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JAFES

20TH INTERNATIONAL CONGRESS OF ENDOCRINOLOGY
18TH ASIA OCEANIA CONGRESS OF ENDOCRINOLOGY
21ST ASEAN FEDERATION OF ENDOCRINE SOCIETIES CONGRESS

25 - 28 August 2022

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GROWTH HORMONE/ GROWTH

CURRENT ADVANCES IN THE MANAGEMENT OF GROWTH DISORDER

Andrew Dauber
USA
Topic: Advances in the genetic diagnosis of short stature

Cheri Deal
Canada
Topic: Should we use aromatase inhibitors or GnRH analogs to improve adult height?

Keiichi Ozono
Japan
Topic: New perspectives for improving growth in children with skeletal dysplasia

MEET THE PROFESSORS

Andrew Dauber
USA
Topic: Novel Therapeutic Approaches to Short Stature

Cheri Deal
Canada
Topic: Care for patients with Turner syndrome

Gudmundur Johannsson
Sweden
Topic: What is the place of long acting GH analogs?

GROWTH HORMONE THERAPY

Gudmundur Johannsson
Sweden
Topic: What have we learnt from 30 Years of Growth Hormone Replacement Therapy in Adults

Jean Claude Carel
France
Topic: What have we learnt from more than 30 Years of Growth Hormone Therapy in Children

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MEMS
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Malaysian Endocrine
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MEMS ANNUAL CONGRESS
MAC 12 2022
ANNUAL ENDOCRINOLOGY BOOSTER:
GETTING AHEAD OF THE CURVE

MEMS ANNUAL CONGRESS MAC 12 2022
EVENT ID : CPDE34041

PRESIDENT'S MESSAGE

Professor Dr Chan Siew Pheng

Consultant Endocrinologist
Subang Jaya Medical Centre (SJMC)

First and foremost, may I wish you all the very best for 2022.

As promised last year, we are BACK! Now in a **HYBRID format**; physical delegates at our usual Conference venue as well as virtual delegates (streaming online) – to cater for the effect of having to socially distance, with reduced numbers attending the physical Conference as well as to allow those healthcare professional colleagues who may remain reluctant to travel to attend face-to-face meetings.

COVID continues to dominate our health care agenda, but we cannot allow ourselves, as well as our patients, to lose sight of other diseases and their impact on their health. It is important to acknowledge the indirect impact of all stakeholders' unfortunate tendency to ignore other medical disorders.

There has been an unprecedented, unfortunate disruption to training, and educational activities. Let us work together to rebuild and re-focus. Therefore, the appropriate theme of this year's MAC 12 – **"Annual Endocrine Booster: Getting Ahead of the Curve."**

Our main objectives are to enhance Continuing Medical Education and bring you the latest up-to-date clinical practice guidelines with a focus on Endocrinologic disorders. Building on previous successes, a key part of the program will include the ever-popular Interactive Case discussions, and Meet-The-Expert sessions. In addition, recognising that a majority of our patients will consult their Primary care doctors/Family Medicine Specialists/General practitioners (forming the grass-roots support) – 1 full tract has been dedicated to addressing common Endocrine problems encountered in primary care.

Finally, this forum will be an ideal opportunity to re-connect with your colleagues, make new connections, meet and discuss with the experts.

Last but not least, welcome to MAC12!

Professor Dr Chan Siew Pheng
Honorary Professor
Consultant Endocrinologist

President
MEMS 2020-2022

Advisor
MAC 12 Organising Committee

MEMS ANNUAL CONGRESS
MAC 12 2022
EVENT ID : CPDE34041

CHAIRPERSON'S MESSAGE

Dr Hew Fen Lee

Consultant Endocrinologist & Physician
Subang Jaya Medical Centre (SJMC)

As we are still battling the COVID pandemic and slowly emerging from the lockdown and restriction, we realise the ever increasing gaps in our health care delivery and management, particularly in chronic noncommunicable diseases. New clinical issues have also arisen and as health care professionals, the challenges have escalated.

My colleagues in the organising committee and I are honoured and delighted to bring you MAC12. The theme this year is: **"Annual Endocrine Booster: Getting Ahead of the Curve."**

This year, we have decided to focus on the day-to-day clinical management issues that we face. We have invited well known international speakers to give updates on the forefront of medical science and development in clinical medicine, balanced with senior and experienced local speakers who will share with us their clinical opinions and management pearls. The programme shall address many clinical issues that are faced by not only specialists, but by general practitioners, too. The sessions will be as interactive as the circumstances allow. This year, the meeting will be a hybrid meeting, with physical participation for those who who can attend, and virtually too. We endeavour to make sure the experience is as rewarding and fulfilling, either way.

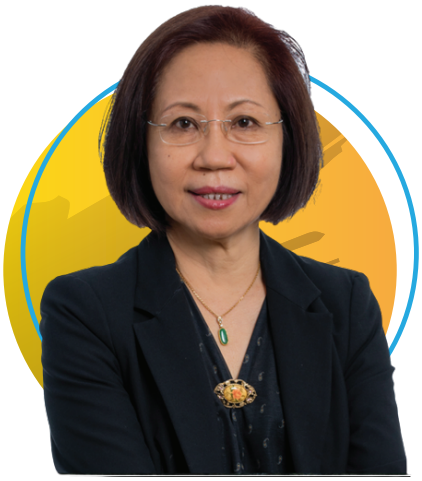
I would like to thank the speakers, both local and overseas, who have not only made time to participate, but have also given us valuable suggestions for the MAC 12 programme. I would also like to register my gratitude to the industry sponsors who universally share our enthusiasm and the aim of MAC 12.

The aim of the MAC 12 is to bridge the gaps: the interrupted medical knowledge gap of obtaining latest medical updates and education; the fellowship gap of professional interaction between colleagues; and and most important, the widening treatment gap for our patients with noncommunicable diseases due to the distraction and resource reallocation from the COVID pandemic. Getting ahead of the curve and meeting the need of the medical professionals would help Malaysia move one step forward towards a healthier nation.

Dr Hew Fen Lee
Consultant Endocrinologist & Physician

Organizing Chairperson
MAC 12 Organising Committee

LEGACY AWARD 2022



Professor Dr Wu Loo Ling

Consultant Paediatric Endocrinologist
Subang Jaya Medical Centre (SJMC)

Professor Dr Wu Loo Ling is a familiar name in the Endocrine fraternity, be it among paediatric or adult endocrinologists. This is not surprising as she is a pioneer in the field of paediatric endocrinology in Malaysia. Having obtained her MBBS from Universiti Malaya in 1977, she then went on to pursue her MRCP from the Royal College of Physicians, UK and Ireland.

Prof Wu, as she is affectionately known, developed a passion for paediatric endocrinology and with the same determination as she does most things, she got herself trained in this field by running clinics with the adult endocrinologists and having a stint at the Royal Children's Hospital, Melbourne. During her tenure in Universiti Kebangsaan Malaysia (UKM), she has been instrumental in training many of our Country's paediatric endocrinologists; some of whom have gone on to supervise fellows of their own. In fact – Prof Wu is considered Malaysia's grandmother of paediatric endocrinology.

Having been a Professor of Paediatrics in UKM since 1998 until she retired, countless numbers of undergraduate students and postgraduate doctors have had the good fortune to be taught by Prof Wu. Although she can be strict, her students had the utmost respect for her and strived to do their best, by the standards that she instilled in them. Many of those she has taught have also achieved great things in their respective fields. Many of them, especially those in the field of paediatrics, cite her as their inspiration.

Indeed, many Doctors bear witness to Prof Wu's astute clinical skills. But she also constantly teaches us the art of medicine – compassion, empathy, practical aspects of being a doctor that we cannot learn from textbooks. As she likes to say, she is first and foremost a doctor, then a professor. It is no surprise then, that patients love her and continue to ask for her even after her retirement.

Prof Wu continues to actively participate in educational programmes. She tells of the early days when the small endocrine fraternity travelled the country running teaching sessions and CMEs. She has also led the subspecialty training committee for paediatric endocrinology for many years, always encouraging the fellows to strive for excellence. Being no stranger to research, she has been involved in and supervised many, and is widely published.

Although retired from academia, Prof Wu is still active in clinical work, doing what she loves most. Now a doting grandmother, she is still as busy (if not busier) than before retirement. Indeed, Prof Wu has played a vital role in the development of paediatric endocrinology, laying the foundation on which we continue building and growing. She continues to be an inspiration to many.

LEGACY AWARD 2022

Professor Dato' Dr Mafauzy Mohamed

Consultant Endocrinologist
Universiti Sains Malaysia Kubang Kerian

Dato' Dr. Mafauzy Mohamed is currently Professor of Medicine and Senior Consultant Endocrinologist at the School of Medical Sciences and Hospital Universiti Sains Malaysia (HUSM). This year's MEMS Legacy award recipient, Prof Mafauzy has dedicated as much of his career to academia, administration at his beloved Universiti Sains Malaysia, as to MEMS, our Society. It is therefore fitting that he be bestowed this year's Legacy award.

After obtaining his MBBS from the University of Adelaide, Australia in 1980, he returned to Malaysia to serve his country; he joined USM as a Trainee Lecturer (1983). He received his Internal Medicine and Endocrine training at Northern General Hospital in Sheffield, United Kingdom under the late Professor Donald S. Munro, who was well known for his work on Thyroid Stimulating Antibodies. Further enhancing his academic pedigree with his MRCP (UK) 1985; Masters of Medical Sciences (University of Sheffield) in 1987; being admitted as Fellow of Royal College of Physicians (Edinburgh) in 1996. At USM, he was promoted to Associate Professorship (1992) and became Professor of Medicine in 2000.

Almost his entire career has been in academic and administrative service at USM, taking up positions from Dean of Medicine (1996-1999), Director of Hospital (2015-2016), Director of Campus (1999-2016) and Assistant Vice-Chancellor (2015-2016). He has also served as an examiner for the Royal College of Physicians, UK and has been External Examiner for Professional Examinations at undergraduate, postgraduate, Masters and PhD level. He continues to be involved as an Examiner for the Exit Examination of Endocrine Fellows for the Endocrinology Subspeciality National Register.

Throughout his long productive academic career, he has been actively involved with over 110 research studies (diabetes, dyslipidemia and thyroid disorders); including many landmark diabetes CV and renal outcome trials – TECOS, CAROLINA, CANVAS, CANVAS-R, SONAR as Principal Investigator for Malaysia. He has supervised over 25 postgraduate students and has published over 110 papers in national and international Journals. He is also involved in formulation of Clinical Practice Guidelines such as Malaysian Type 2 DM, Thyroid Disorders and Obesity and also the International Diabetes Federation and Diabetes & Ramadan International Alliance - Diabetes and Ramadan Practical Guidelines.

In 2017, International Medical University awarded him with an Honorary Doctor of Medicine degree. He has been Chief Editor of the Malaysian Journal of Medical Sciences, Journal of ASEAN Federation of Endocrine Societies and Journal of Endocrinology and Metabolism. He was a Council Member in the Malaysian Medical Council (1994-2021); Chair of the Accreditation Guidelines of Medical Undergraduate Programme Committee, Examination for Provisional Registration Committee and the Common Licensing Examination Committee. He is actively involved in accreditation and recognition of medical programmes by the Malaysian Medical Council and Malaysian Qualifications Agency.

He has been an active member of MEMS since 1987; served as Vice-President from 2012 till 2016 and is still serving as an Executive Committee member of MEMS. He continues to be an inspiration and role model to our Endocrine fraternity.

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Dr Tong Chin Voon	*Hospital Melaka*
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Dr Yeap Swan Sim	*Subang Jaya Medical Centre*

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MAC12 PROGRAMME OVERVIEW

FRIDAY 15TH JULY 2022 (DAY 1)

	CLARKE BALLROOM LECTURE HALL 3	HILTON BALLROOM C LECTURE HALL 2	HILTON BALLROOM B LECTURE HALL 1
0730 - 0800	Registration		
0800 - 0810	Opening Speech & Welcoming Remark		
0810 - 0830	Legacy Award		
0830 - 0900	PLENARY 1: Beyond the Lungs: COVID-19 Associated Endocrinopathies Prof Dato' Dr Mafauzy Mohamed		
0900 - 0930	Tea Break / Poster Viewing		
0930 - 1030	**CASE-BASED DISCUSSION: UNCONTROLLED DIABETES**	**SYMPOSIUM 1: REPRODUCTIVE**	**SYMPOSIUM 2: REPRODUCTIVE**
	1) A Young Child with T1DM Dr Noor Arliena Mat Amin 2) An Adolescent with T2DM Dr Lee Yee Lin Panelists: Prof Dr Muhammad Yazid Jalaludin Dr Janet Hong	Clinical Approach to DSD presenting in Adolescence / Adulthood Prof Dr Wu Loo Ling CAH: Psychosexual Development and Fertility Prof Dr Taninee Sahakitrungruang	Updates to the new Malaysian Osteoporosis CPG Dr Yeap Swan Sim An Update on Osteoporosis Therapy Dr Alexander Tan Tong Boon
1030 - 1115	Paeds MTE 1: Child Born SGA – Long Term Consequences and Management Assoc Prof Dr Azriyanti Anuar Zaini	MTE 1: Parathyroid Disorders: Challenges in Management Dato' Dr Malik Mumtaz	MTE 2: Calcium and Vitamin D Disorders Dr Luqman Ibrahim
1115 - 1200	Paeds MTE 2 Rickets – Diagnosis and Management Dr Jeanne Wong Sze Lyn	MTE 3: Autoimmune Polyglandular Syndrome: When to Suspect? Prof Dr Shireene Vethakkan	MTE 4: Cardiac Screening in Diabetes Prof Dr Chee Kok Han
1200 - 1330	**BOEHRINGER INGELHEIM SYMPOSIUM** SGLT2i: The Game-Changer for Cardio-Renal-Metabolic Outcomes *Speakers:* Prof Dr Janaka Karalliedde Dr Tan Li Ping	**NOVO NORDISK SYMPOSIUM** Optimizing T2DM & CVD Management *Speakers:* Dr Masni Binti Mohamad Prof Dr Chee Kok Han Prof Dr Eduard Montanya	**ZP THERAPEUTICS SYMPOSIUM** Unlocking Potentials of GLP-1RAs in Diabetes Care *Speakers:* Prof Dr Chan Siew Pheng Dr Foo Siew Hui Prof Dr Norlaila Mustafa
1330 - 1415	Paeds MTE 3 Endocrine Complications of Childhood Cancer Survivors Dr Cindy Ho Wei Li	MTE 5: Young Onset Diabetes - Which is it, Type 1 or Type 2? Dr Tong Chin Voon	MTE 6: Young Onset Dyslipidaemia: To Treat or Not? Prof Dato' Dr Mafauzy Mohamed
1415 - 1545	**PAEDS SYMPOSIUM 1: PAEDIATRIC DIABETES**	**SYMPOSIUM 3: THYROID**	**SYMPOSIUM 4: THYROID**
	Glycaemic Management – Mimicking the Pancreas Dr Lim Poi Giok DKA - Prevention and Management Dr Joyce Hong Soo Synn T2 Diabetes Mellitus - What is New? Prof Dr Muhammad Yazid Jalaludin	Thyroid Nodule - Advances in Diagnosis, Treatment & Surveillance Dr Chia Su Ynn TFT Interpretation & Management in Pregnancy: Physiological vs. Pathological Prof Dr Kristien Boelaert Immune Checkpoint Inhibitor Induced Endocrinopathies Dr Jeshen Lau	Making Sense of "Weird" TFTs Assoc Prof Dr Wan Mohd Izani Wan Mohamed Thyroid Nodules for Primary Care Prof Dr Amir S Khir Thyroiditis Dr Wong Ming
1545 - 1615	PLENARY 2: Differentiated Thyroid Cancer: Update in Dynamic Risk Stratification & Management Prof Dr Kristien Boelaert		
1615 - 1715		**MSD SYMPOSIUM** Sitagliptin/Metformin Extended Release: Patient Convenience and Efficacy Coupled! *Speaker:* Dr Vijay Ananda Paramasvaran	**DUOPHARMA SYMPOSIUM** Getting More For Less: The Use of Biosimilar Insulins in the Management of Diabetes *Speaker:* Prof Dr Norlaila Mustafa

SATURDAY 16TH JULY 2022 (DAY 2)

