubarak Al-Kabeer Hospital, Kuwait

Introduction:

Adenosine IV infusion is commonly used as pharmacological stress method in myocardial perfusion imaging (MPI) using radiotracers to induce vasodilation of the coronary arteries thus enabling detection of critical coronary artery stenosis. Usually, MPI studies are done in 2 parts: stress and rest with imaging of the heart using gated SPECT/CT. Recently, a phenomenon known as splenic switch off (SSO) has been observed in which reduced perfusion to the spleen occurs after adenosine infusion and its presence suggests adequate effect of adenosine stress on the heart. The objective of the study was to evaluate the SSO effect in adenosine stress Tc-99m Myoview MPI studies using semiquantitative analysis of the acquired SPECT/CT data.

Methods:

17 MPI studies with adenosine stress were selected successively from the PACS system. Each study had a stress and a rest part processed using software for cardiac reconstruction (Myovation, Xeleris GE) involving slice reorientation in the heart's short, horizontal and vertical long axis. In addition, the data were reconstructed in the body transaxial, coronal and sagittal planes using SPECT/CT software (Volumetrix, Xeleris GE). In the resulting images, the spleen was identified on the CT component and regions of interest (ROIs) were drawn on spleen, adjacent thoracic vertebra and myocardium. The average count per pixel was recorded for each ROI and the ratios Spleen/Vertebra (S/V Ad, S/V Rst) and Myocardium/Vertebra (M/V Ad, M/V Rst) were calculated. Statistical analysis of the imaging data was done using paired t-test and descriptive statistics for non-imaging data using SPSS.

Results:

Mean patient age was 60.35 ± 12.97 yr. There were 9 males (53%). Clinically, 11 (65%) had ischemia, 1 scar (6%) and 5 (29%) were normal. The mean count-for spleen adenosine (S Ad) was 308 ± 136 , spleen rest (S Rst) 144 ± 77 ($t=4.64$, $p<0.001$). For the heart, M Ad 793 ± 282 , M Rst 263 ± 149 ($t=7.612$, $p<0.001$). Vertebra (background) V Ad 349 ± 170 , V Rst 80 ± 26 ($t=6.888$, $p<0.001$). Mean S/V Ad was 0.98 ± 0.38 and S/V Rst 1.87 ± 0.87 ($t=-3.707$, $p<0.01$). The mean M/V Ad was 2.86 ± 1.65 and M/V Rst 3.75 ± 2.41 ($t=-1.323$, $p=0.204$).

Conclusions:

Using the semiquantitative method outlined especially the S/V ratio, evaluation of the SSO can be achieved from the acquired data. Comparison of the results with other stress modalities such as exercise would establish its value as a marker for adequate effectiveness of adenosine stress in doubtful cases.

Key Words: Adenosine; Splenic switch off; Myocardial perfusion imaging;

Funding Agency: None

Asiaticoside Inhibits TNF- α , IL-6 activity, and 99mTc-MIBI Uptake in MCF-7 Cells via the NF- κ B Pathway

AlSaeedi F*

The Department of Nuclear Medicine, College of Medicine, Kuwait University

Introduction:

Breast cancer is the most prevalent cancer among women worldwide and remains a primary cause of cancer-related deaths. Cancer chemoprevention is considered one of the most promising areas in current cancer research, and asiaticoside, which is derived from the plant *Centella Asiatica*, has a relative lack of systemic toxicity. We hypothesized that the antitumor effects of asiaticoside on breast cancer are driven by its ability to decrease the expression of tumor inflammation-promoting genes and increase apoptotic signaling. Objectives: To investigate the effect of asiaticoside on breast cancer cells, MCF-7, and other cells. In addition to understanding the mechanisms of action of asiaticoside as a chemopreventive agent in breast cancer.

Methods:

An MTT assay was performed involving the treatment of MCF-7 cells for 48 h with H₂O₂ alone and H₂O₂ + different asiaticoside concentrations (0, 20, 40, and 80 μ M asiaticoside for 48 h). The levels of caspase 3, tumor necrosis factor-alpha (TNF- α), and interleukin-1 (IL-1) were quantified. Histological examination of tumor tissues was performed. Tumour MIBI uptake ratios were determined. The data are expressed as the means \pm standard deviation. Appropriate t-test and ANOVA statistical methods were used to compare data.

Results:

The half maximal inhibitory concentration (IC₅₀) of asiaticoside for MCF-7 cells was determined to be 40 μ M. Asiaticoside has the potential for hydrogen peroxide cytotoxicity, and the caspase-3 activity increased with increasing asiaticoside dose. The expression of the cytokines TNF- α and IL-1 β was significantly decreased ($p < 0.001$) via the NF- κ B pathway and correlated with MIBI uptake ratios in vitro after asiaticoside administration. In MCF-7 cells, we found that asiaticoside increased caspase-9 activity.

Conclusions:

This study demonstrates that asiaticoside is effective in inducing apoptosis and enhancing anti-tumor activity. Asiaticoside produces promising effects on tumor growth, progression, and tumor-associated inflammation in MCF-7 cells and other cells.

Funding/Acknowledgements: Kuwait

University funded Research Grant No. [MN01/09].

Key Words: Breast; Cancer; Tangeretin;

Funding Agency: Kuwait University funded Research Grant No. [MN01/20]

Nutritional profile of shrimp cultured in biofloc system

Sumaiah Hassain, Sabeekeh Alnuaimi, Abdulaziz Alzalalah
Environment and Life Sciences

Introduction:

Aquaculture has grown due to food security concerns. Due to new local shrimp farming practices, nutritional research on grown shrimps is essential. Consumers are unaware of shrimp's health benefits. Biofloc Technology (BFT) improves water quality, waste treatment, and disease prevention in intensive aquaculture systems by using aggregates of bacteria, algae, or protozoa in a matrix with particulate organic matter. The purpose of this study is to compare the nutritional content of shrimp *L. vannamei* in seawater flows through system and BFT and give customers a basic nutritional breakdown. The species' nutrition profile—carbohydrates, crude protein, crude fat, ash, fibre, and moisture—can provide this data.

Methods:

Zero water exchange is BFT's fundamental idea. According to BFT Technology, A Practical Guide Book, monitoring environmental factors and floc health was crucial. The Kuwait Institute for Scientific Research's Food Analysis Handbook was used to analyse all Proximate compositions. There were BFT and seawater flow-through treatments. Proximate analysis was done on each tank separately. Each treatment had three 300-larvae after three months of feeding and monitoring, prawns weighed 10-15g. A dry matter homogenization using a grinder of *L. vannamei*'s was done to determine carbohydrates, crude protein, lipids, moisture, fibre, and ash. A statistical analysis using t-test was conducted between the two treatments for dry and fresh matter.

Results:

Flow-through had 0.71% more moisture than BFT. BFT had more crude lipids than flow through (0.01%). BFT increased ash and fibers by 0.82% and 0.37%, respectively. BFT(85.25%) had 0.55% more crude protein than flow-through (84.70%). Despite the expected sum of proximate composition values being approximately 100, incorrect instrument calibration yielded 105.43 %. Since NFE=100-(protein+lipids+ash+moisture+fibre), carbs cannot be determined. Both treatments showed no significant differences $P > 0.05$.

Conclusions:

This study examined *L. vannamei*'s nutritional value in BFT and flow-through treatments. Both treatments were similar in all macronutrients. BFT shrimp farming is cheaper and waste-free than flow-through, which wastes space and produces bio-waste. More study is needed to optimize BFT treatment and understand its benefits.

Acknowledgement:

Kuwait Institute for Scientific Research funded this. Dr. Shrean AlSoubaie's ongoing support is much appreciated.

Key Words: nutrition; shrimp; biofloc;

Funding Agency: 14000

Prevalence and quality of life among overweight and obese women with different types of urinary incontinence

Baydaa Alsnnan, Jehad Alhermi, Fatma Alrahal, Shaikha Almansour
Department of Obstetrics and Gynecology, Kuwait University

Introduction:

Objective: Urinary incontinence (UI) is an involuntary leakage of urine and affects the social, physical, and psychological aspects of many individuals worldwide. The purpose of our study was to examine the prevalence, quality of life, severity and different types of urinary incontinence in overweight and obese women.

Methods:

We conducted a cross-sectional study of 1351 consecutive patients, who were recruited between June 2021 and May 2022.

Results:

The mean age of the patients was 39.7 ± 14.2 years with less than a half in the 19–35-year age group (46.9 %); 65% of the subjects were overweight or obese. The overall prevalence of UI was 61.2%. Overweight and obesity accounted to 70.2% of patients with mild to very severe UI. The risk estimates to have UI were 1.84 in overweight and 5.4 in obese group. The risk estimate for severe and very severe UI was 2.33 in overweight and 10.34 in obese group. When considering all subtypes, 67.9% of women with overweight and obesity had any of the subtypes, UUI, SUI and MUI. Overweight and obesity was significantly associated with poor quality of life (QoL) in women with UI ($p < 0.0001$). Among 36.1% of all patients with poor QoL, 79.9% were overweight and obese.

Conclusions:

Overweight and obesity are important risk factors of UI affecting daily activity and QOL considerably. As the number of people with obesity is increasing, the prevalence of UI with increased severity is likely to increase in young to mid-aged women. Weight loss should be considered as first line treatment for this patient population.

Key Words: Urinary incontinence ; Obese; Overweight ;

Funding Agency: 0

Prevalence of overactive bladder among overweight and obese women: A prospective cross-sectional cohort study

Baydaa Alsannan * Antonio Simone Laganà, Jehad Alhermi, Shaikha Almansoor, Amal Ayed, Renato Venezia, Andrea Etrusco
Department of Obstetrics and Gynecology, College of Medicine, Kuwait University, 13110 Safat, Kuwait; ² Unit of Obstetrics and Gynecology, “Paolo Giaccone” Hospital, 90127 Palermo, Italy; ³ Department of Health Promotion, Mother and Childcare, Internal Medicine and Medical Specialties (PROMISE), University of Palermo, 90127 Palermo, Italy; ⁴ Kuwait Ministry of Health, 13110 Safat, Kuwait.

Introduction:

Objective: To evaluate the effect of body mass index (BMI) on the prevalence of overactive bladder (OAB), severity of symptoms, and quality of life of affected patients.

Methods:

We conducted a prospective cross-sectional study of 1351 consecutive patients, who were recruited between June 2021 and May 2022. Patients were divided according to BMI (normal: <25.0, overweight: 25-29.9, obese: ≥30) and menopausal status. The latter were divided according to the presence or absence of urinary incontinence in normal, wet-OAB and dry-OAB group. A validated questionnaire, the International Consultation on Incontinence Questionnaire in Overactive Bladder (ICIQ-OAB), in English and Arabic languages was used.

Results:

1351 patients were included. Women who are overweight had a greater prevalence of dry-OAB ($p=0.02$), but women who are obese have a higher prevalence of both dry and wet-OAB ($p<0.00001$). Compared to women with a normal BMI, women who are overweight or obese had a higher likelihood of developing abnormal daytime urine frequency and nocturia, with p -values ≤ 0.01 . Overweight and obese women have an OR of 3.1 and 5.3 times, respectively, to experience wet OAB in comparison to women with normal BMI. Also, the odds of developing severe type OAB in overweight and obese women are 5.8 and 18.6, respectively, which negatively affects their quality of life (QoL).

Conclusions:

The risk of presenting OAB-symptomatology is significantly higher in overweight and obese patients. As BMI increases, the symptomatology, perceived discomfort and QoL of patients with OAB worsen.

Key Words: overactive bladder; body mass index; incontinence;

Funding Agency: 0

Retrospective cohort study Comparing the clinical profile and outcomes of critically ill pregnant patients in Kuwait during the COVID-19 pandemic waves

Eman Alazmi, Zahraa Akbar, Mariam Aldarweesh, Elaf Hussain, Khalid almusayen, Fatmah alhadhoud, Jehad alharmi
Maternity Hospital Kuwait board of obstetrics and gynecology

Introduction:

COVID-19, the coronavirus disease of 2019, is an infectious disease, later declared a global pandemic, caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). This virus has evolved into several variants, each with different severity. There are surges in the numbers of infected patients, commonly described as 'waves'. In Kuwait, three waves occurred. Our study aims to describe and compare the clinical presentation and outcomes of critically ill pregnant patients infected with different variants.

Methods:

A retrospective cohort study was done in two central intensive care units (ICU) dedicated to patients with COVID-19. The wave periods were retrieved from the Kuwait Ministry of Health. An online survey was used to gather the data. Entry was conducted using Excel Software and analyzed using Analysis of Variance (ANOVA) using SPSS.

Results:

The total number of ICU admissions during the study period was 74 patients. Most cases occurred during the third wave (n= 47/74, 63.5%). Most patients did not have comorbidities. The most common presenting symptoms were fever 62.2%, dyspnea 71.6%, and dry cough 74.3%. Low oxygen saturation, 35.1%, and maternal tachycardia, 75.7%, were observed in most patients. Cesarean section was the most common route of delivery, with maternal indication accounting for most cases 78.84%. Eight patients underwent dialysis 13.69%, and thirty-one had Extracorporeal membrane oxygenation (ECMO) 41.9%. Most patients required ventilatory support 66.21%. Almost all patients were unvaccinated 97.01%. Maternal mortality was primarily noted in the third wave compared to all waves, 13.23%.

Conclusions:

In Kuwait, the number of admissions and the rate of maternal complications, morbidity, and mortality increased with successive wave

Key Words: COVID-19 . Pregnant ; Sever . ICU . ECMO; Dialysis . Mortality ;

Funding Agency: none

2-year experience of induction of labour at Farwanyia hospital: a cross sectional study

Mahmoud, Zenab Shehab
Amal khuder

Introduction:

Induction of labour (IOL) is one of the most commonly used procedures in obstetrics. The rate of IOL is rising rate in developed countries while it is still low In developing countries. It is sensible that IOL is considered only when the vaginal route deemed appropriate. Methods of IOL may be pharmacological or mechanical. The pharmacological methods include prostaglandins and oxytocin. Usually oxytocin infusion is started after artificial rupture of membranes (AROM). Intrauterine foley's catheter is a mechanical method used for IOL used mainly when there is concern about uterine rupture. Aim: The current study aimed at collecting data from local hospital about common indication and outcomes. This knowledge may be employed as a database for future improvement of the quality of care as well as an evidence based information for counselling of mothers.

Methods:

This study is a retrospective cross-sectional study, conducted at obstetrics and gynecology department, Farwanyia hospital in Kuwait. The study included all women who had IOL during the period from January 2021 till December 2022. The included pregnant women were those with cephalic babies who had IOL at term. While those with previous caesarean section were excluded. The data were collected from medical records, both electronic and paper. The women who met the inclusion criteria were 118 women. The data collected included the age and parity of pregnant women, the indication, method, maternal and neonatal outcome of IOL.

Results:

The current study included 118 pregnant women. The age of the included women ranged between 17 and 43 years old. Twenty five women were nulliparous and 12 women had high parity (≥ 5). Post-term pregnancy was the most common indication (50 women), followed by GDM (35 women). Induction of labour using prostaglandin was the most frequently used method. Propess® was used in 104 women, while prostin® E2 was used in 8 women. Intrauterine foley's catheter was used in 6 women. AROM and oxytocin infusion was not used in the first trial of induction for any woman. Seventy-nine women had successful IOL in the first trial yielding success rate of 67%. The remaining 39 women had second trial. Ten women had second dose of Propess®, six women had intrauterine foley's catheter and 23 women had AROM followed by oxytocin infusion. Following the second trial, 28 women out of the remaining 39 women had normal vaginal delivery and two women had assisted vaginal delivery. Six women (out of those who had second trial using Propess® or intrauterine foley's catheter) had favourable cervix that AROM was done followed by oxytocin infusion leading to normal vaginal delivery. Only three women had failed IOL and delivered by caesarean section. The cause of caesarean section in the three cases was pathological CTG. Two out of them had pathological CTG while the cervix was fully dilated but the station was > -1 . The success rate of the second trial was 77%. The overall success rate after first and second trial of 97.5%.

Conclusions:

The IOL was complicated by shoulder dystocia in 3 cases. Also, one case was complicated with retained placenta which needed manual removal of the placenta under general anaesthesia. Though, this case had large fundal fibroid. Only three babies need NICU admission. IOL using Propess® was associated with significantly higher probability of successful first trial. Also those who received IOL at 39 and 40 weeks of gestation were more likely to have successful first trial

Key Words: Induction; Success rate; Pregnancy ;

Funding Agency: Farwanyia hospital kims

Factors associated with preterm labour in diamniotic twin pregnancy

Mahmoud
Amal khuder

Introduction:

The incidence of twin pregnancy increased over the last decades. The incidence of preterm delivery is high among twin pregnancy. Preterm delivery in twin pregnancy leads to worse perinatal outcome. Many risk factors may be associated with preterm delivery in twin pregnancy. Aim: The current study aims at identification of risk factors that may contribute to preterm delivery in twin pregnancy. This may help in recognizing women at risk of preterm delivery, so that optimization of their pregnancy may reduce the incidence of preterm delivery and its consequences.

Methods:

This study is a retrospective cross-sectional study, conducted at obstetrics and gynecology department, Farwanyia hospital in Kuwait. The study included all women with twin pregnancy who had delivered viable babies (> 24 weeks gestation and fetal weight > 500 gm) during the period from January 2021 till December 2022. Women with monoamniotic monochorionic twin were excluded. Also cases of IUFD, twin The data were collected from medical records, both electronic and paper. The women who met the inclusion criteria were 51 women. They were further categorized into term delivery group and preterm delivery group. The cutoff for preterm delivery group was 37 weeks gestation for dichorionic diamniotic twin (DCDA) pregnancy and 36 weeks gestation for monochorionic diamniotic twin (MCDA) pregnancy. Data collected included age, body mass index (BMI), parity of pregnant women, chorionicity of twin, obstetric complications and history of recurrent miscarriage.

Results:

Twenty-nine women had term delivery, while 22 women delivered preterm comprising an incidence of 43%. Majority of included women were younger than 35 years old, had BMI lower than 35, had dichorionic diamniotic twin and had natural conception.

Conclusions:

Women with history of recurrent miscarriage were more likely to have preterm delivery. The difference was statistically significant

Key Words: Twins ; Preterm; Risk;

Funding Agency: Farwanyia hospital kims

A favorable role of prolactin in human breast cancer reveals novel pathway- based gene signatures indicative of tumor differentiation and favorable patient outcome

Hachim I ¹, Shams A ^{2,5,7}, LebrunJJ ³, Ali S ⁴

¹Division of Hematology, Department of Medicine, Cancer Research Program, Research Institute of the McGill University Health Centre, McGill University. Electronic address: Ibrahim.Hachim@mail.mcgill.ca.; ²Division of Hematology, Department of Medicine, Cancer Research Program, Research Institute of the McGill University Health Centre, McGill University. Electronic address: Anwar.Shams@mail.mcgill.ca.; ³Division of Medical Oncology, Department of Medicine, Cancer Research Program, Research Institute of the McGill University Health Centre, McGill University. Electronic address: JJ.Lebrun@mcgill.ca.; ⁴Division of Hematology, Department of Medicine, Cancer Research Program, Research Institute of the McGill University Health Centre, McGill University. Electronic address: Suhad.Ali@mcgill.ca. ⁵Departement of Pharmacology, College of Medicine, Taif University, Taif 21944, Saudi Arabia. ⁶Centre of Biomedical Sciences Research, Deanship of Scientific Research, Taif University, Taif 21974, Saudi Arabia. ⁷High Altitude Research Center, Taif University, Taif 21944, Saudi Arabia.

Introduction:

Prolactin (PRL) hormone is known to play a key role in mammary gland development allowing for successful lactation. The role of this hormone in breast tumorigenesis is still controversial. Here, we evaluated PRL protein and gene expression levels in human breast cancer using tissue microarray of 100 breast cancer cases, as well as different publically available human breast cancer gene profiling databases.

Methods:

We used IHC to examine the protein level of both PRL and PRLR-L in the TMAs of 110 cores of invasive ductal carcinoma with 10 cases of normal tissue. For PRL and PRLR analyses, we used a semiquantitative scoring system. Microarray analysis for Gene expression profile of HC11 cells treated with PRL for 24 hrs compared to untreated cells was performed at Genome Quebec. The ANOVA test was used to evaluate the correlation between PRL, PRL pathway-based gene signature, and PRL-modulated genes signatures.

Results:

Our results showed a significant downregulation of PRL expression in breast cancer compared to normal adjacent tissue. Moreover, expression of PRL was associated with more differentiated tumors, early stage, smaller tumor size and absence of distant metastasis. Also, our results indicate that higher PRL mRNA levels are significantly associated with prolonged relapse-free survival (RFS) in breast cancer patients ($P=3.7 \times 10^{-9}$). Examining expression of PRL pathway-based gene signature composed of PRL, PRLR, Jak2 and Stat5a showed a significant association with more differentiated tumors ($P<.00001$), prolonged RFS ($P=1.8 \times 10^{-6}$) and overall survival (OS) ($P=.0026$). As well, our results indicate that PRL-directed differentiation program in mammary epithelial cells offer good prognosis in human breast cancer. Indeed, expression of a gene signature composed of PRL-upregulated genes showed a significant association with well-differentiated tumors ($P<.00001$). Whereas expression of a gene signature composed of PRL-downregulated genes showed a significant association with shortened distant metastasis-free survival (DMFS) ($P=.0086$).

Conclusions:

Our results highlight that PRL hormone and its signaling pathway may play an important role in maintaining tumor differentiation state and in turn better patient outcome. Acknowledgments: This work was supported by “The Canadian Institutes of Health Research” (CIHR-MOP115105) granted to Suhad Ali. We would like to thank Mr. Adam and Miss Alia Alsalam.

Key Words: Breast Cancer; Prolactin and Prolactin receptors; Favourable Prognosis;

Funding Agency: The Canadian Institutes of Health Research” (CIHR-MOP115105) granted to Suhad Ali.

Effect of lactate dehydrogenase enzyme inhibition on cell motility, invasion and expression profile on signaling molecules in –ER breast cancer cells.

Sarah khochiach, Maitham khajah
Kuwait University

Introduction:

Lactate dehydrogenase (LDH) is a crucial enzyme for energy production through anaerobic respiration. Increased LDH activity and lactate levels has been associated with cancer pathogenesis and poor prognosis specially in ER negative breast cancer. We have previously shown enhanced LDH activity and extracellular lactate levels in the aggressive estrogen receptor negative breast cancer cells when compared to the less invasive ER positive breast cancer cells and normal epithelial cells. Aim: To determine the effect of LDH inhibition through SiRNA/ShRNA mediated knock down of LDHA and B isoforms, and in response to pharmacological inhibitors of LDH enzyme such as (Quercetin, oxamate, Lonidamine and GNE 140).

Methods:

ER-ve breast cancer cells PII was used in this study. LDH isoforms knockdown and expression profile of various signaling molecules involved in the cell motility and invasion were determined by western blotting analysis. While cell motility and invasion were assessed by scratch and cultrex assays, respectively,

Results:

LDHA or LDHB knockdown SiRNA/ShRNA significantly reduced the motility in endocrine resistant (PII cells), which was mediated in part through reduction in ERK1/2 phosphorylation. Treatment with various pharmacological inhibitors of LDH activity, significantly reduced PII cells' motility and invasion through the modulation of oncological signaling molecules. For example, oxamate treatment inhibited the activity of ERK1/2 and AKT while treatment with quercetin inhibited activity of ERK1/2 and P38 MAPK. Furthermore, GNE-140 inhibited the activity of P38 MAPK and AKT, while lonidamine only inhibited AKT activity.

Conclusions:

Targeting LDH enzyme activity is a promising therapeutic approach specially for the aggressive form of breast cancer cell through reducing cell motility and invasion.

Key Words: breast cancer; ldh inhibitors; ldh knockout;

Funding Agency: kuwait university - research sector pt04/21

Prolactin receptor-driven combined luminal and epithelial differentiation in breast cancer restricts plasticity, stemness, tumorigenesis and metastasis

Shams A^{1,2}, Binothman N^{1,3}, Boudreault J¹, Wang N¹, Shams F⁴, Hamam D¹, Tian J¹, Moamer A¹, Dai M¹, Lebrun JJ¹, Ali S⁵

1Department of Medicine, Cancer Research Program, The Research Institute of the McGill University Health Centre, Montreal, QC, Canada. 2Department of Pharmacology, Faculty of Medicine, Taif University, Taif, Saudi Arabia. 3Department of Chemistry, College of Science and Arts, King Abdulaziz University, P.O. Box 344, Rabigh, 21911, Saudi Arabia. 4Department of Pathology and Laboratory Medicine, King Abdulaziz Hospital, Mecca, Saudi Arabia. 5Department of Medicine, Cancer Research Program, The Research Institute of the McGill University Health Centre, Montreal, QC, Canada.

Introduction:

Dedifferentiation increased cellular plasticity and stemness are established drivers of tumor heterogeneity, metastasis and therapeutic failure. Therefore, it is essential to decipher pro/forward-differentiation mechanisms in cancer that may serve as therapeutic targets. While the physiological role of PRL/PRLR in mammary epithelial cellular differentiation is well known, we aimed here to evaluate the impact of loss of PRLR expression in regulating plasticity and tumorigenesis of the breast cancer subtypes HR+ (MCF-7 cells) and HER2-E (SKBR-3 cells) using CRISPR/Cas9 technology.

Methods:

Using CRISPR/Cas9 technology, we interfered with expression of the PRLR in two different breast cancer cell model of the two subtypes HR+ and HER2-E. Various in vitro and in vivo experimental works have been conducted. Statistical analysis was performed using GraphPad prism 6 software.

Results:

We found that interfering with expression of the receptor for the lactogenic hormone prolactin (PRLR) in breast cancer cells representative of the luminal and epithelial breast cancer subtypes HR+ and HER2-E resulted in loss of their differentiation state, enriched for stem-like cell subpopulations, and increased their tumorigenic capacity in a subtype-specific manner. Loss of PRLR expression in HR+ breast cancer cells caused their dedifferentiation generating a mesenchymal-basal-like phenotype enriched in CD44+ breast cancer stem-like cells (BCSCs) showing high tumorigenic and metastatic capacities and resistance to anti-hormonal therapy. Whereas loss of PRLR expression in HER2-E breast cancer cells resulted in loss of their luminal differentiation yet enriched for epithelial ALDH+ BCSC population showing elevated HER2-driven tumorigenic, multi-organ metastatic spread, and resistance to anti-HER2 therapy.

Conclusions:

This study defines PRLR as a driver of precise luminal and epithelial differentiation limiting cellular plasticity, stemness, and tumorigenesis and emphasizing the function of pro/forward-differentiation pathways as a foundation for the discovery of anti-cancer therapeutic targets.

Acknowledgment: The confocal and the histopathology Imaging Platforms of the Research Institute, McGill University Health Centre. A.S. was supported by a scholarship award from Taif University, Saudi Arabia. This work was supported by the CIHR (operating grants #233437 and 233438) granted to S.A.

Key Words: Breast cancer; Prolactin Receptors; Differentiation;

Funding Agency: This work was supported by the CIHR (operating grants #233437 and 233438) granted to S.A.

Prevalence of Mask-Associated Dry Eye (MADE) Among the General Population of Al- Baha Area, Saudi Arabia

¹ Ali H Alghamdi, ² Mahadi A Bashir, ³ Saleha K Alatawi, ⁴Hani A Alghamdi, ⁵ Ahmed M Alzahrani

^{1,2} Department of Ophthalmology, Faculty of Medicine, Al-Baha University, Al-Baha, Saudi Arabia; ³ Department of Optometry, Faculty of Applied Medical Sciences, Al-Baha University, Al-Baha, Saudi Arabia; ⁴ Department of Optometry, Faculty of Applied Medical Sciences, Al-Baha University, Al-Baha, Saudi Arabia; ⁵ Medical Student, Faculty of Medicine, Al-Baha University, Al-Baha, Saudi Arabia

Introduction:

Background: During the coronavirus disease 2019 (COVID-19) pandemic, the utilization of face masks was made mandatory as a protective tool. However, prolonged use of face masks increases the risk of dry eye, which affects people's visual-based activities. The Al-Baha area is a high-altitude area located in the west of the Kingdom of Saudi Arabia in the Hejaz region. As a result, residents of this region are more likely to suffer from dry eyes because of the extreme environmental conditions. Subsequently, the aim of this study is to determine the prevalence of mask-associated dry eye (MADE) and its associated risk factors among the general population of the Al-Baha area, Saudi Arabia.

Methods:

This is a cross-sectional study conducted using an anonymous online questionnaire composed of 56 questions. Data were collected from 480 participants in the Al-Baha area.

Results:

The prevalence of MADE among the general population of Al- Baha, Saudi Arabia, was 39.2%, which is higher than the global prevalence. The risk factors for MADE include exposure to dry weather, wind, blepharitis, and ectropion. Moreover, it was determined that females were more likely to develop MADE than males; likewise, people in the age group of 16 to 25 were more likely to have MADE.

Conclusions:

The study shows that the prevalence of MADE in Al-Baha is comparatively higher than the worldwide prevalence, which is best explained by this area being at a high altitude. Based on the study's findings, some recommendations to guard against MADE are made to patients, the general public, and ophthalmologists.

Key Words: Ophthalmology ; Dry Eye Syndrome ; Covid 19;

Funding Agency: No

Mini-incision (Minimally Invasive) And Standard Incision Direct Lateral Transmuscular Approach For Total Hip Arthroplasty, Comparison of Complications, Function, Clinical and Radiological Outcomes: A Systematic Review

Alfaresy SA*, Khaja A, Aladwani B
Department of Orthopedic Surgery, Al-Razi Hospital

Introduction:

Several studies exist comparing the mini-incision (or minimally invasive) to the standard incision approach for total hip arthroplasties (THA) with inconclusive results regarding the superiority of one approach over the other. To this date, no systematic review focused on comparing complications, function, clinical and radiological outcomes of the different incision lengths in the direct lateral approach for THA, which is the second most common approach utilized worldwide.

Methods:

The search for prospective and retrospective comparative studies comparing the mini-incision to the standard-incision lengths in the direct lateral transmuscular approach for THA in the main databases. We focused on comparing functional outcomes using patient-reported outcome measures (PROMs), radiological assessments and intraoperative and postoperative complications.

Results:

We included a total of 17 studies (14 prospective, 3 retrospective). Total number of hips included were 1601 (1582 patients) that underwent THA. Postoperative function was in favour of the MI approach in 3 studies (Harris Hip Score at three months of 86.9 vs 78; Western Ontario and McMaster Universities Arthritis Index at three months of 2.03 vs 2.91; walking start day of 2.9 vs 4.8 days; painless sit-alone days of 2.53 vs 4.13 days) and one study favouring the SI approach (Harris Hip Score at discharge of 46 vs 40 and at six weeks of 78 vs 72). No difference in component malpositioning was detected in any of the studies. Complication rates were higher in the minimally invasive group (7.72%) compared to the standard incision group (5.47%) with a relative risk of 1.33.

Conclusions:

There are no major benefits of MI approach compared to the SI approach. Conflicting results regarding postoperative function remain. Although it seems to be a relatively safe alternative.