	CLARKE BALLROOM LECTURE HALL 3	HILTON BALLROOM C LECTURE HALL 2	HILTON BALLROOM B LECTURE HALL 1
0730 - 0830	**MERCK SYMPOSIUM** A Closer Look into SGLT2i: Metabolic, Cardiovascular and Renal Protection Outcomes *Speakers:* Dr Hew Fen Lee, Dr Tan Li Ping		
0830 - 0900	PLENARY 3: Cushing Syndrome - Pitfalls and Dilemmas in Diagnostic Evaluation Prof Dr John Newell-Price		
0900 - 1000	**CASE-BASED DISCUSSION: DSD - MANAGEMENT DILEMMA** 1) An Infant with DSD - Sex Assignment and Management Issues Dr Nurshadia Binti Samingan 2) An Adult with Gender Dysphoria Dr Teh Roseleen Nadia Binti Roslan Panelists: Prof Dr Reiko Horikawa Prof Dr Muhammad Yazid Jalaludin Prof Dr Wu Loo Ling	**SYMPOSIUM 5: BONE** Peri-Menopausal Osteoporosis Prof Dr Chan Siew Pheng Osteoporosis - Risk Stratification Dr Hew Fen Lee	**SYMPOSIUM 6: REPRODUCTIVE** When Amenorhoea is not Gynaecological Dr Lim Siang Chin Andropause Dr Richard Chen Yuan Tud
1000 - 1030	Tea Break / Poster Viewing		
1030 - 1115	Paeds MTE 4: Newborn Hypothyroid Screening - Who and How to Treat? Prof Dr Wu Loo Ling	MTE 7: Fracture on Treatment - So How? Dr Sharmila Paramasivam	MTE 8: Clinical Approach to Hyponatreimia Dr Siti Harnida Md Isa
1115 - 1215	Young Investigator Award (Paeds Category)	MTE 9: Hypoglycaemic Disorders Dr Foo Siew Hui	Young Investigator Award (Adult Category)
1215 - 1345	**SERVIER SYMPOSIUM** Do What Matters, Make A1c Difference *Speakers:* Dr Lawrence A. Leiter Assoc Prof Dr Jeyakantha Ratnasingam Assoc Prof Dr Chow Yoke Wai	**SANOFI AVENTIS SYMPOSIUM** Patient Centric Considerations: Safety, Stability & Simplicity in Diabetes Management *Speakers:* Prof Dr Chan Siew Pheng Dr Juan Pablo Frias	**ASTRAZENECA SYMPOSIUM** RADIANT (Revolutionizing Cardio-Renal T2D Disease Management from Prevention to Treatment) *Speakers:* Dr Khoo Chin Meng Assoc Prof Dr Lim Lee Ling
1345 - 1430	Paeds MTE 5 Idiopathic Central Precocious Puberty - When and How to Treat? Dr Janet Hong Yeow Hua	MTE 10: Endocrine Assays: What Clinicians Should Know Assoc Prof Dr Pavai Sthaneshwar	MTE 11: Endocrine Hypertension Dr Norhaliza Mohd Ali
1430 - 1600	**PAEDS SYMPOSIUM 2: NEONATAL ENDOCRINE DISORDERS** Neonatal Diabetes Dr Lim Song Hai Neonatal Hypoglycaemia Assoc Prof Dr Noor Shafina Mohd Nor Ambiguous Genitalia Prof Dr Reiko Horikawa	**SYMPOSIUM 7: PITUITARY** Acromegaly: Persistent Disease Post Transphenoidal Surgery Prof Dr C Rajasoorya Imaging in Non-functioning Pituitary Adenomas: Diagnosis & Surveillance Assoc Prof Dr Warrick Inder Clinical Conundrums in Diagnosis & Management of Diabetes Insipidus: Inpatient vs. Outpatient Setting Dr Azraai Bahari Nasruddin	**SYMPOSIUM 8: ADRENAL** Cushing's Syndrome: Where is it Coming From? Dr Florence Tan Hydrocortisone, Prednisolone, Dexamethasone: What are the Differences? Assoc Prof Dr Jeyakantha Ratnasingam "Adrenal Fatigue" Prof Dr Chan Siew Pheng
1600 - 1630	PLENARY 4: MODY - Update and Management Outcome Prof Dr. Khalid Hussain		
1630 - 1730		**P&G SYMPOSIUM** Diabetic Peripheral Neuropathy *Speakers:* TBC	**IPSEN PHARMA SYMPOSIUM** Making a Difference in the Long Term Management of Acromegaly *Speakers:* Prof Mark Gurnell Assoc Prof Dr Jeyakantha Ratnasingam

SUNDAY 17TH JULY 2022 (DAY 3)

	CLARKE BALLROOM LECTURE HALL 3	HILTON BALLROOM C LECTURE HALL 2	HILTON BALLROOM B LECTURE HALL 1
0730 - 0830	**DKSH SYMPOSIUM** Early Intensification in T2DM Management: How Treatment Option Affect the Outcome *Speaker:* Prof Dr Elaine Chow Yee Kwan		
0830 - 0900	PLENARY 5: The Incidentally Discovered Adrenal Mass Prof Dr William F. Young, Jr.		
0900 - 1030	**PAEDS SYMPOSIUM 3: HYPOTHALAMUS-PITUITARY DISORDERS**	**SYMPOSIUM 9: ADRENAL**	**SYMPOSIUM 10: METABOLIC**
	COGHD at Transition Period Assoc Prof Dr Ting Tzer Hwu Post-neurosurgery Fluid and Electrolyte Management Dr Suhaimi Hussain Central Diabetes Insipidus vs. Psychogenic Polydipsia Dr Arini Nuran Idris	Primary Aldosteronism: Is AVS a must? Prof Dr William F. Young, Jr. Subclinical Adrenal Cushing: Should we Treat? Datuk Dr Zanariah Hussein Clinical Approach to Suspected Adrenal Insufficiency in Hospital Setting Prof Dr C. Rajasoorya	Obstructive Sleep Apnea Assoc Prof Dr Andrea Ban Yu-Lin Managing Fatty Liver in Primary Care Prof Dr Chan Wah Kheong An update on Obesity Prof Dr Rohana Abdul Ghani
1030 - 1115	Paeds MTE 6: Management of Childhood Obesity Dr Nalini M Selveindran	MTE 12: Managing Adrenal Tumours in Pregnancy Prof Dr Norlela Sukor	MTE 13: "Difficult" Diabetes Prof Dr Norlaila Mustafa
1115 - 1130	Tea Break / Poster Viewing		
1130 - 1230	**ABBOTT SYMPOSIUM** A Holistic Approach to Diabetes and Lipid Management *Speakers:* Prof Dr Winnie Chee, Datuk Dr Zanariah Hussein, Dr Alexander Tan Tong Boon		
1230- 1315	Prize Giving / Closing Ceremony		

ORGANISING COMMITTEE

Honorary Advisor	**Professor Dr Chan Siew Pheng** Senior Consultant Endocrinologist & Honorary Professor, Subang Jaya Medical Centre
Organising Chairperson	**Dr Hew Fen Lee** Consultant Endocrinologist, Subang Jaya Medical Centre
Scientific Chairperson	**Dr Alexander Tan Tong Boon** Consultant Endocrinologist, Sunway Medical Centre
Scientific Co-Chairperson	**Professor Dr Wu Loo Ling** Consultant Paediatric Endocrinologist, Subang Jaya Medical Centre
Committee Members	**Professor Dr Muhammad Yazid Jalaludin** Consultant Paediatric Endocrinologist, University Malaya Medical Centre
	Dr Foo Siew Hui Consultant Endocrinologist Hospital Selayang / Subang Jaya Medical Centre
	Dr Sharmila Sunita Paramasivam Consultant Endocrinologist, University Malaya Medical Centre
	Dr Siti Harnida Md Isa Consultant Endocrinologist, Sunway Medical Centre
	Dr Wong Ming Consultant Endocrinologist, Sunway Medical Centre
	Ms Cheah Yet Mei Manager, Malaysian Endocrine & Metabolic Society

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ADULT

OA-A-01

EFFECTS OF METFORMIN IN COMBINATION WITH INSULIN ON GLYCAEMIC VARIABILITY IN OVERWEIGHT OR OBESE PATIENTS WITH TYPE 1 DIABETES MELLITUS

https://doi.org/10.15605/jafes.037.S2.69

Wong Poh Shean,[1,2,3] Tong Chin Voon,[1] Mohamed Badrulnizam Bin Long Bidin,[2] Noor Lita Binti Adam[3]
[1]*Hospital Melaka, Malaysia*
[2]*Hospital Kuala Lumpur, Malaysia*
[3]*Tuanku Ja'afar Seremban (HTJS), Malaysia*

INTRODUCTION
The prevalence of overweight and obese T1DM individuals are increasing. Overweight people with T1DM may be insulin resistant. Glycaemic variability (GV) is an emerging measure of glycaemic control. The aim of this study is to investigate whether metformin, in combination with insulin, has favourable effects on GV.

METHODOLOGY
This is a multi-centre, open-label, randomised crossover study. Overweight or obese T1DM patients aged ≥18 years old, with HbA1c ≥7.0% were recruited and randomised into two arms. For the first 6 weeks, one arm remained on standard of care (SOC), while another arm received oral metformin minimum 1000 mg/day in addition to SOC. There was a 2-week washout period before the groups were subsequently crossed over for another 6 weeks. Anthropometric, blood parameters, CGM were measured at the initiation and end of the study.

RESULTS
A total 46 subjects were included with 23 participants in each arm. Compared to SOC, there were significant reductions in the MET group seen for GV parameters: mean [0.18 ± 1.73 vs -0.95 ± 1.24, p=0.014], %CV [-15.84 (18.92) vs -19.08 (24.53), p=0.044], GRADE [-0.69 (3.83) vs -1.61 (3.61), p=0.047], CONGA [0.25 ± 1.62 vs -0.85 ± 1.22, p=0.013]. Likewise, a significant decrease in systolic blood pressure (SBP) was noted for the MET group [2.78 ± 11.19 vs -4.30 ± 9.81, p=0.027], total daily dose insulin [0.0 (3.33) vs -2.17 (11.45), p=0.012], fasting venous glucose [1.34 ± 4.28 vs -1.54 ± 5.11, p=0.044] and fructosamine [-10.13 ± 29.29 vs -47.39 ± 42.94, p=0.001]. Hypoglycaemic episodes were not significantly different between groups.

CONCLUSION
Metformin showed favourable effects on GV in overweight and obese T1DM patients. Reduction in SBP, total daily insulin dose, fasting venous glucose and fructosamine were also observed when metformin was combined with insulin.

OA-A-02

FACTORS CONTRIBUTING TOWARDS EARLY AND LATE CONVERSION FROM GESTATIONAL DIABETES MELLITUS TO ABNORMAL GLUCOSE TOLERANCE POSTPARTUM

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INTRODUCTION
Women with previous gestational diabetes (post-GDM) have a high risk of developing abnormal glucose tolerance (AGT) postpartum, including pre-diabetes and type 2 diabetes. Limited evidence is available on the risk factors present at different timepoints after GDM pregnancy. This study aimed to determine the factors contributing towards early and late conversion from GDM to AGT postpartum.

METHODOLOGY
This cross-sectional study involved 157 women post-GDM (mean age 34.8 years). The study was conducted at Klinik Kesihatan Seri Kembangan and Universiti Putra Malaysia. In total, 83 and 74 respondents were enrolled at early (<1 year) and late (≥1 year) postpartum, respectively. AGT was diagnosed using OGTT. Respondents diagnosed with AGT at <1 year postpartum were designated as early converters, whereas those diagnosed at ≥1 year postpartum were considered late converters.

RESULTS
On average, respondents were overweight and had abdominal obesity. AGT was diagnosed in 17 (20.5%) at <1 year and 17 (23.0%) respondents at ≥1 year postpartum. Compared to the normal glucose tolerance (NGT) group, early converters had significantly lower educational level, bigger household size, higher gravidity and parity, higher rates of recurrent GDM, overweight and obesity, and hyperinsulinemia. Meanwhile, late converters had significantly shorter breastfeeding duration, higher HbA1c, higher rates of pharmacological treatment during GDM and hypertriglyceridemia, compared to their NGT counterparts. Multivariate logistic regression found independent factors for AGT were parity (adjusted odds ratio [AOR] 7.045, p=0.006) and recurrent GDM (AOR 10.045, p=0.028) at early postpartum; and HbA1c (AOR 91.474, p=0.002) at late postpartum.

CONCLUSION
Findings from this study may help in identifying characteristics of women post-GDM who are at high risk of AGT at different timepoints. Continuous diabetes screening and dietary intervention postpartum are strongly recommended to prevent the eventual progression to type 2 diabetes.

OA-A-03

DIABETES DISTRESS – PREVALENCE, RISK FACTORS AND IMPACT ON SELF-MANAGEMENT AMONG PATIENTS IN SPECIALIST-LED DIABETES CLINICS

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INTRODUCTION
Diabetes distress (DD) is emotional distress from living with diabetes mellitus (DM) accompanied by the burden of long-term self-management. If unaddressed, it can lead to depression.

METHODOLOGY
This is a cross-sectional study to evaluate the prevalence, risk factors and impact of DD among patients (non-pregnant, ≥18 years) in DM clinics at Sarawak General Hospital using the validated DD scale (DDS17), along with a review of medical notes. The DDS17 addresses 4 DD components – A (Emotional burden), B (Physician-related distress), C (Regimen distress) and D (Interpersonal distress). Mean item score ≥3 indicates the presence of high distress.

RESULTS
From a total of 139 patients (57.6% female, 67.9% with T2DM) with a mean age of 41.9 years (SD 15.49), 21.6% have DD. The highest prevalence were for components A (39.6%) and C (38.8%) compared to B (15.8%) and D (19.4%). High emotional burden was significantly associated with a history of DKA [OR=2.9 (95% CI=1.4-6.0), p=0.006] and insulin injections >3 daily [OR=2.2 (95% CI=1.0-4.50, p=0.038]. Patients ≤30 years were more likely to have regimen-related distress [OR=6.6 (95% CI=1.6-26.8), p=0.026]. Lack of own transport to the clinic was significantly associated with interpersonal distress (p=0.012). Indicators of DM self-management namely self-glucose-monitoring, dietary recall and number of missing insulin injections were not significantly different between those with and without high distress.

CONCLUSION
DD is prevalent. Risk factors include young adults, history of DKA, multiple daily injections, and reliance on others to travel to clinics. While DD does not seem to significantly impact DM self-management in our study, greater awareness and early detection and management of DD as part of comprehensive diabetes care are vital to support patients holistically to prevent psychological complications.

OA-A-04

PREVALENCE OF LOW BONE MINERAL DENSITY AND ITS ASSOCIATED RISK FACTORS IN PATIENTS WITH DIFFERENTIATED THYROID CANCER RECEIVING TSH SUPPRESSION THERAPY

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INTRODUCTION
TSH suppression therapy has been reported to cause low bone mineral density (BMD). Osteoporotic fracture is associated with increased morbidity and mortality. Hence, a targeted screening for osteoporosis is important. The aim of this study is to determine the prevalence of low BMD among patients with differentiated thyroid cancer (DTC) receiving TSH suppression therapy and its associated risk factors.

METHODOLOGY
This was a cross–sectional study done at Hospital Putrajaya. About 98 patients with DTC receiving TSH suppression therapy (mean TSH levels ≤0.5 mIU/L within the past one year) were recruited between August 2020 and March 2021.

RESULTS
The prevalence of low BMD among patients with DTC on TSH suppression therapy was 27.6% (osteopenia=22.4%, osteoporosis=4.1%, BMD below the expected range for age=1%). Age was a risk factor for low BMD with the adjusted odds ratio (AOR) of 1.14, 95% confidence interval (CI)=1.032–1.262, p=0.010. In addition, postmenopausal women had a 9–fold higher risk of low BMD compared to men (AOR=8.64, 95% CI=1.436–51.921, p=0.019). Patients with mean TSH <0.1 mIU/L had a 6–fold increased risk of low BMD compared to those with mean TSH between 0.1 mIU/L to 0.49 mIU/L (AOR=6.33, 95% CI=1.111–36.072, p=0.038). Lastly, patients who were on calcium supplementation had an 88% lower risk of low BMD compared to those who were not on calcium (AOR=0.12, 95% CI=0.025–0.556, p=0.007).

CONCLUSION
Our study suggests that over a quarter of the patients with DTC receiving TSH suppression therapy have low BMD, mostly among the older population, postmenopausal women, and patients with mean TSH levels <0.1 mIU/L. We should also consider calcium supplementation to prevent bone loss during TSH suppression therapy.

OA-A-05

THE EFFECTS OF LOW DOSE RADIOACTIVE IODINE ON OVARIAN RESERVE AMONG PATIENTS WITH GRAVES' DISEASE

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INTRODUCTION
High dose radioactive iodine (RAI) has been shown to reduce ovarian reserve. We aimed to evaluate the effects of low dose RAI on ovarian reserve among patients with Graves' disease (GD) and factors associated with changes in anti-Müllerian hormone (AMH) level.

METHODOLOGY
Fifty premenopausal women with GD participated in this study; 25 had RAI therapy and 25 were on anti-thyroid drugs (ATD). Serum follicle-stimulating hormone (FSH), luteinizing hormone (LH), estradiol(E2), thyroid-stimulating hormone (TSH), free thyroxine (FT4), anti-TSH receptor antibody (TRab), anti-thyroid peroxidase antibody (anti-TPO) and 25-hydroxyvitaminD levels were measured at baseline while AMH levels were measured at baseline, and at 3- and 6-months follow-up.

RESULTS
The mean age of participants was 31.22 ± 5.27 years with median thyrotoxicosis duration of 36 (68) months. The median dose of RAI was 15 (5) mCi. The mean AMH levels for the RAI-treated group were 22.88 ± 13.20, 20.75 ± 14.31, and 21.57 ± 15.33 pmol/L, while the mean AMH levels for medical therapy group were 26.36 ± 17.16, 24.27 ± 14.28 and 25.07 ± 16.92 pmol/L, respectively at baseline, 3- and 6-months follow-up. Both groups were not significantly different between these time points (p=0.383; p=0.354). The reduction of AMH levels were 13.15 ± 30.76% and 2.10 ± 27.08% at 3 months; 5.04 ± 38.66% and 5.13 ± 28.28% at 6 months for RAI and medical therapy group, respectively (p=0.184; p=0.993). Only the age of menarche was negatively correlated (r=-0.436, p=0.029) with percentage of changes in AMH level at 3 months after RAI.

CONCLUSION
Low dose RAI has no significant effect on ovarian reserve and age of menarche is negatively correlated with changes in AMH level at 3 months after RAI.