Key Words: Total hip arthroplasty; direct lateral transmuscular approach; mini-incision;

Funding Agency: NONE

Incidence, death, and vaccination rates for COVID-19 across six continents

Alsairafi ZK ¹, Naser AY ², Hemmo SI ², Alshatti BJ ³, Alrawashdeh HM ⁴, Taqi A ¹

¹ Department of Pharmacy Practice, Faculty of Pharmacy, Kuwait University, Kuwait; ² Department of Applied Pharmaceutical Sciences and Clinical Pharmacy, Faculty of Pharmacy, Isra University, Amman, Jordan. ³ Mubarak Hospital, Ministry of Health, Hawalli, Kuwait. ⁴ Sharif Eye Center, 11511, Irbid, Jordan.

Introduction:

In December 2019, Coronavirus Disease (COVID-19) appeared in China. Then, the virus spread toward other regions, first to Europe, where it put tension on all health systems and hit member states violently. As of March 2022, there were 452,201,564 confirmed cases in the world, including 6,029,852 deaths. To better understand the epidemiology of this pandemic globally, this study aimed to determine the global trend of cases, deaths and vaccinations.

Methods:

A retrospective ecological descriptive study using online data from the Our World in Data portal between February 2021-February 2022 among six countries was conducted. It has been approved by the Scientific Research Ethics Committee at the Faculty of Pharmacy, Isra University (SREC/22/09). Descriptive statistics were used to present the findings. The incidence, deaths and vaccination rates with their 95% confidence intervals were calculated by dividing the number of new cases by the number of the population during the same time frame. The change in rates were estimated as the relative changes from the baseline. All analyses were conducted using SPSS version 27 (IBM Corp, Armonk, NY, USA).

Results:

COVID-19 cases: A total of 437,091,587 COVID-19 cases were reported in the world in February 2022. The prevalence and incidence of new cases rate increased by 2.82-fold & 4.15-fold, respectively in February 2022/1,000,000 persons.

Deaths

A total of 5,957,345 COVID-19 deaths were reported globally in February 2022. The overall mortality rate increased by 1.28-fold in February 2022/1,000,000 persons. The incidence rate of new deaths decreased by 10.5% in February 2022/1,000,000 persons.

Vaccinations

A total of 10,716,795,951 vaccinations have been administered globally in February 2022. The overall vaccination rate increased by 38.92-fold in February 2022/1,000,000 persons. The rate of people vaccinated increased by 31.07-fold in February 2022/1,000,000 persons. The rate of people fully vaccinated & who newly vaccinated increased by 74.82-fold & 4.88-fold, respectively in February 2022/1,000,000 persons.

Conclusions:

Vaccination rates varied across continents and according to country income. COVID-19 vaccination must be made more acceptable by public awareness campaigns. This is likely to reduce the disease's incidence and related mortality.

Funding/Acknowledgements

Funding is not applicable. Authors would like to thank Isra University for providing facilities used to accomplish this study.

Key Words: COVID-19 ; Vaccination ; Incidence ;

Funding Agency: None

Correlation Between the Molecular Alterations and the Meningioma Grade

Jarkhi HH ¹, Al-Murshed M ²

PGY5, Program of Anatomical Pathology and Cytopathology, Kuwait Institute for Medical Specializations (KIMS)

Introduction:

Meningioma is the most common primary extradural central nervous system tumor in adults. Meningiomas are graded as grade 1, grade 2, or grade 3, based on World Health Organization (5th edition) criteria, which rely on histopathological morphological findings alone. This grading system is unable to conclusively predict the clinical behavior of these tumors (i.e recurrence or prognosis). Advances in molecular techniques over the recent years, including genomic and epigenomic studies associated with meningiomas, have been utilized to identify genetic biomarkers that can predict tumor behavior. This study summarizes the molecular characteristics of meningioma in 120 cases over the period of two years, with correlation to the meningioma grade, patient age, sex, and other demographic data.

Objectives:

The aim of this study is to correlate the molecular findings in specimens diagnosed as “meningiomas” with the histopathological grade, age, sex, and size of the tumor.

Methods:

Data obtained from 120 patients diagnosed with meningioma in the period of two years (from September 2021 to September 2023). Correlated with the grade of the meningioma are the molecular findings, patient age and sex, tumor location, and site. Excluded from the study are the cases for which no molecular testing was performed, or performed but failed.

Results:

More than 13 different molecular alterations were identified in 36 cases that revealed molecular changes. Some of the mutations were exclusive for morphologically low grade meningiomas. Other mutations were only seen in high grade meningiomas.

Conclusions:

While some molecular alterations (NF2) are noticed in all grades of meningiomas, some mutations (AKT1) are seen only in grades 1 and 2 meningiomas, while other mutations (BRCA1 and BRCA2) are noticed only in grades 2 and 3 meningiomas. Other molecular alterations are seen in a limited number of cases

Key Words: Meningioma; Molecular diagnosis; Pathological diagnosis;

Funding Agency: NONE

Medical & Nursing Students' Insights Towards Patient Safety

Aleinati GT, Kamal ZA*, Alkandery NA, Alajmi HM, Alajmi SE
7th year medical students

Introduction:

Patient safety must be adequately addressed while training future healthcare workers. In order to optimize training in this field, we must evaluate current student perception of issues regarding patient safety. In this pilot study, our aim was to identify strengths and weaknesses in understanding of patient safety among final year medical and nursing students in Kuwait.

Methods:

A cross-sectional study was conducted on Kuwait's final year medical and nursing students, which involved electronic distribution of a modified version of Attitudes to Patient Safety Questionnaire III (APSQ III) by Carruthers, et al. The survey included questions about sociodemographic factors and questions assessing student understanding of various domains within the theme of patient safety. The scoring is from 1 to 7 with 7 being the most positive score. The data for statements that were negatively worded were reverse coded to be integrated correctly. Results were analyzed using SPSS version 29.0.0.0.

Results:

The total number of respondents was 97 (35.6% response rate) of which the majority were nursing students (74.2%), female (62.9%), Kuwaiti (64.9%), single (69.1%), and the median age was 25 years. The median score in our study was 5.5, reflecting an overall positive attitude of respondents. Of the patient safety domains assessed, students scored most positively in recognizing the importance of team functioning in promoting patient safety (6.25 ± 0.87), the inevitability of medical error (5.91 ± 0.98), and working hours as a cause of medical error (5.87 ± 1.14). They scored most poorly in the domain addressing the view that medical error reflects professional incompetence (3.87 ± 1.11), followed by disclosure responsibility (5.00 ± 1.22). Of the respondent characteristics, only faculty was found to be significantly associated with APSQ III score, where medical students had a more positive score ($p=0.002$).

Conclusions:

This is a pilot study and, to our knowledge, is the first study of its type conducted in Kuwait. The sample size was small and only final year students were included. In our analysis, the domains of inevitability of medical error and of medical error reflects professional incompetence are conflicting results but are consistent with other studies in different countries. Medical and nursing schools should take into consideration the gaps in student understanding of patient safety, to best address them through the curriculum.

Key Words: Patient safety; Ethics; Medical error.;

Funding Agency: None

Understanding The Prevalence And Variants Of Mucopolysaccharidoses In Kuwait

Alawadi AM*¹, Alsharhan H^{1,2,3,4}, Makhseed N⁵, Ramadan D⁶, Shahhat MA⁵, Elshawaf RI⁷, Alsafi R⁷, Albash B³

¹Department of Pediatrics, College of Medicine, Health Sciences Centre, Kuwait University, Kuwait, ²Department of Pediatrics, Farwaniya Hospital, Ministry of Health, Kuwait, ³Kuwait Medical Genetics Center, Ministry of Health, Kuwait, ⁴Department of Genetic Medicine, Johns Hopkins University School of Medicine, Baltimore, MD, USA, ⁵Department of Pediatrics, Al-Jahra Hospital, Ministry of Health, Kuwait, ⁶Department of Pediatrics, Al-Sabah Hospital, Ministry of Health, Kuwait, ⁷Department of Pediatrics, Adan Hospital, Ministry of Health, Kuwait

Introduction:

To report the prevalence of different Mucopolysaccharidoses and declare all the genetic and phenotypic characteristics of affected individuals detected at Kuwait Medical Genetics Centre (KMGC).

Background: Mucopolysaccharidoses (MPS) are a group of rare inherited lysosomal storage disorders that result from a deficiency of specific lysosomal enzymes responsible for breaking down glycosaminoglycans. Deficiency of a particular enzyme leads to a distinct multisystemic disease. Given the high rate of consanguinity in Kuwait, a high occurrence of autosomal recessive disorders is expected.

Methods:

A retrospective review of the data registry in KMGC for all cases diagnosed clinically, biochemically and genetically with all types of MPS.

Results:

129 cases of different ethnicities and nationalities (54 females and 75 males) have been diagnosed with MPS in Kuwait based on enzymatic and/or molecular testing, since 1975. Most cases were diagnosed with MPSI (33%) where a founder nonsense variant in IDUA Arg628Ter was found in 78% and is associated with severe phenotype. The most frequent presenting symptoms among them include recurrent respiratory tract infection, snoring, and coarse facial features. This is followed by MPSVI (26%) with a founder nonsense novel variant in ARSB Tyr251Ter. Most of the cases with MPS (41%) were diagnosed based on targeted molecular testing, while 17% were diagnosed based on next-generation sequencing, and 42% were not molecularly tested. The age of diagnosis varied between patients from newborn to 15-year-old, with only one case diagnosed with MPS type IV at age 49-year-old. MPSIV was reported 15%, with different pathogenic variants in GALNS and variable severity where Gly201Glu is associated with mild phenotype and later-age of onset, while Thr313Met has been associated with severe phenotype and earlier presentation. MPSII is reported in 14% with two novel pathogenic variants in IDS, Val16PhefsTer2, and Ala346Thr. The least common MPS is MPS IIIB which is reported 12%, with different variants including a novel pathogenic variant in NAGLU, Ala395ProfsTer26.

Conclusions:

Our findings confirm the high prevalence of MPS in Kuwait, mainly MPSI, highlighting the necessity of including MPS in the national neonatal screening for early detection and management. Our study also offers valuable information on the common genetic variants, that would help in potential national premarital screening program.

Key Words: Mucopolysaccharidosis; Glycosaminoglycans; Consanguinity;

Funding Agency: Grant No. MK02/21

Incidence and Outcome of Infants Born at More Than 35 Weeks Gestation With Low Cord pH < 7 in Kuwait

Al-Enezi RT* ¹, Qureshi SK* ² and Ayed MK ^{3,4,5}

¹ 6th Year Medical Student, Faculty of Medicine, Kuwait University; ² 4th Year Medical Student, Faculty of Dentistry, Kuwait University; ³ Neonatal neuro critical care consultant; ⁴ Head of the Neonatal Department Maternity Hospital; ⁵ President of Kuwait Neonatal Association;

Introduction:

Low cord pH is associated with adverse neurodevelopmental outcomes. However, the incidence and associated adverse outcomes of low cord pH have not been investigated in Kuwait. Objectives: Determine the incidence of low cord pH<7.1 and investigate the predictors of adverse outcomes.

Methods:

A retrospective study was conducted between January 2021 and December 2022 in the tertiary neonatal department in Kuwait. Infants born at gestational age ≥ 35 weeks with umbilical cord pH<7.1 were included. All infants underwent serial neurological examination in the first 24 hours. Infants with major congenital or genetic disorders were excluded. Adverse outcomes are defined as death or abnormal neurological examination on discharge. Univariate and multivariate analyses were conducted.

Results:

During the study period 15,894 live births were born. A total of 104 infants were admitted with cord pH less than 7.1 (median 6.9; Interquartile range 6.7-7.1). Among the 104 infants, 61 (58.6%) were asymptomatic for encephalopathy, 13 (12.5%) had mild encephalopathy, 18 (17.3%) had moderate encephalopathy and 12 (11.5%) had severe encephalopathy. Eighty-one (77.9%) had normal short-term outcomes and 23 (22.1%) either died or had an abnormal neurological examination on discharge. On multivariate analysis, predictors of adverse outcomes were low cord pH of less than 7 adjusted odd ratio (aOR) 9.7 (95%CI, 2 to 47.7);P=0.005, moderate-severe encephalopathy aOR 222 (95%CI, 17.8 to 2760);P<0.001, aOR 225 (95%CI, 14 to 3575);P<0.001, abnormal aEEG background at 72 hours aOR 6.03 (95%CI, 1.2 to 30.6);P=0.03, cerebral regional oxygen saturation >90% in the first 48 hours aOR 5.6 (95%CI, 1.1 to 31.3);P=0.049 and basal ganglia/thalamic injury on brain MRI aOR 5.7 (95%CI, 1.2 to 29.1);P=0.035.

Conclusions:

Although the majority of infants born with cord pH<7.1 have a normal short-term outcome, 22% are at risk of death or abnormal neurological examination at discharge. A cord pH <7, severity of hypoxic-ischemic insult, persistent abnormal aEEG background, high cerebral regional saturation and basal ganglia/thalamic or global brain injury on MRI are independent risk factors for adverse outcomes.

Key Words: Cord pH; Infants; Outcome;

Funding Agency: None

Phenotypic Variability of Sickle Cell Disease in the Arabian Gulf: Influence of Fetal Hemoglobin among Kuwaiti and Omani Patients

Adekile AD* ¹, Al-Kindi S ², Wali Y ³, Gupta R ⁴, Sameer R ⁵ Al-Sahaf H ⁶, Al-Abboh H ⁷, Zahra A ⁷

Department of Pediatrics, Kuwait University, Kuwait¹, Department of Hematology, Sultan Qaboos University, Sultanate of Oman ², Department of Pediatrics, Sultan Qaboos University, Sultanate of Oman ³, Department of Hematology, Mubarak Al-Kabeer Hospital, Kuwait ⁴, Department of Radiology, Faculty of Medicine, Kuwait University ⁵ and Department of Radiology, Sultan Qaboos University, Sultanate of Oman ⁶

Introduction:

The phenotypic heterogeneity of sickle cell disease (SCD) is influenced by several genetic factors including the HbF level, HBB haplotype, and co-existent α -thal trait. Kuwaiti SCD patients uniformly carry the Arab/Indian (AI) haplotype with elevated HbF levels, while Omani patients carry Benin, A/I, and the Central African Republic haplotypes, with varying levels of HbF. We have carried out a comparative study of the hematological and clinical phenotypes among Kuwaiti and Omani patients specifically to detect the influence of HbF level on the phenotypes.

Methods:

The subjects were consecutive, consenting steady-state adult and pediatric patients attending sickle cell clinics in Mubarak Al-Kabeer Hospital, Kuwait, and Sultan Qaboos University Teaching Hospital in Muscat, Oman between January 2020 and March 2022. The clinical course in each patient was documented by chart review and a face-to-face interview. The frequency of pain episodes, blood transfusions, and different complications including gallstones, acute chest syndrome (ACS), stroke, priapism, and leg ulcers were recorded. They were also screened for avascular necrosis (AVN) of the femoral head, using MRI. Complete blood count, hemoglobin quantitation, and blood chemistry were carried out with routine methods.

Results:

216 patients were studied; 93 from Kuwait and 123 from Oman with a mean age of 23.5 ± 14.7 years. There were no significant differences in age, Hb, WBC, platelets, serum bilirubin, and LDH in the 2 groups. However, the HbF levels were significantly ($p < 0.01$) higher among Kuwaiti patients ($23.1 \pm 9.5\%$ vs $11.4 \pm 8.2\%$). Pain episodes, blood transfusions and ACS were less common among Kuwaiti patients. When divided according to age groups, Omani patients aged < 16 years, had significantly more frequent pain episodes, and ACS. However, the phenotypes were similar in those ≥ 16 years old. The frequency of AVN and blood transfusions were similar in both groups, with no age discrimination. No patient in either group had a history of stroke, priapism, or leg ulcers.

Conclusions:

SCD phenotypes are generally similar in Kuwaiti and Omani patients, except among children in whom the former had a milder disease. HbF, therefore, is an ameliorating factor in childhood, but not necessarily among adult patients. Hydroxyurea is used more commonly among Omani than in Kuwaiti patients. It is interesting that some complications like leg ulcer, priapism and stroke were not encountered in both groups in this study. The additional protective factors need to be elucidated.

Key Words: Sickle cell disease; Fetal. hemoglobin; Phenotype;

Funding Agency: Kuwait Foundation for the Advancement of Science CR17-13MM-01

Early aEEG Background and Cerebral rSO₂ For Predicting Brain Injury in Preterm NeonatesKalim S*¹, Al-Enezi R², Ayed M^{3,4}.¹ 4th year dentistry student, Faculty of Medicine, Kuwait University; ² 6th year medical student, Faculty of Medicine, Kuwait University; ³ Neonatal Neurocritical Care Consultant; ⁴ Head of Neonatal Department at Maternity Hospital**Introduction:**

Preterm infants remain at high risk for brain injury despite advancements in neonatal care and brain monitoring. Early amplitude-integrated electroencephalography (aEEG) and cerebral regional oxygen saturation (CrSO₂) are increasingly utilized for term neonates, but their prognostic value in preterm infants remains unclear.

Objective: To investigate the relationship between early aEEG background patterns, CrSO₂, and brain injury in preterm infants.

Methods:

Prospective observational study of 113 neonates born between 24-32 weeks' gestation from October 2022 and November 2023 in a level III neonatal intensive care unit in Kuwait. Amplitude EEG was applied during the first 72 hours for at least 12 hours. The background was assessed as the most prominent pattern and classified into 1) normal voltage, 2) discontinuous; and 3) burst suppression. CrSO₂ was measured with the INVOS 4100 near-infrared spectrometer applied during the first 72 hours for at least 24 hours. Brain MRI was done on 80 neonates (median gestational age 36 weeks) and brain injury was assessed using the Miller score. Multiple regression analysis was used to assess the risk of brain injury associated with aEEG background after adjusting for gestational age, birth weight, hypotension, ventilation mode and hemodynamic significant patent ductus arteriosus.

Results:

One hundred thirteen neonates with a median gestation age of 28 interquartile range (IQR: 26-30) weeks and median birth weight of 1095 (IQR: 900-1310) grams were included in the study. Neonates with discontinuous aEEG (N=64) had high-risk intraventricular hemorrhage (IVH) adjusted odd ratio (aOR) 6.6 (95% CI: 1.9-22.7) and white matter injury (WMI) aOR 3.9 (95% CI: 1.1-14.6). while those with burst suppression background (N=14) are at higher risks of IVH aOR 11.6 (95% CI: 2.5-54.3). Compared to normal voltage, discontinuous and burst suppression aEEG are associated with lower values of CrSO₂. Discontinuous aEEG and CrSO₂ less than 50% are associated with a high risk of IVH (OR 6.5 (95% CI: 1.7-24.3) and WMI (OR

Conclusions:

This study demonstrates that early aEEG background patterns and CrSO₂ can predict brain injury in preterm infants. These findings highlight the potential of bedside neuromonitoring tools to guide therapeutic interventions and improve outcomes in this vulnerable population.

Key Words: aEEG; Brain Injury; Preterm Neonates;

Funding Agency: NONE

Dual COX/LOX inhibition prevents and ameliorates paclitaxel-induced mechanical allodynia in rats in a cannabinoid receptors-dependent manner

Al Baloushi A O, Aly E M, Al-Romaiyan A, Masocha W

Department of Pharmacology and Therapeutics, College of Pharmacy, Kuwait University

Introduction:

Background: The use of paclitaxel as a chemotherapeutic drug is limited by the development of dose dependent painful neuropathy. Recently, we observed that the combination of indomethacin plus minocycline (IPM) attenuates paclitaxel-induced mechanical allodynia in mice in a cannabinoid (CB) receptor-dependent manner. Indomethacin produces analgesia principally by inhibiting COX activity. Minocycline has been reported to inhibit 5-LOX activity. COX and LOX enzymes are involved in the inactivation of endocannabinoids. We evaluated the antiallodynic activities of licofelone, a dual COX/LOX inhibitor, and compared it to the IPM combination in rats, and whether these activities were CB1 or CB2 receptors dependent.

Methods:

Paclitaxel was administered to male Sprague Dawley rats to induce mechanical allodynia. In one set of experiments licofelone was coadministered with paclitaxel before development of mechanical allodynia. In other experiments rats with paclitaxel-induced mechanical allodynia were treated with licofelone or IPM combination, AM251, a CB1 receptor antagonist, and AM630, a CB2 receptor antagonist, or their vehicles. Mechanical allodynia was measured using a dynamic plantar aesthesiometer.

Results:

Paclitaxel-treated rats developed mechanical allodynia. Coadministration of licofelone and paclitaxel prevented the development of mechanical allodynia. Treatment with licofelone and IPM combination attenuated established paclitaxel-induced allodynia. AM251, a CB1 receptor antagonist, and AM630, a CB2 receptor antagonist, blocked the antiallodynic effects of IPM combination.

Conclusions:

In conclusion these results show that treatment with licofelone or IPM combination produces antiallodynic effects in a rat model of PINP, the latter similar to the mouse model, in a CB1 and CB2 receptors-dependent manner. The findings further support the notion that dual COX/LOX inhibition could be useful for managing CIN

Key Words: Neuropathic pain, Paclitaxel, Mechanical allodyni; dual cyclooxygenase (COX)

Funding Agency: KU RS Grant # PT02/21

Signaling and structural characterization of MC4R activation by Setmelanotide

Anwar Mohammad, Maha M. Hammad

¹ Biochemistry and Molecular Biology Department, Dasman Diabetes Institute; ² Department of Pharmacology and Toxicology, Kuwait University**Introduction:**

Melanocortin 4 receptor (MC4R) has a well-established role in regulating appetite, food intake and energy homeostasis. Setmelanotide is an MC4R agonist currently approved for weight loss in obese adults and children with mutations in components of the leptin-melanocortin pathway. This study aims to compare structural and functional aspects of the physiological MC4R agonist alpha-melanocyte-stimulating hormone (α -MSH) with setmelanotide. We also aim to show the binding affinity of setmelanotide to known MC4R human missense mutations associated with obesity.

Methods:

HEK293-MC4R cells are utilized in the functional analysis of MC4R-activated pathways upon stimulating with α -MSH or setmelanotide. We are studying both G protein-dependent (cAMP) as well as G protein-independent (ERK1/2 phosphorylation) pathways. AutoDock Vina is used in the structural analysis to calculate the induced fit docking scores of ligand binding to MC4R wild type or the selected variants.

Results:

Our data shows that setmelanotide has a higher potency for cAMP formation and a weaker effect on ERK1/2 phosphorylation when compared to α -MSH indicating functional selectivity. We also present structural data showing that setmelanotide has a higher binding affinity to MC4R compared to α -MSH. Lastly, we show that two loss-of-function and two gain-of-function MC4R variants change the conformation not only of the ligand binding pocket of the receptor but also of the peptide when bound to the receptor because the interaction network and the residues involved in the binding are altered.

Conclusions:

Taken together, our study provides important insights into the diversity of MC4R signaling pathways which will facilitate the development of personalized anti-obesity drugs via refining MC4R agonists.

Funding: The study was supported by a grant from the Kuwait Foundation for the Advancement of Sciences (KFAS) research project RA HM-2018-023.

Key Words: GPCRs; Obesity; Structural and functional selectivity;

Funding Agency: Kuwait Foundation for the Advancement of Sciences (KFAS), research project RA HM-2018-023.

The Role of Endothelium in Mediating the Vasodilator Response to Trace Amine Associated Receptor Agonists in Isolated Perfused Rat Kidney

Jragh D*, Yousif M, Oriowo MA, Chandrasekhar B

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

Introduction:

Trace amines such as tryptamine and 3-iodothyronamine (T1AM) are endogenous compounds present in mammalian tissues at very low concentrations. They produce a variety effect in the cardiovascular system including tachycardia, hypertension or hypotension depending on the dosage, species, and experimental condition. They activate surface G-protein coupled receptors (GPCRs) specifically for them, known as trace amine-associated receptors (TAARs). Up today, nine subtypes of TAARs (TAAR1-9) have been identified in humans and rats. The objective of this study was to investigate the possible role of the endothelium in mediating the vasodilation effect of TAAR agonists in normotensive and hypertensive conditions.

Methods:

Male Wistar Kyoto (WKY, n=61) and Spontaneously Hypertensive Rats (SHR, n=56) age 12-14 weeks were used in this investigation. Animals were sacrificed on the day of the experiment. The left kidney with renal artery intact was isolated and placed in a temperature-controlled perfusion chamber and perfused with Krebs' solution. Dose-response curves were established for tryptamine and T1AM before and in the absence of L-NAME (100 μ M). Similar experiments were performed in the presence and in the absence of the endothelium. All experiments were perfused with methoxamine (50 μ M) and ritanserin (1 nM). Changes in perfusion pressure were recorded through a transducer connected to a Lectromed. The TAAR mRNA expression in the kidney was assessed using real-time polymerase chain reaction. Data were statistically analyzed by Student's t-test.

Results:

Tryptamine- and T1AM-induced significant reduction in perfusion pressure of kidney preparations from normotensive and hypertensive rats ($p < 0.05$). Perfusion of the isolated kidney with L-NAME had no significant effect ($p > 0.05$). Vasodilator responses induced by tryptamine and T1AM were slightly reduced by the removal of the endothelium in both WKY rats and SHRs. TAAR 1-9 were expressed in WKY rats and SHRs. The expression was significantly greater in SHRs than in WKY rats ($p < 0.05$), except for TAAR4 and TAAR6.

Conclusions:

The results obtained from this study would suggest that TAAR1 receptors are involved in tryptamine- and T1AM vasodilation response in the WKY and SHR rats perfused kidney. The vasodilation response is not related to the endothelium-derived relaxing factor, but it could be related to the activation of the endothelium-derived hyperpolarizing factor.

Key Words: Trace amines; Perfusion Pressure ; Renal vascular activity ;

Funding Agency: The project is funded by College of Graduate Studies, Research Sector, Kuwait University (YM02/21), and Kuwait Foundation for the Advancement of Sciences (KFAS) under project code (CB22-63MR-01).

Berberine attenuates epithelial mesenchymal transition in bleomycin-induced pulmonary fibrosis in mice via activating A2aR and mitigating the SDF-1/CXCR4 signaling

Omaima A. Ahmedy, Marwa W. Kamel, Dalia M. Abouelfadl, Marwa E. Shabana, Rabab H. Sayed

Associate professor, Faculty of pharmacy, Cairo university, Egypt

Introduction:

Berberine is endowed with anti-oxidant, anti-inflammatory and anti-fibrotic effects. This study explored the role of adenosine A2a receptor (A2aR) activation and SDF-1/CXCR4 signaling suppression in the protective effects of berberine in bleomycin-induced pulmonary fibrosis in mice.

Methods:

Pulmonary fibrosis was generated in mice by injecting bleomycin (40 U/kg, i.p.) on days 0, 3, 7, 10 and 14. Mice were treated with berberine (5 mg/kg, i.p.) from day 15 to day 28.

Results:

Severe lung fibrosis and increased collagen content were observed in the bleomycin-challenged mice. Pulmonary A2aR downregulation was documented in bleomycin-induced pulmonary fibrosis animals and was accompanied by enhanced expression of SDF-1/CXCR4. Moreover, TGF- β 1 elevation and pSmad2/3 overexpression were reported in parallel with enhanced epithelial mesenchymal transition (EMT) markers of enhanced expression, vimentin and α -SMA. Besides, bleomycin significantly elevated the inflammatory and pro-fibrogenic mediator NF- κ B p65, TNF- α and IL-6. Furthermore, bleomycin administration induced oxidative stress as depicted by decreased Nrf2, SOD, GSH and catalase levels. Interestingly, berberine administration markedly ameliorated the bleomycin-induced fibrotic changes in lungs by modulating the purinergic system through the inhibition of A2aR downregulation, mitigating EMT and effectively suppressing inflammation and oxidative stress. Strikingly, A2aR blockade by SCH 58261, impeded the pulmonary protective effect of berberine.

Conclusions:

These findings indicated that berberine could attenuate the pathological processes of bleomycin induced pulmonary fibrosis at least partially via upregulating A2aR and mitigating the SDF-1/CXCR4 related pathway, suggesting A2aR as a potential therapeutic target for the management of pulmonary fibrosis.

Key Words: Berberine Bleomycin; A2aR CXCR4 SDF-1 EMT ; Pulmonary fibrosis;

Funding Agency: None

Cyanidin improves spatial memory and cognition in Bisphenol A-induced rat model of Alzheimer's-like neuropathology by restoring canonical Wnt signaling.

Swathi Suresh, Chitra Vellapandian

SRM COLLEGE OF PHARMACY, SRM INSTITUTE OF SCIENCE AND TECHNOLOGY, CHENGALPATTU, TAMIL NADU, INDIA

Introduction:

Research has unveiled the neurotoxicity of bisphenol A (BPA) linked to neuropathological traits of Alzheimer's Disease (AD) through varied mechanisms. This study investigates the potential neurotoxicity of BPA and evaluates the neuroprotective effects of cyanidin, an anthocyanin, in an in vivo model of BPA-induced Alzheimer's-like neuropathology.

Objective: To assess the efficacy of the isolate in mitigating Bisphenol-A-induced Alzheimer's-like neuropathology in Sprague-Dawley rats by employing behavioral observations and brain biochemical analyses.

Methods:

Three-week-old Sprague-Dawley rats were randomly assigned to four groups: Vehicle control, negative control (BPA exposure), low-dose cyanidin treatment (BPA + cyanidin 5mg/kg), and high-dose cyanidin treatment (BPA + cyanidin 10mg/kg). Behavioral assessments (Y-maze, novel object recognition, and Morris water maze) evaluated spatial memory. After behavioral tests, animals were euthanized, and brain regions were examined for acetylcholinesterase inhibition, p-tau, Wnt3, GSK3 β , and β -catenin levels, catalase and superoxide dismutase activities, and histopathological changes.

Results:

BPA-exposed groups displayed memory impairments, while cyanidin-treated groups showed significant memory improvement ($p < 0.0001$). Acetylcholinesterase levels were higher in BPA-exposed groups but significantly reduced by cyanidin. Cyanidin also downregulated p-tau and GSK3 β and restored Wnt3 and β -catenin levels ($p < 0.0001$). Moreover, cyanidin exhibited antioxidant properties, elevating catalase and superoxide dismutase levels. It effectively mitigated the levels of acetylcholinesterase in the cortex and hippocampus ($p < 0.0001$). Significant gender-based disparities were not observed.

Conclusions:

Cyanidin demonstrated potent neuroprotection against BPA-induced Alzheimer's-like neuropathology by enhancing antioxidant defenses, modulating tau phosphorylation by restoring the Wnt/ β -catenin pathway, and ameliorating spatial memory deficits. This study highlights the therapeutic potential of cyanidin in countering neurotoxicity linked to BPA exposure.

Key Words: Alzheimer's disease; cyanidin; Wnt/ β -catenin;

Funding Agency: NONE

Discovery and Characterization of a New Anti-Inflammatory Macrolide Glycoside from Marine Cyanobacteria Targeting the Keap1/Nrf2 Pathway

Al-Awadhi, FH* ¹, Paul VJ ², Luesch H ³

¹ Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Kuwait University, Kuwait ² Smithsonian Marine Station, Fort Pierce, Florida ³ Department of Medicinal Chemistry and Center for Natural Products, Drug Discovery and Development (CNPDD), University of Florida, Gainesville, Florida

Introduction:

Inflammation is a pervasive mechanism to disturbances in tissue homeostasis such as oxidative stress resulting from high levels of ROS. It is considered the most significant cause of death as it underlies the pathogenesis of several diseases including cancer, chronic kidney disease, and neurodegenerative diseases. To combat damaging effects of oxidative stress, the cells are equipped with Keap1/Nrf2-ARE pathway, an antioxidant mechanism responsible for the clearance of ROS and maintenance of cellular redox homeostasis. Activation of this pathway by electrophiles induces the expression of antioxidant genes (NQO1) and suppresses NF-κB-dependent proinflammatory genes (iNOS). Hence, this pathway is considered a promising therapeutic target for the management of inflammatory and oxidative-stress-mediated diseases. Among the well-established Nrf2 activators are molecules bearing an alpha,beta-unsaturated carbonyl moiety. In our quest for new Nrf2 activators, we are exploring marine cyanobacteria, a unique source of bioactive structurally diverse secondary metabolites, with an overall goal to discover and characterize natural products bearing Michael acceptor moiety and assess their Nrf2-ARE and anti-inflammatory activities.

Methods:

ARE-luc activity was determined using HEK293 stably transfected with firefly luciferase reporter gene. Nitric oxide levels were measured in RAW267.4 cells using Griess reagent. Transcript levels were assessed by RT-qPCR and RNA-sequencing. Analysis of RNA-seq data was carried out using Ingenuity Pathway Analysis.

Results:

A new macrolide glycoside (1) bearing an alpha,beta-unsaturated carbonyl system was discovered. The compound exhibited moderate ARE luciferase activity at 32 μM. It significantly upregulated Nqo1 and downregulated iNos at 32 μM by 5.0- and 2.5-fold, respectively, resulting in a significant reduction of NO levels. RNA-sequencing identified canonical pathways and upstream regulators involved in inflammation, immune response, and certain oxidative stress-underlying diseases such as multiple sclerosis.

Conclusions:

To our knowledge, this is the first report of the anti-inflammatory activity of a cyanobacterial-derived macrolide glycoside belonging to the lyngbyalosides class of natural products, targeting the Keap1/Nrf2-ARE pathway. Funding/Acknowledgements: L'Oréal-UNESCO for Women in Science Grant & NIH

Key Words: Marine Cyanobacteria; Inflammation; Keap1/Nrf2-ARE;

Funding Agency: L'Oréal-UNESCO for Women in Science Middle East Regional Young Talents Program Grant; National Institutes of Health (grant R01CA172310)

Effect of Angiotensin 1-7 Treatment on Breast Cancer Cell Proliferation and Motility

Alfoudiry MM, Khajah MA.

Department of Pharmacology & Therapeutics, College of Pharmacy.

Introduction:

Endocrine resistance in breast cancer is associated with epithelial to mesenchymal transition, which results in enhanced cell proliferation, motility, and invasion, leading to poor clinical outcomes. There is little known regarding the effect of Angiotensin 1-7 in breast cancer pathogenesis. In our laboratory, we generated endocrine-resistant cell lines (through ER knockdown), which resulted in EMT and enhanced various effector functions. Aims: To determine the expression profile of Ang 1-7 and its receptor (MAS-R) in endocrine-responsive and resistant breast cancer cells as well as in normal breast epithelial cells. In addition, cell morphology, proliferation, and motility were determined in response to Ang 1-7 treatment.

Methods:

The protein expression profile of Ang 1-7 was determined using ELISA. The expression/localization of MAS-R was determined using immunofluorescence. Cell proliferation and motility were determined using MTT and scratch assays, respectively.

Results:

ER+ cell lines (MCF-7 and YS1.2) showed significantly lower expression profiles of Ang 1-7 and MAS-R compared to ER- cell lines (pII and MDA-MB-231). Interestingly, Ang 1-7 expression in the normal breast epithelial cells (MCF10a) was relatively similar to ER-cells, but no (or extremely low) expression profile for MAS-R was detected. Epidermal growth factor (EGF) stimulation (a known activator of various effector functions) in pII cells resulted in enhanced expression of MAS-R (by 2.5 folds). Ang 1-7 treatment did not affect cell morphology or proliferation, but it significantly reduced breast cancer cell motility (in a dose-dependent manner).

Conclusions:

Ang 1-7 is a promising therapeutic agent for breast cancer treatment in part through affecting cell motility. Acknowledgements: College of graduate studies (YP/122) and Research Sector (PT 04/21).

Key Words: Angiotensin 1-7; Breast cancer therapy; Endocrine resistance;

Funding Agency: College of graduate studies (YP/122) and Research Sector (PT 04/21)

Chemical Profiling of Seaweeds of the Arabian Gulf by Liquid Chromatography-Mass Spectrometry and in-silico screening against Monkeypox

Gagan Preet, Rishi Vachaspathy Astakala, Emmanuel T. Oluwabusola, Marcel Jaspars, Rainer Ebel, Puja Kumari, Frithjof Christian Küpper

¹ School of Biological Sciences, University of Aberdeen, Cruickshank Building, St. Machar Drive, Aberdeen AB24 3UU, UK; fkuepper@abdn.ac.uk (F.C.K.); ² Environment and Life Sciences Research Centre, Kuwait Institute for Scientific Research, P.O. Box 24885, Safat 13109, Kuwait; hadeelah@kISR.edu.kw; ³ Marine Biodiscovery Centre, Department of Chemistry, University of Aberdeen, Aberdeen AB24 3UE, Scotland, UK; gagan.preet1@abdn.ac.uk (G.P.); r01ra19@abdn.ac.uk (R.V.A.); emmanuel.oluwabusola3@abdn.ac.uk (E.O.); m.jaspars@abdn.ac.uk (M.J.); ⁴ Department of Chemistry and Biochemistry, San Diego State University, CA, 92182-1030, USA; a Present address: Scottish Association of Marine Science, Scottish Marine Institute, Oban, PA37 1QA, UK

Introduction:

This work carried out metabolic profiling on nine brown, one red, and two green algae species collected from different sampling sites of Kuwait's coastal waters in the Arabian Gulf. Freeze-dried seaweed samples were processed by solvent extraction and analysed by liquid chromatography-mass spectrometry for metabolite Identification.

Methods:

Seaweed extracts showed similar metabolite profiles with several compounds shared between most of the samples and were clustered together. However, *S. ilicifolium* var. *acaraeocarpum* and *C. vagabunda* were separated from the rest of seaweed samples, due to unique metabolite features. Species-specific differences between intensities of different masses were observed in different seaweeds.

Results:

Dereplication studies were employed to identify the significant metabolites and search for their previously reported bioactivities. The study led to the tentative identification of 22 metabolites using various annotation tools contained within the GNPS platform, most importantly MolNetEnhancer. The most prevalent chemical class annotations were "terpenoids" and "lipids and lipid-like molecules".

Conclusions:

The metabolites potential modes of action in certain diseases was further studied using computational approaches such as molecular docking and ligand-based pharmacophore generation.

Key Words: pharmacophore; drug design; molecular docking;

Funding Agency: KISR

Therapeutic Drug Monitoring Services: A 14-Year Experience in TDM-CT Laboratory, College of Medicine, Kuwait University, Kuwait

Matar KM* ¹, Anwar AA ², Ezzo AA ², Thomas SA ², Ali AF ²

¹ Dept. of Pharmacology & Therapeutics, College of Pharmacy, Kuwait University. ² Dept. of Pharmacology & Toxicology, College of Medicine, Kuwait University ¹ Dept. of Pharmacology & Therapeutics, College of Pharmacy, Kuwait University

Introduction:

A retrospective study was conducted to assess the trends in the utilization of Therapeutic Drug Monitoring (TDM-CT) Services offered by TDM-CT Laboratory at the College of Medicine over a period of almost fourteen years. The aim of the study was to increase the awareness of physicians about the existing TDM-CT service and to highlight the extent and usefulness of its utilization.

Methods:

Statistical analysis was conducted using data collected in the TDM-CT laboratory from March 2007 to July 2021. A total of 22186 samples were analyzed for Amiodarone, Busulfan, Clonazepam, Ethosuximide, Gabapentin, Lamotrigine, Levetiracetam, Mycophenolic acid, Oxcarbazepine, Topiramate, Vigabatrin, Voriconazole, and Zonisamide. The samples were received from Adan, Al-Jaber, Al-Razi, Al-Sabah, Amiri, Armed Forces, Chest Disease, Farwaniya, Ibn-Sina, Infectious Disease, Jahra, Mubarak Al-Kabir, Kuwait Center for Mental Health and Kuwait Cancer Control, Organ Transplantation, and Physical Medicine & Rehabilitation Centers. The analysis was carried out using high-performance liquid chromatography (HPLC)–ultraviolet detection, HPLC–tandem mass spectrometry, and ultra-HPLC–tandem mass spectrometry methods. Extremely cost-effective analytical methods developed in our own laboratory were utilized to analyze the samples for most of the drugs.

Results:

The analysis of the data demonstrated that 31.5% of the requests did not mention the dose, 12.2% lacked the diagnosis, 7.9% missed the age, 10.2% had missing nationality and 7.9% had no mention of the concomitant drugs given to the patients. Out of the total 22186 samples, 54.3% belong to male and 45.7% to female. Sample originating from Kuwaiti and Non-Kuwaiti were 70.4% and 29.6%, respectively and samples from patients above 12 years were 75.5%. Levetiracetam (54.2%), Oxcarbazepine (16.4%) and Lamotrigine (14.0%) constituted the highest number of requested drugs.

The levels of the drugs in most of the samples (60.4%) were within the tentative therapeutic range.

Conclusions:

There was a clear under-utilization of the service regarding the analysis of drugs other than Levetiracetam, Oxcarbazepine and Lamotrigine. We observed that the levels of the drugs in most of the samples were within the tentative therapeutic range except for Clonazepam where the levels remained below the lower limit of the desired value. We look forward to getting input from the physicians to increase the scope of this service in the future.

Key Words: TDM; Medicines; UPLC-MS/MS;

Funding Agency: None

Green Nanomedicine: Inhalable Herbal Nanotherapeutics For The Treatment Of Lung CarcinomaNafee N* ^{1,2}, Gaber DM ³, Abdallah OY ²¹ Department of Pharmaceutics, College of Pharmacy, Kuwait University, Kuwait; ² Department of Pharmaceutics, Faculty of Pharmacy, Alexandria University, Alexandria, Egypt; ³ Department of Pharmaceutics, Division of Pharmaceutical Sciences, College of Pharmacy, Arab Academy for science, Technology and Maritime Transport, Alexandria, Egypt.**Introduction:**

In cancer therapy, phytomedicines, among which flavonoids, proved high anti-tumor potential with minimal harm relative to chemotherapy. Myricetin (MYR) flavonoid has distinct antioxidant, anti-inflammatory and anti-tumor activity. However, low bioavailability ascribed to limited aqueous solubility restricted its biomedical application. Nanomedicine was the ultimate resort to solve these imperfections. Green nanotechnology relying on eco-friendly protocols was of concern. The study herein aims at developing MYR-loaded solid lipid nanoparticles (SLNs) for lung carcinoma. Green nanomedicine ensured the use of biocompatible biodegradable components and solvent-free technique.

Methods:

A two-step preparation procedure started with complexation of MYR with the phospholipid (PH) Lipoid-S100, followed by nanoencapsulation in SLNs. Myricetin-phospholipid complex (MYR-PH-CPX) was characterized by DSC and Fourier Transform Infrared (FT-IR) Spectroscopy. The effect of complexation on drug dissolution and loading was studied. Gelucire®-based SLNs were prepared by solvent-free hot melt homogenization and loaded with either MYR or MYR-PH-CPX. The size and zeta potential of SLNs were measured. Particle morphology was examined by Transmission electron microscopy (TEM). To determine the encapsulation efficiency (EE), MYR was extracted from SLNs and quantified by HPLC. MYR release from SLNs was investigated using dialysis method. To ensure the safety of plain SLNs and potential antitumor activity of MYR-SLNs, MTT viability assay was carried out on Human lung carcinoma (A549) cells. Uptake studies were performed in A549 cells using labelled SLNs. Particle uptake was examined using confocal laser scanning microscopy (CLSM). Internalization was confirmed by 3D-time laps imaging of Z-stacks.

Results:

Optimized SLNs ensured 75.98 nm diameter, zeta-potential of -22.5 mV, and 84.5% EE. MYR-PH complexation prior to its entrapment in SLNs lead to 5-fold increase in drug loading. Viability assays revealed superior antitumor activity of MYR-PH-CPX and 3-fold reduction in IC₅₀. Enhanced cellular uptake was evidenced by confocal imaging and doubled fluorescence intensity.

Conclusions:

The study highlights the potential safety and antitumor activity of MYR-PH-CPX-SLNs and give promises of green alternative to chemotherapy for lung carcinoma.

Key Words: Myricetin; Solid lipid nanoparticles; Inhalation;

Funding Agency: None

Adaptation to Resistance Exercise Prior to Sciatic Nerve Injury Promotes a Promyelination Effect in the Crush Injured Sciatic Nerves of Rats

Al-Mallah H*, Mouihate A, Al-Sarraf H

¹ Post-graduation MSc student (defended), Department of Physiology, Faculty of medicine, Kuwait University; ² Department of Physiology, Faculty of medicine, Kuwait University.

Introduction:

Peripheral nerve injury can lead to motor and sensory deficits causing disability. Studies on protective effect of resistance exercise (RE) prior to injury are scarce. Therefore, our objective was to assess whether RE prior to sciatic nerve crush injury (SCI) is protective by assessing the morphology and morphometric measurements in the injured nerves using transmission electron microscopy (TEM).

Methods:

Sprague Dawley rats were divided into control (Ctrl) and RE groups after the approval of the animal ethics committee. The RE rats pulled progressively increasing load tied to their tail in a tunnel (3x/week) for 10 weeks, while the Ctrl rats walked through the tunnel without pulling any load. After 10 weeks, the left leg of each rat was subjected to a moderate SCI using micro-mosquito forceps, while the right leg was used as sham. Sciatic nerves were extracted 14 days after surgery for TEM to assess morphological and morphometric measurements (3 rats/group, 5 images/section). Areas were sampled as: sham, site of injury, and 1-2 mm distal to the site of injury. Image pro plus version 10 was used to measure the mean diameter of the myelinated fibres (D) and axons (d) to calculate g-ratio and myelin thickness using the equations: d/D and $D-d/2$, respectively. The number of myelinated axons was also counted. The statistical analysis was done using one-way ANOVA followed by Bonferroni test, SPSS version 25 ($p < 0.05$).

Results:

Electron microscopy revealed that distal segments of RE injured nerves showed better morphology indicating less damage compared to their corresponding area in the injured Ctrl nerves. At the distal segment of the injured nerve, the number of myelinated axons and myelin thickness were significantly lower than the sham in the Ctrl ($p < 0.05$), while in the RE group, no significant difference was observed. Furthermore, at the distal segment, RE significantly showed a better myelination compared to the Ctrl; the number of myelinated axons ($RE = 49.53 \pm 5.19$ vs $Ctrl = 25 \pm 3.24$) ($p < 0.01$), g-ratio ($RE = 0.55 \pm 0.02$ vs $Ctrl = 0.65 \pm 0.04$) ($p < 0.05$), and myelin thickness ($RE = 1.09 \pm 0.09$ vs $Ctrl = 0.72 \pm 0.13$) ($p < 0.05$).

Conclusions:

RE prior to sciatic nerve injury promotes a promyelinating effects to the injured nerve. This improved neuroprotection could be due to the direct protective effect of RE against injury or faster process of recovery or both.

Funding/Acknowledgments: CGS and Research Sector (YM06/22)/Animal Facility and EMU.

Key Words: TEM; Morphometrics; Morphology;

Funding Agency: College of Graduate Studies and Research sector (YM06/22).

Differential Effect of Hypoxia Related Cytokines on Cell Death in the Rat Brain during Hypoxemic Hypoxia.

Barakat RM ¹, Kilarkaje N ², Redzic Z ¹.

¹ Department of Physiology, Faculty of medicine, Kuwait university; ² Department of Anatomy, Faculty of Medicine, Kuwait university,

Introduction:

Inflammation-mediated cell death in the brain could be one of the underlying mechanisms of secondary acute brain injury in type-1 respiratory failure (T1RF). This study was aimed to explore whether T1RF-associated hypoxia triggers inflammatory or some other response in the brain and to which extent this response is important for the cell survival.

Methods:

We measured concentrations of 32 cytokines in interstitial fluid (ISF) samples from the premotor cerebral cortex (CC) and in plasma (n=5-6/group), which were collected from conscious Sprague-Dawley rats during 48 hours of hypoxemic hypoxia, a condition that mimics T1RF. The association of the pattern of changes in the concentrations of cytokines to signaling pathways was analyzed by Ingenuity Pathway Analysis (IPA). Effects of pharmacological inhibition of the three main hypoxia-related cytokines signaling on cell death in the brain was assessed by the TUNEL assay (n=5/group). The concentrations of cytokines in the ISF and plasma were compared with Repeated-Measures and Mixed-Measures ANOVA, respectively. The number of dead cells was compared with one-way ANOVA with Dunn's multiple comparisons. Statistical significance was set at p<0.05.

Results:

We could estimate concentrations of 14 cytokines in ISF, with no significant effect of the duration of hypoxia on the concentrations of any of these. IPA analysis associated the pattern of changes in their concentration to the anti-inflammatory, rather than to the pro-inflammatory response. In plasma, we could determine concentrations of ten cytokines and the duration of hypoxia exerted significant effects on the concentrations of five, with >7 folds increases in Erythropoietin (EPO) and Fibroblast growth factor 21 concentration. IPA analysis associated the pattern of changes in plasma to the inflammatory response. Inhibition of EPO and vascular endothelial growth factor signaling significantly reduced (~50%) the number of dead cells in the CC and ependymal layer, while peripheral inhibition of tumor necrosis factor alpha signaling doubled the number of dead cells.

Conclusions:

Hypoxemic hypoxia in the brain triggered an anti-inflammatory response. Inhibition of the three major hypoxia-related pathways exerted differential, either protective or detrimental effects on the brain during hypoxia. Acknowledgement: This study was funded by Research Administration grants no YM05/18 and GM 01/15 and by the College of Graduate Studies.

Key Words: Type 1 Respiratory failure ; Hypoxia ; Cytokines ;

Funding Agency: Kuwait University grant no YM05/18.

Effects of Estradiol Signaling on Secretion of Cytokines, Growth Factors and Cell Death in the Rat Brain During Middle Cerebral Artery Occlusion

Sayed ZA*, AlBader MD, Redzic Z

Department of Physiology, Faculty of Medicine, Kuwait University

Introduction:

Postmenopausal women have a higher risk of ischemic stroke (IS), IS-related disability & mortality compared to men, while premenopausal women are less likely to suffer IS than men. This suggest that estrogen plays a role in the pathogenesis of IS. The objective of this study was to identify differences in cell death& cell-to-cell signaling processes in the brain between normal& ovariectomized rats with or without hormone replacement therapy (HRT) during& after 1 h of middle cerebral artery occlusion (MCAO)/24 h reperfusion.

Methods:

Two months old female SD rats were divided into 4 groups (6 rats/group): ovariectomized (G1), ovariectomized that received HRT (17-beta estradiol) immediately (G2) or 4 weeks after ovariectomy (G3) & non-ovariectomized rats in estrus (G4). After MCAO the infarction volumes were calculated& the number of dead cells in the penumbra were estimated using TUNEL staining. Samples of brain interstitial fluid (ISF) were collected by open flow microperfusion before (control), during MCAO& after MCAO/reperfusion (3 samples/rat). Concentrations of 35 signaling molecules (cytokines) in the ISF samples were determined by Milliplex Magnetic Bead Panel. Changes in their concentrations were associated to molecular networks using Ingenuity Pathway Analysis. Statistical analysis was done using one-way ANOVA with Tukey's multiple comparisons test, $p < 0.05$ was considered statistically significant.

Results:

Absence of estrogen during MCAO/reperfusion (G1) was associated with the activation of proinflammatory pathways, the highest number of dead cells in the penumbra, but the smallest infarction sizes. Delayed application of estrogen after MCAO (G3) was associated with the activation of proinflammatory pathways, the lowest number of dead cells in the penumbra, but the largest infarction sizes. Presence of estrogen during MCAO (G4) or its early replacement (G2) were associated with the activation of angiogenic& neurotrophic pathways& reduced infarction sizes.

Conclusions:

Our data suggests that absence of estrogen was associated with the highest number of dead cells in the penumbra, while its presence was associated with the upregulation of survival pathways, thus fewer dead cells in the penumbra, but higher infarction sizes. Surprisingly, the data revealed an inverse relationship between the infarction sizes& the numbers of dead cells in the penumbra. Acknowledgement: This study was funded by Research Sector grant no. YM07/20.

Key Words: Middle cerebral artery occlusion; Estrogen; Open Flow Microperfusion;

Funding Agency: Research Sector grant no. YM07/20.

The management of the donor site of split-thickness skin graft

Nawaf Alhindi, Sarah Alzolaibani, Sarah Qari, Kausar Ahmed, Houriah Nukaly, Abdulaziz Alsuhaim, Abdulaziz altala, Hanin banjer, Feryal Alali, Asal Hobani, Abdulaziz Samandar, Zainab Alasfour, Abdullah Althagafi, Mousa Akkour, Faculty of Medicine, Batterjee Medical College, Jeddah, Saudi Arabia

Introduction:

Over 160,000 skin grafts are conducted annually in approximately one out of every three burn hospitalizations, since they are primarily simple and quick. This network meta-analysis aimed to compare different conventional dressing options based on re-epithelialization time and side effects for split-thickness skin graft donor sites.

Methods:

A thorough systematic review and network meta-analysis was conducted in accordance with PRISMA guidelines. A comprehensive search was performed through Medline, Cochrane, and Embase databases, up to the year 2023 without time limitation.

Results:

This study performed a network meta-analysis of 25 unique randomized controlled trials published between 1983 up to 2022. In terms of effective wound healing, Povidone-Iodine foam (Betafoam) emerged as the most advantageous choice, boasting a remarkable SUCRA score of 90.4%. Immediately following this top-performing option were hydrocolloid dressings at 87.9%, oxygen diffusion dressings at 87.3%, cellulose dressings at 75.1%, and Petrolatum dressings at 73.5%. Subsequently, our rankings unfolded as follows: Allevyn (72%), Silver (55%), collagen (44.8%), transforming methacrylate (43.9%), carboxymethylChitosan sponges (42.6%), alginate (40.6%), mepitel (34.9%), polyurethane (29.7%), suprather (26.5%), tegaderm (23.1%), paraffin gauze (18.1%), and cotton gauze (3.9%). We found that Alginate is the most frequently used, followed by Paraffin gauze. Nonetheless, Povidone-Iodine was the most effective (90.4%), followed by hydrocolloid (87.9%). Petrolatum (73.5%) is associated with faster re-epithelization than alginate (40.6%) and paraffin (18.1%). Cotton gauze ranked as the worst modality for skin-graft donor-site dressing (3.9%).

Conclusions:

This study serves as a guide for the selection of proper dressing for patients undergoing partial-thickness skin-graft harvest. Even though povidone-iodine was the most effective, we recommend further research comparing other factors for selecting dressings, such as wound and patient characteristics, availability, and costs of dressings.

Key Words: Split-thickness; Donor-site; Dressing;

Funding Agency: None

Skin Graft Donor-Site Dressing: Network Meta-analysis of the rate of re-epithelization

Nawaf Alhindi, Sarah Alzolaibani, Sarah Qari, Kausar Ahmed, Houriah Nukaly, Abdulaziz Alsuheim, Abdulaziz Altala, Hanin banjer, Feryal Alali, Asal Hobani, Abdulaziz Samandar, Zainab Alasfour, Abdullah Althagafi, Mousa Akkour

¹ Faculty of Medicine, King Abdulaziz University, Rabigh, Saudi Arabia; ² Faculty of Medicine, Taibah University, Madinah, Saudi Arabia; ³ Faculty of Medicine, Ibn Sina Medical College, Jeddah, Saudi Arabia; ⁴ Faculty of Medicine, Fakeeh Medical College, Jeddah, Saudi Arabia; ⁵ Faculty of Medicine, Batterjee Medical College, Jeddah, Saudi Arabia; ⁶ Faculty of Medicine, King Saud University, Riyadh, Saudi Arabia; ⁷ Faculty of Medicine, Dar AlUloom Medical College, Riyadh, Saudi Arabia; ⁸ Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia; ⁹ Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia; ¹⁰ Faculty of Medicine, Ibn Sina Medical College, Jeddah, Saudi Arabia; ¹¹ Faculty of Medicine, Umm-AlQura University, Makkah, Saudi Arabia; ¹² Faculty of Medicine, King Faisal University, Alahsa, Saudi Arabia; ¹³ Faculty of Medicine, King Abdulaziz University, Rabigh, Saudi Arabia

Introduction:

Split-thickness skin grafts (STSG) are widely used in reconstructive procedures and are known to cover wounds which are often caused by burns, abrasions, trauma, diseases, infections. Upon the harvesting of STSG, the donor site's epidermal and dermal layers sustainably damage, resulting in the remaining fragments of an induced wound. Therefore, after extracting a split-thickness skin graft, maintaining the integrity of the donor site is crucial since patients frequently experience more pain than at the recipient site.

Objective:

We aim to assess the variety of dressings accustomed for the management of the donor site of split-thickness skin graft, in the impression of healing span and occurrence of side effects and complexity.

Methods:

A systematic review and network meta-analysis was carried out following PRISMA guidelines. The study protocol was registered in PROSPERO (CRD42023449798). A comprehensive search through Medline, Cochrane, and Embase was done. The inclusion criteria included: (1) Reported Randomized Controlled trials (2) Patients undergone split-thickness skin graft harvest and donor-site managed by any dressing (3) Reported outcomes of interest for the clinical question (full-healing time or Re-epithelization Time). RStudio was utilized to perform network meta-analysis of seventeen different interventions. Standardized mean difference effect measure was used for the mean time taken to achieve complete wound healing or epithelization.

Results:

This network meta-analysis included a total of 25 RCTs involving 1,707 participants, published between 1983 and 2023. A total of 17 different interventions were included in the ranking. Povidone-iodine Foam is the most likely dressing to have the best outcomes, followed by Petrolatum and Carboxymethylchitosan, Hydrocolloid, Oxygen Diffusion, Cellulose, Allevyn, Silver, Collagen, and Mepitel, Spongensforming methylacrylate, Alginate, Polyurethane, Suprathel, Paraffin Gauze, Tegaderm, and finally, Cotton Gauze was seen to have the worst outcomes.

Conclusions:

This network meta-analysis found that Povidone-iodine Foam is the most likely dressing to promote the fastest re-epithelialization of split-thickness skin graft donor sites. Petrolatum, Carboxymethylchitosan, Hydrocolloid, Oxygen Diffusion, Cellulose, and Allevyn are also likely to be effective dressings for split-thickness skin graft donor sites. Funding/Acknowledgements:

Key Words: Skin graft ; Donor-site; Dressing;

Funding Agency: None

The Benefits of Friendships in Academic Settings: A Systematic Review and Meta-Analysis

Alotaibi TA* ¹, Alkhalifah KM ², Alhumaidan NI ³, Almutiri WA ³, Alsaleh SK ⁴, AlRashdan FM ⁵, Almutairi HR ⁶, Sabi AY ⁷,
Almawash AN ⁸, Alfaifi MY ⁹, Al-Mourgi M ¹⁰

¹ College of Medicine, Taif University, Taif, SAU, ² Unaizah College of Medicine and Medical Sciences, Qassim University, Unaizah, SAU, ³ College of Medicine, Princess Nourah bint Abdulrahman University, Riyadh, SAU, ⁴ College of Medicine, Arabian Gulf University, Manama, BHR, ⁵ College of Medicine & Surgery, King Abdulaziz University, Jeddah, SAU, ⁶ College of Medicine and Surgery, Qassim university, Qassim, SAU, ⁷ College of Medicine, Jazan University, Baish, SAU, ⁸ College of Medicine, King Saud University, Riyadh, SAU, ⁹ Medicine and Surgery, King Abdulla Bin Abdulaziz University Hospital, Riyadh, SAU, ¹⁰ Professor of Surgery & Consultant Chest Surgeon, Dean Faculty of Medicine, Taif University, Taif, SAU

Introduction:

Academic success is predicted by measurements of academic performance as grade point average (GPA), as well as measurements of academic motivation as persistence in school or college. Having friends is an important aspect of adolescents' and young adults' lives, The objectives of the study are to examine the benefits of friendships in academic settings, explore the methodological variations across studies.

Methods:

A comprehensive literature search was performed using PubMed, EBSCO, and Web of Science databases without any time restrictions. The search strategy included relevant terms related to GPA, friendships, and academic settings. Inclusion and exclusion criteria were applied to select studies conducted in academic settings, published in English, and focusing on the benefits of friendships on academic outcomes. Data extraction was performed, including study characteristics, friendship variables, academic outcomes, and conclusions.

Results:

15 articles were included in this systematic review. The selected studies exhibited diversity in terms of geographical area, study design, sample size, and academic outcomes. Most studies used a cross-sectional design and assessed the impact of friendships on GPA. The findings indicated a positive correlation between friendships and academic performance in various academic settings.

Conclusions:

This study revealed that friendships in academic settings have a significant impact on academic success. Building strong social bonds among students fosters a supportive environment, encourages collaboration, and enhances learning experiences. The findings highlight the positive correlation between friendships and academic performance, although the relationship is influenced by various factors, emphasizing the importance of fostering a conducive social environment to promote academic success. The insights provided by this study contribute to a better understanding of the role of friendships in academic settings and can inform interventions and strategies aimed at enhancing students' educational experiences. Funding/acknowledgment: no financial support was received from any organization for the submitted work. We would like to express our sincere gratitude to all those who have contributed to this work.

Key Words: Academic performance ; Academic setting ; Friendship ;

Funding Agency: NONE

Psychometric Properties of the Arabic version of The Ten-Item Personality Inventory (TIPI)

Alansari B M

Department of Psychology, Faculty of Social Sciences, University of Kuwait, Kuwait

Introduction:

The Five-Factor-Model (FFM) is the most widely adopted model of personality that can be described by five broad factors: neuroticism, extraversion, openness, agreeableness, and conscientiousness. The Ten-Item Personality Inventory (TIPI) is a brief instrument designed to assess (FFM) and enjoys widespread use and has been translated into several different languages.

Objectives: To examine the psychometric properties (internal consistency and factor structural validity) of the Arabic version of the Ten Item Personality Inventory (TIPI) among Kuwait University undergraduate students.

Methods:

A cross sectional study of the TIPI and the second Big Five Inventory (BFI-2) were administered to 1560 (576 males, 984 females) Kuwait University undergraduates. Cronbach's alpha is a measure of internal consistency (is a way of assessing reliability by comparing the amount of shared variance, or covariance, among the items making up an instrument to the amount of overall variance), factor structure (the correlational relationship between a number of variables that are said to measure a particular construct) and convergent validity to assessed how well a TIPI correlates with BFI-2 of the same construct.