OA-A-06

DETERMINATION OF PREVALENCE AND RISK FACTORS FOR HEART FAILURE WITH PRESERVED EJECTION FRACTION (HFPEF) IN TYPE 2 DIABETES MELLITUS

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INTRODUCTION
Diabetes and heart failure are two major risk factors for morbidity and mortality that have reached epidemic proportions worldwide. The number of patients with heart failure with preserved ejection fraction appears to be increasing compared to those with heart failure with reduced ejection fraction, due to an increasing prevalence of metabolic diseases such as diabetes mellitus. However, the prevalence and risk factors are currently not well studied in our population. The aim of this study is to determine the prevalence and associated risk factors for HFpEF amongst patients with T2DM attending clinics in Hospital UiTM.

METHODOLOGY
We conducted a cross sectional study among patients with T2DM, age >18 years. Exclusion criteria were the presence of atrial fibrillation, ESRF and moderate to severe valvular heart disease between December 2021 until May 2022. Baseline demographic, anthropometric measurements, echocardiography and NTproBNP test were performed in compliance with the ESC 2019 guideline.

RESULTS
The study population (n=260) had a mean age of 61+5.4 years, median (IQR) duration of T2DM 10 years (14) and 56% (n=147) of them are on insulin. The prevalence of HFpEF was 22% (n=55). Multiple logistic regression analysis revealed that female sex (OR 2.764, CI, 1.49-5.1, p=0.001) duration of diabetes (OR 1.033, CI 1.002-1.066, p=0.036), higher waist circumference (OR 1.023, CI 1.001-1.046, p=0.044), insulin usage (OR 2.587, CI 1.349-4.96, p=0.004) and 3 or more antihypertensive medications (OR 2.014, CI 1.510-2.688, p< 0.001) are predictors of HFpEF in this group of patients with T2DM.

CONCLUSION
The prevalence of HFpEF amongst patients with T2DM was high at 22%. The associated risk factors of HFpEF from our study include female gender, longer duration of diabetes, higher waist circumference, insulin usage and use of multiple antihypertensive drugs.

PEDIATRIC

OP-P-01

CLINICAL DIVERSITY AND GENETIC FINDINGS IN CHILDREN WITH DIFFERENCE OF SEX DEVELOPMENT

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INTRODUCTION
Difference of sex development (DSD) is a rare disease. Clinical classification is difficult due to similar phenotypes with different genetic etiologies. The study aimed to determine the clinical diversity and genetic diagnosis of patients with DSD in Hospital Tunku Azizah (HTA), Kuala Lumpur.

METHODOLOGY
Children with DSD (except Turner syndrome and congenital adrenal hyperplasia) who attended the Paediatric Endocrine Clinic, HTA between January to December 2021 were included. Data including karyotypes and whole exome sequencing results were retrospectively reviewed.

RESULTS
Twenty-seven children were identified: 23 with 46,XY DSD, two 46,XX DSD and two sex chromosome DSD. Majority (59.3%) presented at the neonatal period; the rest during prepubertal (33.3%) and pubertal (7.4%) ages. All 16 neonates presented with ambiguous genitalia, with external genitalia score (EGS) 7.9 ±1.6. All were assigned as male, and 93.8% (15/16) were 46,XY. Nine children presented at the prepubertal period, with mean age of 4.8 ± 3.9 years. Of these, 55.6% (5/9) were brought up as male with EGS 5.7 ± 2.9. Six were 46,XY, two 45,XO/46,XY and one 46,XX. The reasons for referral were middle/proximal hypospadias (50%), cryptorchidism (37.5%), micropenis (25%) and virilisation (12.5%). Two adolescents (46,XY) presented at puberty with mean age of 11.5 ± 0.7 years and EGS 5.8 ± 3.9. The most common diagnosis was gonadal dysgenesis (10/27, 37%), followed by androgen insensitivity syndrome (AIS) (33.3%), 5-alpha reductase (5αR) deficiency (11.1%), and ovotesticular (11.1%) and mixed gonadal dysgenesis (MGD) (7.4%). Nineteen children (70.4%) had genetic testing. Two were found to have MGD (45,XO/46,XY), two with gonadal dysgenesis (WT1 gene), one with 5αR deficiency (NR5A1) and one with AIS (AR).

CONCLUSION
We observed a wide spectrum of DSD in our clinical setting. An accurate genetic diagnosis is crucial to predict long term outcomes. Reanalysis maybe required in the future for unsolved cases.

OP-P-02

PSYCHOSOCIAL CONSEQUENCES OF THE COVID-19 PANDEMIC AMONG TEENAGERS WITH DIABETES

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INTRODUCTION
The management of teenagers with diabetes during the COVID-19 pandemic has become more challenging with the negative psychosocial impact brought upon by the pandemic.

METHODOLOGY
We embarked on a cross-sectional study to identify the factors influencing glycaemic control (HbA1c) among teenagers with diabetes during the COVID-19 pandemic. Interviews regarding lifestyle changes were conducted among teenagers with type 1 (T1DM) and type 2 diabetes mellitus (T2DM), followed by the administration of the Depression, Anxiety, and Stress Scale (DASS-21).

RESULTS
A total of 59 adolescents with T1DM (32 males, 54.2%) and 31 patients with T2DM (10 males, 32.3%) were recruited. Overall, the HbA1c worsened from 9.13% before the COVID-19 pandemic to 9.33% during the pandemic (p-value 0.039). Significant factors which negatively influenced glycaemic control were male sex, puberty, prolonged screen time, presence of symptoms of anxiety/stress, and T2DM. However, skipping breakfast, sleep adequacy and physical activity did not directly influence the HbA1c. About one-third of the participants suffered from some form of mental disturbance (31.1% of patients had depressive symptoms, 38.9% of patients had anxiety symptoms, and 23.3% of patients experienced stress). The incidence of depression was higher among participants with T2DM, while anxiety and stress were higher among those with T1DM. Male gender, good glycaemic control pre-pandemic, and prepubertal status were associated with depressive symptoms during the pandemic.

CONCLUSION
Besides the disruption of daily routine, glycaemic control worsened among diabetic adolescents during the COVID-19 pandemic. A holistic management plan is needed to address the psychosocial concerns of this group to ensure optimal mental well-being and appropriate glycaemic control.

OP-P-03

GROWTH PATTERNS OF TERM SMALL-FOR-GESTATIONAL-AGE BABIES

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INTRODUCTION
Catch-up growth is important in bringing a child back to pre-retardation growth. Term small-for-gestational-age (SGA) children with a lack of catch-up growth are at risk of short stature, growth retardation and impaired cognitive function. Early recognition of those who failed to achieve catch-up growth is important as they could benefit from early follow-up and nutritional assessment; and if indicated, growth hormone therapy. This study aimed to determine the proportion of term SGA infants born in University Kebangsaan Malaysia Medical Centre (UKMMC) who achieved catch-up growth with respect to height velocity, and the associated factors for catch-up growth.

METHODOLOGY
This retrospective longitudinal cohort study was conducted in UKMMC. The sample consisted of term SGA children delivered in UKMMC from January 2016 to March 2017. Their anthropometric data were assessed at birth, three months, six months, nine months, one year, 1.5 years, two years and five years.

RESULTS
A total of 128 term SGA children were included. Catch-up growth was seen as early as three months. By two years of age, 88.3% achieved catch-up growth. Despite good catch-up growth, the rates of wasting and severe wasting in terms of BMI were high from 1.5 years onward, indicating that weights were not proportionate to attained heights. Apart from mixed feeding, we found no other factors related to catch-up growth that was associated with higher catch-up rate.

CONCLUSION
While more than 85% of the term SGA children eventually achieved catch-up growth by 2 years, the rate of wasting was high. Early identification and early referral are important in these children to optimise outcomes.

OP-P-04

PREVALENCE OF HYPOPHOSPHATEMIA IN CHILDREN WITH DIABETIC KETOACIDOSIS

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INTRODUCTION
In diabetic ketoacidosis (DKA), hypophosphatemia may occur due to phosphaturia and intracellular phosphate shift during insulin and fluid repletion. Although ISPAD recommends monitoring, the guideline on routine checks is unclear.

METHODOLOGY
This is a retrospective cohort study among children with Type 1 Diabetes Mellitus (T1DM) admitted with DKA from 2017 until 2021 at University Malaya Medical Centre (UMMC). Hypophosphatemia is defined as severe if the serum phosphate is <0.80 mmol/L or moderate if the serum phosphate is between 0.8 to 1.0 mmol/L.

RESULTS
Eighty-nine children with T1DM were analysed, but only 47 children with seventy presentations of DKA were included. Thirty (43%) presentations were recurrent DKA (14 patients). Twenty-seven (51%) were males. Forty seven percent (47%) were Malay, 31% Indian, 20% Chinese and 1% were of other ethnicities. There were 47% severe, 36% moderate, and 17% mild DKA presentations. The mean age at T1DM diagnosis was 8.6 ± 3.1 years, and the mean age at DKA diagnosis was 11 ± 4 years. Of the recurrent DKA's, the mean duration of diagnosis was 4.4 years (0.5-8 years). Mean HbA1c was 12.6 ± 2.5%. Hypophosphatemia was present in 78% (55/70) [mean 0.77 ± 0.4 mmol/L] with 50% having severe hypophosphatemia (mean serum phosphate of 0.46 ± 0.18 mmol/L). The mean time to onset of hypophosphatemia after DKA presentation was 12.3 ± 1.2 hours. Among the children with severe hypophosphatemia, 74% (26/35) had severe DKA (mean pH 6.99 ± 0.13; mean HCO_3 7 ± 2.2 mEq/L). Twenty percent (7/35) were given >20 mL/kg intravenous fluid boluses. Five of 6 children who were on assisted mechanical ventilation had severe hypophosphatemia. Twenty percent (7/35) developed complications with cardiovascular and/or renal injury.

CONCLUSION
In our study, the children who presented with severe hypophosphatemia had severe DKA. They also had higher intravenous fluid requirements and higher intubation rates. One in five children with severe hypophosphatemia had other DKA-related complications. Routine phosphate monitoring is recommended in children with DKA.

OP-P-05

PREVALENCE AND RISK FACTORS OF DIABETIC NEPHROPATHY AMONG CHILDREN WITH TYPE 2 DIABETES MELLITUS

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INTRODUCTION
Youth-onset type 2 diabetes mellitus (T2DM) is an aggressive disease with early occurrence of diabetic nephropathy (DN), which can lead to end-stage renal failure. The prevalence of DN among Malaysian children with T2DM is not known. Risk factors associated with DN in T2DM children showed inconsistent findings among published studies. The main objectives of this study were to evaluate the prevalence of DN and determine the risk factors associated with DN among children with T2DM seen at University Malaya Medical Centre (UMMC).

METHODOLOGY
All patients diagnosed with T2DM before 18 years old from 1 January 2007 to 31 December 2020 with at least one year of follow-up were included. This retrospective case-control study compared cases (patients who developed DN) and controls (patients without DN). DN was diagnosed by the presence of microalbuminuria or macroalbuminuria. Logistic regression was performed to determine the independent variables associated with DN.

RESULTS
Forty-two patients were analysed: 48% were male, with mean age of 12.5 ± 2.3 years and median diabetes duration of 4.4 (range 2.9 - 6.9) years. The prevalence of DN was 47%. The mean age of onset of DN was 14.9 ± 2.8 years, after a median duration of T2DM of 1.8 (range 0.7 - 2.9) years. Three significant risk factors associated with the development of DN were NAFLD (OR 107.51, 95% CI; 2.10 - 5496.57), serum LDL-C at diagnosis (OR 3.43, 95% CI; 1.13 - 6.99) and HbA1c in the first three years of T2DM (OR 3.14, 95% CI; 1.05 - 9.34).

CONCLUSION
The prevalence of DN among T2DM children at UMMC is high. The risk factors significantly associated with DN were HbA1c levels in the first three years of diabetes, LDL-C at diagnosis and the presence of NAFLD.

POSTER PRESENTATIONS

ADULT

PP-A-01

ACCURACY OF RANDOM SERUM CORTISOL IN DIAGNOSING SECONDARY ADRENAL INSUFFICIENCY

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INTRODUCTION
Adrenal insufficiency (AI) is defined as failure of the adrenal cortex to secrete adequate amounts of hormones. The Short Synacthen Test (SST) is a diagnostic test used to establish AI. Random serum cortisol may be a more practical and useful test for screening and diagnosing AI. The objectives of this study are to compare random serum cortisol with positive and negative SST and to evaluate the diagnostic accuracy of random serum cortisol at different cut off values.

METHODOLOGY
This is a 5-year retrospective study performed at three tertiary centers. A total of 111 subjects who underwent SST were identified. Primary AI was excluded in this study. Primary and secondary AI were differentiated based on serum ACTH. Positive SST refers to a patient who has confirmed diagnosis of secondary AI based on SST. Random serum cortisol was defined as a serum cortisol sample drawn at presentation. The association between random serum cortisol and positive SST levels were analysed through an independent sample T test. Diagnostic accuracy was evaluated by a receiver operating characteristic curve (ROC) analysis. Cut of values of random serum cortisol were determined using Youden Index.

RESULTS
Of the 111 patients who underwent SST, only 103 patients who fulfilled the inclusion criteria, and 53 (51%) were confirmed to have secondary AI. Mean random serum cortisol for positive SST was 143.86 ± 105.68 nmol/L. The ROC curve for the model assessing the diagnostic accuracy had an area under curve of 0.72 (95%CI 0.62-0.82). The cut off levels of random serum cortisol for were <80 nmol/L and <100 nmol/L. The cut-off of <100 nmol/L was noted to have the highest specificity at 98%, while optimal baseline serum cortisol of >400 nmol/L had the highest sensitivity at 98.1%

CONCLUSION
A random serum cortisol of <100 nmol/L is highly specific and very strongly associated with secondary AI.

PP-A-02

THE IMPACT OF DIABETES MELLITUS AND OBESITY ON CLINICAL OUTCOMES OF HOSPITALISED PATIENTS WITH COVID-19 INFECTION

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INTRODUCTION
Obesity and diabetes mellitus are often regarded as risk factors for poorer outcomes in various infections. This study was conducted to determine the impact of diabetes mellitus and obesity on clinical outcome of COVID-19 infected patients.

METHODOLOGY
A prospective study was conducted from April 2021 to October 2021 among patients aged >18 years, admitted to Hospital Sarikei with confirmed SARS-CoV-2 infection stratified as categories 4 and 5. Pregnant women and patients with existing lung pathology were excluded. Demographic data, comorbidities, BMI, and clinical outcome parameters such as number of days on oxygen supplementation, need for mechanical ventilation and mortality were recorded.

RESULTS
A total of 458 patients were included, mean age was 61.6 ± 14.2 years and 231 (50.4%) participants were male. Almost half, 211 (46.1%) were diabetics and 165 (36.0%) were found to be obese.

Diabetic patients were on oxygen supplementation for a mean duration of 7.30 ± 5.63 days, significantly longer than nondiabetic patients with a mean duration 6.01 ± 4.90 days, p=0.009. There was no significant difference in number of days on oxygen between obese and non-obese patients.

A higher proportion of obese patients were mechanically ventilated, 38.2% vs 25.3% non-obese patients, p=0.004. There was no increase in mechanical ventilation among diabetic patients.

The rate of mortality in the obese group was also significantly higher than non-obese patients, 23.0% vs 12.6% respectively, p=0.009. The mortality rate among diabetics was not significantly different from that of nondiabetics.

CONCLUSION
Diabetic patients required oxygen supplementation for a significantly longer duration than nondiabetics. The rates of mechanical ventilation and mortality were significantly higher among obese patients compared to non-obese patients. These findings suggest that vigilant monitoring and better management for obese and diabetic patients with COVID-19 infection are important to improve clinical outcome.

PP-A-03

GENETIC STUDIES OF DIABETIC NEPHROPATHY IN THE MALAYSIAN POPULATION: A REVIEW

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INTRODUCTION

Malaysia is reported to have the world's second fastest growing rate of kidney failure. The 2018 Annual Data Report of the United States Renal Data System noted that the incidence rate of treated end-stage renal disease in Malaysia increased by an average of 13.2% per year from 2003 to 2016. Diabetes is cited as the most common cause of end-stage renal disease in Malaysia. This article aims to review genetic studies conducted among patients with diabetic nephropathy in the Malaysian population.

METHODOLOGY

This review was conducted by searching PubMed, MEDLINE and Google Scholar databases to identify all relevant papers published in English from March to April 2022, using the following keywords: diabetes, type 2 diabetes, diabetic nephropathy, diabetic kidney disease and Malaysia.

RESULTS

The case-control study of patients with and without diabetic nephropathy showed a significant association of CNDP1, NOS3, and MnSOD genes with diabetic nephropathy. Ethnic subgroup analysis showed significant differences in terms of diabetes duration (≥10 years) in CCL2 rs3917887, CCR5 rs1799987, ELMO1 rs74130, and IL8 rs4073. IL8 rs4073 was found to have significant association only in Indians, while CCR5 rs1799987 was significantly associated with the Chinese ethnic group. In Malays, SLC12A3 Arg913Gln polymorphism and ICAM1 K469E (A/G) polymorphism were found to be associated with diabetic nephropathy. No significant difference was observed in the I/D polymorphism of the ACE gene, regardless of ethnicity and gender. Studies on gene-environment interactions have suggested significant genetic and environmental factors for eNOS rs2070744, PPARGC1A rs8192678, KCNQ1 rs2237895 and KCNQ1 rs2283228 with kidney disease.

CONCLUSION

The contributions of genetic variants differed across ethnic groups. Further studies on the relationship of genetic variants and phenotypes are important because of the different complication profiles and susceptibility to diabetic nephropathy among Malaysians.