Results:

Mean age of the participants from 16 colleges = 21.26 ± 1.19 years. PCA showed that TIPI five factors explain 73.10% for males and 69.64% for females of the total variance. The results of the five-factor solution consistent with the Big Five factors, with each item loading the intended factor. Cronbach's alpha was satisfactory for Neuroticism, Extraversion, and Openness to Experience, Agreeableness, and Conscientiousness subscales, specifically (.85, .74, .85, .73, .75) for males and (.83, .79, .79, .81, .70) for females. The results revealed significant gender differences in Neuroticism & Agreeableness with a favor for females. However, the high mean convergent correlations between the TIPI and BFI-2 scales, with coefficients of (0.91) for the Neuroticism, (0.54) for the Extraversion, (0.69) for the Openness to Experience, (0.70) for the Agreeableness and (0.84) for the Conscientiousness.

Conclusions:

This study provided evidence for the reliability and validity of the Arabic TIPI for Kuwaiti undergraduates.

Key Words: Arabic TIPI; psychometric properties ; Kuwait ;

Funding Agency: None

Public Health

135

Take-Back Campaign: A Multisectoral Approach to Medication Safety in Kuwait

Abahussain EA ¹, Alyahia AH ², Alajeel NA ³

¹ Dhahiat Abdulla Al Salem Healthy City's Office, Kuwait; ² Healthy City Office, Kuwait; ³ UCLA MBA Candidate, Los Angeles, California

Introduction:

To coincide with the 2022 International Patient Safety Day theme "Medication Safety," a multisectoral initiative named the "Take-Back Campaign" was implemented in Kuwait. This campaign, organized by the Healthy Cities Office of the Ministry of Health (MOH), aimed to enhance household participation, promote safe medication disposal practices, and strengthen stakeholder engagement.

Methods:

The campaign was conducted from September 14 to September 22, 2022, involving nine entities from the MOH and external stakeholders. Fourteen Primary Health Care centers in Healthy Cities were designated as collection sites. The public was invited to submit unwanted medications from their households. Collection times were set from 9 am to 1 pm. Participants provided informed consent, and medications were logged on comprehensive inventory sheets. The collected items were disposed of in yellow containers by the MOH. Data analysis was conducted using Excel and presented through graphs.

Results:

The campaign involved 52 MOH and Environment Public Authority participants and 54 Kuwait University College of Pharmacy students. In 56 hours, 405 households contributed, resulting in over 1005 kilograms of medication waste, encompassing 7648 individual items. The main categories of returned medications were painkillers (18%), gastrointestinal drugs (12%), and antibiotics (11%). Notably, 57% of the returned medications were sourced from the MOH, and 52% were expired.

Conclusions:

The Take-Back Campaign's success illustrates the effectiveness of intersectoral collaboration in addressing complex public health challenges. The campaign demonstrated significant community engagement, highlighting public consciousness of medication safety and proper disposal. It underscores the positive outcomes possible through community-based health initiatives.

Acknowledgements: Special thanks to the Healthy Cities Office, Ministry of Health, and all the volunteers for their indispensable contributions to the campaign's success.

Key Words: Medication Take Back Campaign; Medication safety; Medication disposal;

Funding Agency: NONE

Peri-Conceptional Folic Acid Supplementation Related Knowledge And Practice Among Healthcare Professionals And Patients In Kuwait

Alajmi HS, Altarrah DK

College of Public Health, Health Science center, Kuwait University

Introduction:

Neural Tube Defects (NTD) are defined as congenital malformations (spina bifida and anencephaly). NTD is a preventable disease through periconceptional folic acid (FA) supplementation.

Methods:

A cross-sectional study aimed to assess the knowledge and practice of periconceptional FA supplementation of healthcare professionals (HCP) and females of childbearing age (18-50 years old) from February to April 2023, in the public hospitals all across Kuwait governorates. HCPs were recruited using a multistage stratified random sampling from 6 general hospitals and the maternity hospital. HCPs were stratified based on the profession and department. Females of child-bearing age were recruited using convenience sampling. A self-administered questionnaire was disseminated using a QR code available at each hospital department, and through social media platforms. Sociodemographic data, pregnancy related data, and data related to FA use, knowledge and practices was collected. Univariate and multivariate logistic regression analysis were used to determine associations with FA use, knowledge and practice. The study was approved by the ethics committee at the Ministry of Health Kuwait.

Results:

A total of 515 females; 33.7% of them were between 26-33 years, and 188 HCPs; 55.8% of them were between 25-34 years, were recruited. Knowledge related to periconceptional FA supplementation was low in both groups; 22.3% of the HCP and 17% of the females. Higher educational level was significantly associated with FA knowledge (OR: 1.4 (95% CI: 1-1.7), $p=0.001$). Current and previous pregnancy were significantly associated with FA supplementation practices (OR: 0.46 (95% CI: 0.2-0.8), $p=0.008$) and (OR: 0.4 (95% CI: 0.25-0.61), $p=0.001$) respectively.

Conclusions:

This study demonstrates the need of future public health programs to focus on raising the awareness on FA use among HCP and females of child-bearing age in Kuwait.

Funding/Acknowledgements: this study was not funded, the authors express their gratitude to Kuwait University, Ministry of Health and all participants who made this work possible.

Key Words: Folic acid; Periconception; Knowledge; practice; Healthcare professionals;

Funding Agency: None

Risk Assessment of Gross Alpha-Beta Radiation in Drinking Water in Kuwait

Al-Shammari H ¹, Al-Jarba M ¹, Al-Shammari Jehan ², Al-Ateeqi S ¹

¹ Crisis Management Decision Programme, Environmental & Life Science Research Centre, Kuwait Institution for Scientific Research;

² Department of Nuclear Medicine, Faculty of Medicine, Kuwait University.

Introduction:

Gross alpha/beta radiation measurement is one of the simplest screening techniques to detect radiation levels for various environmental and industrial applications. This study uses it to estimate the radiation dose in drinking water due to water consumption and compares the activity concentration with the international guidelines of the World Health Organisation (WHO) in three types of drinking water in Kuwait (local bottled water, imported bottled water, and public-piped water from all Kuwait governorates).

Methods:

For bottled water samples, seven domestic and twelve imported bottled water brands were collected from different supermarkets within Kuwait, and for public water standpipe analysis, six samples were collected from the six governorates in Kuwait, using random sampling to avoid self-selection bias. The samples were filled in 1-litre polypropylene containers with 20 ml of concentrated nitric acid to minimise radiation loss. Ultra-low background gas-flow proportional counting system (XLB) and the Thermo Orion Versa Star Pro device were used for pH and TDS measurements. The US-EPA 900 method was used for sample analysis.

Results:

The committed effective dose due to the gross alpha activity concentrations within three types of water was almost at the same level or less than the WHO limits of 0.1 mSv/y. Four bottled water samples had a higher gross beta activity concentration than the other samples but were still less than WHO limits, thereby affecting the estimated effective dose (imported bottled water samples: Gerolsteiner 0.237±0.009 Bq/L with 0.12±0.005 mSv/y, Nasseem 0.206±0.020 Bq/L with 0.1±0.01 mSv/y, Volvic 0.188±0.017 Bq/L with 0.09±0.01 mSv/y, and local bottled water: ABC peekaboo 0.343±0.029 Bq/L with 0.17±0.01 mSv/y). Those samples may need nuclide-specific analysis to determine the radionuclide content as it affects the estimated effective dose, especially in the local bottled water (ABC PEEKABOO) since it is recommended for use in babies.

Conclusions:

We conclude that the public-stand pipe water is, in general, better than the bottled water in Kuwait. Nevertheless, all drinking water sources do not pose any health burden to the population. The beta gross activity concentration in bottled water displayed higher levels than the public standpipe water samples; further investigation is needed.

Funding: No funding was granted for this work.

Key Words: Committed effective dose of alpha/beta activity. ; Gas flow proportional counter;

Funding Agency: NONE.

Prevalence of Minimally Invasive Facial Cosmetic Surgery and its Association with Mental Health Among College Students in Kuwait

Ibrahim D ^{*1}, Saadallah A ¹, Awada Z ², Alawadhi E ³

¹ 1st year MPH student, Department of Community Medicine, Faculty of Medicine, Kuwait University;

² MSc Epidemiology student, Department of Population Health Sciences, University of Bristol; ³ College of Public Health, Department of Epidemiology and Biostatistics, Kuwait University

Introduction:

Minimally Invasive Facial Cosmetic Surgeries (MIFCS), such as botox injections and fillers, are less invasive and traumatic compared to traditional cosmetic surgeries. It has been proven that there is a link between psychological predictors, including depression, anxiety, and self-esteem, and the decision to undergo MIFCS. This study aimed to investigate the association between MIFCS and mental health predictors among Kuwait University undergraduates.

Methods:

A cross-sectional design was used, where data were collected through an online questionnaire between February 2023 and April 2023 among students at different colleges in Kuwait University. The primary outcome was whether students underwent MIFCS, and the predictors were depressive symptoms, anxiety, and level of self-esteem. Depression, Anxiety, and Stress Scale (DASS-21) was used to assess depression and anxiety, and self-esteem was measured using the Rosenberg Self-Esteem Scale (RSE). A logistic regression model was utilized to identify significant predictors of undergoing MIFCS. An ethical approval was obtained from the Health Sciences Center Ethical Committee and the Ministry of Health Ethical Committee.

Results:

744 undergraduate students were sampled; 21% reported having undergone MIFCS. Of the total sample, 64.4% reported having depressive symptoms; 68.8% reported having symptoms of anxiety; 12.6% reported having low self-esteem. Some factors associated with increased odds of MIFCS include being a female (OR, 4.01; p-value < 0.001), being 20 or older (OR, 4.20; p-value < 0.001), being married (OR, 2.38; p-value = 0.004), having a history of physical disorders (OR, 1.77; p-value = 0.049), having a family history of mental disorders (OR, 1.87; p-value = 0.031), and having signs of anxiety (OR, 2.27; p-value < 0.001). However, studying at the health sciences center decreased the odds of MIFCS (OR, 0.44; p-value = 0.003).

Conclusions:

Undergoing MIFCS was multifactorial and more prevalent in Kuwait compared to other countries. Understanding the relationship between psychological health and cosmetic procedures would help counselors on campuses and doctors in cosmetic clinics better assess patients' mental and psychological status. Funding/Acknowledgments: The study did not require a funding body. The authors express their gratitude to the College of Public Health, Kuwait University.

Key Words: MIFCS (Minimally Invasive Facial Cosmetic Surgery); Depression/Anxiety/Self-

Funding Agency: This study was not funded

Impact Of 5k Run Race Conducted During Health-Care Events On Level Of Physical Activity And Motivation Among Health-Care Professionals In Saudi Arabia.

Sabbagh AY [1,2,3], Abedalqader T ², Alzahrani A ⁴, Alzhrani A ⁵, Alzahrani W ⁶, Bin Orayir L ¹, Abuallenain JT ⁷, Alzahrani A ⁸

¹ Adult Emergency Department, King Fahad Medical City, Second Health Cluster, Riyadh, Saudi Arabia, ² College of Medicine, Alfaisal University, Riyadh, Saudi Arabia, ³ Sport for All Federation, Ministry of Sport, Saudi Arabia, ⁴ 5th year student, College of Medicine, Taif University, Taif, Saudi Arabia, ⁵ Department of Physiotherapy, College of Applied Medical Sciences, Taif University, Taif, Saudi Arabia, ⁶ Translation Master's Student, Department of Foreign Language, College of Arts, Taif University, Taif, Saudi Arabia, ⁷ Department of Emergency Medicine, Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia, ⁸ Pediatric Emergency Department, King Fahad Medical City, Second Health Cluster, Riyadh, Saudi Arabia.

Introduction:

Saudi Arabia's quality-of-life program aims to increase regular physical activity from 13% to 40% by 2030. The Saudi Society of Emergency Medicine (SASEM) organized a 5k run race to motivate healthcare workers to engage in PA. Physical inactivity is linked to negative health outcomes and contributes to global premature mortality. The race aims to assess the effect of running a race combined with a healthcare event on motivation to promote PA among participants.

Methods:

A cross-sectional descriptive study was conducted using the Physical Activity and Leisure Motivation Scale (PALMS) questionnaire, distributed via email and WhatsApp to participants in the SASEM 5k run race. The study collected sociodemographic data, PA levels before and after the race, and the PALMS, a reliable assessment tool for PA motives. The 40-item questionnaire had eight subscales, and all participants provided electronic consent. The data was analyzed using the Statistical Package for the Social Sciences SPSS application.

Results:

A survey of 129 healthcare workers (HCWs) revealed that 68.2% of responses were from HCWs, including physicians (55.7%), nurses (19.3%), emergency medical technicians (3.4%), other specialties (13.6%), and retired medical professionals (8%). Emergency department workers contributed 61.4% of the responses. The study found that 59% of HCWs increased their weekly physical activity (PA) to over 10,000 steps and 34% to over 300 minutes per week, compared to the pre-race period. Physical and psychological conditions were the most motivating factors for PA, with competition/ego being the most significant motivator for EMTs and nurses. Notably, appearance was not a significant motivator for PA among participants.

Conclusions:

In conclusion, the SASEM 5k run race significantly impacted the PA level, suggesting the need for more frequent running races in conjunction with healthcare events to promote year-round PA maintenance

Key Words: Emergency; motivation; physical activity, health-care professionals;

Funding Agency: NONE

The Application and Efficacy of Hyaluronic Acid Fillers for Chin Enhancement and Retrusion Correction: A Systematic Review of Patient- Reported Outcomes

Al-Khafaji MQ¹, Althobaiti NS², Alhassani NF³, Alnahwi ZA⁴, Aldawsari WA, Alquraini SK, Abdrabameer AH, Alharamlah FS, Almalki AS⁹, Alotaibi NA¹⁰, Alabdulkarim AO¹¹

¹ Mustafa Qais Al-Khafaji Department of Plastic and Reconstructive Surgery, Faculty of Medicine, University of Debrecen; ² Nawaf saleh A. Althobaite 5th year medical student, Faculty of medicine, Taif University; ³ Nusaybah F. Alhassani; 2th year medical student, Faculty of medicine, Ibn Sina National College⁴ Zainab Ali Alnahwi; 4th year medical student, Faculty of medicine, King Faisal University; ⁵ Wejdan Ahmed Aldawsari; 4th year medical student, Faculty of medicine, University of Tabuk; ⁶ Sadeem Khalid Alquraini 5th year medical student, Faculty of medicine, Imam Mohammad Ibn Saud Islamic University; ⁷ Ather Hassan Abdrabameer 4th year medical student, Faculty of medicine, Imam Abdulrahman Bin Faisal University; ⁸ Faisal Saad S. Alharamlah 5th year medical student, Faculty of Dentistry, Imam Abdulrahman Bin Faisal University⁹ Abeer Saad Almalki 6th year medical student, Faculty of medicine, Taif University¹⁰ Naif Abdullah Alotaibi 4th year medical student, Faculty of medicine, Taif University ¹¹ Abdulaziz Alabdulkarim Plastic Surgery, Department of Surgery, College of Medicine, Prince Sattam Bin Abdulaziz University

Introduction:

Facial aesthetics, particularly concerns related to facial cosmetic procedures, have garnered significant attention. Among these, the chin aesthetics procedure plays a crucial role in facial harmony and allure. Chin retrusion, influenced by various factors, can impact both appearance and functionality. Treatment options range from chin implants to orthognathic surgery, with the recent popularity of hyaluronic acid (HA) fillers for chin enhancement. However, a comprehensive review of the effectiveness of HA fillers for chin enhancement and retrusion correction is lacking.

Methods:

This systematic review, registered in the Prospective Register of Systematic Reviews (PROSPERO), followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A thorough search of Embase, OVID, and Google Scholar databases yielded studies meeting specific inclusion criteria. Eligible studies focused on adult patients undergoing chin enhancement with HA fillers and reported patient outcomes. Bias assessment tools were employed to evaluate study quality.

Results:

Out of 382 initially identified publications, 24 met inclusion criteria. The studies demonstrated that HA injectable fillers have an acceptable safety profile and effectively restore facial volume, contour the chin, and address retrusion. Patient-reported outcomes indicated high satisfaction rates, with minor and tolerable complications. Reported complications included bruising, swelling, erythema, pain, and tenderness, with a low incidence of necrosis. The studies emphasized the suitability of HA fillers for chin augmentation compared to surgical alternatives.

Conclusions:

The systematic review underscores the effectiveness and safety of HA injections for chin enhancement and retrusion correction. The findings highlight high patient satisfaction, enduring aesthetic effects, and efficacy up to 18 months post-treatment. Minor complications, mostly unrelated to the injection process, suggest HA fillers as a valuable option for patients averse to surgery. The study advocates for the broader use of HA fillers in addressing various chin aesthetic and functional concerns, positioning them as a safe and effective alternative to surgical interventions. However, further extensive research is warranted for conclusive evidence.

Key Words: non-surgical management; patient-reported outcome; dermal filler;

Funding Agency: NONE

Moderate Ischemic Mitral Regurgitation in Ischemic Heart Disease: To Operate or Not? A Meta-analysis.

Alsuaayri RA ¹, Alassiri AK ², Awad AK ³, Faleh MN ⁴, Baqays RT ⁵, Porqueddu M ⁵

¹ College of Medicine, Batterjee Medical College for Sciences and Technology, Jeddah, Saudi Arabia, ² Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia, ³ Faculty of Medicine, Ain-Shams University, Cairo, Egypt, ⁴ College of Medicine, University of Jeddah, Jeddah, Saudi Arabia, ⁵ Department of Cardiac Surgery, King Fahd Armed Forces Hospital, Jeddah, Saudi Arabia

Introduction:

Deciding whether to perform coronary artery bypass grafting (CABG) alone or in combination with mitral valve repair is a common dilemma encountered by surgeons when treating patients with ischemic mitral regurgitation, a common condition related to coronary artery disease. Although ischemic mitral regurgitation after CABG has been linked to unfavorable results, the benefits of including mitral valve repair are still unknown. This discrepancy led us to undertake a systematic review and meta-analysis to determine whether combining CABG with mitral valve surgery leads to better clinical results than CABG alone.

Methods:

Studies comparing the results of CABG versus CABG with mitral valve replacement were searched in the databases of PubMed and Google Scholar. There were six randomized clinical trials included in this study.

Results:

We analyzed 852 patients' data. There were no significant variations between patients who acquired CABG alone or CABG + (MVR) in terms of their risk of death at one year, stroke, atrial fibrillation, or hospitalization for heart failure. For recurrent/residual mitral regurgitation; it revealed an RR = 5.42, 95% CI, 0.77 to 37.98, and a p-value of = 0.065. According to the analysis of study heterogeneity, no apparent heterogeneity was identified in the outcomes of death after one year, stroke, atrial fibrillation, or hospitalization for heart failure. However, the outcome of recurrent or residual mitral regurgitation showed significant variation (I² = 66%).

Conclusions:

Patients who underwent CABG alone versus CABG plus MVR did not differ significantly from one another. However, the comparison of CABG alone with CABG plus MVR underlines the need for customized treatment plans based on the unique characteristics of each patient.

Key Words: moderate mitral regurgitation; ischemic heart disease; mitral valve surgery;

Funding Agency: None

Surgery

142

Amputation vs Reconstruction in Type IV Tibial Hemimelia: Functional Outcomes and Description of a Novel Surgical Technique

Chun Hong Tang, Abdullah Addar, James Alfred Fernandes

Department of Orthopedic Surgery, College of Medicine, King Saud University, Riyadh, Saudi Arabia; Paediatric Limb Reconstruction Service, Sheffield Children's Hospital, Western Bank, Sheffield, United Kingdom

Introduction:

The management of tibial hemimelia can be complex and involve either amputation or reconstruction. The decision made carries significant implications on patients and their families. This is a case series in the management of Type IV tibial hemimelia with a description of a novel surgical technique in the reconstructive arm of the pathway.

Methods:

The study included four patients with bilateral tibial hemimelia have an amputation in one limb and reconstructive surgery on the other. The reconstruction involved a supratotal double osteotomy of the tibia and fibula, followed by a staged hindfoot osteotomy using a circular ring fixator. Functional outcomes are reported using the Special Interest Group in Amputee Medicine (SIGAM) and the short form 12 (SF-12) methods.

Results:

The mean age of patients in our cohort is 14 years (3–27 years) with mean age of surgery at 3 years. One case had an amputation following initial reconstructive surgery due to psychological distress and regressive behaviour. SIGAM functional outcome scores of F were recorded in three of four cases, with one patient performing at level B. On the reconstructive side, two of three patients reported a mean physical short form 12 (SF-12) score of 56.7 and a mental SF-12 score of 55.7. One patient reported a physical SF-12 score of 28.5 and a mental SF-12 score of 30.3.

Conclusions:

A reconstructive option provides a satisfactory functional outcome, comparable to the population mean, in the majority of patients in our cohort. Clinical significance: A staged supratotal double osteotomy followed later by a hindfoot osteotomy is effective in centralising the ankle and creates a plantigrade weight-bearing platform for ambulation in patients with Type IV tibial hemimelia.

Key Words: Amputation, Deformity correction, Limb reconstruct; Deformity correction; Tibial

Funding Agency: N/A

Surgery

143

Semaglutide and Tirzepatide for Weight Regain and Management following Sleeve Gastrectomy

Dsouza C, Al-Hashemi M, Al-Hassani S, Qasem W, Al-Mazeedi S, Al-Sabah S

¹²³⁴ Department of Surgery, Health Sciences Center, Kuwait University, Kuwait City, Kuwait; ⁵ Mubarak Hospital, Kuwait City, Kuwait; ⁶⁷ Department of Surgery, Jaber Hospital, Kuwait**Introduction:**

Metabolic and bariatric surgery (MBS) is the most effective treatment for obesity and improvement of obesity associated comorbidities. However, a proportion of these patients may suffer from weight recurrence and recurrence of obesity associated comorbidities. The aim of the study is to determine the real-world effectiveness of semaglutide and tirzepatide as a treatment for weight recurrence after sleeve gastrectomy (SG).

Methods:

A retrospective analysis of medical records on individuals who underwent SG between January 2008 and August 2022, and sought treatment for weight recurrence or management using semaglutide or tirzepatide from January 2022 onwards.

Results:

Weight loss outcomes were obtained after 3 and 6-months of semaglutide and tirzepatide treatment. Following a semaglutide treatment, the mean post-treatment weight at 3-months and 6-months was 84.9 ± 19.3 kg and 81.0 ± 19.1 kg from 90.1 ± 19.4 kg, corresponding to a clinically significant mean weight loss from baseline to 3-months of -6.0 ± 3.6 % ($p < 0.0001$) and to 6-months of -10.3 ± 5.9 % ($p < 0.0001$). Following a tirzepatide treatment, the mean post-treatment weight at 3-months and 6-months was 91.2 ± 27.3 kg and 87.6 ± 28.3 kg from 100.2 ± 28.5 kg, corresponding to a clinically significant mean weight loss from baseline to 3-months of -9.3 ± 4.3 % ($p < 0.0001$) and to 6-months of -15.5 ± 6.3 % ($p < 0.0001$). Weight loss percentage in tirzepatide patients at 3 and 6-months was significantly greater than the semaglutide patients at 3-months ($p = 0.007$) and 6-months ($p < 0.0001$), likewise statistical difference in weight loss was observed with increase in respective treatment duration ($p < 0.0001$).

Conclusions:

Semaglutide and tirzepatide may be an effective treatment for managing excessive weight regain or insufficient weight loss in patients who had sleeve gastrectomy. Further studies with larger sample sizes and longer follow-up periods are needed to strengthen the evidence on the benefits and safety of the treatment approach.

Key Words: Sleeve gastrectomy; weight regain; GIP/GLP1;

Funding Agency: None

Histopathologic analysis of 1688 sleeve gastrectomies: a case study

Esraa O. Abdljaber ¹, Khaled Hindi ², Smiley George ³

¹ Kuwait Institution for Medical Specializations (KIMS); ² Mubarak Hospital, ³ Jaber Al Ahmad Hospital

Introduction:

Bariatric surgeries, including laparoscopic sleeve gastrectomy (LSG) have become a common treatment modality for obesity. Whether such specimens should be submitted for pathology evaluation, and whether microscopic examination in the absence of gross abnormalities should be performed for all cases remains a controversial issue.

Objective:

To analyze the demographic data and pathology diagnoses for all LSG specimens performed at Mubarak Hospital, Kuwait between 2010 and 2018.

Methods:

Pathology reports for all specimens (n=1688) were retrieved retrospectively. Demographic data and histopathologic findings were recorded and analyzed. Our institution's protocol involves submitting at least two sections and staining with H&E.

Results:

Out of the total patient population (n=1688), 1164 (69%) were female and 524 (31%) were male. The most common age group was 19-30 years (34.9%). Chronic inactive gastritis was the most frequent histopathological finding (n=1259, 75%). Other histopathological findings included H. pylori gastritis (n=273, 16.2%), intestinal metaplasia, autoimmune atrophic gastritis, fundic gland polyps, and granulomatous gastritis. One case of calcifying fibrous tumor and two cases of gastrointestinal stromal tumor (GIST) were identified accidentally.

Conclusions:

Most of the specimens (75%) were signed out as chronic inactive gastritis, negative for H. Pylori or intestinal metaplasia. This diagnosis is defined by the presence of plasma cells, lymphoid aggregates, or lymphoid follicles. Whether these microscopic features in the absence of clinical complaint can be considered as a normal variant or can be attributed to obesity needs further studies. As few cases show clinically significant findings and clinically occult neoplasms, pathologic assessment for LSG specimens is still recommended.

Key Words: Craniosynostosis; Next generation sequencing; Novel candidate gene;

Funding Agency: NONE

Three-dimensional magnetic resonance imaging in guiding tibial and femoral tunnels position in anterior cruciate ligament reconstruction: A cadaveric study.

Marwan Y* ¹, Böttcher J ², Laverdière C ², Jaffer R ³, Burman M ², Boily M ³, Martineau PA ²

¹ Department of Surgery, College of Medicine, Health Sciences Centre, Kuwait University, Kuwait City, Kuwait;

² Division of Orthopaedic Surgery, McGill University Health Centre, McGill University, Montreal, Quebec, Canada; ³ Department of Radiology, McGill University Health Centre, McGill University, Montreal, Quebec, Canada.

Introduction:

Femoral and tibial tunnel malposition for anterior cruciate ligament (ACL) reconstruction is correlated with higher failure rate. Regardless of the surgical technique used to create ACL tunnels, significant mismatches between the native and reconstructed footprints exist. The aim of this study is to compare the position of tunnels created by a standard technique with ones that are created based on preoperative 3-dimensional magnetic resonance imaging (3D MRI) measurements of the ACL anatomic footprint.

Methods:

Using 3D MRI, the native ACL footprints were identified in 8 cadavers. Tunnels were created on the 16 knees arthroscopically. On one side, the tunnels were created based on 3D MRI measurements that were provided to the surgeon (roadmapped technique), while the tunnels were created based on a standard anatomic ACL reconstruction technique on the contralateral side. The technique was randomly assigned per set of knees. Postoperatively, the positions of the tunnels were measured using 3D MRI.

Results:

On the tibial side, the median distance between the center of the native and reconstructed ACL footprints in relation to root of the anterior horn of the lateral meniscus medially was 1.7 ± 2.2 mm and 1.9 ± 2.8 mm for the standard and roadmapped techniques respectively ($p = 0.442$), while the median anterior/posterior distance was 3.4 ± 2.4 mm and 2.5 ± 2.5 mm for the standard and roadmapped techniques respectively ($p = 0.161$). On the femoral side, the median distance in relation to the apex of deep cartilage distally was 0.9 ± 2.8 mm and 1.3 ± 2.1 mm for the standard and roadmapped techniques respectively ($p = 0.195$), while the median distance anteriorly from the ADC was 1.2 ± 1.3 mm and 4.6 ± 4.5 mm for the standard and roadmapped techniques respectively ($p = 0.007$).

Conclusions:

Providing precise radiological measurements of the ACL footprints does not improve the surgeon's ability to position the tunnels. Future studies should continue to attempt to provide tools to improve tunnel position in ACL reconstruction.

Key Words: Anterior cruciate ligament (ACL); Knee; Magnetic resonance imaging (MRI);

Funding Agency: Not applicable

Surgery

146

Circular external fixation for revision of failed tibia internal fixation.

Marwan Y* ¹, Turner J ², Senan R ², Muir R ², Barron E ², Hadland Y ², Moulder E ², Sharma H ²

¹ Department of Surgery, College of Medicine, Health Sciences Centre, Kuwait University, Kuwait City, Kuwait;

² Limb Reconstruction Unit, Department of Trauma and Orthopaedic Surgery, Hull University Teaching Hospitals, Hull, UK.

Introduction:

The management of failed tibial fracture fixation remains a challenge for orthopaedic surgeons. This study investigates the utility and outcomes of circular external fixation in the management of failed internal fixation of tibial fractures.

Methods:

Retrospective review of a prospectively collected database of a complex limb reconstruction unit at a major trauma centre was done during December 2022. Patients with failed internal fixation of tibial fracture who underwent revision surgery with circular external fixation frame were included.

Results:

20 patients with a mean age of 47.8 ± 16.5 years (range: 15-69) were included. Fourteen (70.0%) patients had failed plate and screws fixations, and the remaining six (30.0%) failed intramedullary nail fixation. The most common indication for revision surgery was development of early postoperative surgical site infection (5 patients; 25.0%). The mean duration of frame treatment was 199.5 ± 80.1 days (range = 49-364), while the mean follow-up duration following frame removal was 3.2 ± 1.8 years (range = 2-8). The overall union rate in this series was 100%; and all infected cases had complete resolution from infection. The total number of complications was 11, however, only two complications required surgical intervention. The most common complications reported were pin site infection (6; 30.0%) and limb length discrepancy of 2 cm (2; 10.0%).

Conclusions:

Circular external fixation is a reliable surgical option in the treatment of failed internal fixation of tibia fractures. This technique can provide limb salvage in complex infected and noninfected cases with a high union rate and minimal major complications.

Funding/Acknowledgements: None.

Key Words: Tibia; Fracture; External fixation;

Funding Agency: Not applicable

Ligasure Versus Milligan-Morgan Hemorrhoidectomy: A Prospective Randomized Clinical Trial

Mahmoud F Sakr
Ahmadi Hospital (KOC)

Introduction:

Objective. The present study was conducted to compare operative time, postoperative course and outcome of Ligasure hemorrhoidectomy (LH) and conventional open hemorrhoidectomy (OH) for prolapsed hemorrhoids.

Methods:

Eighty four patients with Grades III and IV hemorrhoids were randomized into 2 groups of 42 patients each; Group 1 patients underwent LH whereas group 2 patients underwent OH. Data regarding patient demographics, operative details, postoperative pain score, number of Parenteral analgesic injections, hospital stay, and time to return to work or normal physical activity were all prospectively collected. Postoperative complications and recurrence of prolapse were also recorded. All patients were regularly followed-up every two weeks for the first eight weeks postoperatively, and at two-month intervals thereafter for a total period of 12 months.

Results:

Patient demographics, clinical characteristics, and hospital stay were similar between both groups ($P>0.05$). The mean operating time, postoperative pain score (up to 48 hours), number of Parenteral analgesics, time off work, and time for complete wound healing were significantly less in patients undergoing LH ($P<0.001$). Both groups had similar postoperative complications except for delayed wound healing that was observed, at 4 weeks postoperatively, in seven patients (16.67%) in the LH group as compared to 17 patients (40.48%) in the OH group ($\chi^2= 5.83$, $P=0.016$). Although hemorrhoid recurrence, at one year, was also lower among the LH group as compared to the OH group (2.38% vs 9.14%, respectively), yet the difference was not statistically significant ($P=0.167$).