PP-A-04

A RETROSPECTIVE REVIEW OF CLINICAL CHARACTERISTICS, NATURAL HISTORY AND FOLLOW-UP OF PATIENTS WITH ADRENAL INCIDENTALOMA

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INTRODUCTION
Adrenal incidentalomas are clinically silent adrenal masses detected on imaging performed for non-adrenal-related reasons. This study aims to describe the clinical characteristics, natural history and follow-up of patients with adrenal incidentaloma in Selayang Hospital.

METHODOLOGY
This is a retrospective review of patients diagnosed with adrenal incidentaloma between January 2014 and March 2022. Data for demographics, radiological characteristics, biochemical function, histopathological examination and follow-up were reviewed and analyzed.

RESULTS
Of the 60 patients included, 53.3% were female. Mean age at diagnosis was 57.9 ± 17.1 years. Lesions were left-sided in 53.3%, while 10% were bilateral. Majority (80%) were non-functioning tumors. Among the 11 cases of functioning tumors, mild autonomous cortisol secretion (MACS) was the most common (45%), followed by pheochromocytoma (36%) and primary aldosteronism (18%). Adrenal tumors with MACS were associated with a significantly higher prevalence of obesity and osteoporosis.

Malignant adrenal tumors were discovered in three cases (5%): one was an adrenocortical carcinoma, while two were metastatic tumors. Mean tumor size was 2.9 ± 0.5 cm (range, 1.0-15.5 cm) with malignant lesions being significantly larger than benign ones (5.1 ± 2.0 cm versus 2.4 ± 2.2 cm, p=0.048). All patients who underwent adrenalectomy in this series were in remission at the time of the last follow-up. Among the conservatively treated patients, only one had a significant increase in tumor size. There were no changes in functionality or malignant transformation during the mean follow-up duration of three years.

CONCLUSION
The prevalence of functioning tumors or malignancy in this series was 20% and 5%, respectively. MACS was the most common type of hormonal abnormality associated with obesity and osteoporosis. Malignant lesions were associated with larger tumor size.

PP-A-05

PREDICTIVE FACTORS FOR FAILURE OF FIRST RADIOACTIVE IODINE THERAPY IN PATIENTS WITH HYPERTHYROIDISM

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INTRODUCTION
Radioactive iodine (RAI) therapy is used commonly and successfully as a definitive treatment for hyperthyroidism. Predictive factors for RAI outcomes have been previously shown to be heterogenous. This study aimed to examine the prevalence of treatment failure at one year post-RAI as well as identify the predictors of RAI failure in our local urban population.

METHODOLOGY
We performed a retrospective study involving patients who had undergone first RAI therapy from January 2015 to December 2020 in the University Malaya Medical Centre. Pre- and post-RAI data were collected from electronic medical records, including demographics, goiter size, thyroid function tests at diagnosis/pre-RAI, RAI dose, anti-thyroid drug duration and dose, and time taken to achieve euthyroidism or hypothyroidism. Data were analyzed using SPSS® version 23 and expressed as mean/median or frequencies, and multivariate analysis using logistic regression.

RESULTS
A total of 292 patients were included in the study. Majority of the patients were female (69.9%) with Graves' disease (79.2%). The median RAI dose given was 16 mCi (range, 10-18). Within one year of RAI, 85.3% of patients achieved treatment success; of these, 93.2% attained success within six months. Treatment failure, defined as persistent hyperthyroidism one year post-RAI, was seen in 14.7%. We found that a high serum free T4 at diagnosis was a predictive factor for RAI failure (OR 1.01; 95% CI, 1.01-1.02; p=0.002). There were no significant associations between age, gender, body mass index, goiter size and RAI dosage with failure of RAI in our study population.

CONCLUSION
High serum free T4 at diagnosis was associated with poorer RAI outcomes. Higher doses of RAI or thyroidectomy may be considered in these patients.

PP-A-06

PREVALENCE AND ASSOCIATED FACTORS OF METABOLIC BONE DISEASE IN MALE PATIENTS WITH TYPE 2 DIABETES MELLITUS

https://doi.org/10.15605/jafes.037.S2.06

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INTRODUCTION
Osteoporosis is recognized as a prevalent disease in postmenopausal women and elderly individuals. Studies have shown that patients with type 2 diabetes mellitus (T2DM) are at risk for fractures even with normal or high bone mineral density (BMD). Fractures amongst male patients with T2DM have also become more prevalent. We aimed to determine the prevalence and associated factors of metabolic bone disease in males with T2DM.

METHODOLOGY
We conducted a cross-sectional study of male patients with T2DM above age 50 years at Hospital Universiti Teknologi MARA from December 2021 to May 2022. Demographic data and biochemical profiles were obtained from all the participants. BMD of the lumbar spine (L1-L4) and femoral neck were obtained using dual energy X-ray absorptiometry (DEXA).

RESULTS
A total of 150 patients with mean age of 64 ± 7.2 years were included. The prevalence of osteoporosis and osteopenia within the study cohort was 4% and 15.3%, respectively. Patients with metabolic bone disease had numerically higher median age, lower eGFR and lower urine albumin creatinine ratio (UACR), albeit not statistically significant. Multiple linear regression analysis showed a correlation between hip BMD with BMI and with alkaline phosphatase (ALP), whereby a 1 kg/m^2 increase in BMI was correlated with a 0.008 increase in hip BMD (CI 0.003 to 0.012, p=0.001), and a 1 U/L increase in ALP with a 0.001 decrease in hip BMD (CI -0.002 to 0.000, p=0.006). Other factors including age, smoking, eGFR, HbA1c and UACR showed no significant correlation with metabolic bone disease.

CONCLUSION
The prevalence of osteoporosis and osteopenia in our study cohort was low. BMI and serum ALP were found to be significant predictors of BMD levels in male patients with T2DM.

PEDIATRIC

PP-P-01

A FAMILY WITH HYPOGONADOTROPIC HYPOGONADISM AND A NOVEL VARIANT OF FGFR1 GENE MUTATION

https://doi.org/10.15605/jafes.037.S2.76

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INTRODUCTION
FGFR1 gene mutation is a known cause of gonadotropin deficiency such as Kallmann syndrome. We described two related young under-virilized males with a variant of FGFR1 gene mutation. Both were born in a non-consanguineous family. Both have normal senses of smell.

CASES

CASE 1
A 9-month-old male presented with ambiguous genitalia at birth. He had signs of under-virilization at birth including a micropenis with a stretched penile length of 1.7 cm, and bilateral undescended testes. He was planned for work-up but was lost to follow-up until the current presentation. He had a 46,XY karyotype with a positive SRY gene. Beta-hCG stimulation test revealed a poor testosterone rise. LHRH test did not show a response to GnRH. Genetic mutation analysis revealed the FGFR1 mutation variant at position c.1430.

CASE 2
His paternal uncle, a 13-year-6-month-old male was also referred to us for a micropenis. He had no dysmorphic features. He did not have any sign of pubertal development. He had a stretched penile length of 2.5 cm and bilateral prepubertal testicular volumes. He had a 46,XY karyotype and a positive SRY gene. He had low baseline levels of LH, FSH, and testosterone. Both beta-hCG and LHRH tests showed poor pituitary and gonadal responses. His MRI showed a normal pituitary gland and olfactory bulbs. He has the exact mutation variant at the FGFR1 gene as the index case.

CONCLUSION
Both of our patients shared common features of under-virilization and biochemical evidence of hypogonadotropic hypogonadism. Despite there being more than 200 missense mutations of the FGFR1 gene reported in "The Human Gene Mutation Database" and the "ClinVar" database, the genetic mutation variant that our patients shared was not registered in both databases and may suggest a novel mutation associated with hypogonadotropic hypogonadism. Identification of this genetic variant may assist in the proper counseling of the patients and their families.

PP-P-02

VITAMIN D DEFICIENCY AND CENTRAL PRECOCIOUS PUBERTY (CPP) IN CHILDREN WITH AUTISM SPECTRUM DISORDER (ASD) - A CASE SERIES

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INTRODUCTION
More children with Autism Spectrum Disorder (ASD) are being recognised. Management of ASD remains challenging. We report 2 children with ASD manifesting with Vitamin D deficiency and 5 children with ASD and central precocious puberty (CPP). DSM-5 classification is used to describe the autism severity.

CASES
Two patients presented with symptomatic hypocalcaemia. Patient A (13 years old; severe ASD level 3) had carpopedal spasms and Patient B (3 years old; ASD level 3) had rickets. Both had restricted diet variations and were stunted (height SDS -2.07 and -2.9 respectively). Patient A had serum calcium of 1.61mmol/L, ALP of 799U/L, iPTH of 25.2 pmol/L, and Vitamin D of 18 nmol/L. Patient B had serum calcium of 1.66 mmol/L, ALP of 2333 U/L, iPTH of 42.2 pmol/L, and Vitamin D of 11 nmol/L. Both required intravenous calcium gluconate, oral calcium carbonate, cholecalciferol, and calcitriol. Both their serum calcium levels normalized with treatment. Five patients were referred for CPP. Patients C (8 years old; ASD level 1) and D (7.2 years old; ASD level 3) were siblings who presented with isolated thelarche. Patient E (5.6 years old; ASD level 1) had thelarche and menarche. Patient F (7 years old; ASD level 1) presented with tall stature and thelarche. Patient G (8.5 years old; ASD level 3) presented with advanced puberty. Three of the five children with CPP had abnormal psychological traits (genitalia rubbing). At presentation, breast staging varies between Tanner 2-4, and pubic hair at Tanner 2-3. The mean basal LH level was 0.8 ± 0.8 IU/L, mean FSH was 5.8 ± 2.87 IU/L, and mean estradiol was 179 ± 128.2 pmol/L. Bone ages were advanced ranging from 0.6 to 3 years and ultrasonography of the pelvis revealed pubertal uterine development. Three required LHRH tests to confirm the diagnosis. All were treated with GnRH agonists. Only 1 patient completed treatment.

CONCLUSION
Early recognition and therapy may benefit these children.

PP-P-03

AUDIT ON BISPHOSPHONATE THERAPY IN CHRONIC ILLNESS OSTEOPOROSIS IN HOSPITAL TUNKU AZIZAH

https://doi.org/10.15605/jafes.037.S2.78

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INTRODUCTION
The incidence of secondary osteoporosis in children is on the raise due to improved long-term outcomes for children with chronic conditions. It causes significant morbidity if left untreated, including pain due to fractures and subsequent immobilisation.

METHODOLOGY
The clinical notes and imaging findings of the recipients of bisphosphonate therapy from 2019 to 2022 were traced through the electronic medical record system.

RESULTS
A total of five patients received bisphosphonate therapy during the study duration. Their ages ranged from 7 months to 15.5 years. All patients presented with vertebral compression fractures. Two patients had concurrent long bone fractures. Identified risk factors for osteoporosis included chronic inflammatory condition, neuromuscular disorder and prolonged steroid administration (one patient with Crohn's disease, one patient with Duchenne muscular dystrophy); vitamin D deficiency (Alagille syndrome and end-stage liver disease secondary to biliary atresia) and malignancy (acute lymphoblastic leukaemia). Three patients received intravenous zoledronic acid while another two received pamidronate. There was no recurrence of fracture after initiation of bisphosphonate therapy. The patient with Crohn's disease had completed bisphosphonate therapy at 18 years old. There was marked bone mineral density improvement (184%) with lumbar spine Z-score ameliorated from -4.7 to -1.7. The teenager with Duchenne muscular dystrophy had the least recuperation. Two patients developed serum sickness syndrome during the first infusion of intravenous bisphosphonate. The toddler with end stage liver disease died after liver transplantation due to septicaemia and disseminated intravascular coagulopathy.

CONCLUSION
Bone health surveillance should be offered to all children with risk factors. Bisphosphonate therapy should be offered to children with secondary osteoporosis.

PP-P-04

RAMADAN FASTING AMONG PAEDIATRIC PATIENTS WITH CONGENITAL ADRENAL HYPERPLASIA (CAH)

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INTRODUCTION
All postpubescent Muslims, with exceptions, are requested to fast during Ramadan. However, patients with illnesses often want to fast despite medical risks to their health. To our knowledge, there are no studies on fasting among children with CAH, and the risks of prolonged fasting are not known. We seek to explore their experiences during fasting.

METHODOLOGY
This is a cross-sectional study using a questionnaire over an estimated period of 6 months. All children with CAH being seen at Hospital Putrajaya who had attempted fasting during Ramadan or wished to fast in the future were included.

RESULTS
18 females and 16 males with a mean age of 9.6 ± 0.982 years (3–17) were recruited. Twenty-seven patients (79.4%) tried to fast but only twelve (44%) sought the advice of a paediatrician. Nine (75%) fasted despite being advised against fasting. Complications which occurred in 13 patients (48.2%) included the following: asthenia (92.3%), thirst (30.7%), dehydration (23%), and hypoglycaemic symptoms (61%). None were hospitalised. Twelve patients (44%) were able to fast for the whole month.

Non-fasters were significantly younger than fasters [adjusted OR (95%CI) = 1.9437 (1.09–3.43), p=0.02]. Fasters were less aware of the potential complications from fasting [adjusted OR (95%CI) = 0.07 (0.007–0.68), p=0.02]. The frequency of adequate knowledge on safe fasting practices during Ramadan was significantly lower in full-month-fasters vs. partial-month-fasters [adjusted OR (95%CI) = 0.079 (0.008–0.781), p=0.02]. Non-compliant-fasters were significantly more likely to experience complications vs. compliant-fasters during fasting [adjusted OR (95%CI) = 8.3 (1.47–47.22), p=0.01].

CONCLUSION
A significant number of paediatric patients with CAH who observed Ramadan fasting without a paediatrician's advice is a cause for concern. In paediatric CAH patients, fasting can cause complications especially if compliance with medications is an issue.

PP-P-05

THE OUTCOME OF DEFINITIVE THERAPY FOR PAEDIATRIC GRAVES' DISEASE: A SINGLE-CENTRE STUDY

https://doi.org/10.15605/jafes.037.S2.80

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INTRODUCTION
Most paediatric hyperthyroid patients are diagnosed with Graves' Disease (GD). The low remission rate and adverse events associated with antithyroid medications may warrant definitive therapy for these patients. Options for definitive therapies include total thyroidectomy (TT) or ablative therapy with radioactive iodine (RAI). The age, size of the goitre, and frequency of relapses influence the choice of definitive therapy.

METHODOLOGY
Medical records of paediatric patients with GD receiving definitive therapy at the University Malaya Medical Centre from 2012 to 2022 were reviewed.

RESULTS
Ten patients received definitive therapy. Seven were female. The mean age at diagnosis was 10.7 ± 4.3 years old. The average duration of antithyroid medication use before definitive therapy was 4.1 ± 1.6 years. The median relapse rate for both TT and RAI groups was 2.5 (1-6) times. Three patients had TT performed post-puberty. The mean age at RAI was 14.9 ± 4.0 years, with the youngest at 8 years of age. The thyroid gland weight was the decisive factor favouring TT, 92 ± 17.8 grams (TT) versus 22.9 ± 6.2 grams (RAI). Hypothyroidism occurred earlier in those who underwent TT at 1.3 weeks versus 8 weeks for those who underwent RAI. Six patients became hypothyroid post-RAI, however, 3 patients relapsed. The dose of RAI was lower in the patients who relapsed (5.6 ± 3.8 mCi versus 9 ± 2.0 mCi), although the thyroid sizes were similar. Two patients became hypothyroid after the second RAI therapy. No significant adverse events were seen in all patients who underwent TT.

CONCLUSION
Definitive therapy is safe in non-remitting paediatric GD patients. TT should be considered if the thyroid gland size is large and less likely to respond to RAI with the provision of an experienced surgeon. RAI renders a good outcome in difficult GD, however, in younger children, small doses may not be sufficient, and repeat doses may be necessary.

POSTER ABSTRACTS

ADULT

PA-A-01

ADRENAL INSUFFICIENCY SECONDARY TO BILATERAL ADRENAL HISTOPLASMOSIS IN AN IMMUNOCOMPETENT ELDERLY PATIENT

https://doi.org/10.15605/jafes.037.S2.07

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INTRODUCTION
Chronic progressive disseminated histoplasmosis commonly affects older patients who are not overtly immunocompromised and carries a high mortality risk if left untreated. Adrenal gland involvement is common in disseminated histoplasmosis but hypoadrenalism does not ensue invariably.

METHODOLOGY
We illustrate a case of an immunocompetent elderly patient who presented with adrenal insufficiency secondary to bilateral adrenal histoplasmosis four years after a diagnosis of oral mucocutaneous histoplasmosis.

RESULTS
A hypertensive, immunocompetent, 73-year-old female with a history of chronic exposure to birds was treated for oral mucocutaneous histoplasmosis in January 2017. She was lost to follow-up after all her oral lesions resolved following 12 weeks of itraconazole therapy. Four years later, she was admitted for progressively worsening lethargy and weight loss over a month, accompanied by biochemical evidence of hyponatremia, hyperkalemia as well as a random cortisol level of 259 nmol/L. Baseline adrenocorticotropic hormone (ACTH) and ACTH stimulation tests were not performed. Plain computed tomography (CT) of abdomen and pelvis showed presence of bilateral adrenal heterogeneous enlargement with specks of calcification within the adrenals. The right adrenal measured 6.1 cm × 4.5 cm × 5.7 cm and the left adrenal measured 5.7 cm × 2.9 cm × 4.4 cm. A diagnosis of adrenal insufficiency was made and oral glucocorticoid therapy was initiated. Following an episode of Addisonian crises precipitated by urinary tract infection, she was seen in the endocrine clinic in our hospital, during which an adrenal biopsy was planned. While waiting for the procedure, she was admitted for relapsed histoplasmosis with oral mucocutaneous and cervical lymph node involvements. Itraconazole therapy was subsequently reinstituted, along with hydrocortisone and fludrocortisone replacement. She succumbed to the disease three days later.

CONCLUSION
Although hypoadrenalism does not always complicate adrenal histoplasmosis, its presence should be sought particularly when both adrenal glands are involved. The prospect of adrenal function recovery ensuing antifungal therapy is still uncertain to date.

PA-A-02

NEW ONSET GRAVES' DISEASE AFTER SARS-CoV-2 VACCINATION

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INTRODUCTION
There is an increasing number of reports of thyroid dysfunction after severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccination. We would like to report a case of new onset Graves' disease following vaccination with the adenovirus-vectored Vaxzevria (Oxford-AstraZeneca).

METHODOLOGY
A 29-year-old female with no prior history of endocrine or autoimmune diseases, presented with a week of palpitations, heat intolerance and excessive sweating three days after her second dose of Vaxzevria. She did not experience these symptoms after her first dose which she received two months earlier. Her father and sister have Graves' disease. She had a diffuse goiter with no orbitopathy. Thyroid Stimulating Hormone (TSH) was <0.01 mIU/L (normal range: 0.27-4.2) with a markedly elevated free T4 of >100 pmol/L (normal range: 12-22). TSH receptor antibody was positive at >40.00 IU/L (Normal range: <1.75). Ultrasonography revealed a hypervascular, diffusely enlarged goiter. She was started on oral carbimazole and propranolol. Five months later, her free T4 had normalized at 18 pmol/L though her TSH was still undetectable. To date, she remains hesitant for her booster dose.

RESULTS
SARS-CoV-2 infection and vaccination have been associated with subacute thyroiditis and autoimmune thyroid disease. While there are reports of new onset Graves' disease after mRNA and adenovirus-vectored vaccines, it has not been associated with inactivated virus vaccines. The current prevailing theory is that the adjuvants in the vaccines can trigger an autoimmune event, also called "autoimmune/inflammatory syndrome induced by adjuvants" (ASIA).

CONCLUSION
Physicians need to be aware of thyroid dysfunction after SARS-CoV-2 vaccination, especially in those with a strong family history of autoimmune disease. Nevertheless, it is also important to note that the benefit of vaccination far outweighs this uncommon potential risk. More studies are required to establish a causal relationship.

PA-A-03

A RARE CASE OF METASTATIC PHEOCHROMOCYTOMA IN MULTIPLE ENDOCRINE NEOPLASIA TYPE 2A (MEN 2A)

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INTRODUCTION
In MEN 2A, there is a heritable predisposition to medullary thyroid carcinoma (MTC), pheochromocytoma and hyperparathyroidism. MEN2A-associated pheochromocytoma is typically benign. We report a case of malignant pheochromocytoma in MEN2A.

METHODOLOGY
A 45-year-old female was diagnosed with MEN 2A when she was 19-years-old as part of a family screening in the year 1996. Genetic analysis revealed a mutation in codon 634 of the RET proto-oncogene (cysteine-to-tyrosine substitution, C634Y). She underwent total thyroidectomy for MTC and bilateral adrenalectomy for bilateral pheochromocytoma in 1997. She developed recurrence of her pheochromocytoma and underwent laparoscopic left adrenalectomy in 2005. At that time, she also developed primary hyperparathyroidism and underwent total parathyroidectomy.

However, her urinary catecholamines remained elevated. Iodine-131 meta-iodobenzylguanidine (I-131 MIBG) scan in 2007 revealed increased uptake in her left adrenal, liver, mediastinum, skull and upper abdomen. Since she was asymptomatic, she declined systemic therapy. Her disease subsequently progressed. She now experiences daily paroxysms with rising levels of urine metanephrines/normetanephrines. Latest 131-MIBG and Gallium-68 PET/CT scans showed progression with disease activity at her left adrenal bed and with regional node involvement and metastasis to lung, liver and bones. She is now agreeable for further therapy.

RESULTS
In patients with RET codon 634 mutations, pheochromocytoma occurs in 52% by the age of 50 years old. It is almost always benign. Metastatic pheochromocytoma in MEN2A is rare. Case series suggest a prevalence of 3-5%, in contrast to the prevalence of more than 10% in sporadic pheochromocytomas.

CONCLUSION
While MTC is the usual culprit of metastatic disease in MEN2A, it may rarely be due to malignant pheochromocytoma. Multidisciplinary approach to management is optimal.

PA-A-04

INITIATING/SWITCHING TO INSULIN DEGLUDEC/INSULIN ASPART (IDEGASP) IN MALAYSIAN PATIENTS WITH TYPE 2 DIABETES IN REAL-WORLD SETTING

https://doi.org/10.15605/jafes.037.S2.10

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INTRODUCTION
IDegAsp, a co-formulation of long acting basal (insulin degludec) and rapid-acting bolus (insulin aspart) insulin is used for treating patients with type 2 diabetes mellitus (T2DM) not adequately controlled by previous anti-hyperglycaemic treatments (AHTs). The current study is a subgroup analysis of the Malaysian cohort of patients from the earlier 26-week prospective, multicentre, non-interventional ARISE study that investigated the effect of IDegAsp on glycaemic control in patients with T2DM initiated or switched to IDegAsp from previous AHTs in a real world setting in six countries, including Malaysia.

METHODOLOGY
Adult patients (>18 years old) with T2DM using any AHTs except IDegAsp were enrolled. Patients received IDegAsp according to their physicians' discretion. Primary endpoint was change in glycosylated haemoglobin (HbA1c) levels from baseline to end of the study (EOS, 26 weeks).

RESULTS
Overall, 182 out of the 205 enrolled patients (mean [SD] age: 56.4 [11.9] years) completed the study (95 men, 52.2%). Mean (SD) duration of T2DM was 11.2 (7.99) years. A total of 93 (51.1%) patients received IDegAsp once daily and 89 (48.9%) patients received twice daily at treatment initiation (mean (SD) daily dose: 29.1 [19.7] U). HbA1c levels were significantly reduced from baseline to EOS (mean [SE] estimated change from baseline: –1.3% [0.18]; $p<0.0001$). Consistent with this finding, FPG levels were also significantly reduced from baseline to EOS (mean [SE] estimated change from baseline: –1.8 [0.34] mmol/L; $p<0.0001$). The incidence of overall and nocturnal non-severe and severe hypoglycaemic events and the number of patients experiencing these events were also reduced from baseline to EOS.

CONCLUSION
In the Malaysian cohort, initiating or switching to IDegAsp in patients with T2DM demonstrated significant improvements in glycaemic control and numerically lower rates of non-severe and severe hypoglycaemic events.

PA-A-05

CHALLENGES IN FLUID MANAGEMENT OF AN END-STAGE RENAL DISEASE PATIENT WITH COVID-19 PNEUMONIA AND STARVATION KETOACIDOSIS

https://doi.org/10.15605/jafes.037.S2.11

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INTRODUCTION
Fluid management is a delicate process when it involves an anuric end-stage renal disease (ESRD) patient on regular hemodialysis, who has Coronavirus Disease-19 (COVID-19) pneumonia in acute respiratory distress syndrome (ARDS). The management is made even more challenging when the condition of the patient is complicated with starvation ketoacidosis. There is limited literature with regards to this issue.

CASE
We report the case of a 55-year-old male patient with ESRD, who is suffering from COVID-19 pneumonia in ARDS with concomitant starvation ketoacidosis.

CONCLUSION

Starvation ketoacidosis is an under-recognized cause of metabolic acidosis and may occur even in a diabetic patient who has been acutely unwell with poor oral intake. While the mainstay of therapy in a patient with starvation ketoacidosis is to provide an intravenous dextrose-containing fluid replacement, this has to be judiciously given in an anuric ESRD patient on fluid restriction. A careful balance between low-dose insulin infusion to maintain euglycemia and strict fluid management is crucial to stop gluconeogenesis and ketogenesis. The ultimate goal is to bring the patient out of starvation ketoacidosis while avoiding the deleterious effect of fluid overload in a patient who is already in ARDS.

PA-A-06

AN UNUSUAL SITE FOR THYROID CANCER: A CASE REPORT ON ECTOPIC PAPILLARY THYROID CARCINOMA

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INTRODUCTION

Ectopic thyroid tissue is rare, and the prevalence of ectopic thyroid cancer is even rarer. We report the case of a 37-year-old female with ectopic papillary thyroid carcinoma.

CASE

A 37-year-old female initially presented to the Ear, Nose and Throat (ENT) clinic with a midline upper anterior neck swelling that had gradually increased in size over several months. She did not complain of any compressive or infective symptoms. A computed tomography scan of the neck showed ectopic thyroid at the lingual area, thyroglossal cyst at the hyoid level, posterior to the thyroglossal cyst, and left supraclavicular locations. Fine needle aspiration for cytology of the left supraclavicular swelling was reported as papillary thyroid carcinoma. Subsequent thyroid scintigraphy further confirmed the presence of ectopic thyroid tissue or foci of metastasis. Pre-surgery blood investigation showed Free T4 of 13.4 pmol/L (11-22), TSH of 4.042 mIU/l, unstimulated thyroglobulin of >300 mcg/L (2—50 mcg/L), and negative anti-thyroglobulin. The patient underwent bilateral neck dissection, Sistrunk procedure, and ablation of the base of the neck. Histopathology showed ectopic thyroid tissue with papillary thyroid carcinoma from the Sistrunk specimen and bilateral lymph node metastases. Thereafter, she underwent radioiodine ablative therapy with 100 mCI of Iodine-131. Serial whole-body scans showed physiologic findings. Currently, she is on TSH suppression therapy and close monitoring for tumor recurrence.

CONCLUSION

This case is a reminder of the embryological journey of thyroid tissue, defects of which can lead to its ectopic location. In spite of its rarity, thyroid carcinoma can occur in ectopic thyroid tissue.

PA-A-07

MANAGEMENT CHALLENGES PRIOR TO SUCCESSFUL TOTAL THYROIDECTOMY IN A PATIENT WITH REFRACTORY GRAVES' DISEASE

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INTRODUCTION

Graves' disease is the most common cause of thyrotoxicosis. Restoration of euthyroidism is vital to prevent further complications including cardiac impairment. Refractory Graves' disease is uncommon and, thus, poses a challenge in preparing a patient for definitive therapy. We describe a case of refractory Graves' disease who successfully underwent definitive surgical therapy.

CASE

A 25-year-old female with a seven-month history of Graves' disease was referred for recurrent syncope due to multifocal atrial tachycardia. She had multiple previous admissions for severe thyrotoxicosis within the last five months where she was treated with thionamides and multiple five-to-seven-day courses of Lugol's iodine each time. On admission, thyroid functions tests showed free T4 (fT4) of 92.5 pmol/L (normal range: 11.5 - 22.7) and TSH of <0.01 mIU/L (normal range: 0.55-4.78). The thyroid ultrasound revealed diffuse enlargement of both thyroid lobes with increased vascularity. She was treated with carbimazole up to 80 mg/day, however, fT4 remained at a range of 77.9 – 90.1 pmol/L. Additional therapy with lithium carbonate (1200 mg/day), dexamethasone (8 mg/day) and cholestyramine resin (2 g twice a day) failed to normalize the fT4 level. Switching carbimazole to propylthiouracil (900 mg/day) also did not prove successful. Plasmapheresis was initiated which near-normalized her fT4 after 11 cycles. Tachyarrhythmias were controlled with carvedilol 25 mg twice a day, verapamil 80 mg thrice a day and ivabradine 7.5 mg twice a day. She underwent a successful semi-urgent total thyroidectomy and was eventually discharged after seven days post-operatively with levothyroxine replacement, calcitriol and calcium supplementation.

CONCLUSION
This case highlights the management challenges in a case of Refractory Graves' disease. Adjunct to maximal medical therapy, plasmapheresis is a potential modality to achieve a euthyroid state prior to thyroidectomy.

PA-A-08

A CASE OF GRAVES' DISEASE WITH SEVERE HYPERCALCAEMIA

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INTRODUCTION
Mild to moderate hypercalcemia is seen in up to 20 percent of thyrotoxic patients. However, thyroid hormone-mediated severe hypercalcemia is rare. We report a case of Graves' disease-induced symptomatic severe hypercalcemia.

CASE
A 25-year-old male presented with a three-week duration of abdominal pain, vomiting and constipation. He also complained of palpitations for one month and weight loss of 40 kilos within a year. Clinical examination revealed a temperature of 37.2°C, blood pressure of 120/72 mmHg and pulse rate of 140 beats per minute. He had fine tremors, exophthalmos and diffuse goiter with a thyroid bruit. Initial investigations showed significantly elevated free T4 of >64.35 pmol/L (9-19) with suppressed thyroid-stimulating hormone (TSH) of <0.008 μIU/mL (0.4-4.2). He had severe hypercalcemia with a serum calcium level of 3.97 mmol/L and a low serum intact PTH of 1.09 pmol/L (1.59-7.24). Serum phosphate, magnesium, creatinine and alkaline phosphatase were normal. TSH receptor antibody was raised at >40 IU/L (0-1.75) with normal anti-thyroid globulin and anti-thyroid peroxidase antibody. Neck ultrasound showed diffuse thyroiditis with increased vascularity in the thyroid gland. Tumour markers (CA19-9, CEA, AFP, PSA) were all normal. The skeletal survey revealed no lytic lesions. He was treated as a case of impending thyroid storm. Diagnosis of hyperthyroidism-induced hypercalcemia was made after excluding other common causes of hypercalcemia. He was started on propylthiouracil, propranolol, Lugol's iodine and steroids. An intravenous saline infusion was started for hypercalcaemia without calcitonin or bisphosphonate. His serum calcium levels progressively declined and hypercalcemia-related symptoms resolved. He was discharged on day 8 of hospitalization with a normal calcium level of 2.5 mmol/L and fT4 of 40 pmol/L.

CONCLUSION
Hyperthyroidism is a potential cause of severe hypercalcemia. The treatment of hyperthyroidism may cause normalization of serum calcium levels as observed in this case.

PA-A-09

COLLISION TUMOR OF THE THYROID: A CASE OF MEDULLARY AND PAPILLARY THYROID CARCINOMAS WITH NODAL METASTASES

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INTRODUCTION
Papillary thyroid carcinoma (PTC) and medullary thyroid carcinoma (MTC) differ in their incidence, cell origin and histopathological features. Thyroid collision tumors have rarely been reported. We present a 69-year-old female who was recently diagnosed with a collision thyroid tumor consisting of PTC and MTC.

CASE
A 69-year-old female with underlying dyslipidemia presented with neck discomfort. On surveillance medical check-up, it was found that her carcinoembryonic antigen (CEA) was markedly elevated at 220.9 uG/L (<5). Computed tomography scan of thorax, abdomen and pelvis showed a suspicious left thyroid nodule and multiple enlarged lymph nodes at the left lower cervical and superior mediastinal. Subsequent fine needle aspiration (FNA) demonstrated medullary thyroid carcinoma. She underwent total thyroidectomy with modified radical neck dissection with sternotomy for removal of right paratracheal lymph nodes. Histopathology examination demonstrated medullary thyroid carcinoma measuring 35 mm with extensive perithyroidal soft tissue and lymph nodes infiltration. Seven out of twenty-two right lateral cervical lymph nodes, three out of four right paratracheal lymph nodes, and four out of thirteen left lateral lymph nodes were positive for metastases. Papillary microcarcinoma measuring 3 mm was also found at the right lobe. The calcitonin level was 2742 pg/ml postoperatively and decreased further to 1456 pg/ml six months later. CEA decreased to 45.4 uG/L. FDG-PET whole body scan reported no hypermetabolic lesions at the thyroid bed. Currently, she is on levothyroxine therapy (without TSH suppression) and on close follow-up.

CONCLUSION
The collision between two thyroid carcinomas is a rare entity. Management requires assessment of each carcinoma and tailored according to the extent of both tumors. In this case, the focus was on the predominant MTC.

PA-A-10

FIRST CASE OF EXCLUSIVELY DOPAMINE-SECRETING PARAGANGLIOMA IN MULTIPLE ENDOCRINE NEOPLASIA TYPE 2A (MEN2A)

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INTRODUCTION
Pheochromocytomas in MEN2A are usually intra-adrenal, though they may uncommonly manifest as paragangliomas. Predominantly or exclusively dopamine-secreting pheochromocytomas and paragangliomas (PPGL) are rare with only 33 cases reported in the literature. We report the first case of exclusively dopamine paraganglioma in the context of MEN2A.

CASE
A 72-year-old male was diagnosed with MEN2A following a family screening in 1996. Genetic analysis revealed a mutation in codon 634 of the RET proto-oncogene (C634Y). He underwent total thyroidectomy for medullary thyroid carcinoma in 1996 and total parathyroidectomy for primary hyperparathyroidism in 1997. His yearly 24-hour urinary catecholamines had been within the normal ranges. However, in August 2019, his urinary dopamine was raised to 1033 µg/day (Normal range: 64.0-400). Urinary adrenaline and noradrenaline were not elevated. Repeated 24-hour urinary metanephrines in August 2020 yielded an elevated 3-methoxytyramine level of 21.8 µmol/day (Normal range: 0.10-1.79). Urinary metanephrines and normetanephrines remained within normal ranges. He has hypertension which was well-controlled on two agents. He is, otherwise, asymptomatic with no paroxysmal attacks of headaches, sweating or palpitations. Iodine-131 meta-iodobenzylguanidine (I-131 MIBG) imaging revealed an avid lesion in the mediastinum with no tracer uptake at the adrenal glands. The patient declined further interventions.