Conclusions:

LH provides a superior alternative to conventional OH in treating prolapsed hemorrhoids (Grades III & IV) by reducing operating time, postoperative pain, and time off work, and allowing faster complete wound healing with minimal comparable side effects and low recurrence rate.

Key Words: LigaSure; Milligan-Morgan; Hemorrhoidectomy;

Funding Agency: Ahmadi Hospital (KOC)

Ligasure Hemorrhoidectomy Versus Stapled Hemorrhoidopexy: A Prospective Randomized Clinical Trial

Mahmoud F Sakr, Mohamed M. Moussa
Ahmadi Hospital (KOC)

Introduction:

Objective. To compare the outcome of Ligasure hemorrhoidectomy (LH) and stapled hemorrhoidopexy (SH) for prolapsed hemorrhoids.

Methods:

Sixty eight patients with Grades III and IV hemorrhoids were randomized into 2 groups of 34 patients each; Group 1 patients underwent LH whereas group 2 patients underwent SH. Patient demographics, operative details, postoperative pain score, number of Parenteral analgesic injections, hospital stay, and time to return to work were all prospectively collected. Postoperative complications and recurrence of prolapse were also recorded. Patients were regularly followed-up a total period of 12 months.

Results:

Patient demographics and clinical characteristics were similar between both groups. The mean operating time, postoperative pain score, Parenteral analgesics, hospital stay and time off work were not statistically significant between both groups. Likewise, both groups had similar postoperative complications except for a residual prolapse that was observed, at 4 weeks postoperatively, in eight patients (23.53%) in the SH group as compared to two patients (5.89%) in the LH group ($P=0.040$). Although prolapse recurrence, at one year, was also higher among the SH group as compared to the LH group (11.76% vs 2.94%, respectively), yet the difference was not statistically significant ($P=0.163$).

Conclusions:

Both LH and SH yield comparable good results and minimal side effects for treatment of Grades III and IV hemorrhoids, with less residual prolapses observed with LH. Further, owing to their low postoperative pain, short hospital stay and rapid return to work, both procedures offer an excellent therapeutic option for prolapsed Grades III and IV hemorrhoids.

Key Words: LigaSure; Hemorrhoidectomy; Stapled Hemorrhoidopexy;

Funding Agency: Ahmadi Hospital

Behind the Mask: Psychological Effects of Post-COVID Mask Wearing on Self-Deprecation and Cosmetics

Alsulami OA ¹, Alsuyari RA ², Alrashed HA ³, Hibili NH ⁴, Alkhudairy AI ⁵, Mahjari AA ⁶, Alshaikh SA ⁷, Fadel Z ⁸

¹ College of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia, ² College of Medicine, Batterjee Medical College, Jeddah, Saudi Arabia, ³ Jouf University, Aljouf, Saudi Arabia, ⁴ College of Medicine, Umm Alqura University, Makkah, Saudi Arabia ⁵ College of Medicine, King Saud Bin Abdulaziz University, Riyadh, ⁶ College of Medicine, Najran University, Najran, Saudi Arabia, ⁷ Ibn Sina National College, Jeddah, Saudi Arabia, ⁸ Plastic & Reconstructive Surgery, Hand, Microsurgery & Peripheral Nerves, King Abdulaziz University Hospital, Jeddah, Saudi Arabia

Introduction:

The COVID-19 pandemic and mask-wearing measures have had a significant impact on public health. Previous outbreaks have shown a link between anxiety, social avoidance behaviors, and psychological distress. In Saudi Arabia, there has been an increased demand for cosmetic surgery, but the effect of mask-wearing on self-perception, body image, and cosmetic procedure demand is unclear.

Methods:

A questionnaire-based study with 1,213 participants was conducted in Saudi Arabia, covering demographics, face mask usage, body image, self-esteem, body appreciation, and facial cosmetic procedures. Validated scales were used, and the survey was distributed online.

Results:

The majority of participants were women (81.9%) aged 18-29 years (60.8%), and Saudi citizens (86.9%). Notably, 28.1% of participants felt comfortable wearing masks. Most reported no discernible impact of prolonged mask use on self-esteem (55.3%) and body image (61.9%).

Participants with unaffected body image had higher BAS-2 scores (median = 43.0, IQR = 31.0 to 50.0; $p < 0.001$). Overall, mask use did not significantly affect body image satisfaction. While 52.2% did not consider non-surgical cosmetic procedures, 52.5% expressed a desire for cosmetic enhancement, with popular choices being fillers, botox, and rhinoplasty (43.2%). These findings suggest a desire for cosmetic interventions despite limited consideration and indicate a positive body image for those less self-conscious about their appearance with masks.

Conclusions:

The study found that prolonged mask use had minimal impact on participants' self-esteem and body image. Although non-surgical cosmetic procedures were considered, most participants did not seriously contemplate them. Gender and self-esteem played significant roles in attitudes towards cosmetic procedures. These findings highlight the limited influence of masks on self-perception and inform the understanding of factors influencing the desire for cosmetic enhancements.

Key Words: Cosmetic Surgery ; Face mask ; Self-esteem ;

Funding Agency: None

Prevalence of Naturally Occurring NS3, NS5A and NS5B Amino Acid Substitutions and Resistance Associated Substitutions (RASs) in Kuwaiti Patients with Chronic Hepatitis C Infection

Maisa Kamkar¹, Zain Zia*¹, Kashif Aziz¹, Mohammed Elfar³, Abu Salim Mustafa², Mamoun Al Qasser¹

¹ Virology Lab, Mubarak Al Kabeer Hospital, Ministry of Health; ² Microbiology Department, Faculty of Medicine, Kuwait University; ³ Mubarak Al Kabeer Hospital, Gastroenterology Unit, Ministry of Health

Introduction:

Hepatitis C virus (HCV), non-structural proteins (NS3, NS5A and NS5B), resistance-associated substitutions (RASs) are the main causes of failure to direct-acting antiviral agents (DAAs). NS3, NS5A and NS5B amino acid substitutions and RASs has been reported to occur in patients with HCV infection naturally and before exposure to DAAs.

Objectives: This study aimed to evaluate naturally occurring NS3, NS5A and NS5B protein coding regions and RASs in Kuwaiti patients infected with HCV.

Methods:

Viral RNA was extracted from serum leftover samples processed for viral load determination. NS3, NS5A and NS5B protein coding regions were amplified using RT-PCR followed by Next Generation DNA Sequencing (ion torrent S5 Platform, ThermoFisher). The Fastq nucleotide files were analysed using ABL DeepCheck genetic analysis software, whereby the nucleotide sequences were aligned against reference sequences of HCV-genotype 4a, HCV-genotype 1a and HCV-genotype 3a. Moreover, the amino acid substitutions were analysed using geno2pheno [hcv].

Results:

Among 30 patients with hepatitis C infection, NS5A amino acid substitutions/RASs were identified in 16.6%, 13.3% and 10% of patients with HCV-genotype 4a, HCV-genotype 3a and HCV-genotype 1a infections, respectively. The identified amino acid substitutions/RASs in the NS5A protein coding region of patients with HCV-genotype 1a infection were Y93H, H58D, L30H, A30K, L30R and Y93C. While A30K was prevalent in patients with HCV-genotype 3a. As for patients infected with HCV-genotype 4a (most prevalent genotype in Kuwait), Y93H constituted 91% followed by L30H and L30R amino acid substitutions. These mutations has been reported conferring resistance to Daclatasvir, Elbasvir, Ledipasvir, Ombitasvir and Velpatasvir. As for NS3 and NS5B protein coding regions, no amino acid substitutions were found in all tested samples.

Conclusions:

Mutations conferring DAA resistance were detected in NS5A protein coding region of HCV genotypes 4a, 3a and 1a from HCV patients. Although some mutations confer a low level of drug-resistance, however, the presence of multiple resistance-mutations at baseline may result in viral breakthroughs during treatment. Further studies are needed to better evaluate the role of all variants and the influence which they might have in modulating resistance levels or susceptibility to HCV drugs.

Key Words: Hepatitis C Virus; Next Generation Sequencing; Liver Diseases;

Funding Agency: NONE

Dentistry

151

Mucocoele Excisional Biopsy- An alternative approach using laser.

Al-Jassim D¹, Nazar S*², Barry S³

¹ Undergraduate Student in Paediatric Dentistry, University of Manchester; ²Specialist in Paediatric dentistry, Ministry of Health, Kuwait; ³ Department of Child Dental Health, University Dental Hospital of Manchester, UK.

CASE REPORT

Background

A 10-year-old girl attended following a referral by her GDP regarding a painful swelling of the lower lip.

Case summary

The patient was troubled by a fluctuant swelling of the lower lip of 9-12 months duration. This swelling had been painful on eating and speaking. Medical history was non-contributory. On examination, she presented with a mixed dentition which was clinically caries free. A soft swelling of 1cm diameter was present on the lower labial mucosa opposite to the LR12 region. Occlusal assessment showed a class II division I incisor relationship and bilateral class II molar relationship.

Clinical management:

History and clinical examination were consistent with the diagnosis of a mucocoele. Following a discussion of options for treatment, an excisional biopsy of the lesion and underlying salivary glands was completed under local analgesia using a Fotona® Nd:YAG laser. The area was left to granulate from the base. Histopathological analysis confirmed the diagnosis of salivary extravasation cyst. On 3 month follow-up, the lower lip had healed well, and the patient was asymptomatic.

Discussion

Mucocoeles or mucous extravasation cysts are benign swellings that present, most commonly on the lower lip, due to mucus blockage of salivary glands. Trauma to lower lip glands by the dentition is a suggested cause in this case, due to the increased overjet. Excisional biopsy using a laser reduces surgical complications, such as bleeding and swelling; additionally, sutures aren't required. While surgical excision of mucocoeles is the conventional approach, the use of laser is becoming a popular and accepted approach for paediatric patients.

Key Words: Paediatric dentistry; oral medicine; Mucocoele;

152

Sequalae of injuries to the primary dentition and shared care management

Clarke Lisa, Barry Siobhan

¹Specialist in Paediatric dentistry, Ministry of Health, Kuwait;²Department of Child Dental Health, University Dental Hospital of Manchester,

CASE REPORT

Background

Worldwide prevalence of traumatic dental injuries (TDIs) affecting the primary dentition is 22.7% with injuries involving the periodontal ligament occurring most frequently. There can be significant impact of TDIs to primary teeth on developing permanent successors including; enamel defects 44%, crown and/or root dilaceration or eruption failure. Long term management is essential to maintain aesthetics and function.

Case summary

A 12-year-old female presented complaining of the colour of her UR1 and pain related to the lower right and left quadrants. Her medical history was unremarkable. There was a history of an intrusion injury to the URA at age 3. Clinical and radiographic examination revealed a localised hypoplastic and hypomineralised defect of UR1 with gingival overgrowth, dental caries in UR6 UL6 and chronic periapical periodontitis due to the carious LR6 LL6. She also has a class II Division 2 incisor relationship with moderate upper and lower arch crowding.

Clinical management:

Under local analgesia, gingival recontouring was completed with electrocautery of UR1, exposing the whole crown surface. Microabrasion for UR1, followed by direct composite veneer placement was undertaken, significantly improving the appearance. The patients GDP extracted LR6 LL6 under local analgesia and restored UR6 UL6. Following an improvement of her oral hygiene and stabilisation of caries risk, a local orthodontic referral was completed. Longer term, following orthodontic alignment, the composite restoration could be revised.

Discussion

This case highlights that shared dental care is appropriate with the primary dental care provider, paediatric dentist and orthodontist to achieve favourable long-term outcomes.

Key Words: Paediatric dentistry; Dental trauma; Primary dentition;

153

A Case of Nevus Lipomatosus Superficialis

Alajmi HM

7th year medical student, College of Medicine, Kuwait University

CASE REPORT

Background: Nevus lipomatosus superficialis, also known as pedunculated lipofibroma, is a rare benign hamartous skin lesion. It can be misdiagnosed as lipofibromas, skin tags, hemangioma, lymphangioma, and focal dermal hyperplasia. There are two types depending on the presentation, classical or solitary. The classical form, also called Hoffmann Zurhelle, is usually located at the gluteal region, pelvic or upper thigh region, and lower back area as soft, yellow, skin colored lumpy lesions usually present at birth or during the first three decades of life. The solitary type however occurs after the second decade in adult life as a single soft, yellow, skin colored subcutaneous swelling anywhere in the body. The patient's main concern is cosmetic.

Case summary: A 13 year old boy presented to Farwaniya hospital with a brownish sessile skin lesion on his right forearm since birth that caused cosmetic concern. Physical examination revealed a single, well circumscribed, firm lesion with a measurement of 0.5x0.5x0.6cm. Since 5 years ago, the lesion would easily bleed with minor trauma, but usually is asymptomatic. An excisional biopsy was done and revealed multiple scattered lobules of small capillary type vessels with small oval to spindle shaped cells throughout the upper dermis revealing cannonball or glomerular appearance. There is no atypia or mitosis. The overlying epidermis is atrophic and forming collarette over the dermis. Histological diagnosis was consistent with tufted angioma.

Conclusion: Nevus lipomatosus superficialis is a rare benign hamartoma characterized by the presence of mature adipocytes in the dermis. It is not heritable and the pathogenesis is unknown. The diagnosis by histopathological examination of a skin biopsy because this condition is benign, it is best left untreated. If there is a cosmetic reason or the lesion is ulcerated, surgical excision is an option.

Acknowledgment: The case report was done in help of Dr. Ibraheem Darweesh, dermatology department Farwaniya hospital, Kuwait

Key Words: Nevus Lipomatosus Superficialis; Pedunculated lipofibroma; Hoffmann Zurhelle;

154

Cardiovascular Form of Gaucher Disease Associated with Homozygous Asp448His in GBA gene in KuwaitAlzayed N ¹, Ali NY ², Ebrahim MA³, Albash B⁴, Ramadan DG⁵, Bastaki L⁴, Alsharhan H^{4,6,7}

¹ Faculty of Medicine, Health Science Center, Kuwait University, Kuwait; ² Radiology department, Ibn Sina Hospital, MOH, Kuwait; ³ Department of pediatrics. Affiliated with Chest Disease Hospital, Faculty of Medicine. Kuwait University; ⁴Kuwait Medical Genetics Center, Ministry of Health, Sulaibikhat, 80901, Kuwait, ⁵Department of Pediatrics, Sabah Hospital, Ministry of Health, Kuwait; ⁶Department of Pediatrics, Farwaniya Hospital, Ministry of Health, Sabah Al-Nasser, 92426, Kuwait; ⁷ Department of Pediatrics, Health Sciences Centre, College of Medicine, Kuwait University, P.O. Box 24923, Safat 13110, Postal code 90805, Kuwait

CASE REPORT

Gaucher disease is a pan ethnic lysosomal storage disorder inherited as autosomal recessive with a world prevalence of 1 in 50,000-100,000. It is caused by biallelic pathogenic variants in glucocerebrosidase gene (GBA) that encodes the lysosomal enzyme glucocerebrosidase, resulting in a decrease in its activity and glucocerebroside accumulation in macrophages of various body organs, mainly the spleen, liver, lungs and bone marrow. Cardiac involvement is rare and is characterized by valvular calcification, myocardial infiltration, restrictive cardiomyopathy, pericardial calcification and pulmonary hypertension. Cardiac phenotype has been reported in total of 61 individuals, caused mainly by homozygous Asp448His GBA variant. Early enzyme replacement treatment and substrate reduction therapy are associated with improved outcomes in this multisystem disease. Diagnosis is usually delayed due to late presentation and nonspecific symptoms resulting in high morbidity and mortality. This study aims to analyze cases with cardiovascular form of Gaucher disease, with homozygous Asp448His GBA variants and describe their clinical course and manifestations. Retrospective analysis was conducted from data in Kuwait Medical Genetics Center of individuals with homozygous Asp448His GBA variants detected in Kuwait. We report five individuals from two families, Kuwaiti and Jordanian, who were previously reported with homozygous pathogenic (c.1342G>C; p.Asp448His) GBA variant. All individuals were diagnosed during childhood except one individual, diagnosed at age 28 years. They presented with organomegaly, cytopenia, neurological manifestations, aortic stenosis, and stenosis or regurgitation of the mitral valve, all requiring valvular surgeries. Three of them underwent aortic and mitral valve replacement surgery while one underwent aortic valve replacement. All except one individual have unfortunately passed away a few years after surgery due to cardiac failure, while the adult individual is alive and well at 30 years of age. This is the first study in Kuwait to describe Gaucher disease cardiovascular form associated with homozygous Asp448His GBA variant, increasing the number of reported cases to 66 with this variant. Our cases share same phenotypic characteristics of such disorder. Increasing awareness of this disorder would help identify affected individuals and initiate adequate management, reducing morbidity and mortality as effective therapeutic measures are available.

Key Words: Gaucher disease, cardiovascular form; valvular heart disease, valve replacement ; GBA;

Genetics

155

Case Study: Co-inheritance of a PKD1 mutation and novel PKD1 variant: a potential modifier in autosomal dominant polycystic kidney disease

Naser Hussain², Medhat Naim², Mohammad Zayed², Peter C. Harris⁴, Fahd Al-Mulla³

¹MLS Department, Faculty of Allied Health Sciences, Health Sciences Center (HSC), Kuwait University, Kuwait;

²Department of Nephrology, Mubarak Al-Kabir Hospital, Ministry of Health, Kuwait; ³Department of Genetics and Bioinformatics, Dasman Diabetes Institute, Kuwait; ⁴Division of Nephrology and Hypertension, Mayo Clinic, Rochester, USA

CASE REPORT

Background: Autosomal Dominant Polycystic Kidney Disease (ADPKD) is the most prevalent type of Polycystic Kidney Disease (PKD), with an occurrence rate of 1/800 to 1/1000 across all ethnicities globally. Notably, ADPKD displays significant variability in disease progression and the presence of symptoms beyond the kidneys within the same family, indicating a potential role for inherited modifier genes.

Case Summary: We conducted a clinical assessment of a family affected by ADPKD to evaluate and track the progression of the disease in each family member. Genetic analysis specifically focused on the PKD1 gene was performed through targeted sequencing. Our targeted genetic screening revealed that family members with ADPKD had a specific PKD1 mutation (p.Q2243X). Two individuals exhibited a more aggressive form of the disease, marked by lower Glomerular Filtration Rates (eGFR) and larger total kidney volumes, due to an additional novel PKD1 variant (p.H1769Y). Other family members with only the p.Q2243X mutation showed less severe symptoms.

Conclusion: Our findings underscore the significant variability in ADPKD within families, often linked to other modifying genes. Uniquely in this study, we identified that a variant of PKD1, in combination with the PKD1 mutation, can also act as a modifier in ADPKD. Understanding how this gene influences the disease could enhance our knowledge of ADPKD pathogenesis.

Key Words: Genetics; Nephrology; eGFR;

Lambda Light Chain Myeloma Presenting Initially by Pancytopenia.

Omar MS, Bahl S, Omara NM, Shams Aldeen NK

Hematology Unit, Laboratory Department, Al Jahra Hospital, Ministry of Health,
Kuwait.

CASE REPORT

Background: Plasma cell (PC) disorders are clonal neoplasms of PCs with a spectrum of clinical conditions. Multiple myeloma (MM), which represents 1% of cancers, is a symptomatic phase of these neoplasms, commonly seen in the sixth-seventh decades of age and is usually associated with end-organ damage. Light chain (LC) MM (LCMM) is a less frequent type of MM (accounts for 15% of cases) with a more aggressive course and poorer prognosis. LCMM is characterised by the inability of the malignant PCs to produce heavy chains, resulting in the exclusive production of LCs with the typical association of renal failure, bone disease and systemic LC AL amyloidosis. Even though pancytopenia, a hematologic condition characterised by a decrease in peripheral blood cells, may result from bone marrow (BM) infiltration, it is unusual to see it as an initial presentation of LCMM. Here, we report a rare case of LCMM in a young patient who presented initially with severe pancytopenia in the absence of related symptoms.

Case Summary: A 43-year-old lady with unexplained pancytopenia (Hb: 60 g/L - WBCs, ANC and PLT count: 1.7, 0.56 and 32 x1000/cubic millimetre, respectively) and reticulocytopenia was referred to us for a BM examination to rule out BM failure. Serum calcium, creatinine and ESR were within normal ranges. A blood film examination showed unremarkable findings, and the viral screen was negative. BM aspirate and trephine biopsy were carried out, but the aspirate was a “dry tap”. Unexpectedly, the biopsy revealed infiltration by around 65% of abnormal PCs; by immunohistochemical markers, these PCs are positive for CD138, CD38, and CD117 and negative for CD45, CD19, and CD56 with LC-lambda restriction. Then, serum protein electrophoresis (SPE) and free LC (FLC), molecular and radiological studies were requested. The monoclonal band that appeared in SPE, was identified by immunofixation as LC-lambda. The FLC-kappa: FLC-lambda ratio was 0.025, and molecular analysis detected DNMT1 mutation. After providing the diagnosis of LCMM, the patient shifted to the Kuwait Cancer Centre, where she received a Daratumumab-Bortezomib-Dexamethasone regimen.

Conclusion: Pancytopenia as an initial presentation of LCMM hardly ensues, especially with no characteristic features; this may delay the early diagnosis of the disease. We recommend a thorough evaluation of all patients having unexplained pancytopenia, considering BM infiltration as one of the unexpected possibilities.

Key Words: LCMM: Light chain multiple myeloma; BM: Bone marrow ; PCs: Plasma cells;

157

Case Report: An Unusual Initial Presentation of BCR-ABL1-Positive Chronic Myeloid Leukemia with Pancytopenia and No Splenomegaly.

Gouda EF*, Elsherbiny ZM and Hasan ML.

Hematology Unit, Laboratory Department, Al Jahra Hospital, Ministry of Health, Kuwait.

CASE REPORT

Background: Chronic myeloid leukemia (CML) is a myeloproliferative neoplasm characterized by the dysregulated production and uncontrolled proliferation of mature and maturing granulocytes with fairly normal differentiation. CML is associated with the fusion of two genes: BCR (on chromosome 22) and ABL1 (on chromosome 9) resulting in the BCR::ABL1 fusion gene. This abnormal fusion typically results from a reciprocal translocation between chromosomes 9 and 22, t(9;22)(q34;q11), that gives rise to an abnormal chromosome 22 called the Philadelphia (Ph) chromosome. An extensive review of the literature using Pubmed and Trip database with the words aplasia, hypoplasia, pancytopenia, CML-chronic phase (CML-CP) revealed that the association of CML-CP pancytopenia and with no splenomegaly is extremely uncommon as a presenting feature at initial diagnosis.

Case summary: A 42-year-old lady was admitted to the Causality of Al-Jahra hospital with manifestations of anemia (shortness of breath, fatigue & dizziness), recurrent gum bleeding, petechiae, and menorrhagia. Her symptoms were started one month before admission. The patient was afebrile and had no past medical history. On examination, there was no organomegaly or lymphadenopathy. CT revealed: mild homogenous hepatomegaly and bulky spleen (12.5 cm). LDH: 168 IU/L, normal liver & kidney functions, normal coagulation profile, folate: 28.76 nmol/L, and vitamin B12: 84.0 pmol/L. Virology screen: negative. CBC showed marked pancytopenia. Bone marrow examination revealed: Hypo-proliferative BM with all hematopoietic elements depressed, the remaining BM cells consist mainly of small mature lymphocytes, plasma cells, histocytes, blasts 5%, and focal reticulin fibrosis (overall 1-2/3). The presence of the BCR-ABL1 fusion gene confirmed the diagnosis of CML, chronic phase. The patient traveled abroad to receive BCR::ABL1 tyrosine kinase inhibitors.

Conclusion: This case, being had BCR:ABL1 fusion gene; presents a patient with CML abnormal initial presentation (i.e., pancytopenia, bone marrow fibrosis, and the absence of splenomegaly). We conclude that cytogenetic and molecular analysis are necessary before diagnosis of aplastic anemia.

Key Words: Chronic myeloid leukemia; Pancytopenia; BCR::ABL1 fusion gene;

A Case Of Secondary Syphilis: The Great Imitator Can't Be Forgotten

Aladwani MM

6th year medical student, Faculty of medicine, Kuwait university

CASE REPORT

Background: Syphilis is a sexually transmitted infection (STI) caused by *Treponema pallidum*. If untreated, primary syphilis can progress to secondary syphilis, which has a characteristic rash and diverse systemic features. This report is of a Papular syphilides, which is a rare form of secondary syphilis. May evolve from macular rash or manifest as such. Most characteristic ; appears around 3 months post infection. Dull red, discrete papules less than 1cm ; non scaly initially but can be scaly later. Predominantly involve trunk, extremities, face and genitals. Buschke Ollendorff sign: deep dermal tenderness elicited by pressing papule with a blunt side of a pin. Syphilis represents a diagnostic challenge for the practitioner because it mimics several conditions. Current guidelines on syphilis management support the place of benzathine penicillin as a treatment for all forms of syphilis.

Case summary: A 27-year-old Kuwaiti, healthy female, who is single heterosexual, presented with disseminated skin and mucosal lesions of 1 month duration. A history of unprotected heterosexual exposure with sex workers 2 months earlier. The patient experienced mild fever, sore throat and headache. There is no history of weight loss, diarrhea, signs and symptoms of other STIs, blood transfusion, IV drug abuse, or alcohol intake. The skin lesions were numerous violaceous papules and nodules, ranging from 0.5 to 1.0 cm, were found on the trunk and limbs. Inguinal, epitrochlear, and axillary lymph nodes were enlarged, rubbery, non-tender. Oral and genital mucosa were normal. Results of laboratory testing included a positive Venereal Disease Research Laboratory (VDRL). Human immunodeficiency virus (HIV) testing was positive, and serologic testing for HBV, HCV were negative. Given the clinical presentation and laboratory findings, Secondary Syphilis with HIV considered the final diagnosis.

Conclusion: Clinicians should be aware of this rare presentation of secondary syphilis and patients presenting with disseminated unusual papulonodules should be investigated for syphilis and HIV.

Acknowledgment: This case report was prepared in collaboration with Prof Nawaf IMutairi, dermatology department, Farwaniya Hospital, Kuwait

Key Words: Secondary syphilis; sexually transmitted disease; *Treponema pallidum*; benzathine penicillin;

159

A Glimpse Into Parkinsonism: A Case Report

Asbeutah SA*¹, Shah SS², Ponomareva GV³, Molla MM⁴

¹ Neurology, Department of Medicine, Kuwait University; ² Neurology, University College Dublin School of Medicine, Dublin ³Internal Medicine, Pomeranian Medical University, Szczecin; ⁴Internal Medicine, Byramjee Jeejeebhoy (BJ) Medical College, Pune

CASE REPORT

Background

Progressive supranuclear palsy (PSP) is a neurodegenerative disorder, particularly the Richardson's syndrome (PSP-RS) subtype, which primarily afflicts adults and lacks a familial pattern. PSP-RS is characterized by early falls due to postural instability and distinct oculomotor signs that predominantly affect vertical eye movements, including slowed saccades progressing into supranuclear gaze palsy. It is considered rare, with an incidence rate of around 5-7 cases per 100,000 individuals. Prevalence varies across regions, with peaks around the age of 70-74.

Lower levels of educational attainment stand out as a consistent factor. Some theories suggest a link to diminished "synaptic reserve," increased exposure in certain work environments associated with industrial occupations, and lower income levels.

Case Summary

A 71-year-old right-handed woman presented with a history of tremors, bradykinesia, vision problems, and recurrent falls, dating back to 2018 when she was initially diagnosed with Parkinson's disease (PD). Her medical condition's chronological progression is visually represented in Figure 1. The examination revealed limited vertical gaze, notably during downward gaze, suggesting vertical gaze palsy, particularly when tracking objects. Horizontal gaze was unaffected, but voluntary blinking was challenging. The face appeared stiff and lacked expression, indicating dystonia. We also assessed her handwriting and drawings of a clock (Figure 2) over a three-month period, which demonstrated notable micrographia and lack of precision. Derived from a combination of core clinical features and CCs, the Movement Disorder Society proposes four levels of diagnostic certainty. According to the MDS-PSP criteria, our patient initially qualified for probable PSP with predominant parkinsonism (Figure 3).

Conclusions

Diagnostic criteria have historically relied on clinical patterns and neuroimaging. Our case, initially resembling Parkinson's disease, showcases the diagnostic challenges. Comprehensive literature reviews reveal complex comorbidities and varied clinical presentations. Neuroimaging is vital, but newer methods differentiate PSP from similar syndromes.

Funding/Acknowledgements

We extend our heartfelt gratitude to the individuals and organizations who contributed to the realization of this research project.

Key Words: Progressive supranuclear palsy; Parkinson's Disease; Tremor;

160

A Case of *Serratia marcescens* Conjunctivitis in a Young Male after Exposure to Contaminated Shampoo in a Fitness Club

Halwani M A

Department of Microbiology, Faculty of Medicine, Al Baha University, Saudi Arabia

CASE REPORT

Background: the contamination of shampoo with bacteria is not very common but can happen and can be a potential cause of conjunctivitis.

Case Summary: This case report describes a 24-year-old male who developed conjunctivitis after using a *Serratia marcescens* contaminated shampoo in a fitness club. The patient had redness, swelling, and discharge in both eyes. Cultures of the shampoo and eye swabs were positive for *S. marcescens* with indistinguishable DNA fingerprints. The patient was treated with an eye drop antibiotic and his symptoms resolved within a week.

Conclusions: this case highlights the possibility of exposure in places where shampoos containers are refilled or shared. The avoidance of refilling them and using replaceable cartridges, single-sealed refill bags, or bringing personal shampoo is highly recommended to prevent such incidents.

Key Words: *Serratia marcescens*, ; Conjunctivitis; Contaminated Shampoo;

161

The First Isolation of *Madurella Mycetomatis* In a Mycetoma Patient InManchanda Y*¹, AlBazali A¹, Alsadat M¹, Alobaid K², Asadzadeh M³, Ahmad S³¹ Department of Dermatology, Farwaniya hospital, Kuwait; ² Mycology reference laboratory, Mubarak Al-Kabeer hospital, Kuwait; ³ Department of Microbiology, College of Medicine, Kuwait University**CASE REPORT****Background:**

Mycetoma is a chronic granulomatous disease affecting subcutaneous tissue and bone, typically resulting from traumatic inoculation of the causative organism. Cases are geographically restricted to tropical and subtropical regions. It is characterized by swelling, sinuses and grains. Mycetoma is divided into eumycetoma, caused by fungi, and actinomycetoma, caused by bacteria. Given the distinct treatment approaches for these two forms, a definitive laboratory diagnosis using pathological and microbiological examinations is essential. In this case report, we present a case of eumycetoma, while highlighting the crucial roles that pathology and microbiology played in establishing a conclusive diagnosis of this condition.

Case Summary:

A 32-year-old Sudanese male farmer presented with a four-month history of an asymptomatic mass on the right sole, along with a pus discharge and sporadic black-colored granules. Notably, the patient had a significant past history of similar lesions at the same site, which were surgically excised three years ago. There were no systemic complaints such as weight loss, night sweats, a chronic cough, or a low-grade persistent fever. The patient denied any definitive history of a penetrating injury at the site preceding the lesion. To establish a definitive diagnosis, a biopsy was performed using an elliptical incision around a discharging sinus. The excised tissue was fragile and filled with mucopurulent discharge containing numerous black granules. The wound was closed through simple interrupted sutures. Potassium hydroxide preparation was made from the black granules, revealing branched elongate hyphae. Histopathology, supplemented by Periodic Acid-Schiff and Gomori's Methenamine Silver staining, showed dermal fungal grain. The fungal culture yielded a filamentous mold with a yellow diffusible pigment suggestive of *Madurella mycetomatis* and confirmed by PCR-sequencing of beta tubulin gene and D1/D2 domains of rDNA. The patient has been prescribed Itraconazole and is scheduled for complete surgical excision after four weeks of treatment.

Conclusions:

While the morphology of grains and histopathological examination can provide a tentative diagnosis, definitive confirmation requires microbiological examination through culture followed by molecular testing. Since this disease is not endemic to Kuwait, it is crucial for the clinicians to be aware of its presentation and consider it in their differential diagnosis.

Key Words: *Madurella mycetomatis*; Mycetoma; Black grains;

Atypical Presentation of Guillain-Barre Syndrome (GBS): A Case Report

AlJassar RW ¹, AlShatti NN ¹, Aleinati GT ¹, AlShammari SS ², AlHalban FA ²

¹ Seventh-Year Medical Students- Faculty of Medicine, Kuwait University;

² Department of Internal Medicine, Farwaniya Hospital, Farwaniya, Kuwait

CASE REPORT

Background:

Bilateral lower limb weakness is a possible presentation of a variety of conditions, including Guillain-Barre Syndrome (GBS) and transverse myelitis. Thorough evaluation is necessary to reach a diagnosis. GBS is an immune-mediated polyradiculoneuropathy, and it has been classified into different pathogenetic subtypes, including acute inflammatory demyelinating polyradiculoneuropathy (AIDP). In AIDP, there is slower neural conduction, associated with segmental demyelination, usually followed by recovery through regeneration of myelinating Schwann cells. Patients typically present with progressive, symmetric muscle weakness and decreased deep tendon reflexes. However, the clinical presentation can be atypical, posing a diagnostic challenge and demanding a closer inspection of variations in clinical features.

Case Summary:

A 45-year-old male presented with acute onset of bilateral lower limb weakness and numbness, unaccompanied by antecedent viral infections or trauma. Physical examination revealed symmetrical diminished power in the lower limbs and decreased deep tendon reflexes in the upper and lower limbs. Sphincter function was normal. The patient also had decreased sensation to temperature, pain, and light touch up to the upper thigh bilaterally, raising the concern for possible spinal cord pathology. Magnetic resonance imaging (MRI) excluded spinal cord compression along with no abnormal signals from the spinal cord. Cerebrospinal fluid (CSF) analysis showed normal protein level and normal WBC count, with a negative virology screen. Serum anti-ganglioside antibodies screen was negative. Nerve conduction studies indicated distal demyelinating neuropathy without radiculitis (distal variant of AIDP). The patient received a five-day course of intravenous immunoglobulin (IVIG) (0.4 g/kg/day), resulting in a significant rapid improvement of symptoms.

Conclusion:

This case highlights the diagnostic challenges associated with atypical presentations of AIDP. Recognition of such variants is important for accurate diagnosis. Despite diagnostic challenges, the prognosis remains favorable. In most cases of AIDP, the clinical course is usually benign with disease recovery starting two to four weeks after reaching the nadir of the disease. In the case presented, the patient improved rapidly within 5 days following IVIG therapy.

Key Words: Guillain-Barre Syndrome (GBS); Lower limb weakness ; Acute inflammatory demyelinating polyradiculoneuropathy (AIDP);

163

Metastatic Papillary Thyroid Carcinoma in Pleural Effusion: A case report and review of literatureAbutalib M¹, Shams A^{3,5*}, Tamur S⁶, Khalifa E^{7,8}, Alnefaie G⁹, Hawsawi Y^{10,11}

¹Clinical cytologist and supervisor of pathology, Department of laboratory medicine and Pathology, Division of Anatomical Pathology, King Abdulaziz Medical City, P.O.Box 9515, Jeddah 21423, Saudi Arabia; ²King Abdullah International Medical and Research Center, Jeddah, Saudi Arabia; abuttm@ngha.med.sa; ³Department of Pharmacology, College of Medicine, Taif University, P.O. Box 11099, Taif 21944, Saudi Arabia; a.shams@tu.edu.sa, anwar.shams@mail.mcgill.ca; ⁴Centre of Biomedical Sciences Research (CBSR), Deanship of Scientific Research, Taif University, Taif 21974, Saudi Arabia; a.shams@tu.edu.sa, anwar.shams@mail.mcgill.ca; ⁵High Altitude Research Center, Taif University, P.O. Box 11099, Taif 21944, Saudi Arabia; a.shams@tu.edu.sa, anwar.shams@mail.mcgill.ca; ⁶Department of Pediatric, College of Medicine, Taif University, P.O. Box 11099, Taif 21944, Saudi Arabia; shaditamur@tu.edu.sa, stamur03@gmail.com; ⁷Department of Parasitology, College of Medicine, Taif University, P.O. Box 11099, Taif 21944, Saudi Arabia; e.khalifa@tu.edu.sa, emanali1999@yahoo.com; [8]Department of Parasitology, Tanta University, Tanta, Egypt; e.khalifa@tu.edu.sa, emanali1999@yahoo.com; [9]Department of Pathology, College of Medicine, Taif University, P.O. Box 11099, Taif 21944, Saudi Arabia, Ghaliyah.o@tu.edu.sa; [10]Research Center, King Faisal Specialist Hospital and Research Center, Jeddah 21499, P.O. Box 40047, Kingdom of Saudi Arabia; hyousef@kfshrc.edu.sa; [11]College of Medicine, Al-Faisal University, P.O. Box 50927, Riyadh, 11533, Saudi Arabia; hyousef@kfshrc.edu.sa.

CASE REPORT

Background: Papillary thyroid carcinoma (PTC) accounts for the most common type of thyroid cancer of well-differentiated type. PTC is featured by biologically low-grade and less aggressive tumours with a survival rate of 10 years in most of the diagnosed cases. PTC can be presented with the involvement of cervical lymph nodes in about 50% of the patients yet the distant spread is very uncommon.

Case Summary: Herein, we discussed an early 50-year-old male patient with a history of PTC who presented to the emergency department complaining of shortness of breath and a radiological finding of hydrothorax. Cytologic examination together with immune-histochemical staining and molecular studies of pleural effusion aspiration concluded the definitive diagnosis of metastatic papillary thyroid carcinoma in the pleural space.

Conclusion: PTC seldom causes metastatic niches in the pleural space, and this is a rare clinical presentation, nevertheless, a differential diagnosis of thyroid metastasis needs to be excluded. A definitive diagnosis of metastatic papillary thyroid carcinoma can be made using clinical presentation, cytologic examination, immunohistochemical investigation, and molecular testing. The most common mutation found in PTC cases is the BRAFV600E mutation, yet these patients have a relatively low probability of cancer recurrence. Patients with PTC who have the BRAF mutation frequently experience metastases and relapses of the disease after the cancer has progressed aggressively. To help with therapy planning and the introduction of BRAF inhibitors, genetic testing for BRAF mutation may therefore prove to be a useful tool, especially in cases of aggressive subtypes of TC.

Acknowledgments: The authors would like to thank King Abdulaziz Medical City, Jeddah, Saudi Arabia and King Abdullah International Medical and Research Center, Jeddah, Saudi Arabia. The authors would also like to sincerely thank the Deanship of Scientific Research for funding this work and the High Altitude Research Center, at Taif University.

Key Words: Papillary thyroid carcinoma ; pleural effusion; metastases;

164

Solitary Neurofibroma of the Nasal Columella: A Rare Case with Emphasis on Cosmetic Considerations and Management

Babiker AF*¹, Alsakka MA², Al-Sabeih KH³

¹ 7th year medical student, Faculty of Medicine, Kuwait University; ² Department of Otorhinolaryngology and Facial Plastic Surgery, Canadian Medical Center, Sharq, Kuwait City, Kuwait; ³ Department of Surgery - Otolaryngology division, Faculty of Medicine, Kuwait University; Department of Otorhinolaryngology and Facial Plastic Surgery, Canadian Medical Center

CASE REPORT

Neurofibromas are peripheral nerve sheath tumors composed of schwann cells, perineural-like cells, fibroblasts, nerve fibers, collagen strands, and a myxoid matrix. They typically occur in individuals aged 20-30 years and are associated with Neurofibromatosis type 1 (NF1), but when they present as solitary nodules, they usually occur independent of NF1. Distinguishing neurofibromas from schwannomas is based on the presence of nerve fibers within the tumors. While neurofibromas can manifest in various anatomical regions, their occurrence in the external nasal area is a rare occurrence and is not well documented in the English literature. This report presents a case of a neurofibroma in the nasal columella, which was surgically removed via an external approach.

Key Words: Neurofibroma; columella; external approach;

165

Adenomatoid Odontogenic Tumor: A Case Report

Aldousari L ¹, Hindi K ², George J ³

¹ Pathology Resident, Kuwait Institute for Medical Specializations (KIMS), Kuwait; ² Department of Histopathology, Mubarak Alkabeer Hospital, Kuwait;

CASE REPORT

Background:

Adenomatoid odontogenic tumor (AOT) is an uncommon benign odontogenic neoplasm, accounting for less than 5% of odontogenic tumors. It is thought to originate from enamel organ epithelium or remnants of dental lamina. Its nonaggressive behavior has prompted some pathologists to regard it as a hamartoma. According to the World Health Organization, it occurs more commonly in females, with the majority diagnosed in the first three decades of life.

Case Summary:

A 16-year-old boy presented with a radiolucent maxillary swelling incidentally found on radiographs. The swelling was associated with an unerupted right canine. An excisional biopsy was done. Multiple pieces of fibrous tissue were grossly examined. Microscopically, cyst wall lined by cuboidal to columnar cells forming gland-like structures is seen, in addition to areas of stromal whirling and calcifications.

Conclusions:

AOT is benign epithelial tumor that is sometimes referred to as the “two-thirds tumor”, because roughly, two-thirds of AOTs present in females, two-thirds present before the second decade of life, two-thirds present in the maxilla, and two-thirds surround an impacted tooth. Radiographically, this tumor tends to be well-defined with characteristic radiolucency surrounding the impacted tooth and extending beyond the cemento-enamel junction. Microscopically, AOTs are solid and cystic tumors with duct-like characterized by rounded nests or rosette-like areas. Differential diagnosis includes ameloblastoma, which requires extensive surgical treatment compared with AOT; thus, distinction between these two entities is crucial.

In summary, this tumor has unique clinical, radiographic, and histopathological features. Treatment of choice includes enucleation or curettage, and recurrence rates are exceedingly low.

Acknowledgements:

I am thankful to the Pathology Department in Mubarak Alkabeer Hospital and the Oral and Maxillofacial Surgery Unit in Bneid Alqar Dental Center for giving me the opportunity to present such a rare case.

Key Words: Adenomatoid; Odontogenic; Tumor;

A Rare Case of Cerebral Schistosomiasis Presenting as Epilepsy: A Case Report

AL-Shamaa A ¹, Jarkhi H ², Abodie W ³

^{1,2} Kuwait Institute For Medical Specializations; ³ Pathology Department, Al-Sabah Hospital

CASE REPORT

Background:

Schistosomiasis or bilharziasis is one of the most widespread parasitic infections in the world. Neuroschistosomiasis is one of the very rare manifestations of Schistosoma infection that can present with unexplained brain lesions. Herein we present a rare case of Cerebral schistosomiasis presenting as epilepsy.

Case Summary:

A 32-year-old Filipino female patient with no previous medical history presented to the emergency department complaining of a one-month history of worsening headaches, vomiting, episodes of generalized tonic-clonic seizure, and 2- two-week history of right-sided weakness. On physical examination, the patient was disoriented and had right-sided hemiparesis including the face. MRI brain with contrast showed left temporal and frontotemporal intra-axial lesions with multinodular pattern associated with marked vasogenic edema and significant midline shift. Treatment with antiepileptics and dexamethasone was immediately started. A tailored frontotemporal craniotomy was done and showed creamy-white firm avascular lesions. Surgical excision and subsequent histopathological examination showed brain parenchyma with necrotizing granulomatous inflammation around parasitic eggs with thin transparent refractile shells, some with lateral spine, which were morphologically consistent with schistosomiasis. The surrounding brain tissue showed mixed inflammatory cell infiltrate. Post-operatively, the patient showed significant clinical improvement and started on Praziquantel and corticosteroids. Her further investigations which included stool examination revealed no evidence of ova or parasites. A follow-up CT scan of the brain revealed very minimal residual mass effect.

Conclusion:

Schistosomiasis is the third most devastating disease globally. Neuroschistosomiasis is caused by the host's reaction to the presence of Schistosome eggs; however, some people may not develop symptoms. Literature review shows cerebral schistosomiasis is more common in the forms caused by Schistosoma Japonicum. On the other hand, spinal Schistosoma involvement is more common with Schistosoma mansoni and Schistosoma haematobium. The diagnosis of cerebral schistosomiasis can be difficult. The aggressive diagnostic approach such as stereotactic biopsy remains the gold standard to confirm the diagnosis.

Key Words: Cerebral Schistosomiasis ; Neuroschistosomiasis; bilharziasis;

167

Unraveling a Rare Case of Filarial Orchitis: A Case Report

Baqer MW*¹, Alshammaa A¹, Alkandari M²

¹ Kuwait Institute of Medical Specialization (KIMS), Kuwait, ² Department of Histopathology, Farwaniya Hospital, Kuwait

CASE REPORT

Background:

Filariasis is a tropical parasitic disease caused by a chronic mosquito-borne infection. Affected individuals can present after years of harboring the parasitic worms, and commonly suffer from lymphedema affecting the lower limbs. However, it can rarely manifest in the scrotum, constituting diagnostic difficulties. This case report details a unique presentation of scrotal filariasis to enhance understanding of this rare clinical manifestation.

Case Summary:

A 56-year-old Indian male, a known case of diabetes mellitus, presented with erythema of the scrotal area in association with pus and necrotic tissue. Laboratory blood tests were within normal limits and blood cultures were negative. An ultrasound study of the scrotal area showed diffuse scrotal wall inflammatory process with left scrotal wall abscess formation, as well as bilateral evidence of epididymo-orchitis and funiculitis. The patient received antibiotic therapy and underwent multiple incision and drainage procedures with only modest improvement. The left testis was surgically removed, and grossly showed a rough outer surface partially covered by purulent exudate. Sectioning revealed a variegated surface with residual viable testicular tissue. Histologic sections displayed extensive fibrinopurulent inflammation and fibrosis involving the tunica albuginea and surrounding soft tissue. The testis showed acute on chronic suppurative orchitis with prominent vasculitis, involving small, medium, and large vessels. There was a focal area showing granulomatous inflammation with central abscess formation containing degenerating larval helminthic organisms suggestive of filaria nematode (*Wuchereria bancrofti*).

Conclusions:

Filariasis is a helminthic infection that is endemic in tropical and sub-tropical areas. Although the typical presentation is lymphedema, it can rarely cause testicular infections. Thick peripheral blood smears are usually performed to diagnose filariasis by demonstrating microfilariae. However, a granulomatous testicular inflammation, seen histologically, in a patient who resided in an endemic area should raise suspicion of filarial orchitis and prompt a thorough microscopic examination.

Acknowledgement:

I would like to thank the Pathology Department in Farwaniya Hospital for allowing me to present this rare case.

Key Words: Filariasis; Granuloma; Testis;

Light Chain Proximal Tubulopathy As The First Indicator Of An Underlying

Hasuneya M ^{1,2}, Al Taleb A ¹²

¹Department of Histopathology, Mubarak AL Kabeer Hospital, Kuwait;

²Kuwait Institute for Medical Specialization (KIMS)

CASE REPORT

Background: Monoclonal gammopathies and plasma cell neoplasms, including multiple myeloma, are associated with multiple renal complications. These include amyloidosis, cast nephropathy, light/heavy chain deposition disease and light chain proximal tubulopathy. Light chain proximal tubulopathy (LCPT), is rarely reported and is caused by accumulation of non-crystalline and rarely crystalline deposits of monoclonal light chains in the cytoplasm of proximal tubular epithelial cells. LCPT is reported in less than 5% of monoclonal gammopathy-associated kidney diseases but the exact incidence is still unknown. The clinical presentation of LCPT includes acute or chronic kidney injury, Fanconi syndrome and proteinuria. Herein, we present this rare form of monoclonal light chain associated renal injury in a 47-year-old woman who presented with renal impairment, proteinuria and microscopic hematuria. Histopathologic evaluation of her kidney biopsy suggested LCPT; therefore, further investigations were performed, and the diagnosis of an underlying multiple myeloma was reached.

Case Summary: A 47-year-old woman known case of type 2 DM, dyslipidemia, hypothyroidism, and renal impairment of 2 years duration presented with nephrotic range proteinuria and microscopic hematuria. Immunology workup was normal. Ultrasound revealed normal sized kidneys with (Grade 1) nephropathy. A kidney biopsy was obtained and histopathological evaluation identified 16 glomeruli, of which 5 were globally sclerosed. Segments of the proximal tubular cells display abundant coarse eosinophilic granules that have a peculiar fuchsinophilic appearance by Masson trichrome stain. In addition, there was associated acute tubular injury. Moderate interstitial fibrosis and tubular atrophy was also noted. Arterioles were moderately sclerotic with hyaline changes. Immunostains were negative for glomerular deposits by IgG, IgA, IgM, C3 and C4d, while staining for kappa and lambda light chains revealed kappa light chain restriction. Further work up for this patient including bone marrow biopsy supported the diagnosis of multiple myeloma.

Conclusion: Since LCPT is a rare form of renal disease associated with dysproteinemias and possible underlying hematolymphoid neoplasm, diagnosing this entity has significant diagnostic and prognostic implications. Therefore, pathologists should have high index of suspicion for this subtle, yet significant, diagnostic clue, as it may uncover an underlying potentially manageable dysproteinemia/hematolymphoid neoplasm.

Key Words: Light chain proximal tubulopathy (LCPT); multiple myeloma ; kappa and lambda light chains;

Pathology

169

Multiple Splenic Epithelial Cysts: A Rare Presentation

Jamil M*, Arora R

Department of Histopathology, Farwaniya Hospital, Kuwait.

CASE REPORT

Background: Splenic cysts are very rare occurrences in clinical practice. They usually present with non-specific symptoms like dull abdominal ache & nausea or are discovered as incidental finding on imaging studies.

Case summary: Here we report a case of young male, aged 20 with enlarged spleen with multiple cysts which was discovered incidentally on abdominal ultrasound. It was clinical diagnosed as hydatid cyst which was further ruled out on negative serology. The case was then confirmed by histopathology as epithelial cyst.

Conclusion: Splenic cyst can be classified as parasitic cysts and non-parasitic cysts. Non-parasitic cysts are further divided into primary and secondary (pseudo) cysts. Primary cysts of spleen are also called true cyst, congenital cysts, epidermoid cysts or epithelial cysts. Secondary cysts develop mostly post traumatic.

Key Words: Multiple splenic cysts; Epithelial splenic cyst ; Splenic cysts;

170

Rénal And Hepatic Hydatid Cyst Presenting As Anaphylactic Shock: A Case Report

Indushekar V*, Mohana Al M, Annie S, Mohammed T
Department of histopathology, Jaber Al Ahmad hospital

CASE REPORT

Background

Hydatid disease is a parasitic infection caused by the larval stage of the Echinococcus tapeworms and commonly involves the liver, less frequently the lungs and kidneys are a rare location. Renal hydatid cysts are seen in around 2%-4% of total cases. The kidney is the most commonly affected organ in the urinary tract. However, reports on renal hydatid disease are limited in the literature. Herein we report a case of renal and hepatic hydatid cyst in a 62-year-old male patient, presented to emergency with hypotensive shock and anaphylaxis

Case summary

A 62-year-old male patient presented to emergency with hypotensive shock. He was resuscitated and started on IV steroids, albendazole 400mg BD after the radiological investigations showed a large left renal cystic lesion with surrounding reactive changes in favor of rupture of renal hydatid cyst and right hepatic cyst. Serology was also mildly positive for Echinococcus Multilocularis. Once the patient was hemodynamically stable he underwent left radical nephrectomy and partial right hepatectomy, grossly left kidney (22*16.5*8 cm) cut surface showed a large cyst with multiple daughter cysts with typical appearance of a tender coconut. On microscopy both these lesions show cyst wall made up of outer laminated membrane, inner germinal membrane with multiple foci showing scolices with hooklets and daughter cysts bordered by granulomatous inflammation.

Conclusion

Initial presentation of renal hydatid cyst as anaphylactic shock due to rupture remains a rare presentation in the above case with kidney also as one of the rarest sites. Histopathology is the gold standard for diagnosis aided by positive serology and CT imaging. High clinical suspicion is required for an accurate diagnosis and timely management.

Key Words: Hydatid cyst; Shock; Renal ;

Pathology

171

Hidden Identity: Unmasking follicular dendritic cell sarcoma mimicking squamous cell carcinoma in the tonsil

¹Shamsuddin F, ² George SA, Alyouha N, ⁴Alali B

^{1 2} Histopathology department, Jaber Al Ahmad hospital; ^{3,4}Head and Neck surgery department, Jaber Al Ahmad hospital

CASE REPORT

Background:

Follicular dendritic cell sarcoma (FDCS) is an uncommon neoplastic proliferation of spindled to ovoid cells with morphologic and immunophenotypic features similar to normal follicular dendritic cells. While most cases arise from lymph nodes, at least one-third occur in extranodal sites like tonsil. A broad differential diagnosis can be developed, as the tumor morphology resembles other tumors, creating a diagnostic pitfall. But, its immunophenotypic profile is quite specific and is diagnostically crucial.

Case summary:

A 55-year-old male patient presented with progressive dysphagia and weight loss. CT neck revealed a large oropharyngeal lesion infiltrating the right tonsil, uvula, and soft palate. Initial biopsy and later excision specimens were examined. Histopathology revealed ulcerated squamous epithelium overlaying a tumor with syncytial sheets of epithelioid and spindle-shaped cells, multinucleate forms, and extensive necrosis. Initial panel of Immunohistochemistry (IHC) ruled out epithelial and melanocytic neoplasms creating a diagnostic dilemma. Further panels of IHC confirmed CD21 and CD23 positivity, leading to the diagnosis of FDCS.

Conclusion:

Our case underscores the need to consider rare entities like FDCS when encountering tonsillar neoplasms. In the right context, a high index of suspicion is required in the diagnosis of FDCS and should be seriously considered when there is an unusual appearing cytokeratin-negative, S100 negative undifferentiated epithelioid/spindle cell neoplasm. Our findings contribute to the growing body of literature on extranodal FDCS and its diagnostic challenges.

Acknowledgement:

I am grateful to the Head of Department and the technicians with whom I have had the pleasure to work with during this project.

Key Words: Follicular Dendritic Cell Sarcoma; Tonsillar Neoplasms; Immunohistochemistry (IHC);

172

Role Of Exfoliative Pleural Fluid Cytology And Immunocytochemistry In The Diagnosis Of Pleural Malignant Mesothelioma: A Case Report.

Pathan SK* ¹; Mothafar FJ ³; Al Rashedi B ⁴; Abdullah HA⁵; Kapila K^{1, 2}.

¹ Department of Cytopathology, Mubarak Al-Kabeer Hospital, ² Department of Pathology, Faculty of Medicine, Kuwait University, ³ Department of Histopathology, KOC-Ahmadi Hospital, ⁴ Department of Pulmonology, KOC- Ahmadi Hospital, ⁵Department of Radiology, KOC-Ahmadi Hospital, Kuwait.

CASE REPORT

Background: Malignant mesothelioma is the most common primary tumor involving the pleura. Unfortunately, it also poses the greatest challenge for physicians to diagnose and treat. Latency from the time of initial asbestos exposure, clinical features of chest pain and dyspnea, radiographic findings of pleural effusion or pleural thickening are the presenting features. Pathological verification remains challenging. The differential diagnoses rests between reactive mesothelial cells Vs malignant cells and a metastatic tumor. Adequate tissue sampling is important for the diagnosis of malignant mesothelioma. Effective treatment is limited for most patients with malignant mesotheliomas, however a variety of new treatment modalities have changed the outcome.

We present a case of intrathoracic malignant mesothelioma diagnosed by imaging guided fine needle aspiration cytology (FNA) cytology and Immunocytochemistry (ICC). Case Summary: A 64-year-old man, smoker and known case of hypertension was admitted to Kuwait Oil Company (KOC) - Ahmadi Hospital with CT-scan finding of a right sided pleural effusion and pleural based large mass, suggestive of malignancy - malignant mesothelioma Vs metastatic adenocarcinoma. Imaging-guided pleural fluid was aspirated and sent for cytological examination. Cytospin smears showed tumor cells arranged in cohesive clusters, as well as dispersed singly having round to oval moderately pleomorphic nuclei, some with binucleation and some with multinucleation (with abundant dense cytoplasm). Cytoplasmic vacuolations were prominent.

ICC results showed, the tumor cells stained positive for CK 5/6, WT-1 and D2-40 and negative for CK-7, CK-20, Calretinin, TTF-1 and PSA were negative. A cytological diagnosis of malignant mesothelioma was rendered. The patient was referred to KCCC for further management.

Conclusion: Malignant mesothelioma can be difficult to diagnose on cytological and histopathological preparations. and is nearly untreatable. Asbestos exposure remains a major factor in the pathogenesis of this malignancy. Diagnosis requires recognition of patients at risk and knowledge of the clinical features of the disease. Adequate tissue sampling is important to permit accurate diagnosis. In absence of these features, immunocytochemical studies may be of help to arrive a diagnosis.

Key Words: Intrathoracic; Malignant Mesothelioma; Pleural fluid cytology;

173

Fine Needle Aspiration Cytology of Thymoma- A Diagnostic Dilemma

Sany PK* ¹; Bahiya HI ¹; Elhosiny MM ³; Kotb MM ³; Kapila K ^{1,2}

¹Department of Cytopathology, Mubarak Al- Kabeer Hospital ² Department of Pathology, Faculty of medicine, Kuwait University, ³ Department of Respiratory medicine, Mubarak Al- Kabeer Hospital.

CASE REPORT

Background: Thymic epithelial neoplasms are rare tumors that constitute the majority of anterior mediastinal masses. They are classified as thymomas, thymic carcinomas, and thymic neuroendocrine neoplasms. Thymomas show a significant degree of histological diversity and morphological overlap with extra-thymic tumors. Fine needle aspiration cytology (FNAC) of these tumours always poses a diagnostic challenge. However, FNAC with ancillary studies and radiologic findings, make a definite diagnosis. We present a case of thymoma which was highly challenging.

Case summary: A 53-year-old female on medication for diabetes, presented with dry cough for one month. She also complained of dysphagia and choking. The x-ray chest showed a wide mediastinum. CT chest showed a well-defined soft tissue mass at right paratracheal region (6.2x5.7x5.5 cm) abutting trachea, right bronchus inferomedially and SVC anteriorly. An endobronchial ultrasound (EBUS) guided FNA was performed on this mass. The smears from the lung mass showed predominantly small mature lymphocytes along with a mixture of spindled and epithelioid tumour cells. The cell block sections showed similar morphology. The immunocytochemistry showed majority of lymphoid cells to be positive for CD3, CD5, TDT and BCL2. CD20 highlighted few reactive B-lymphocytes only. The spindle and epithelioid tumor cells were strongly positive for pan-CK and p63. The paratracheal lung mass was diagnosed as a thymoma – features consistent with B1 subtype of thymoma, lymphocyte predominant subtype. The patient was referred to a specialized cancer centre for further molecular studies.

Conclusion: Thymoma is a rare tumor with an estimated incidence of 0.13 per 100,000 persons per year. It constitutes half of all anterior mediastinal masses. However, they can show a variety of morphologic features, causing diagnostic dilemmas. FNA coupled with clinicoradiological and immunocytochemical studies help in diagnosing primary and metastatic thymomas.

Key Words: Thymoma; EBUS-guided FNA; immunocytochemistry/ancillary studies;

174

Long QT Syndrome: Phenotypic and Genotypic Evidence to Upgrade 2 KCNH2 Variants of Unknown Significance with Calibrated Functional Patch-Clamp Assay

AlJassar RW^{*1}, Ebrahim MA², Ng CA^{3,4}

¹Seventh-year medical student, Faculty of Medicine, Kuwait University; ²Department of Pediatrics, Faculty of Medicine, Kuwait University; ³Victor Chang Cardiac Research Institute, New South Wales, Australia; ⁴School of Clinical Medicine, UNSW Medicine and Health, UNSW Sydney, Australia

CASE REPORT

Background:

Variations in more than 17 genes have been implicated in Long QT Syndrome (LQTS). Specifically, LQTS type 2 results from mutations involving the KCNH2 gene (hERG, human ether-a-go-go-related gene), which encodes for the pore forming alpha-subunit of cardiac K⁺ channel (Kv11.1). Most KCNH2 variants identified are classified as variants of unknown significance (VUS). Functional data using the calibrated automatic patch clamp (APC) assay aids in variant reclassification by demonstrating the functionality of variants of interest. In this report, we aim to show further evidence of pathogenicity for 2 KCNH2 variants not previously reported, using APC platforms.

Case Summary:

First case: The index case was a product of a consanguineous marriage, born with functional AV block due to very prolonged repolarization (> 600 msec) and bifid t waves. She had frequent Torsades de Pointes and was managed with dual chamber implantable cardiac defibrillator, bilateral sympathectomy, and medical treatment including nadolol. Her genotype confirmed homozygous mutation in KCNH2 [c.1819A>T (p.Ile607Phe)], labeled as VUS. Her family history is impressive with numerous sudden deaths. Her brother (asymptomatic and on nadolol) and mother (primary prevention ICD only) are both heterozygous for the same mutation. Second case: The proband is a 9-year-old male who presented with 2 episodes of fainting associated with seizures. The ECG showed sinus bradycardia with 550 msec QTc and bifid T waves. Genetic testing confirmed heterozygous KCNH2 mutation [c.1832 A>G (p.Tyr611Cys)], labeled as VUS. In terms of family history, the patient's paternal aunt was diagnosed with LQTS after presenting with sudden cardiac arrest. The father's ECG showed abnormal repolarization. Automated patch clamp assay: Both hetero/homozygous KCNH2-p.I607F and heterozygous KCNH2-p.Y611C stable HEK293 cells were generated to assess channel functions using an APC assay. There was a significant reduction in the current density for both variants described. The amount of reduction in both variants was significant and suggestive of a pathogenic mutation.

Conclusions:

We provided further evidence of the pathogenicity of both variants seen in these 2 families, using APC assay, and believe that those mutations should be upgraded towards pathogenicity.