CONCLUSION
Despite the rarity of exclusively dopamine-secreting PPGL, the case highlights the importance of measuring urinary or plasma dopamine in MEN2A. Dopamine-secreting PPGL typically lacks the classical presentation of paroxysmal attacks and is often extra-adrenal. The patient was diagnosed with PPGL at 70 years of age. As the prevalence of PPGL in MEN2A increases with age, there is no age cut-off to stop screening.

PA-A-11

RARE ASSOCIATION OF NEUROFIBROMATOSIS TYPE 1 WITH PRIMARY HYPERPARATHYROIDISM: A CASE REPORT

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INTRODUCTION
Neurofibromatosis Type 1 is an autosomal dominant genetic disorder characterized by central nervous system involvement, cutaneous manifestations and increased risk of developing endocrine-related tumors. Meanwhile, Primary Hyperparathyroidism is most commonly caused by parathyroid adenoma resulting in abnormal calcium homeostasis. There are case reports identifying an association between neurofibromatosis and primary hyperparathyroidism as a variant of multiple endocrine neoplasia (MEN) syndrome, however, their association is not fully understood.

CASE
This is the case of a 50-year-old male patient who is known to have neurofibromatosis type 1 with cutaneous manifestations (cafe au lait spots, neurofibromas, Lisch nodules) and pleural neurofibroma. He initially presented with persistent left lumbar pain and a kidney ultrasound demonstrated evidence of left nephrolithiasis. Laboratory tests revealed high serum calcium of 2.7 mmol/L to 3.1 mmol/L, a low phosphate level of 0.49 mmol/L and a markedly raised serum parathyroid hormone level of 1038 pg/ml. Vitamin D level was normal at 72.26 nmol/L and a calcium-to-creatinine-ratio of 0.019. Further workup with Sestamibi parathyroid scan revealed evidence of parathyroid adenoma inferior to the left thyroid gland. Contrast-enhanced computed tomography of the neck showed a heterogeneously-enhancing lesion in the same location corresponding with the Sestamibi scan finding. There was no clinical evidence of pheochromocytoma and the 24-hour urine metanephrines test was normal. With the imminent complication of nephrolithiasis, the patient is awaiting parathyroidectomy.

CONCLUSION
This case demonstrates a rare but proven co-occurrence between neurofibromatosis and primary hyperparathyroidism as evidenced by biochemical tests and radiographic imaging. Screening neurofibromatosis patients for primary hyperparathyroidism during the initial evaluation and follow-up is a potential step for early detection of the condition before it leads to complications.

PA-A-12

ENDOCRINE VIRTUAL CLINIC PATIENT SATISFACTION: A SINGLE-CENTRE EXPERIENCE IN PAHANG, MALAYSIA DURING THE CORONAVIRUS-19 (COVID-19) PANDEMIC

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INTRODUCTION
The COVID-19 pandemic had placed significant strain on the health care system across the world. The implementation of virtual clinics was suggested as an option to reduce face-to-face outpatient appointments and clinic congestion. This study highlights the challenges and patient satisfaction regarding the implementation of a Hyperthyroidism and Hypothyroidism Virtual Clinic in Hospital Sultan Haji Ahmad Shah, Temerloh, Pahang, Malaysia.

METHODOLOGY
This is a cross-sectional study that included all patients who received virtual clinic appointments between October 2020 and May 2021. Patients' satisfaction with their virtual clinic appointments was assessed by nurses through phone interviews. Patients' demographic data and responses to treatment were obtained through electronic medical data.

RESULTS
Ninety-five patients were included in the study. The patients involved had a mean age of 38.9 (SD 13.6) years, 73.7% were female, and 87.4% were of Malay ethnicity. 65.3% of virtual clinic patients had hyperthyroidism. The mean free T4 for hypothyroid and hyperthyroid virtual clinic patients were 20.9 (SD 9.3) pmol/L and 21.7 (SD 11.9) pmol/L, respectively. The mean TSH for hypothyroid virtual clinic patients was 7.3 (SD10.5) mU/L. Nearly 50% of patients had no medication dose changes during their follow-up, while 26.3% required incremental adjustment of medication doses. 88.4% of patients were satisfied with their virtual clinic sessions. 66.3% of the patients interviewed preferred virtual clinics due to reduced waiting time for consultation, while 48.4% mentioned the decreased need for multiple and long hospital visits for clinical consultation. The main negative views cited regarding the virtual clinics were patients' poor internet connection and medication collection issues.

CONCLUSION
This study demonstrated that patients were receptive to the virtual clinic concept. Patient consultations were focused and waiting time was greatly reduced. Adjustments to patient medications also could be done effectively in a virtual clinic setting.

PA-A-13

PRIMARY HYPERPARATHYROIDISM IN A PREGNANT PATIENT WITH EPILEPSY: A CASE REPORT

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INTRODUCTION
Severe hypercalcemia in pregnancy increases the risk of maternal complications and second-trimester fetal loss. Diagnosis of primary hyperparathyroidism during pregnancy is difficult and management of severe hypercalcemia can be challenging. We present a case of primary hyperparathyroidism in a primigravid patient presenting with severe hypercalcemia complicated by recurrent seizure episodes.

CASE
A 22-year-old primigravida, with a prior history of idiopathic generalized epilepsy, presented at a district hospital with severe hypercalcemia at 26 weeks period of gestation (POG). She had initially presented with multiple episodes of seizures and was incidentally found to have severe hypercalcemia (corrected calcium range: 3.0-3.8 mmol/L). Laboratory investigations revealed elevated serum parathyroid hormone [8.76 pmol/L (1.59-7.24)] and vitamin D insufficiency (25-hydroxy Vitamin D: 63.75 nmol/L). Her calculated calcium-to-creatinine-clearance ratio was 0.02 affirming the diagnosis of primary hyperparathyroidism. Her neck ultrasound revealed no sonographic evidence of parathyroid adenoma. She had repeated admissions during her pregnancy due to severe hypercalcemia coupled with recurrent seizure episodes. She required admission for fluid hydration and loop diuretics to reduce her serum calcium levels. She also required optimization of anti-epilepsy treatment. She was closely monitored by the Endocrine and Obstetric team throughout the pregnancy with a planned delivery by 38 weeks POG. However, she presented one week early in hypertensive crisis, and the breech position of the fetus while in labor, necessitated emergency Caesarean section. She delivered a healthy 2.55 kg female baby without complications. After delivery, she was treated with intravenous bisphosphonate with her calcium levels improving to 2.4-2.6 mmol/L upon discharge. Functional imaging for localization of possible parathyroid adenoma was planned postpartum.

CONCLUSION
This case report highlights the challenges in managing severe hypercalcemia during pregnancy in a patient with concomitant recurrent seizures. Close monitoring and multidisciplinary team communication are important in the management.

PA-A-14

ESCAPE ECHO BIGEMINY SECONDARY TO MILD HYPERKALEMIA

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INTRODUCTION
Escape echo bigeminy is a bigeminal rhythm in which each atrioventricular junctional escape beat is followed by a conducted beat from a sinus P wave. In other words, a normal sinus (anterograde) P wave is sandwiched between 2 QRS complexes, an arrangement causing group beating with recurring couplets.

CASE
This is the case of a 63-year-old female, with hypertension, Type 2 diabetes mellitus, dyslipidemia, and ischemic heart disease, who consulted with a one-day history of chest discomfort. The chest pain was burning in nature and associated with nausea and vomiting. Upon presentation, the patient was bradycardic with a heart rate of 40 beats per minute and normal blood pressure. An electrocardiogram showed atrioventricular junctional escape beats followed by a conducted beat from a sinus P wave. The chest radiography was normal. She has mild hyperkalemia (5 mmol/L), but other electrolytes were normal. Troponin I was negative. The patient was treated for bradycardia secondary to unstable angina. She was given intravenous atropine for two doses, which did not resolve the bradycardia. The patient was given an insulin chase and serum potassium was reduced to 4 mmol/L. Heart rate normalized to 60 beats per minute and repeated ECG showed resolved escape echo bigeminy.

CONCLUSION
Escape-capture bigeminy occurs if the effective inter-sinus interval exceeds the sum of the escape interval and the refractory period after the escape beat. This requires an intermittent block of the impulse either at the sinus or AV nodal level. Digitalis, digitalis plus beta-blocker, or calcium blocker may be partially implicated. The patient had mild hyperkalemia and the correction of which led to the resolution of the arrhythmia. As presented by the case, mild hyperkalemia may cause an escape echo bigeminy arrhythmia that can be reversed medically, precluding the need for pacing.

PA-A-15

A RARE CASE OF PSEUDOPHEOCHROMOCYTOMA WITH PANIC ATTACK WITHOUT AGORAPHOBIA – A CASE REPORT

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INTRODUCTION
Pseudopheochromocytoma is a rare but often disabling syndrome comprised of paroxysmal severe hypertension and symptoms of catecholamine excess including anxiety, tremors, sweating and palpitations. It is a diagnosis of exclusion. There is considerable overlap between pseudo-pheochromocytoma and panic disorder. How psycho-logical factors influence the severe and acute rise in blood pressure seen in patients with pseudopheochromocytoma is unknown.

CASE
A case of a young hypertensive patient diagnosed at the age of 26 years old without proper follow up is presented. He arrived at a tertiary hospital with symptoms of paroxysm and chest pain and was diagnosed as a case of ischemic stroke with uncontrolled hypertension.

24-hour urine catecholamine screening showed a mild rise of norepinephrine with normal epinephrine and dopamine levels. We proceeded with a 24-hour urine normetanephrine screening which revealed mildly elevated normetanephrine and a normal metanephrine level. Repeat testing showed normal evels of both normetanephrine and methanephrine. Multiphasic adrenal CT was unremarkable except for an incidental finding of a tiny simple renal cyst. Due to recurrent chest pain, multi-slice cardiac CT was done which showed normal findings. Despite the maximal dosages of an alpha- and beta-blocker, blood pressure remained uncontrolled. Addition of spironolactone showed no benefit. Patient was referred to the psychiatric department for evaluation. He was diagnosed with panic attack without agoraphobia and was started with alprazolam for symptom control.

CONCLUSION
While the current study represents an important addition to the limited literature on pseudopheochromocytoma, its mechanism has yet to be fully explained and a specific diagnostic test has not been identified. The findings support the use of alpha- and beta-blockade without any other possible treatment options for now. With such scarce data, optimal treatment for pseudopheochromocytoma remains challenging.

PA-A-16

A CASE SERIES OF ACUTE SYMPTOMATIC HYPONATREMIA DUE TO SIADH: AN UNUSUAL PRESENTATION OF COVID-19 INFECTION

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INTRODUCTION
The Syndrome of Inappropriate ADH Secretion (SIADH) is one of the most common causes of hyponatremia among medical inpatients. The evolution of SARS-CoV-2 infection over recent years has led to atypical presentations, one being in the form of acute symptomatic hyponatremia secondary to isolated SIADH not associated with pneumonia.

CASES
We report a series of three unusual cases of Category 2 COVID-19 infection presenting with acute symptomatic hyponatremia secondary to SIADH.

All three patients presented with symptoms of acute severe hyponatremia and coincidentally tested positive for SARS-CoV-2 virus without respiratory tract symptoms and normal chest imaging. All patients were fully vaccinated and boosted at least 3 months before the presentation. Clinical and biochemical workup confirmed SIADH in all three patients. They were treated with hypertonic saline in the initial phase, followed by fluid restriction as per recommendations. It was postulated that the inappropriate ADH secretion was mediated by increased inflammatory cytokines, especially interleukin 6 may be a direct effect of the SARS-CoV-2 infection itself.

CONCLUSION
In the context of the ongoing COVID-19 pandemic, acute symptomatic hyponatremia without an obvious cause could be an atypical, isolated manifestation of SARS-CoV-2 infection. Awareness of these uncommon presentations is important so that specific treatment protocols or recommendations can be created and instituted to address this likely reversible but potentially fatal presentation of COVID-19.

PA-A-17

REAL-WORLD BURDEN OF CARDIORENAL COMPLICATIONS IN INDIVIDUALS WITH T2D IN MALAYSIA – EVIDENCE FROM 'TAKE CARE OF ME' REGISTRY

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INTRODUCTION
The burden of T2D and its cardiorenal complications (CRCs) are increasing in Malaysia with emerging evidence demonstrating high prevalence of asymptomatic cardiac dysfunction. In addition, there is an increasing incidence of dialysis initiation in the T2D population. The Take CaRe of Me programme, a subset of iCaReMe registry, aims to address the burden of silent CRCs by examining individuals with T2D from six low-to-middle income countries including Malaysia.

METHODOLOGY
This ongoing, prospective, real-world, observational registry is focused on evaluating diagnostic and management strategies for CRCs in T2D during routine care. Adults (≥18 years) with no known CRCs at index visit were enrolled in the study. Data extracted from medical records on clinicodemographic and treatment patterns are captured on cloud-based platforms. We present a descriptive analysis of the baseline characteristics of the Malaysia cohort.

RESULTS
Overall, 261 individuals (mean [*SD*] age 52.5 [14.0] years; 55.9% males; mean BMI 28.4 [7.6] kg/m2) were recruited. Mean duration of T2D was 13.7 (13.9) years with 44.7% having T2D duration greater than 10 years. Mean HbA1c was 6.7% (1.7%) with 70.1% under control (HbA1c <7%). Mean total cholesterol, LDLc, HDLc and triglycerides were 4.6 (1.2) mmol/L, 2.5 (1.1) mmol/L, 1.3 (0.4) mmol/L and 2.1 (1.1) mmol/L, respectively. As per ESC 2019 risk stratification, 32.6% individuals had very high/high CV risk. Of the individuals screened for renal risk using urine albumin-creatinine ratio (UACR) (N=207), 26.6% were categorized as A2 (UACR 30-300 mg/g) and 4.3% as A3 (UACR >300 mg/g).

CONCLUSION
There is high prevalence of undiagnosed CRCs in T2D patients with more than 30% having very high/high CV and renal risk. This emphasizes the need for early screening for CRCs to identify the at-risk population along with appropriate management of these patients with cardio- and renoprotective glucose-lowering agents.

PA-A-18

SPONTANEOUS HASHIMOTO'S THYROIDITIS REMISSION IN TWO CONSECUTIVE PREGNANCIES

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INTRODUCTION

Hashimoto's thyroiditis (HT), a type of autoimmune thyroid disorder, is the most common cause of hypothyroidism. The course of HT is altered during pregnancy with majority of cases requiring an increment in levothyroxine doses as high as 20-40% to achieve euthyroidism. Spontaneous remission of HT during pregnancy is extremely rare.

CASE

We describe a 37-year-old female who was diagnosed with Hashimoto's thyroiditis initially presenting with neck swelling and symptoms of hypothyroidism seven months after her first pregnancy. Her thyroid function test showed overt hypothyroidism (TSH 83.9 IU/ml, FT4 3.9 pmol/L) with positive anti-thyroid peroxidase antibody (TPO Ab) at 196 IU/ml (>34), and thyroid stimulating immunoglobulin of less than 0.1 IU/L. She was started on levothyroxine 100 mcg daily. Patient had a miscarriage during her second pregnancy. On her third pregnancy, she developed hyperthyroidism at 10 weeks of gestation, requiring gradual reduction of her thyroxine and eventual discontinuation at 2 months postpartum. Thyroxine was resumed 6 months postpartum due to overt hypothyroidism. A similar pattern was observed in her fourth pregnancy wherein she developed hyperthyroidism at 13 weeks also requiring gradual reduction and later discontinuation of thyroxine at 35 weeks of gestation. Anti-TPO Ab at 35 weeks of gestation was still elevated at 158.2 IU/ml. Her pregnancy was uneventful and she delivered a healthy baby. She remains in remission three months postpartum.

CONCLUSION

Spontaneous remission of HT can occur during pregnancy, usually beyond the second trimester., However, recurrence of HT has been observed during the postpartum period. Thyroid autoantibodies may play a role in these changes. Close monitoring of thyroid function is essential.

PA-A-19

RARE PRESENTATION OF A GIANT INTERNAL CAROTID ARTERY (ICA) ANEURYSM CAUSING HYPOPITUITARISM

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INTRODUCTION

Pituitary insufficiency secondary to giant internal carotid artery (ICA) aneurysms are rare. It is, however, an important differential to consider in cases of hypopituitarism as prompt diagnosis and treatment is necessary to prevent a fatal outcome.

CASE

We present a case of hypopituitarism with hyperprolactinemia secondary to a suprasellar giant ICA aneurysm. A 60-year-old female presented with bilateral visual field defects. Examination showed left temporal hemianopia and right inferior scotoma. Her cranial CT revealed a well-defined, rounded lesion arising from the suprasellar region. She was then referred for a brain and pituitary MRI. While awaiting the date of her MRI appointment, she developed diarrhoea and increasing lethargy.

Pituitary hormone panel done demonstrated panhypopituitarism with hyperprolactinemia: cortisol 12 nmol/L (normal range 185-624), TSH 1.238 mU/L (0.34-5.6) free T4 6.8 pmol/L (7.9-4.4), FSH 2.2 mU/ml (2.5-10.2), LH 0.2 mU/ml (15.9-54), prolactin 1400 u/ml (<500) and GH 0.11 Ug/L (0.077-5.0). The hyperprolactinemia was attributed to the stalk compression effect. She was given hydrocortisone and thyroxine replacement. MRI revealed a sellar and suprasellar mass suggestive of a distal right ICA aneurysm. The findings were confirmed by digital subtraction angiography. Cerebral stenting was successfully performed. One month postoperatively, she has not shown any recovery of pituitary function.

CONCLUSION

We described an unusual case of a suprasellar giant ICA aneurysm leading to pituitary insufficiency. ICA aneurysms, particularly those located at the sellar-suprasellar region, are very rare. However, since they resemble pituitary tumours in terms of imaging and laboratory findings, an accurate diagnosis must be made in order to institute necessary treatment strategies among these patients.

PA-A-20

THE EFFECTS OF DRY INTERMITTENT FASTING ON OVERWEIGHT AND OBESITY: PROTOCOL FOR A NON-RANDOMIZED CONTROLLED TRIAL

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INTRODUCTION

In line with the increasing trend of overweight and obesity prevalence worldwide, stakeholders have been strengthening the efforts to promote obesity prevention programs. Although wet intermittent fasting has been proven effective in reducing weight and is widely practised nowadays, the effectiveness of two-days per week dry fasting is still unclear. The Cardiometabolic and Anthropometric Outcomes of Intermittent Fasting (CAIFA) study aimed to determine the cardiometabolic, anthropometric, dietary and quality of life changes among overweight and obese civil servants following combined intermittent fasting and healthy plate (IFHP) and healthy plate (HP) alone. This study also explored the participants' experience with both methods.

METHODOLOGY

The CAIFA study is a mixed-method quasi-experimental study examining the effectiveness of IFHP and HP methods among overweight and obese adults. A total of 177 participants participated in this study, of which 91 were allocated in the IFHP group and 86 in the HP group. The intervention involve two phases: a supervised phase (12 weeks) and an unsupervised phase (12 weeks). The data collection was conducted during baseline visit, after the supervised phase, and at the end of the unsupervised phase. Data on socio-demographics, quality of life, physical activity and dietary intake were also obtained. Serum and whole blood were collected from each participant for analysis.

RESULTS

Most of the participants were females (n=147, 83.7%) and Malays (n=141, 79.6%). The outcomes included in this study were changes in body weight, body composition, quality of life, physical activity, dietary intake and cardiometabolic parameters such as fasting blood glucose, 2-hour postprandial blood glucose, HbA1c, fasting insulin and lipid profile.

CONCLUSION

We established a mixed-method study to assess the effectiveness of combined IFHP and HP interventions on cardiometabolic and anthropometric parameters and to explore participants' experience throughout the study

PA-A-21

GRAVES' DISEASE COMPLICATED WITH THYROID STORM AND SEVERE CHOLESTASIS

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INTRODUCTION

A multifaceted relationship exists between the thyroid gland and the liver, which is crucial for maintaining homeostasis. Therefore, it is common to identify liver dysfunction in patients with thyroid disease. Although cholestasis can be associated with thyroid storm, it is important to ascertain the etiology as other conditions such as drug-induced cholestasis, autoimmune liver disease and sepsis-related hepatic dysfunction warrant specific management.

CASE

We report a case of severe cholestasis in a patient presenting with thyroid storm secondary to Graves' disease in whom heart failure and other secondary causes were appropriately investigated. We also present other relevant reports and studies available in the literature.

A 39-year-old female presented with jaundice, symptoms of thyrotoxicosis and heart failure. Clinically, she had exophthalmos with a moderately enlarged thyroid and signs of heart failure. Burch-Wartofsky Point Scale was 70. Her thyroid-stimulating hormone level was suppressed at 0.02 mU/L, with high free thyroxine of 92.4 pmol/L and free triiodothyronine of more than 30.8 pmol/L. She also had hyperbilirubinaemia which was predominantly conjugated, mildly elevated aspartate transaminase (AST) of 86 IU/L and normal alanine transaminase (ALT) level of 34 IU/L. Blood parameters were prolonged with activated partial thromboplastin time (APTT) of more than 180 seconds and international normalized ratio (INR) of 2.14. She was commenced on Lugol's iodine, corticosteroids and propranolol for thyroid storm, ursodeoxycholic acid for cholestasis and furosemide along with spironolactone for heart failure. She improved gradually and was discharged after a month of hospitalization.

CONCLUSION

Severe cholestasis in patients with thyrotoxicosis is a common presentation and may dominate the clinical picture of the primary disease. The recognition of liver and cardiac complications of thyrotoxicosis together with a thorough evaluation for other etiologies will allow proper management and hence, steady improvement of this serious medical condition.

PA-A-22

SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 (SARS-CoV-2) VACCINE-INDUCED THYROID DYSFUNCTION: A TALE OF TWO PATIENTS

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INTRODUCTION

SARS-CoV-2 vaccine has been the main pillar in battling the coronavirus disease 2019 (COVID-19) pandemic. However, the current vast scale of SARS-CoV-2 vaccination programme has led to inevitable reports of various adverse reactions, one of which include thyroid dysfunction.

CASES

We describe two patients who manifested hyperthyroidism following BNT162b2 mRNA-based COVID-19 vaccine boosters.

Patient 1, a previously euthyroid 46-year-old female, has an eight-year history of type 1 diabetes mellitus. She developed palpitations of increasing severity about two weeks after her COVID-19 booster vaccine on 20th January 2022. She had weight loss of 4 kg and experienced menstrual irregularities in the subsequent three months. Examination revealed tachycardia (112 beats per minute, regular) and bilateral fine tremors of the hands. There was no goitre or neck tenderness. Blood investigations showed overt hyperthyroidism with positive thyroid autoantibodies, consistent with Graves' disease. Treatment with carbimazole led to marked symptomatic improvement. Patient 2, a 38-year-old female with a six-year history of Hashimoto thyroiditis, was clinically and biochemically euthyroid while taking levothyroxine 100 mcg daily prior to her COVID-19 booster vaccine on 5th January 2022. Five weeks following the vaccine, her thyroid function test during her endocrine clinic appointment showed overt hyperthyroidism, which was confirmed by a second blood sample ten days later. There was neither a change in levothyroxine dose nor any additional supplement intake. She was otherwise asymptomatic. Levothyroxine was then withheld. She regained her baseline hypothyroid state two weeks later, during which levothyroxine was resumed.

CONCLUSION

SARS-CoV-2 vaccine-induced thyroid dysfunction can affect both euthyroid and hypothyroid patients. A history of recent COVID-19 vaccination should be included in the clinical evaluation of a newly diagnosed hyperthyroid patient or unexplained hyperthyroidism in a long-standing hypothyroid patient.

PA-A-23

CHARACTERISTICS OF PATIENTS WITH TYPE 1 DM AND LADA IN A MALAYSIAN PUBLIC HOSPITAL: A CROSS- SECTIONAL STUDY

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INTRODUCTION
Type 1 diabetes mellitus (DM) occurs as the result of pancreatic beta cell destruction. Latent autoimmune diabetes in adults (LADA) is immunologically similar to T1DM but immune destruction progresses at a slower rate. The aim of the study is to identify the clinical characteristics of patients with T1DM and LADA in our clinic.

METHODOLOGY
This is a single centre cross-sectional study involving all 122 patients with T1DM and LADA. Information was obtained from patients' records and interviews during follow up.

RESULTS
There were 49 males (40.2%) and 73 females (59.8%) with a mean age of 35.3 (*SD* 14.9) years old. The mean duration of disease is 12.9 (*SD* 9.7) years. Ninety-five subjects (77.9%) have T1DM and 27 subjects (22.1%) have LADA. The most common complication was retinopathy (14.8%). Almost 2/3 of subjects (61.5%) reported having minor hypoglycemia and 15 (12.3%) had diabetic ketoacidosis in the past year. The most common co-morbid is dyslipidemia (45.9%). Eighteen percent of the subjects have other autoimmune diseases. Majority of the subjects were on at least one analogue insulin (93.4%) and on basal bolus regimen (89.3%). Only 6 subjects (4.9%) were on insulin pump. One hundred fourteen (93.4%) subjects performed self-monitoring of blood glucose (SMBG) and only 26 (21.3%) subjects have used continuous glucose monitoring systems (CGMS) at least once. The mean HbA1c is 8.91% (SD 2.2). The most frequent pancreatic autoantibodies detected were glutamic acid decarboxylase (GAD) (77.9%) and islet cell antibody (ICA) (77.7%).

CONCLUSION
Majority of our subjects with T1DM and LADA are on analogue insulin andon basal-bolus regimen with most of them performing SMBG. Despite this, the rate of hypoglycemia is high and control remains suboptimal. Increasing the use of technologies such as CGMS and insulin pumps which are not fully utilized at present, may improve outcomes.

PA-A-24

CASE REPORT: PRIMARY HYPERPARATHYROIDISM AND JAW TUMOUR SYNDROME WITH CDC73 GENE MUTATION IN A YOUNG PATIENT

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INTRODUCTION
Primary hyperparathyroidism (pHPT) occurs frequently in those over the age of 50 years. This condition is uncommon in young adults and are more likely to have an underlying germline mutation.

CASE
We present a case of a healthy 16-year-old male who was incidentally found to have an elevated calcium of 3.16 mmol/L. Family history revealed that his father, aunty and grandfather also had a history of hypercalcemia. No genetic study was done previously. The patient was diagnosed with iPTH-mediated hyperparathyroidism based on blood investigations. Localization scan revealed an overactive right parathyroid gland secreting excess iPTH. Subsequently, he was scheduled for right parathyroidectomy.

Histopathology report confirmed the diagnosis of a right superior parathyroid adenoma. His iPTH level declined from 968.5 pg/ml to 7.9 pg/ml after the surgery while calcium and ALP levels also normalized. He subsequently required calcium and activated Vitamin D supplementation.

The patient and his family were referred for further genetic assessment, revealing CDC73-related disorders, with a pathogenic mutation on CDC73 gene. The patient's father was found to develop a jaw tumour with histologic confirmation of invasive ossifying fibroma. Hence, tumour debulking was planned.

CDC73-related disorder is an autosomal dominant disorder resulting from the inactivation of the CDC73 tumor suppressor gene. The spectrum includes: Hyperparathyroidism jaw tumor (HPT-JT) syndrome, parathyroid carcinoma and familial isolated hyperparathyroidism (FIHP). Penetration of pHPT is as high as 80% to 95%, while parathyroid carcinoma may be found in more than 20% of patients. Lifelong surveillance is indicated for positive gene carriers to look for recurrent hyperparathyroidism, parathyroid carcinoma, renal and uterine tumour in females.

CONCLUSION

This case report demonstrated the importance of early detection of hypercalcaemia in a younger population, the need to obtain a comprehensive family history and the significance of proceeding with early germline CDC73 mutation detection for optimal clinical management of pHPT. Genetic counselling and surveillance of family members who are at risk of developing CDC73-related disorders must also be emphasized.

PA-A-25

MICROANGIOPATHIC HEMOLYTIC ANEMIA IN A CASE OF PHEOCHROMOCYTOMA CRISIS

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INTRODUCTION

Pheochromocytomas are rare neuroendocrine tumours of the adrenal medulla. Pheochromocytoma crisis, a potentially fatal presentation, is characterized by severe hypertension or hypotension with end organ damage occurring spontaneously or precipitated by a stressor such as surgery, stress or medications such as anaesthetic agents, corticosteroids, and metoclopramide. A cascade of life threatening events may occur including myocardial infarction, acute pulmonary oedema, stroke, paralytic ileus, thrombosis, renal failure, diabetic ketoacidosis, and lactic acidosis. Microangiopathic hemolytic anemia (MAHA), an uncommon sequelae of pheochromocytoma crisis or malignant hypertension can occur.

CASE

We report a case of pheochromocytoma crisis presenting with microangiopathic hemolytic anemia. A 58-year-old female with diabetes mellitus, hypertension, and dyslipidemia presented with recurrent vomiting and epigastric pain for 9 days. On arrival, her blood pressure was 177/133 mmHg with a pulse rate of 146 beats/minute. It worsened to 214/146 mmHg following the administration of intravenous metoclopramide. She developed acute kidney injury (AKI) (urea 14.5 mmol/L, creatinine 321.8 umol/L) and MAHA with Coomb's test negative anemia. Her hemoglobin decreased from 10.6 g/dl to 8.1 g/dl in 2 days, with increased schistocytes from 2.7% to 3.0%, accompanied by reticulocytosis of 4.8%, thrombocytopenia with platelet of 141 k, and raised lactate dehydrogenase of 482 U/L. She received 1-unit packed cell transfusion. Her MAHA and her AKI resolved subsequently following adequate blood pressure control with alpha blockade. Twenty four hour urine metanephrine was elevated with abdominal imaging demonstrated a right adrenal mass (4.0x 4.5x 4.0 cm) supporting the diagnosis of a right adrenal pheochromocytoma. She underwent a right open adrenalectomy with symptoms resolution and normotension after surgery.

CONCLUSION

This case highlights the awareness of detecting a pheochromocytoma crisis and avoiding medication that may induce a pheochromocytoma crisis. High index of suspicion, prompt diagnosis and early initiation of treatment of pheochromocytoma crisis is essential to minimise complications and improve clinical outcomes.

PA-A-26

A CASE OF SYNCHRONOUS PANCREATIC NEUROENDOCRINE TUMOUR IN VON HIPPEL-LINDAU ASSOCIATED PHEOCHROMOCYTOMA

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INTRODUCTION
Synchronous tumours in adrenal gland and pancreas are rare and considered as part of von Hippel-Lindau (VHL) syndrome. Because pancreatic neuroendocrine tumours (PNETs) in VHL have malignant potential, it is of clinical importance to diagnose these as early as possible. We report a case of synchronous PNETs in pheochromocytoma associated with VHL syndrome managed by surgical excision.

CASE
A 13-year-old male first presented to an ophthalmology clinic with bilateral eye floaters was found to have classic triad of catecholamines excess symptoms and severe hypertension. Family history was unremarkable except his maternal aunt had ovarian tumour. On examination, his blood pressure was 200/100 mmHg, regular pulse of 120 bpm, normal thyroid, abdominal, and neurological examinations. Fundus examination revealed grade IV hypertensive retinopathy. Electrocardiogram showed significantly increased left ventricular voltages. The diagnosis of clinically suspected pheochromocytoma was confirmed with 24-hour urine normetanephrine at 10 times upper limit normal. CECT adrenal showed lobulated lesion at right suprarenal measuring 5 x 3.6 x 5.4 cm with spontaneous density of 38 HU and absolute washout of 41%. Gallium-68 DOTATATE scan showed moderately avid right suprarenal mass suggestive of pheochromocytoma and intensely avid pancreatic lesion at head of pancreas (1.5 cm) suggestive of synchronous PNETs which was not detected on CT images. There was neither other localizations nor lymph nodes involvement.

He underwent right adrenalectomy and pancreatic nodulectomy with complete tumour excision. Genetic analysis revealed a missense mutation c.500G >A (p. Arg167Gln) in exon 3 of the VHL gene. On recent clinic review, he remained asymptomatic and normotensive without medication, and scheduled for follow-up urine metanephrines and MRI brain screening for hemangioblastomas.

CONCLUSION
Synchronous PNETs in VHL associated with pheochromocytoma are reportedly uncommon. Presence of the exon 3 mutation in VHL gene determines more aggressive course and metastases development of PNETs which requires early detection and intervention.

PA-A-27

TYPE 1 DIABETES AND LATENT AUTOIMMUNE DIABETES IN ADULTS: ARE THEY THE SAME?

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INTRODUCTION
It is believed that LADA is the extreme end of T1DM as they shared similarities in terms of genetic susceptibility and presence of similar islet autoantibodies but presented in the older age.

METHODOLOGY
This is a cross-sectional study based in T1DM Clinic, Hospital Melaka where patients' information was collected via records and latest clinic visits. We aimed to compare T1DM and LADA patients in terms of phenotype, complications, co-morbidities and treatment.

RESULTS
We had 95 T1DM patients and 27 LADA patients in our clinic. LADA patients were older (54 ± 15 years old Vs 28 ± 17 years old, $P<0.001$) with later onset (43 ± 15 years old Vs 15 ± 10 years old, $P<0.001$) compared to T1DM patients.

Less LADA patients had diabetic ketoacidosis as the initial presentation but it is associated with higher rates of hypertension (44.4% vs 21.1%, $P=0.015$) and dyslipidemia (77.8% vs 36.8%, $P<0.001$). LADA patients had lower eGFR (90.4 ± 35 mls/min vs 111.0 ± 30.6 mls/min, $P=0.001$) and higher rate of ischemic heart disease (14.8% vs 3.2%, $P=0.042$).

Treatment wise, more LADA patients were on oral hypoglycemic agent (44.4% vs 20%, $P=0.01$), anti-hypertensives (59.3% vs 37.9%, $P=0.048$) and statins (81.5% vs 34.7%, $P<0.001$) but required less total daily dose of insulin per weight (0.60 ± 0.23 u/kg/day vs 0.75 ± 0.30 u/kg/day, $P=0.006$). There was no significant statistical difference in HbA1c between both groups.

CONCLUSION
Early recognition of LADA patients and intensive glycemic management in this group of patients may be crucial as they can present with more complications compared to T1DM patients.

PA-A-28

MACROPROLACTINEMIA WITH CO-EXISTING PITUITARY MACROADENOMA AS A DIFFERENTIAL FOR DOPAMINE-AGONIST RESISTANT PROLACTINOMA

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INTRODUCTION
Macroprolactinemia is a condition where there is assay interference resulting to a falsely elevated prolactin level. The interference is due to the presence of antibodies that form large complexes with existing prolactin. This condition is asymptomatic and has no direct effects on health. It may coincide with a non-functioning pituitary adenoma and may be mistaken for drug resistant prolactinoma.