Key Words: LQTS, Long QT syndrome, KCNH2; Calibrated automatic patch clamp (APC); Variants of unknown significance (VUS);

175

Methicillin Resistant Staphylococcus Aureus (MRSA) Hepatic Abscess In A Neonate: A Case Report And Literature Review

BinNakhi HA, Alfaiakawi HA, Ashkanani M, Elsayed Farara N
Departement of pediatric, Adan Hospital, State of Kuwait

CASE REPORT

Introduction:

Sepsis in newborn infants less than 28 days old continues as a leading cause of morbidity and mortality among infants. Although neonatal sepsis is common, pyogenic liver abscess in neonate is very rare. We hereby are reporting our experience of managing a full term healthy neonate who was admitted with fever to rule out sepsis and was found to have methicillin resistant staphylococcus aureus infection causing neonatal hepatic abscess.

Case Report:

A ten days old kuwaiti baby girl, product of full term caesarean delivery (due to previous caesareans), presented with history of fever, decreased feeding/activity and jaundice. Her birth weight is 2,7 kg, on admission she was very sick, febrile, with skin mottling, delayed capillary refill time, and hypotension. She was admitted to PICU treated as a case of septic shock without needing ventilation. Lab investigations revealed leukocytosis (WBC's 15 neutrophils 9), high CRP (128). Blood culture grows methicillin resistant staphylococcus aureus. Lumbar puncture revealed normal CSF findings and urine culture was normal. The baby was started on IV Claforan and vancomycin but continued to be lethargic and developed abdominal distension for which abdominal ultrasound (U/S) was performed and showed multiple micro-abscess lesions in both lobes of the liver. This was also documented by doing abdominal computed tomography (CT). Patient responded to IV Meropenem and Vancomycin which was continued for four weeks. Patient was evaluated by pediatric immunologist who excluded primary immune deficiency. Repeated abdominal CT confirmed the disappearance of the hepatic micro-abscess lesions.

Conclusion :

Hepatic abscess is a very rare complication of neonatal sepsis, particularly in a full term normal baby and especially if caused by methicillin resistant staphylococcus aureus infection. This case report highlights the importance of having high index of clinical suspicion of neonatal hepatic abscess especially in high risk neonate (preterm, immune compromised) . An ultrasound (US) scan and computed tomography (CT) of the abdomen are required to confirm the diagnosis of liver abscess in a sick newborn baby. Long term (3-6 weeks) IV antibiotic based on culture (C/S) results with serial repeated CT abdomen is the main line of management.

Key Words: Neonatal sepsis; methicillin resistant staphylococcus aureus infec; Neonatal hepatic abscess;

176

Salmonella Pyelonephritis in a healthy child: A case report and literature

Bin Nakhi HA, FRAJ RA, Amin HI

Department of Pediatrics, Al Adan Hospital, Kuwait

CASE REPORT

Back ground:

Although pediatric pyelonephritis is a common problem, Salmonella Urinary tract infection (UTI) is very rare (0.01% to 0.1%). Salmonella (gram-negative bacilli) is a cause of significant morbidity and mortality worldwide. Salmonella typhi infection cause mainly gastroenteritis. Non typhoidal Salmonella infection may cause invasive pyelonephritis especially in patients with genitourinary abnormalities and/ or immune deficiencies. We hereby are reporting Salmonella pyelonephritis in a healthy baby boy who had no gastroenteritis. Focusing on the clinical characteristics, and identifying the risk factors, with reviewing the management of such an infection.

Case report:

A healthy five year old Kuwaiti boy, presented with fever, abdominal pain, dysuria, frequency and urgency of urination of three days duration. There was no history of vomiting and or diarrhoea. He is a product of full term normal delivery to a non consanguinant parents, he is circumcised with no history of enuresis or constipation and this is his first time to have urinary symptoms. On examination: he was unwell with normal blood pressure and vital signs. He developed haematuria, and loin tenderness. Urine c/s reveiled salmonella, stool pcr salmonella positive, stool c/s negative, blood c/s negative. Pt received 10 days iv augmentin, 10 days rocephin and 10 days oral septrin based on urine culture / sensitivity result. Repeated urine culture was negative. Immunology screening test resulted normal. Renal ultrasound, MCUG, DMSA all normal.

Conclusion:

Salmonella UTI is rare in healthy children. Clinical presentation and findings resemble any other more common UTI. Childhood Salmonella UTI may not be proceeded or concurrent with enteric Salmonella infection. Clinicians have to be aware that structural abnormalities of the genitourinary tract and immune deficiency should be excluded in any child diagnosed with Salmonella UTI. Management of Salmonella UTI is not less than 14 days of proper antibiotic based on sensitivity pattern of the isolated cultured organism. Repeated urine cultures are necessary to ascertain of the Salmonella urinary tract infection has successfully been treated.

Key Words: Salmonella Urinary tract infection, ; enteric Salmonella infection; childhood pyelonephritis.;

177

A rare congenital Brucellosis re-emerging in Kuwait: Case Report

Al-Ayyadhi NH*¹, Shaimaa S. Al-Awadhi SS², Al-Shammari FJ³, Dr. Al-Hassan HA³

¹ Directorate of Public Health Ministry of Health, State of Kuwait; ² Public health department, AlAhmadi health Region, Ministry of Health; ³ Public health department, AlJahra health Region, Ministry of Health

CASE REPORT

Background: Congenital brucellosis (CB) is extremely rare due to acquired infection during the perinatal period. CB can be transmitted vertically across the placenta from a mother with bacteremia or through contact with maternal blood, urine, or genital secretions during childbirth. CB affects approximately 2% of the newborns exposed to brucellosis in utero. Infected newborns may have low birth weight, failure to thrive, jaundice, hepatomegaly, splenomegaly, difficulty breathing and general symptoms of sepsis. Despite endemic nature of brucellosis in Kuwait, cases of CB are extremely rare as the only and last confirmed case reported in 1994.

Case summary: Full term premature boy born to a 29-year-old asymptomatic G2P1, spontaneous vaginal delivery admitted to NICU & intubated for low weight for gestational age (2.3 kg), respiratory distress, meconium aspiration, intrauterine growth retardation & poor suckling, thrombocytopenia, high C reactive protein sepsis was suspected, treated empirically with antibiotics Ampicillin & Gentamycin then changed to Gentamycin & Cefotaxime for 7 days. The mother had hyperpyrexia few hours after delivery, septic workup showed positive Brucella standard agglutination test. The mother had history of one abortion, used to drink raw camel & cow milk and some of her relatives had history of brucellosis. She was treated with Doxycycline and Rifampicin for 6 weeks. Blood culture for the mother was negative after 7 & 14 days but blood culture for the baby showed presumptive brucella species grown. Antibiotics changed to Rifampicin & Ciprofloxacin for 6 weeks, discharged after 2 months. Parents missed many follow up appointments, show up at age of 5 months. The baby has failure to thrive: weight 4.3kg, height 58cm (below 5th percentile on growth chart), head circumference 41.5cm. Also, has abnormal features in the form of deep infraorbital ridges, sloping forehead, rotated ears and microretrognathia. MRI showed dorsal scoliosis with convexity to the right with multilevel dorsal vertebra deformities with fusion and segmentation anomalis in the form of DV5 & DV9 butterfly vertebrae and supernumerary vertebra with DV12, associated with accessory rib.

Conclusion: CB is a rare disease should be suspected in critically ill newborns. pediatricians should remain vigilant in patients living in endemic areas, getting detailed medical history is important pillar for diagnose and in-time treatment

Key Words: Congenital brucellosis; malformations; Brucella Treatment ;

Surgery

178

Management of recurrent colostomy prolapse by Laparoscopic Enteropexy for Prolapsing Stoma (LEPS) technique; case report

Athary Saleem, Abrar Alawadhi, Mohammad Almarri, Sarah Al Safi, Ahmed

Department of General Surgery, Al-Adan Hospital, Kuwait, Department of Surgery, Faculty of Medicine, Kuwait University, Kuwait

CASE REPORT

Background: Stoma prolapse is a well-known complaint following colostomy or ileostomy that can be reduced by either conservative and/or surgical approaches.

Presentation: A 46-year-old male patient who developed colostomy prolapse as an early postoperative complication. The first episode occurred 4 days following the creation of a temporary loop colostomy to allow the initiation of neoadjuvant chemoradiotherapy for an obstructive locally advanced rectal cancer. The prolapse was associated with incarceration which was not amenable for bedside reduction. This was managed by loop colostomy revision into an end-loop colostomy. Two weeks later, a repeated episode of incarcerated colostomy prolapse occurred. This episode was managed, using Laparoscopic Enteropexy for Prolapsing Stoma (LEPS) technique. The postoperative period, two days, was uneventful and no evidence of recurrence occurred to date.

Discussion: temporary colostomy prolapse with acute incarceration is a highly challenging event that requires innovative intervention. Usually, it is considered a late complication in contrast to our case where the patient presented with prolapsed colostomy as an early complication. The surgical options to manage the colostomy prolapse can be either local and/or intra-abdominal techniques.

Conclusion: LEPS is a valid approach to managing prolapsed stoma that has been formed as a temporary bridge to definitive surgery. It is a simple low-risk procedure that allows fast recovery so patients can proceed with further treatment plans.

Key Words: Colorectal carcinoma; Prolapse; LEPS;

Surgery

179

Rare emergency case of bowel ischemia as a result of diabetic ketoacidosis complication; A case report and literature review of an unusual entity

Athary Saleem, Saqer Alenezi, Jumana A Ifadhli, Fahad Alhammadi, Maher Hassan, Khaled Alshammari
General Surgery Department, Al-Adan Hospital, Kuwait

CASE REPORT

Introduction and importance: Diabetic ketoacidosis (DKA) is a life-threatening situation that if inadequately managed, is related to high fatality risk. It is associated with mesenteric ischemia that necessitates early detection and intervention to enhance the prognosis for mesenteric ischemia.

Case presentation: A 58-year-old male patient presented to our hospital with severe generalized abdominal pain, vomiting, and polyurea. On admission, he was newly diagnosed with diabetes mellitus type II (DM II) which is complicated by DKA. Days later, his abdominal pain worsened, and bowel obstruction was confirmed by both X-ray and ultrasonography of the abdomen. Due to the deterioration in the patient's clinical condition, an emergent diagnostic laparoscopy was decided which was followed by an open laparotomy with bowel resection of the detected dilated and ischemic bowel loops. The resected specimens, including small bowel and peritoneal wall mass, were sent for histopathological studies. Three re-look laparotomies were also performed, and the postoperative period was uneventful.

Clinical discussion: Intestinal ischemia is a rare complication of DKA. Bowel ischemia can be either occlusive or nonocclusive mesenteric types. It is clinically manifested by abdominal symptoms in diabetic patients. Evaluation is mainly by abdominal computed tomography (CT) and the main treatment approach is laparoscopy and/or laparotomy in combination with resection of the affected bowel loops.

Conclusion: In our case report, we document an additional unusual case of intestinal ischemia and necrosis as a DKA consequence, in a recently diagnosed DM II patient, as one of the few non-occlusive mesenteric ischemia causes.

Key Words: Diabetic ketoacidosis; Bowel ischemia; non-occlusive mesenteric ischemia;

Surgery

180

Management of unusual complications of modified rhomboid/Limberg procedure by interventional radiology guidance; A case report and

Athary Saleem a, Saqer Alenezi, Ali Alenezi, Omar Alhajri, Fahad Alabdulghani, Ahmed Alkhamis
Department of General Surgery, Al-Adan Hospital, Kuwait

CASE REPORT

Background: Fragmentation of the surgical drain is an unusual negative consequence of using a drainage system postoperatively. Even though it is rare, multiple management approaches were documented in the literature.

Case presentation: A 19-year-old male patient who had a history of recurrent pilonidal sinus disease that was operated on twice 4 months apart. He presented to our hospital for postoperative follow-up, during which the inserted drain was assessed. While withdrawing the drain, part of it was damaged and missed. The location of the misplaced drain was assessed by a lumbosacral region computed tomography (CT) scan. The decision was made to proceed with less invasive methods using interventional radiology techniques to avoid wide excision and incision reopening complications and prolonged healing time. A fluoroscopy procedure was performed to create three-dimensional anterolateral, frontal posterior views. Then the fragmented drain was retrieved successfully by a minimally invasive technique. The postoperative period was uneventful.

Discussion: Drain fragmentation and/or dislodgement is a highly challenging event that requires highly innovative intervention. Multiple treatment options are available as open surgery techniques and endoscopic approaches.

Conclusion: This case highlights the potential role of fluoroscopy as an outstanding effective choice that could be carried out promptly and safely at the bedside under local anesthetic and reduce the patient's hospital stay.

Key Words: Pilonidal sinus disease; Drain fragment; Limberg procedure;

181

Pyogenic hepatic abscess formation after Roux-en-Y Gastric Bypass; A case report and literature review of an infrequently encountered postoperative complication

Athary Saleem, Saqer Alenezi, Nimer Al-Shadidi, Khaleel Mohammad
General Surgery Department, Al-Adan Hospital, Kuwait, Kuwait Hospital, Sabah Al Salem, Kuwait

CASE REPORT

Introduction and importance: Pyogenic liver abscess (PLA) is an uncommon postoperative complication of Roux-en-Y Gastric Bypass (RYGB). Radiological investigations such as Abdominal ultrasonography (USG) and computed tomography (CT) are crucial to evaluate and diagnose intra-abdominal abscesses, especially hepatic collections.

Case presentation: A 66-year-old female patient with multiple comorbidities, including Urticaria requiring monoclonal antibody therapy (Humera). She underwent an uneventful RYGB to treat her weight regain and reflux after a prior sleeve gastrectomy, and presented with diffuse abdominal pain. This occurred on postoperative day 23 after the patient was discharged home. Patient evaluation was initiated by physical examination, laboratory investigations, and radiological diagnostic tools. Chest and abdominal X-rays together with abdominal ultrasonography were unremarkable. Then, abdominal Computed Tomography (CT) scans with IV contrast were done, and a liver abscess was detected. Image-guided percutaneous transhepatic liver abscess drainage through pigtail drain placement was performed. The patient's response was evaluated by serial abdominal CT scans. The liver abscess was successfully treated by percutaneous drainage for 5 weeks and IV antibiotic therapy.

Clinical discussion: PLA is a rare entity that might occur after gastro-intestinal surgery such as Roux-en-Y Gastric Bypass. Patients with a history of immunosuppressive therapy may be at increased risk of this complication. This life-threatening complication can be prevented by treating liver abscesses early on by utilizing imaging-guided drainage and intravenous antibiotics.

Conclusion: Due to the unusual etiologic origin of hepatic abscess post-RYGB, we report the case of a 66-year-old female with diffuse abdominal pain, which was found to be caused by PLA.

Key Words: Liver abscess; Roux-en-Y Gastric Bypass; Percutaneous drainage;

182

Multiple abdominopelvic abscesses caused by fishbone: A case report of rare etiology and literature review

Athary Saleem, Saqer Alenezi, Seddeqah Abdulbaqi, Anas Saud, Nimer Al-Shadidi
Department of General Surgery, Al-Adan Hospital, Kuwait

CASE REPORT

Introduction and importance: Foreign body ingestion, particularly fishbone, is a prevalent medical complaint in the emergency department. Usually, these foreign substances pass through the gastrointestinal tract without causing any complications. The clinical manifestations of foreign body consumption are non-specific.

Case presentation: A 32-year-old male patient presented to our hospital with severe abdominal pain. Physical examination revealed a distended abdomen and tenderness. Plain chest and abdominal X-rays were unremarkable. The performed computed tomography (CT) of the abdominopelvic region showed multiple abscesses. Then, an exploratory laparotomy was decided during which a foreign body, a fishbone, was detected and the affected omental mass was resected, and abscess drainage was done. The resected specimen was sent for histopathological studies. The postoperative period was uneventful.

Clinical discussion: Perforation of the intestinal wall by fishbone ingestion is an unusual entity. The clinical features of intestinal perforation are usually non-specific resulting in delayed diagnosis. Based on individual situations, the treatment strategy can be surgical or non-surgical. **Conclusion:** Even though ingesting a foreign body is a frequent complaint in clinical practice, its repercussions are extremely rare. Our case presented multiple intra-abdominal abscesses and perforation as a complication of accidental fishbone ingestion.

Key Words: Abdominopelvic abscess; Perforation; Foreign body;

Surgery

183

Giant multinodular goiter with Grave's disease associated with retrosternal extension; A case report of thyroid-related emergency

Athary Saleem, Fatma Albloushi, Abdullah Jamal, Fahed Alajmi, Ali Alenezi, Odai Al Shdifat, Maher Hassan, Bashayer Al Kandari

General Surgery Department, Al-Adan Hospital, Kuwait

CASE REPORT

Introduction and importance: Although huge multinodular goiter is a common underlying etiology of hyperthyroidism, retrosternal extension occurs only in up to 7% of instances. Giant goiter is an unusual phenomenon that creates surgical challenges.

Case presentation: A 48-year-old female, with a background history of Graves with toxic multinodular goiter, presented with a two-day history of tachycardia and new onset of atrial fibrillation. On admission, the patient had an enlarged diffused neck mass associated with mild dyspnea and no evidence of other compressive symptoms. The patient has a seven-year history of thyrotoxicosis that was managed by medical treatment. The diagnosis of huge multinodular goiter and Graves' disease was confirmed by laboratory investigations and both ultrasonography and computed tomography (CT) of the neck. Then, the patient's recent presentation necessitates the performance of a total thyroidectomy to manage the emergency situation. The resected specimen was sent for histopathology studies and the postoperative period was uneventful.

Clinical discussion: Giant goiter with retrosternal extension is rarely reported by physicians. The clinical manifestations of huge goiter include compressive symptoms and/or thyroid dysfunction. Diagnosis of goiter relies on imaging modalities. Neck CT was used to diagnose the majority of cases. Total thyroidectomy provides the definitive treatment of massive multinodular goiter.

Conclusion: Because long-term huge goiter is a life-threatening condition, we highlight a case of a 48-year-old female patient who presented with a massive thyroid goiter and Graves' disease that was found to require total thyroidectomy to manage the clinical features.

Key Words: Graves' disease; Huge goiter; multinodular goiter;

Incidence of Second Primary Malignancies Following Thyroid Cancer Treatment with Radioactive Iodine

Dr Adullah Al Futaisi

College of Medicine and Health Sciences, Sultan Qaboos University

Introduction:

Background: Thyroid cancer is the most common endocrine malignancy, with an increasing incidence globally and in Oman. The standard treatment for differentiated thyroid cancer (DTC) involves radioactive iodine (RAI). However, previous studies have suggested that RAI treatment may increase the risk of second primary malignancies (SPM). Despite the high incidence of thyroid cancer in Oman, to our knowledge, there are no published reports on the association between RAI treatment and the risk of SPM in Oman.

Objective: There is a lot of debate about the possibility of developing SPM in DTC patients after treatment with RAI. This research aimed to evaluate the incidence and estimate the risk of SPM in thyroid cancer patients treated with RAI.

Methods:

A retrospective cohort study was conducted at Sultan Qaboos University Hospital (SQUH) for 500 DTC patients who received RAI treatment between January 2007 and December 2017. We collected patients' information, including gender, age at diagnosis, thyroid cancer subtypes, site of SPM, cumulative RAI doses, and follow-up period. Descriptive statistics and logistic regression were used to analyze the data. SPM was defined as a new malignancy diagnosed at least one year after the first RAI dose.

Results:

The mean follow-up period was 9.5 ± 3 years (range 5.1-15.8). During this period, four patients (0.8%) developed SPMs, all with the papillary subtype. The sites of the SPMs were the colon, bladder, breast, and liver. We found age at diagnosis to be a significant predictor of the occurrence of SPMs ($p = 0.02$).

Conclusions:

The incidence of SPMs in patients with thyroid cancer treated with RAI is low, and age at diagnosis was found to be the only significant predictor of SPM occurrence. These findings suggest that RAI treatment is safe and does not significantly increase the risk of developing SPM.

Key Words: radioactive iodine; second primary malignancy; thyroid cancer;

Funding Agency: none

Impact of Maternal Body Mass Index on Maternal and Perinatal outcome

Al-Omairi. AM

Department of Obstetrics & Gynecology, Student of medicine, Sultan Qaboos University

Introduction:

Objectives: The increasing rate of obesity among women of reproductive age provides a major challenge since maternal obesity can result in negative outcomes for both women and fetuses. The aim of the study is to estimate the impact of high maternal body mass index on maternal outcomes among women who delivered at Sultan Qaboos University Hospital (SQUH) in Oman. It showed how maternal obesity is strongly associated with many obstetric complications, hence focusing the attention on the importance of weight loss to prevent pathological outcomes.

Methods:

This retrospective cohort study included four hundred pregnant Omani women, who delivered a singleton newborn at 22–42 weeks of gestation in the period from January 1st, 2018, to December 31st, 2019, at SQUH. All patient's data including demographic information (age), weight, height, body mass index, and maternal outcomes were extracted from the hospital information system (TrackCare), and delivery registers from the hospital. Pregnant women were classified according to their pre-pregnancy or first trimester body mass index into groups following World Health Organization categories. Maternal outcomes were compared between normal weight and obese pregnant women.

Results:

Obese women had a significantly increased risk of gestational diabetes (relative risk [RR]: 2.85; 95% confidence interval [CI]: 2.02-4.02; P-value < 0.0005), gestational hypertension (RR: 4.21; 95% CI: 2.44-7.30; P-value < 0.0005), induction of labor (RR: 2.00; 95% CI: 1.43-2.78; P-value < 0.0005), third and fourth perineal tears (RR: 6.50; 95% CI: 1.49-28.43; P-value = 0.008), instrumental delivery (RR: 2.15; 95% CI: 1.15-4.04; P-value = 0.021), cesarean delivery (RR: 3.71; 95% CI: 2.25-6.10; P-value < 0.0005), and postpartum hemorrhage (RR: 3.70; 95% CI: 1.90-7.23; P-value < 0.0005).

Conclusions:

Our findings indicate that maternal obesity had a significantly increased risk of different maternal antenatal, intrapartum, and postpartum complications such as gestational diabetes, gestational hypertension, postpartum hemorrhage, and caesarean delivery.

Key Words: Maternal ; women ; weight ;

Funding Agency: none

Green chemistry and its implementation in pharmaceutical analysis

*Al-Shatti BJ^{1,2}, Alsairafi ZK³, Al-Tannak NF⁴

¹Mubarak AlKabeer Hospital, Ministry of Health, Jabriya, Kuwait, ²Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Kuwait University, Kuwait City, Kuwait. ³Department of Pharmacy Practice, Faculty of Pharmacy, Kuwait University, Kuwait, ⁴Acting Chair, Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Kuwait University, Kuwait City, Kuwait.

Introduction:

The expanding progression of industrial development was a pioneer for world economic growth. Green chemistry has been defined as the employment of techniques and methodologies that reduce or eliminate the use or production of feedstocks, products, by products, solvents, and reagents that are harmful to human health or the environment.

Methods:

The quality-by-design approach is well known in the pharmaceutical industry, and it has a great influence on analytical methods and procedures. In the green method of chemistry, the core consideration is directed towards the design of a material or the chemical procedure; four of twelve principles are associated with design, e.g, designing fewer hazardous chemical syntheses, designing harmless chemicals and products, designing for energy effectiveness, and designing for degradation.

Results:

One of the most active fields of research and development in green chemistry is the establishment of analytical methodologies, leading to the beginning of so-called green analytical chemistry.

Conclusions:

The influences of green chemistry on pharmaceutical analysis, the environment, the population, the analyst, and companies are discussed in this review, and they are multidimensional. Every selection and analytical attitude have effects both in the end-product and everything that surrounds it.

Key Words: Green chemistry; Clean chemistry; Pharmaceutical analysis;

AUTHOR INDEX

- Ahmed M Alzahrani 109
 Abahussain EA 135
 Abdallah E 93
 Abdallah OY 127
 Abdel-Moneim As 80
 Abdelmoteleb A 93
 Abdelzaher A 93
 Abdrabalameer AH 140
 Abdulaziz Alsuhaim 131, 132
 Abdulaziz altala 131, 132
 Abdulaziz Alzalalah 99
 Abdulaziz NE Sokhn E 85
 Abdulaziz Samandar 131, 132
 Abduljalil El Sibai 71
 Abdulkarim B 45
 Abdulla A 73
 Abdullah Addar 142
 Abdullah Al-Qahtani 44
 Abdullah Althagafi 131, 132
 Abdullah Jamal 183
 Abdulsalam M 65
 Abed BS 10, 26
 Abedalqader T 139
 Abeer A Al-Masri 72
 Abodief W 166
 Abrar Alawadhi 178
 Abu Salim Mustafa 24, 150
 Abualenain JT 139
 Abutalib M 163
 Adekile AD 95, 116
 Adel Kalou 71
 Ahmad FS 33
 Ahmad R 17
 Ahmad S 74, 77, 78, 161
 Ahmed Alkhamis 178, 180
 Aisha Albouloshi 96
 Akhtar S 23, 27
 Akram M Asbeutah 51
 Al Aboud DM 80
 Al Baloushi A O 118
 Al Haqqan AM 85
 Al Mansoor S 100
 Al- Mulla AO 38
 Al Ozairi E 49
 Al Taleb A 168
 Al-Abboh H 116
 Alabdulkarim AO 140
 AlAbraheem Z 35
 Al-Adwani A 84
 Aladwani B 110
 Aladwani MM 158
 Aladwani NA 68
 Alajeel NA 135
 Alajlan AH 40
 Al-Ajmi AM 26
 Alajmi HM 113, 153
 Alajmi HS 136
 Al-Ajmi MA 26
 Al-Ajmi R 87
 Alajmi SE 113
 Al-Ali A 45
 Alali AA 62, 63, 64, 65
 Alali B 171
 Alali M 46
 AlAlqam FB 40
 Alamri SA 66
 Alanazi AM 16
 Alanazi MM 16
 Alanazi SF 16
 Alansari B M 134
 Alanzi AF 68
 Alasousi DH 11
 Alassiri AK 141
 Alatar F 87
 Alatar FA 89
 Al-Ateeqi S 137
 Al-Awadhi 123
 Al-Awadhi A 6
 Alawadhi AA 32
 Alawadhi E 138
 Al-Awadhi RM 5
 Alawadi AM{1} 114
 Alawwad D 27
 Al-Ayyadhi NH 177
 Alazemi FY 68
 Alazmi RM 59
 AlBader MD 130
 Albaloul G 2
 Albalwan AS 43
 Albano R 94
 Albash B 114, 154
 Al-Batineh AN 28
 AlBazali A 161
 Albert MJ 86
 Albeshir M 62
 Alboraie M 64
 Al-Dalmani MA 28
 Aldawsari WA 140
 Aldhafiri DA 97
 Aldharman S 42
 Al-Dousari AM 28
 Aldousari L 165
 Aldowaisan R 82
 Aleid AM 40
 Aleinati GT 113, 162
 Al-Elaewah A 65
 Al-Enezi AF 26
 Al-Enezi R 117
 Alenezi RT 68, 68
 Al-Enezi RT 115
 AlFadhli S 47
 Alfadhli YA 11
 Alfaifi MY 133
 Alfailakawi HA 175
 Alfaresy SA 110
 Alfoudiry MM 124
 Alfouzan W 74
 Al-Fouzan W 87
 Alfouzan WA 79
 Alfuhigi YM 43
 Alfuraih NT 36
 Alghamdi AS 80
 Alghamdi S 62

Al-Ghunaim E 65
 Alhaddad ME 46
 AlHaddad SK 61
 AlHalban FA 162
 Alharamlah FS 140
 Al-Harban AA 19
 Alharbi OM 66
 Alharbi ZA 16
 Alharmi J 100
 Al-Hashemi M 143
 Alhashime KM 30
 Alhassani NF 140
 Al-Hassani S 143
 Alhawaj F 69
 AlHayyan WF 61
 AlHelal B 93
 Alhemaidani AM 16
 Al-Herz W 75
 Alhindi NI 66
 Alhumaidan NI 133
 Alhusayan M 54
 Al-Hussaini HA 10
 Ali AF 126
 Ali Al-Ali 44
 Ali Alenezi 180, 183
 Ali H 46
 Ali H Alghamdi 109
 Ali H Ziyab 31
 ALI KA 34
 Ali N 50
 Ali NY 154
 Ali S 106, 108
 Alisher Agzamov 9
 Aljabri J 65
 Aljahdali E 62
 Al-Jarallah A 18, 23
 Al-Jarallah K 82
 Al-Jarba M 137
 AlJassar RW 162, 174
 Al-Jassim D 151
 Aljunid SM 58
 Alkadneri AM 33
 Al-Kafaji G 47
 Alkafeef S 13, 22
 AlKandari A 93
 Alkandari FA 32
 Alkandari H 57
 Al-Kandari H 49
 Alkandari J 7
 Alkandari M 167
 AlKandari O 93
 Alkandery NA 113
 Alkandery NF 97
 AlKazemi G 35
 Al-Khafaji MQ 140
 Alkhalifah AB 36
 Alkhalifah KM 133
 Alkhamis W 42
 Alkhawaja A 48
 Alkhudairy AI 149
 Al-Kindi S 116
 Allanqawi MJ 30
 Almadi MA 63
 Al-Mahmeed A 76
 Almajed YA 33
 AlMajran AA 95
 Almalki AS 140
 Almalki ZT 66
 Al-Mallah H 128
 Al-Mansour N 76
 Almari M 58
 Almatrafi S 40
 Almawash AN 133
 Al-Mazeedi S 143
 Almazyed DM 30
 Al-mesbah SN 38
 Almeskati HF 32
 AlMoosa AI 61
 Almoosa M 27
 Al-Mourgi M 133
 Almousa ZM 30
 Al-Msaileem SD 26
 Almulhim NA 40
 Almulla F 17, 50
 Al-Mulla F 49, 54
 AlMulla M 1, 2
 Al-Murshed M 112
 Almutairi BS 42
 Almutairi HR 133
 Al-Mutairi NF 29
 Al-Mutairi NH 29
 Al-Mutairi NM 77
 Almutairi R 27
 Al-Mutairi RB 28
 AL-Mutawa MW 12
 Almutiri WA 133
 Alnahwi ZA 140
 Alnefaie G 163
 Alnjaim NA 66
 Alobaid DA 67
 Alobaid K 161
 AlOmari Q 35
 Alonaizi LA 30
 Alonaizi M 17
 Al-Onaizi M 13, 14
 Alonaizi MA 11, 15, 67
 Al-Onaizi MA 10
 Alonaizi MA# 69
 Alotaibi HS 85
 Alotaibi N 4
 Alotaibi NA 140
 Alotaibi TA 133
 Al-Otaibi TM 28
 Alothman R 18
 Alosairi A 3
 Al-Ozairi E 7
 Alqaderi H 55
 AlQallaf A 93
 Alquraini SK 140
 Alrahal F 100
 AlRajab H 93
 AlRashdan FM 133
 Alrashed HA 43, 149
 AlRasheedi NA 20
 Al-Rashid EA 28
 Alrashidi D 27
 AlRashidi FT 20, 21
 Alrashidi RS 68
 AlRashied AJ 61
 Alrawashdeh HM 111
 Al-Romaiyan A 118
 AlRoomy MS 5

Alroughani R 48
 AlRoumi SS 30
 Alruwaili LD 43
 Al-Sabaan K 6
 Al-Sabah RA
 26
 Al-Sabah S 143
 Al-Sabeih KH 164
 Alsadat M 161
 AlSaeedi F 98
 Alsafi R 114
 Alsahli H 27
 AlSahow A 93
 Alsaiani SO 16
 Alsairafi ZK 111
 Alsakka MA 164
 Alsaleh H 50
 Alsaleh SK 133
 Alsannan B 100
 Al-Sarraf H 128
 Alshaiji AJ 30
 Alshaikh SA 149
 AlShalabi H 73, 90
 AL-Shamaa A 166
 Alshammaa A 167
 Al-Shammari FJ 177
 Alshammari FR 97
 Al-Shammari H 137
 Al-Shammari Jehan 137
 Al-Shammari MG 28
 AlShammari SS 162
 AlSharekh M 93
 Alsharhan H 57, 114, 154
 Alshatti BJ 111
 AlShatti NN 162
 Alshemali RK 59
 Alshemmari SF 59
 Alsuayri RA 141, 149
 Alsuhaime MA 66
 Alsulami OA 149
 Al-Sweih NA 85
 ALTALHI YA 80
 Altarraha D 13
 Altarraha DK 136
 Al-Temaimi R 45, 48
 Al-Thaferi RS 79
 Althobaiti NS 140
 Al-Turab M 84
 Alturaifi SA 33
 Alwehaidah MS 47
 Aly E M 118
 Alyahia AH 135
 Alyouha N 171
 AlYousef A 93
 Alzahrani A 42, 139, 139
 Alzahrani AA 42, 80
 Alzahrani MM 40
 Alzahrani W 139
 Alzaid F 13, 14, 15, 17, 69
 Alzaid FN 67
 Alzayed N 154
 Alzhrani A 139
 Al-Zufairi OF 26
 Amal Ayed 102
 Amin HI 176
 Anas Saud 182
 and Khan A 42
 Andrea Etrusco 102
 Annie S 170
 Antonio Simone Laganà 102
 Anwar AA 126
 Anwar Mohammad 53, 119
 Arora R 169
 Arshad Channanath 56
 Asadzadeh M 74, 78, 86, 161
 Asal Hobani 131, 132
 Asbeutah A 2
 Asbeutah AM 95
 Asbeutah SA 30, 95, 159
 Ashkanani M 175
 Athary Saleem 178, 179, 181, 182, 183
 Athary Saleem a 180
 Attar AF 66
 Awad AI 60
 Awad AK 141
 Awad MA 59
 Awada Z 138
 Awadh A 27
 Ayed M 117
 Ayed M5 57
 Ayed MK 115
 Azizieh F 75, 82
 Babiker AF 164
 Babiker F 18
 Bader Zimmo 41
 Bahbahani Y 46, 93
 Bahiya HI 173
 Bahl S 156
 Bamakhrama BA 66
 Bamakhrama K 62
 Baqays RT 141
 Baqer MW 167
 Barakat F 94
 Barakat RM 129
 Barkun AN 63
 Barron E 146
 Barry S 39, 151
 Barry Siobhan 152
 Bashayer Al Kandari 183
 Baskaradoss JK 36
 Bastaki H 33
 Bastaki L 46, 154
 Baydaa Alsannan 102
 Baydaa Alsnnan 101
 Bency John 44
 Benov L 22
 Bin Nakhi HA 176
 Bin Orayir L 139
 Bindayna K 76
 BinNakhi HA 175
 Binothman N 108
 Boily M 145
 Boswihi SS 89
 Böttcher J 145
 Boudreault J 108
 Boutaiban D 82
 Bouzabar MM 97
 Braysh K 13, 14, 15, 67, 69
 Burman M 145
 Chandrasekhar B 120
 Channanath AM 54
 Chaudhary NT 68

Chehadeh WF 5
 Chitra Vellapandian 122
 Christina Heyer 51
 Chun Hong Tang 142
 Clarke Lisa 152
 Dai M 108
 Dalia M Abouelfadl 121
 Dana Daboul 91
 Dannoon S 13
 Dashti M 49, 50, 54
 Dashti RH 32
 Deema AlAteeqi 91
 Dhaunsi GS 57
 Dilli MA 43
 Dow AW 60
 Dr Al-Hassan HA 177
 Dr Muawia Qudeimat 21
 Dsouza C 143
 D'Souza L 14
 Ebrahim MA 154, 174
 Ebram Shenoda 25
 Eiad Kseibi 71
 Elaf Hussain 103
 Elhosiny MM
 Eldesouqi SI 21
 Elnaggar MA 16
 Elsayed Farara N 175
 Elshawaf RI 114
 Elsherbiny ZM 157
 Eman Alazmi 103
 Emmanuel T Oluwabusola 125
 Esraa O Abdjlaber 144
 Essa S 82
 Ezzo AA 126
 Fadel Z 149
 Fadel ZT 66
 Fahad Alabdulghani 180
 Fahad Alhammadi 179
 Fahd Al-Mulla 51, 52, 53, 81, 155
 Fahd Al-Mulla 56
 Fahed Alajmi 183
 Faleh MN 141
 Fares Alhawaj # KAwthar Braysh Anwar Kandari
 Michayla Williams Fawaz Alzaid 70
 Faridoun A 35
 Fatemah Alatar 24
 Fatemah Bahman 81
 Fatma Albloushi 183
 Fatma Alrahal 101
 Fatmah alhadhoud 103
 Feryal Alali 131, 132
 FH 123
 Firas Kseibi 71
 FRAJ RA 176
 Frithjof Christian Küpper 125
 Gaber DM 127
 Gagan Preet 125
 Garashi AN 61
 Garret M 94
 George J 165
 George SA 171
 Ghadeer Aldallal 31
 Ghaith J 62
 Ghanem RA 61
 Goodacre CH 34
 Gouda EF 157
 Gupta R 116
 Hachim I 106
 Hadland Y 146
 Haidar MZ 57
 Halawani AA 66
 Halwani M A 160
 Hamad Ali 52, 53
 Hamam D 108
 Hana AL Harbi 9
 Hana Drobiova 81
 Hani A Alghamdi 109
 Hanin banjer 131, 132
 Hasan ML 157
 Hasuneya M 168
 Hawraa Alabdullah 31
 Hawsawi Y 163
 Hayes H 83
 Hemmo SI 111
 Hibili NH 149
 Hindi K 165
 Houriah Nukaly 41, 131, 132
 Huda Al Foudary 9
 Humoud HB 97
 Hussain A Safar 24
 Hussain MJ 32
 Ibrahim Albalawi 41
 Ibrahim D 138
 Ibrahim R 82
 Indushekar V 170
 Irshad M 7
 Jacob S 49
 Jacob T 17
 Jad Attari 71
 Jaffer R 145
 Jaghan Kumar 37
 Jamal WY 12
 James Alfred Fernandes 142
 Jamil M 169
 Jannat Alamoudi 41
 Jarkhi H 166
 Jarkhi HH 112
 Jihad Abubaker 51, 52, 53
 Jihad alharmi 103
 Jihad Alhermi 101, 102
 John B 45
 John SE 46, 54
 Joseph B 36
 Joud Albalool 25
 Jragh D 120
 Jumana Alfadhli 179
 Kadhém ZH 22
 Kalakh S 23
 Kalim S 117
 Kamal ZA 113
 Kandanath BM 92
 Kandari A 17, 69
 Kandari AH 83
 Kandari NA 33
 Kankouni MW 61
 Kapila K 45
 Kashif Aziz 150
 Katoue MG 60
 Kausar Ahmed 131, 132
 Kazem LM 32
 Kelly SL 74
 Khadadah 65

Khaja A 110
 Khajah MA 124
 Khaled Alshammari 179
 Khaled Hindi 144
 Khaleel Mohammad 181
 Khalid almusayen 103
 Khalifa E 163
 Khan Z 78
 Khanafer NA 15
 Khoder A 65
 Kholood Baron 8
 Kilarkaje N 129
 Kusum Kapila 44
 Lauren M Seaburg 51
 Laverdière C 145
 Lebrun JJ 108
 LebrunJJ 106
 Limmechokchai SU 34
 Loulwah Al Mulla 37
 Loutfi I 97
 Ludmil B 19
 Luesch H 123
 M A Sheikh 92
 Madi NM 84
 Maha M Hammad 119
 Mahadi A Bashir 109
 Maharshi S 64
 Mahdi GA 61
 Maher A 64
 Maher Hassan 179, 183
 Mahfouz WS 61
 Mahjari AA 149
 Mahmoud 104, 105
 Mahmoud F Sakr 147, 148
 Maisa Kamkar 150
 Maitham khajah 107
 Makhseed N 114
 Malik M 54
 Malik MZ 55
 Mallik MK 45
 Mamoun Al Qasser 150
 Manchanda Y 161
 Manee F 4
 Marcel Jaspars 125
 Mariam Aldarweesh 103
 Maribasappa Karched 91
 Martel M 63
 Martin JC 83
 Martineau PA 145
 Martins BC 63
 Marwa Alkhabaz 88
 Marwa E Shabana 121
 Marwa W Kamel 121
 Marwan Y 145, 146
 Maryam AlNaser 91
 Mashal B 93
 Masocha W 118
 Matar KM 126
 Mazroue A 93
 Md Zubair Malik 52
 Medhat Naim 51, 52, 53, 155
 Meis JF 74
 Metib Alotaibi 72
 Moamer A 108
 Moghnia OH 85
 Mohamed Abu-Farha 51, 52, 53
 Mohamed M Moussa 148
 Mohamed Tlayjeh 71
 Mohammad AA 33
 Mohammad Al-Ali 53
 Mohammad Almarri 178
 Mohammed Alhusayan 56
 Mohammed Dashti 56
 Mohammed Elfar 150
 Mohammed HY 85
 Mohammed T 170
 Mohana Al M 170
 Mohmmad Zayed 155
 Mokaddas E 73, 77, 86, 90
 Molla MM 159
 Moradi NS 30
 Mortada HH 66
 Mothafar FJ
 Mouihate A 128
 Moulder E 146
 Mousa Akkour 131, 132
 Moussa AM 12
 Mrinmay Kumar Mallik 44
 Muhammad Omair Sultan Meo 72
 Muhammad Zain Sultan Meo 72
 Muhandis SM 80
 Muir R 146
 Mustafa AS 79, 87, 89
 Mzahim B 42
 Nadeem Akhter 81
 Nafee N 127
 Najem R 17
 Naser AY 111
 Naser Hussain 51, 53, 155
 Nasser K 87
 Nawaf Alhindi 131, 132
 Nazar S 39, 151
 Nessim G 93
 Ng CA 174
 Nimer Al-Shadidi 181, 182
 Nizam R 49, 50, 54, 55
 Nourah Alotaibi 31
 Nukaly HY 40
 Nur AM 58
 Odai Al Shdifat 183
 Omaira A Ahmedy 121
 Omar Albouloshi 96
 Omar Alhajri 180
 Omar MS 156
 Omara NM 156
 Oriowo MA 120
 Parker JE 74
 Pathan SK ;;; Kapila K 172
 Pathan SS 85
 Paul VJ 123
 Peter C Harris 51, 155
 Pittayanon R 63
 Plas D R 94
 Ponomareva GV 159
 Porqueddu M 141
 Preethi Cherian 52
 Puja Kumari 125
 Qadoura B 57
 Qali MQ 38
 Qasem W 143
 Qasem WA 68
 Qureshi SK 115

Rabab H Sayed 121
 Rabeah Al-Temaimi 44
 Raghad Aldibane 41
 Raghupathy R 75, 82
 Raikos V 83
 Rainer Ebel 125
 Ramadan D 114
 Ramadan DG 154
 Rammal AA 62
 Rasheeba Nizam 52
 Rasheed Ahmad 81
 Razan Alsuayri 41
 Redzic Z 129, 130
 Reema Albalawi 41
 Renato Venezia 102
 Rishi Vachaspathy Astakala 125
 Saad M 93
 Saadallah A 138
 Sabbagh AY 42, 139
 Sabeekah Alnuaimi 99
 Sabi AY 133
 Sabika Alnuaimi 96
 Sadeq MA 84
 Safar H 84
 Safar HA 87, 89
 Sahar Essa 88
 Sajjad Ahmed 51
 Saleha K Alatawi 109
 Samaro BH 15, 67
 Sameer R Al-Sahaf H 116
 Sany PK ;;; Kotb MM ; Kapila K 173
 Saqer Alenezi 179, 180, 181, 182
 Sarah Al Safi 178
 Sarah Alzolaibani 131, 132
 Sarah khochiach 107
 Sarah Qari 131, 132
 Savignano RO 34
 Sayed Almoosawy 25
 Sayed S 86
 Sayed ZA 130
 Schwinghammer TL 60
 Scott KP 83
 Seddeqah Abdulbaqi 182
 Senan R 146
 Shaaban AM 30
 Shabeb MM 21
 Shah SS 159
 Shahad Redha 31
 Shahhat MA 114
 Shaikha Almansoor 102
 Shaikha Almansour 101
 Shaimaa S Al-Awadhi SS 177
 Shams A 106, 108
 Shams A ⁵ 163
 Shams Aldeen NK 156
 Shams F 108
 Shamsuddin F 171
 Sharifa Aljohar 31
 Sharma H 146
 Sharma SS 64
 Shastari Y 62
 Shbib MM 55
 Shehab D 65, 82
 Shehab GM 80
 Shehab HF 61
 Shetty S 90
 Shihab Kochumona 81
 Shiji George 88
 Shuaib AS 19
 Shukkur M 28
 Sindhu Jacob 52
 Smiley George 144
 Sultan Ayoub Meo 72
 Sumaiah Hassain 99
 Sumi Elsa John 53, 56
 Swathi Suresh 122
 Taghadom E 7
 Tahraa Lari 31
 Tamur S 163
 Taqi A 111
 Texy Jacob 81
 Thanaraj TA 49, 55
 Thangavel Alphonse Thanaraj 52, 53
 Thangavel AT 50, 54, 111
 Thomas BT 92
 Thomas SA 126
 Tian J 108
 Tovmasyan A 19
 Tulandi T 100
 Turner J 146
 Udo EE 89
 Varghese A 7
 Wael Kalou 71
 Wali Y 116
 Wang N 108
 Wani FA 43
 Waseem AlHawasawi 41
 Wassim Chehadah 88
 Williams M 13, 17, 69
 Williams MR 14
 Yassin BM 33
 Yousif Bahbahani 52, 53
 Yousif M 23, 120
 Zahra A 95, 116
 Zahraa Akbar 103
 Zain Zia 150
 Zainab Alasfour 131, 132
 Zenab Shehab 104
 Ziyab A 61
 Ziyab AH 29
 Ziyad A 32
 Zubbair Malik MD 56

KEYWORD INDEX

A2aR CXCR4 SDF-1 EMT 121
 Abdominopelvic abscess 182
 Ablation 25
 Academic performance 133
 Academic setting 133
 Acute inflammatory demyelinating polyradiculoneuropathy (AIDP) 162
 Acute kidney injury 93
 Adalimumab 41
 ADAMTS13 6
 Added sugar 37
 Adenomatoid 165
 Adenosine 97
 aEEG 117
 Ageing 14
 Akt
 Apoptosis 18
 Alleles 49
 Allergy 75, 78
 Alpha rays 96
 Alzheimer's disease 122
 Amputation, Deformity correction, Limb reconstruct 142
 Angiotensin 1-7 124
 Anterior cruciate ligament (ACL) 145
 Antibiotic resistance 85
 Antibiotics 39
 Antifungal susceptibility testing 74
 anti-HPF4 antibodies 12
 Antimicrobial resistance genes 87
 Antimicrobial susceptibility 90
 Arabic TIPI 134
 ARPKD 46
 Artificial intelligence 16
 Atrial Fibrillation 25
 Attitudes in Kuwait 33
 Autism 31
 Awareness 68
 Aztreonam 73
 BCR::ABL1 fusion gene 157
 Beliefs 29
 benzathine penicillin 158
 Berberine Bleomycin 121
 Bilharziasis 166
 Biofloc 99
 Biomarker 21, 82
 Biopsy 65
 Black Grains 161
 Blue Led Light 10
 Bm: Bone Marrow 156
 Bmi 100
 Body Mass Index 102
 Bowel Ischemia 179
 Brachial Plexus 66
 Brain Injury 117
 Breast 98
 Breast Cancer 106, 107, 108
 Breast Cancer Therapy 124
 Brucella Treatment 177
 Calibrated Automatic Patch Clamp (Apc) 174
 Cancer 19, 98
 Candida Albicans 22
 Candida Kefyr 74
 Cannabinoid Receptor 118
 Ceftazidime/ avibactam 73
 Celiac Disease 68
 Cerebral Schistosomiasis 166
 Cervical Cancer 5
 Chatgpt; Knowledge; 72
 Chemical Peels 40
 Childhood Pyelonephritis. 176
 Choice Of Physician 30, 30
 Chronic Myeloid Leukemia 157
 Cognitive And Behavioural Decline 17
 Cognitive Flexibility 11
 Cognitive Impairment 13
 College Students 138
 Colorectal Carcinoma 178
 Columella 164
 Committed Effective Dose Of Alpha/Beta Activity. 137
 Congenital Brucellosis 177
 Conjunctivitis 160
 Consanguinity 114
 Contaminated Shampoo 160
 Copy Number 47
 Cord Ph 115
 Coronary Artery Disease 56
 Cosmetic Surgery 149
 Covid 19 109
 Covid-19 58, 90, 111
 Covid-19 . Pregnant 103
 Covid-19 Vaccines 12
 Craniosynostosis 144
 Cross-Sectional 32
 Cyanidin 122
 Cytokine Expression 10
 Cytokines 75, 82, 129
 Decreasing Icu Cost And Los 9
 Deformity Correction 142
 Dental Students 35
 Dental Trauma 152
 Depression/Anxiety/Self-Esteem 138
 Dermal Filler 140
 Diabetes 14
 Diabetes Mellitus, 28
 Diabetic Ketoacidosis 179
 Dialysis . Mortality 103
 Differentiation 108
 Digital 34
 Direct Lateral Transmuscular Approach 110
 Disaster Medicine 42
 Donor-Site 131, 132
 Dosimetry 8
 Drain Fragment 180
 Dressing 131, 132
 Drug Design 125
 Dry Eye Syndrome 109
 Dual Cyclooxygenase (Cox) And 5-Lipoxygenase (5-L 118
 Duplex Ultrasound Extracranial Internal Carotid Ar 95
 Dysphagia, Quality Of Life (Qol), 3
 Ebus-Guided Fna 173
 E-Cigarettes 36
 Economic Burden 58
 Eczema 32
 Egfr 53, 155
 Emergency 139
 Endocrine Resistance 124
 Endoscopy 62, 63

Enteric Salmonella Infection, 176
 Environmental Molds 78
 Epidemiological 43
 Epigenetics 48, 94
 Epithelial Splenic Cyst 169
 Ercp 64
 Esd Measurements 8
 Essential Thrombocythemia 59
 Estrogen 130
 Ethics 113
 Eubacterium Rectale 83
 Eukaryotes 24
 Eus 62, 65
 Exome 51
 Exome Sequencing 54
 External Approach 164
 External Fixation 146
 Extracorporeal Membrane Oxygenation 93
 F0xp3 48
 Face Mask 149
 Favourable Prognosis 106
 Fetal. Hemoglobin 116
 Filariasis 167
 Folic Acid; Periconception 136
 Follicular Dendritic Cell Sarcoma 171
 Foreign Body 182
 Fractal Analysis 69, 70
 Fractionation 92
 Fracture 146
 Friendship 133
 Gas Flow Proportional Counter 137
 Gaucher Disease 154
 Gba 154
 Gdna Extraction 89
 General Population In Kuwait 26
 Genetic Mutations 59
 Genetics 46, 51, 52, 53, 54, 155
 Gestational Diabetes Mellitus 21
 Gi Bleed 63
 Gingival Depigmentation 38
 Gingival Esthetics 38
 Gingivitis 36
 Gip/Glp1 143
 Glioblastoma 94
 Glucagon-Like Peptide 1 Agonists 26
 Glucose Intolerance 13
 Glycemic Levels, Lipid Profile 7
 Glycosaminoglycans 114
 Gpcrs 119
 Granuloma 167
 Graves' Disease 183
 Guillain-Barre Syndrome (Gbs) 162
 Gut Bacteria 83
 Gut Microbiota 83
 Hand Hygiene 91
 Hand Rehabilitation 4
 Haplogroups 50
 Hbd-3 76
 Hbv, Saudi Arabia 20
 Hcv 80
 Hdl 18
 Hdl, Angiotensin Ii, Sr-Bi, 23
 Healthcare 16
 Healthcare Equity 61
 Healthcare Professionals; Childbearing Age Women 136
 Heavy Metals 20
 Hemorrhoidectomy 147, 148
 Hepatitis C Virus 150
 Hidden Sugars 37
 Hidradenitis Suppurativa 41
 High Fat Diet Mouse Study 17
 High Protein Diet 75
 Hla 49
 Hmgb1 76
 Hoffmann Zurhelle 153
 Hospital Incident Command System 42
 Hpv Infection 33
 Hr-Hpv 5
 Huge Goiter 183
 Hydatid Cyst 170
 Hyperbaric Oxygen Therapy 41
 Hypothyroidism 43
 Hypoxia 129
 Icp-Oes 20
 Image Evaluation 2
 Immunocytochemistry/Ancillary Studies 173
 Immunohistochemistry (Ihc) 171
 Implant 34
 Impression 34
 Inactivity Time, 7
 Incidence 111
 Incontinence 102
 Induction 104
 Infants 115
 Infection Control 91
 Inflammation 67, 69, 70, 123
 Inhalation 127
 Intellect Level 72
 Intensive Care Unit 71
 Interleukin-1 Beta 36
 Interprofessional Collaborative Practice 60
 Interprofessional Education 60
 Intrathoracic 172
 Irritable Bowel Syndrome 29
 Ischemic Heart Disease 141
 Ite; Aryl Hydrocarbon Receptor (Ahr), 81
 Kappa And Lambda Light Chains 168
 Keap1/Nrf2-Are 123
 Kindergarten Teachers 31
 Knee 145
 Knowledge 29, 31
 Knowledge; Practice 136
 Kras / Nfkbia 45
 Kuwait. 55, 59, 84, 134
 Kuwait. 28
 Lactose 37
 Lasers Vs Burs 38
 Latent Viruses 88
 Lcmm: Light Chain Multiple Myeloma 156
 Ldh Inhibitors 107
 Ldh Knockout 107
 Leps 178
 Ligasure 147, 148
 Light Chain Proximal Tubulopathy (Lcpt) 168
 Limberg Procedure 180
 Lipopolysaccharide 67
 Lipopolysaccharides (Lps), 81
 Liver Abscess 181
 Liver Diseases 150
 Lower Limb Weakness 162
 Lqts, Long Qt Syndrome, Kcnh2 174
 Lumbricals 4

Lung Cancer 65
 Lysosomal Storage Disorder 57
 Madurella Mycetomatis 161
 Magnetic Resonance Imaging (Mri) 145
 Magnetic Resonance Imaging Safety 1
 Malformations 177
 Malignancy 63
 Malignant Mesothelioma 172
 Marine Cyanobacteria 123
 Matrix Metalloproteinase-9 (Mmp-9), 81
 Mechanical Ventilation 71
 Medical Education 61, 72
 Medical Error. 113
 Medical Major Incident Management System 42
 Medication Disposal 135
 Medication Safety 135
 Medication Take Back Campaign 135
 Medicines 126
 Melasma 40
 Melasma Treatment 40
 Meningioma 112
 Mental Health 32
 Metabolic Dysfunction 15
 Metastases 163
 Methicillin Resistant Staphylococcus Aureus Infec 175
 Microbial Infections 90
 Microglia 69, 70
 Micronaut-Am Assay 74
 MicroRNA 45
 Middle Cerebral Artery Occlusion 130
 Mifcs (Minimally Invasive Facial Cosmetic Surgery) 138
 Milligan-Morgan 147
 Minerals 20
 Mini-Incision 110
 Mitochondria 50
 Mitral Valve Surgery 141
 Mlst 86
 Moderate Mitral Regurgitation 141
 Molecular Diagnosis 112
 Molecular Docking 125
 Morbid Obesity 54
 Morphology 128
 Morphometrics 128
 Mortality 71, 93
 Motivation 139
 Mtdna 47
 Mtor 18
 Mucocoele 151
 Mucopolysaccharidosis 57, 114
 Multidrug-Resistant 79
 Multinodular Goiter 183
 Multiple Myeloma 168
 Multiple Sclerosis 48
 Multiple Splenic Cysts 169
 Mycetoma 161
 Mycobacterium Tuberculosis 77
 Myocardial Perfusion Imaging 97
 Myricetin 127
 Naff. 28
 Neonatal Hepatic Abscess 175
 Neonatal Sepsis 175
 Neonates 85
 Nephrology 51, 52, 53, 155
 Nerve Block 66
 Network Medicine 56
 Neurofibroma 164
 Neuronal Loss 15
 Neuropathic Pain, 118
 Neuroschistosomiasis 166
 Neutrophil-Lymphocyte Ratio 21
 Neutrophils 88
 Nevus Lipomatosus Superficialis 153
 Newborn Screening 57
 Next Generation Sequencing 144, 150
 Nicotine Dependency 27
 Non-Occlusive Mesenteric Ischemia 179
 Non-Surgical Management 140
 Novel Candidate Gene 144
 Nutrition 99
 Obese 101
 Obesity 55, 100, 119
 Odontogenic 165
 Ont 24
 Ont, Bioinformatics 87
 Open Flow Microperfusion 130
 Ophthalmology 109
 Oral Medicine 151
 Orthotic Device 4
 Outcome 115
 Overactive Bladder 102
 Overweight 101
 Oxford Nanopore Technologies 89
 Oxidative Stress 19
 P. Aeruginosa 79
 Paediatric Dentistry 39, 151, 152
 Pancreatic Cancer 45, 62
 Pancreatic Cancer, Genetic Risk, Ethnicity, Geneti 44, 44
 Pancreatitis 64
 Pancytopenia 157
 Papillary Thyroid Carcinoma 163
 Parkinson's Disease (Pd), 3
 Parkinson's Disease 159
 Pathological Diagnosis 112
 Patient Safety 113
 Patient-Reported Outcome 140
 Pcs: Plasma Cells 156
 Pediatric Radiography, 8
 Pedunculated Lipofibroma 153
 Percutaneous Drainage 181
 Perforation 182
 Perfusion Pressure 120
 Periclavicular 66
 Peripheral Blood Mononuclear Cells 88
 Pharmacophore 125
 Phenotype 116
 Phenotypic & Genotypic Susceptibility Testing 77
 Photodynamic Therapy 19, 22
 Photosensitizer 22
 Physical Activity, Health-Care Professionals 139
 Physician 68
 Pilonidal Sinus Disease 180
 Plant Based Milk 96
 Pleural Effusion 163
 Pleural Fluid Cytology 172
 Precut 64
 Pregnancy 104
 Pre-Marital 80
 Prescription 39
 Preterm 105
 Preterm Neonates 117
 Primary Dentition 152
 Primers 92

Professional Attitudes 60
 Progressive Supranuclear Palsy 159
 Prolactin And Prolactin Receptors 106
 Prolactin Receptors 108
 Prolapse 178
 Proliferation 23
 Provider Cost 58
 Psoriasis 47
 Psychometric Properties 134
 Pulmonary Fibrosis 121
 Pulmonary Surfactant 67
 Qiasure Methylation Test 5
 Quality Check 92
 Quality Control 2
 Radiation 96
 Radiographers' Knowledge 1
 Radiography 2
 Renal 46, 170
 Renal Vascular Activity 120
 Respiratory Syncytial Virus 84
 Response 94
 Rhythm Control 25
 Risk 105
 Robot Physician - Rp 7,9
 Oncology Icu Patients, Management 9
 Roux-En-Y Gastric Bypass 181
 Safety Policies 1
 Salivary Biomarkers, Salivary Cortisol, Salivary A 35
 Salivary Microbiome 55
 Salmonella Urinary Tract Infection, 176
 Sarcopenia 82
 Saudi Arabia 16
 Secondary Syphilis; Sexually Transmitted Disease 158
 Selecting A Physician 30
 Self-Esteem 149
 Sepsis 76
 Tibial Hemimelia 142
 Tobacco Smoke, 27
 Tonsillar Neoplasms 171
 Total Hip Arthroplasty 110
 Trace Amines 120
 Transcranial Duplex Ultrasound 95
 Tremor 159
 Treponema Pallidum 158
 Triazole Resistance 78
 Tumor 165
 Tumor Necrosis Factor Alpha Knockout Cytokine Proi 17
 Twins 105
 Type 1 Diabetes 49
 Type 1 Diabetes, 7
 Type 1 Respiratory Failure 129
 Type 2 Diabetes 11, 13, 15, 50, 56
 Uplc-Ms/Ms 126
 Urinary Incontinence 101
 Urinary Incontinence (Ui) 100
 Uropathogens 85
 Vaccination 111
 Vaccination Knowledge 33
 Valvular Heart Disease, Valve Replacement 154
 Variants Of Unknown Significance (Vus) 174
 Vascular Remodeling, 23
 Visual Acquisition 11
 Vitt 12
 Von Willebrand Factor 6
 Water Quality 137
 Weight Loss Medications 26
 Serotype 86
 Serratia Marcescens, 160
 Sever . Icu . Ecmo 103
 Shock 170
 Shrimp 99
 Sickle Cell Disease 95, 116
 Skin Graft 132
 Skin Of Color 61
 Sleeve Gastrectomy 143
 Small Rna 52
 Smartphone 91
 Solid Lipid Nanoparticles 127
 Species Identification, 87
 Splenic Cysts 169
 Splenic Switch Off 97
 Split-Thickness 131
 Staphylococcus Aureus 89
 Stapled Hemorrhoidopexy 148
 Streptococcus Pneumoniae 86
 Streptomycin 77
 Stress 35
 Structural And Functional Selectivity 119
 Success Rate 104
 Swallowing Quality Of Life Questionnaire (Swal-Qol),
 Water Swallow Test (Wst). 3
 Synergy 73
 Tangeretin 98
 Tau Pathology 14
 Tdm 126
 Tem 128
 Testis 167
 Thalassemia 6
 Thymoma 173
 Thyroid Hormones 43
 Tibia 146

Weight Regain 143
Weight, Serum Glucose, And Mobility 10
Wgs 24
Whole Genome Sequencing 79
Whole-Genome Sequencing 84
Wnt/B-Catenin 122
Young Adults 27

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, College of Medicine

Administration, College of Medicine

Special thanks to the following staff for their contribution from Health Sciences Centre, Kuwait University:

- Mrs. Teena Sadan
- Mrs. Rania Al-Mawlawi
- Mrs. Neshour Al Hamdan
- Mr. Waleed A Kamil

ACCREDITATIONS

Title of Activity:

28th Health Sciences Centre Conference

Scheduling: 14-15 February 2024

Category 1: 6credits, varies on Poster/Oral Presentations

CME/CPED Reg. No. 005700/IMEI/Feb24

CME Provider: College of Medicine

Online Registration for CME:

<https://bit.ly/Registration28thHSCPosterConference2024>

www.hsc.edu.kw/poster

Contact: Centre for Research Support and Conferences; Office of the Vice Dean for Research and Post Graduate Studies; College of Medicine, Kuwait University; Tel: +965 246 36418; Email: poster.hsc@ku.edu.kw; Web: <http://www.hsc.edu.kw/Poster/Main/Index.aspx>