CASE
We present a case of a 63-year-old female with chronic headaches for 2 years with blurred vision which necessitated imaging. There was a finding of pituitary macroadenoma (0.7 x 1.2 x 0.8 cm) on MRI Brain. Anterior pituitary hormone panel revealed hyperprolactinemia and hypogonadotrophic hypogonadism. Serum prolactin was 8510 mIU/L (NR <500 mIU/L), serum oestradiol <43 pmol/L, leutenizing hormone (LH) 0.1 mIU/L (NR 2.4 – 12.6) and follicle-stimulating hormone (FSH) 3.2 mIU/L (NR 3.5 – 12.5). Other pituitary hormones were normal.

A diagnosis of prolactinoma was made. She was started on cabergoline initially at 0.25 mg twice weekly and dose increased according to serum prolactin response. She required cabergoline doses of 7 mg weekly to achieve normalization of serum prolactin. Serial MRI Pituitary showed no change in size of pituitary lesion despite treatment duration of >2 years. These are consistent with Dopamine-agonist resistant prolactinoma. Subsequently, PEG Precipitation analysis of serum prolactin was performed to assess for macroprolactinemia. This confirmed presence of macroprolactinemia with the percentage of PEG-precipitable prolactin being 64% (>60% is diagnostic). Cabergoline was stopped with subsequent monitoring of anterior pituitary hormones.

CONCLUSION
The diagnosis is Macroprolactinemia with co-existing non-functioning pituitary adenoma. The management is drastically different from a drug resistant Prolactinoma which requires surgical intervention. This highlights the importance of establishing the correct diagnosis and having a high index suspicion of assessing for macroprolactin.

PA-A-29

NEW-ONSET THYROID EYE DISEASE AFTER COVID-19 VACCINATION: A CASE REPORT

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INTRODUCTION
The relationship between autoimmunity and SARS-CoV-2 vaccine has explained how thyroid dysfunction developed following vaccination but the onset of thyroid eye disease (TED) is scarcely described. We report a case of Graves' disease (GD) who developed TED after three weeks of BNT162B2 SARS-CoV-2 vaccine (Pfizer-BioNTech) injection.

CASE
A 54-year-old non-smoking male presented with new-onset bilateral eyes redness, proptosis, and diplopia three weeks after receiving the second dose of mRNA BNT162B2 SARS-CoV-2 vaccine. He was diagnosed with GD without TED in 2003 and underwent radioactive iodine ablation in 2020. He subsequently developed hypothyroidism and was started on levothyroxine with stable thyroid function test throughout clinic visits. There were no recent stressful events including COVID-19 infection. On examination, he has bilateral exophthalmos, chemosis, conjunctival injection, swollen eyelids and caruncles, with intact vision. Blood tests revealed normal TSH, free T4, and T3, but elevated TSH-receptor antibodies of 3.60 IU/L (<1.75) and anti-thyroid peroxidase (TPO) antibodies of >600 IU/ml (0-34). MRI orbit showed bilateral extraocular muscle enlargement and proptosis. Intravenous methylprednisolone was given weekly for 12 weeks. There was significant improvement concerning congestive symptoms and diplopia after the third dose of methylprednisolone.

Thyroid eye disease is the extrathyroidal manifestation of GD resulting from the autoimmune and inflammatory process. The temporal relationship of the onset of TED after mRNA SARS-CoV-2 vaccination in our case was suggestive, and there were no other inciting events identified. The postulated mechanisms include immune reactivation, molecular mimicry between the SARS-CoV-2 spike proteins and thyroid proteins, and the autoimmune/inflammatory syndrome induced by adjuvants present in the mRNA vaccine.

CONCLUSION
Patients with autoimmune thyroiditis should be monitored closely after SARS-CoV-2 vaccine as they may develop TED and require treatment.

PA-A-30

RELIABILITY OF THE 2017 ACR TI-RADS CLASSIFICATION SYSTEM IN DETECTING MALIGNANT THYROID NODULES

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INTRODUCTION
In 2017, the American College of Radiology (ACR) proposed a new point-based reporting system, the ACR Thyroid imaging reporting and data system (ACR TI-RADS) consisting of 5 categories ranging from TR1 to TR5, stratifying thyroid malignancy risk based on ultrasound features and a predetermined size cut off for fine needle aspiration cytology (FNAC) or follow up. Since the introduction of ACR TI-RADS, this system has been validated in other countries. We aim to evaluate the reliability and practicality of the ACR TIRADS scoring system in our centre.

METHODOLOGY
A cross-sectional observational study of 592 adult patients (716 thyroid nodules) from 2019-2021 in Hospital Queen Elizabeth and Hospital Queen Elizabeth II, Kota Kinabalu who had thyroid ultrasound and available FNAC and/or histopathological examination (HPE) results. The ACR TI-RADS system was applied to categorize thyroid nodules. The performance and diagnostic accuracy of the ACR TIRADS scoring system, the risk of malignancy in each TR category and the percentage of unnecessary FNAC rates were determined.

RESULTS
The ACR TI-RADS performance showed a specificity, sensitivity, positive predictive value (PPV), negative predictive value (NPV) of 94.6%, 41.8%, 26.4%, 97.2%. The diagnostic accuracy was 51.5%. The ROC curve analysis showed AUC 0.794 (95% CI: 0.753-0.834). The risk of malignancy was 0% for TR 1 and 2, 4.1% for TR3, 17.2 % for TR4, and 52.9% for TR5. The unnecessary FNAC rate was 32.5%.

CONCLUSION
The ACR TI-RADS system applied in our centre is synonymous with other validated studies and is a reliable system to differentiate malignant from benign thyroid nodules. The high unnecessary FNAC rates inform that FNAC should be deferred in patients with TR 1 and 2 nodules.

PA-A-31

DIABETIC KETOACIDOSIS IN A NEW ONSET ELDERLY TYPE 1 DIABETES AFTER SARS-CoV-2 VACCINATION: ASSOCIATION OR COINCIDENCE?

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INTRODUCTION
In the era of the COVID-19 pandemic, several cases of new onset diabetes associated with COVID-19 have been reoprted. Additionally, patients with diabetes, a high-risk population, are prioritised for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccination. The vaccine against the (SARS-CoV-2) could represent a new environmental trigger for autoimmune disorders such as Graves' disease, immune thrombotic thrombocytopenia, autoimmune liver diseases, Guillain-Barré syndrome, systemic lupus erythematosus and type 1 diabetes.

CASE
We report a case of diabetic ketoacidosis in a new onset Type 1 diabetes in an elderly female following SARS-CoV-2 vaccination. A 69-year-old female with a history of treated TB abdomen in 2015 with no history of diabetes received her second dose of SARS-CoV-2 vaccination (COMIRNATY) on 21st August 2021. Two weeks following vaccination, she developed osmotic symptoms, reduce appetite and lethargy. Her random blood glucose (RBS) was 41 mmol/L, serum ketone 4.4 mmol/L, pH of 7.29 mmHg, bicarbonate 12.5 mmol/L and serum osmolarity of 298 mOsm/kg. She was treated for DKA with intravenous insulin infusion and hydration with resolution of DKA within 12 hours. Anti-Glutamic Acid Decarboxylase and anti-Islet Cells antibodies were positive with low fasting C-peptide of 102 pmol/L. She was discharged well with basal bolus insulin. Four months later, HbA1c reduced from 15.6% to 7.7% with a random C-peptide of 152 pmol/L.

CONCLUSION
The occurrence of hyperglycaemia crisis following SARS-CoV-2 vaccine in patients with pre-existing diabetes is known but the occurrence of new onset autoimmune diabetes following vaccination is rare. Further studies are needed to better understand the underlying pathogenesis of autoimmune diabetes following SARS-CoV-2 vaccine.

PA-A-32

MALIGNANT STRUMA OVARII IN PREGNANCY

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INTRODUCTION

Struma ovarii is monodermal teratoma predominantly composed of mature thyroid tissue. Thyroid tissue must comprise more than 50% of the overall tissue to be classified as a struma ovarii and it accounts for approximately 2.7-5% of all ovarian teratomas. Depending on the histological features, struma ovarii can be classified as benign or malignant.

CASE

We report a case of a 28-year-old Malay primigravida. She visited the antenatal clinic on her 9th gestational week. Ultrasound of the pelvic incidentally found a right ovarian cyst measuring 9 x 8 cm located above the uterus, which is multiloculated with solid-cystic component. Otherwise, she was asymptomatic at presentation. Patient underwent laparoscopic right ovarian cystectomy on her 13th gestational week. Histopathology examination revealed a mature cystic teratoma, with papillary thyroid carcinoma arising in the background of struma ovarii. She had subclinical hyperthyroidism at early pregnancy, however normalized at her 23rd gestational week. Subsequent thyroid ultrasound was normal.

She successfully delivered a healthy baby at her 38th gestational week. There was no evidence of metastasis based on the computed tomography (CT) scan of the thorax, abdomen, and pelvis. Six weeks after delivery, she underwent laparoscopic right salpingo-oophorectomy with omentectomy and right pelvic lymph node sampling which also showed no evidence of metastasis.

CONCLUSION

Struma ovarii is a rare ovarian tumour. A high index of clinical suspicion along with thorough clinical examination is crucial to diagnose such a tumour. Although benign forms are more common, malignant struma ovarii, mainly papillary thyroid carcinoma have also been reported. Long-term follow up is needed to detect recurrence.

PA-A-33

SEVERE HYPERCALCAEMIA OF HYPERPARATHYROIDISM WITH CARDIAC COMPROMISE; AVOIDING DIALYSIS WITH AGGRESSIVE MEDICAL THERAPY

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INTRODUCTION

Severe hypercalcaemia of primary hyperparathyroidism (pHPT) is usually symptomatic and carries high mortality risk due to cardiac arrhythmia and decompensation. Treatment involves vigorous hydration alongside anti-resorptive agents such as bisphosphonate and RANK-Ligand inhibitor i.e., denosumab. Usually, serum calcium of more than 4 mmol/l necessitates dialysis. Here, we report a case of severe hypercalcaemia of hyperparathyroidism with cardiac compromise treated medically resulting to avoidance of dialysis.

CASE

The case is a 50-year-old female with hypertension and chronic kidney disease stage IIIB who was diagnosed with primary hyperparathyroidism since 2020. She was stable with mild hypercalcaemia (calcium less than 3.0 mmol/L). During endocrine follow-up, she complained of constipation, abdominal discomfort, lethargy and vomiting for 2 weeks. She has no cough, no constitutional symptoms, no bone pain, no recent fracture or immobilisation and she denied taking any supplementations. Clinical assessment done was in keeping with severe dehydration.

Blood investigations revealed severe hypercalcaemia (5.01 mmol/L) with normal phosphate and acute azotemia (urea 11, Creatinine 191). Electrocardiography showed first degree heart block, with short QT interval, and a heart rate 60-80 bpm.

Hydration with 5 litres of normal saline and intravenous denosumab was given. Nephrology team was consulted, but no dialysis was planned. On the third day of admission, hydration was increased to 6 litres/day alongside intravenous furosemide to induce forced diuresis. Calcium level reduced to 3.1 mmol/L after a week of admission. Repeated ECG showed resolution of the heart block and short QT. Right inferior parathyroidectomy was done after localisation 2 weeks after. Histopathology confirmed parathyroid adenoma.

CONCLUSION
Severe hypercalcaemia of pHPT can be successfully managed with aggressive treatment and close monitoring. Need for dialysis may be avoided but such patients should undergo parathyroidectomy as soon as possible.

PA-A-34

A CASE OF DENOSUMAB-INDUCE HYPOCALCEMIA:
A SEVERE AND PROLONGED CONSEQUENCES

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INTRODUCTION
Denosumab is known to cause abnormalities in calcium homeostasis. The majority of such cases have been described in patients with underlying metastatic cancer, chronic kidney disease or vitamin D deficiency. History of bariatric surgery could also compound the effect of hypocalcemia necessitating intravenous treatment and prolong high dose oral supplementation.

CASE
We present a 61-year-old female with a 6-day history of progressive worsening limb numbness, tingling sensation and intermittent muscle cramps. She had gastric sleeve surgery done 20 years ago. Her regular medication includes calcium, vitamin D and iron supplement. Further history uncovered a denosumab treatment for osteoporosis 1 week ago at a private hospital.

Biochemistry revealed severe hypocalcemia with adjusted calcium of 1.33 mmol/l, mild hypophosphatemia at 0.65 mmol/l, with normal magnesium and renal function. ECG showed prolonged QT interval. PTH level was high at 34.6 pmol/l and 25-OH-vitamin D was insufficient at 33 mmol/l.

She required multiple courses of intravenous calcium gluconate bolus and infusion due to retractable severe hypocalcemia while titrating up her oral supplement in the ward. She was discharged after 8 days with serum calcium around 1.90 mmol/l. At clinic follow up 5 days later, her serum calcium decreased again to 1.64 mmol/l requiring further iv calcium infusion and oral supplement adjustment.

After 2 months, she still requires high dose replacement with 1.5 ug calcitriol twice daily, 1 g calcium carbonate thrice daily and vitamin D3 replacement to maintain normocalcemia.

CONCLUSION
This case report highlights the importance of screening for risk factors for iatrogenic hypocalcemia before initiating denosumab treatment particularly for patients with a history of bariatric surgery. Vitamin D should be adequately replaced prior to treatment and serum calcium levels should be closely monitored post treatment.

PA-A-35

DOSE UP-TITRATION OF EMPAGLIFLOZIN AMONG TYPE 2 DM PATIENTS UNCONTROLLED ON EXISTING ORAL ANTIDIABETIC AGENTS

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INTRODUCTION
In most trials involving empagliflozin, the effect on HbA1c reduction was based on concurrent use of 2 doses of the drug without dose titration. This study aims to determine the proportion of patients who need to up-titrate empagliflozin from 10 mg to 25 mg to achieve the desired A1c reduction.

METHODOLOGY
T2DM patients uncontrolled on existing oral glucose-lowering drugs were given empagliflozin 10 mg daily for 3 months. Those who achieved a reduction in HbA1c more than 0.5% from baseline will continue the same dose for another 3 months while those those who had HbA1c reduction of 0.5% or less will be given 25 mg daily for 3 months.

RESULTS
A total of 55 (67.9%) patients had significant HbA1c reduction >0.5% after 3 months on 10 mg empagliflozin (non-titration group), while 26 (32.1%) patients required up-titration of empagliflozin to 25 mg daily for another 3 months (up-titration group). There was no further significant reduction in mean HbA1c from 7.50% (range: 7.1 to 8.15) to 7.45% (range: 6.78 to 8.13), p=0.574 after 3 months of 25 mg empagliflozin. At 3 months therapy with empagliflozin 10 mg, 55 (67.9%) patients achieved mean HbA1c reduction of >0.5% from baseline 7.8%(range: 7.5 to 8.7) to 6.95% (range: 6.53 to 7.38), p<0.001 and remains stable after the continuation for another 3 months.

CONCLUSION

Most patients responded well to 10 mg of empagliflozin and achieved sustained HbA1c at 6 months of treatment. However, a third of patients did not respond well to empagliflozin 10 mg, even after up-titrating to 25 mg. These finding suggests that if patients do not achieve at least 0.5% reduction in HbA1c with 10 mg dose, further significant reduction in HbA1c is unlikely to be achieved with up-titration to 25 mg for the next 3 months.

PA-A-36

CEREBELLAR ATAXIA ASSOCIATED WITH ANTI-GLUTAMIC ACID DECARBOXYLASE ANTIBODIES: A CASE REPORT

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INTRODUCTION

Anti-glutamic acid decarboxylase (anti-GAD) - related cerebellar ataxia is the second most common cause of GAD antibody (Ab) spectrum disorders. It is characterised by cerebellar symptoms with elevated GAD Ab levels in the serum and cerebrospinal fluid (CSF). It commonly affects females associated with Type 1 DM or polyendocrinopathy. IVIG is the most effective immunomodulatory therapy.

CASE

We report a 34-year-old male diagnosed with Type 1 DM with high titer of serum anti-GAD Ab who first presented with cerebellar syndrome at the age of 12. At 15 years of age, HbA1c was 12% hence, insulin treatment was initiated. Initial diagnosis of neurodegenerative disorder was made in view of brain MRI findings showing cerebellar atrophy and family history of consanguineous marriage.

Laboratory investigation revealed high serum anti-GAD Ab titre >250 IU/ml. He was on basal-bolus insulin regimen and self-monitoring of blood glucose showed good control. There was no target organ damage. Furthermore, there was no progressive worsening of the neurological deficit. Repeated cranial MRI showed stable symmetrical hyperintensity in the atrophic middle cerebellar peduncles and pons with cerebellar atrophy. A lumbar puncture was performed and CSF analysis for anti-GAD Ab revealed remarkably high titre >250 IU/ml. Work-up for other causes of cerebellar ataxia and neurodegenerative disorders were negative. Immunomodulatory treatment was not initiated in view of non-progressive symptoms.

CONCLUSION

The unique association of autoantibody-mediated cerebellar ataxia and T1DM in this male patient is interestingly rare with childhood cerebellar syndrome as initial presentation before the diagnosis of Type 1 DM. Immunomodulatory treatment may be effective. We emphasize the importance of long-term follow-up, given the possibility of late development of other anti-GAD related neurological disorders and autoimmune polyendocrinopathy.

PA-A-37

T3 THYROTOXICOSIS SECONDARY TO GRAVES' DISEASE EXHIBITING RESISTANCE TO RADIOACTIVE IODINE-131 THERAPY

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INTRODUCTION

Radioactive Iodine (RAI) therapy with Iodine-131 is commonly used as definitive therapy for Graves' Disease. It is especially useful when there is poor response to anti-thyroid medications. The failure rate for RAI therapy is approximately 15% and known predictors for failure are RAI doses of <13 mCi and prior methimazole therapy. Initial free T3 (fT3) and T4 (fT4) levels at presentation may also predict response to RAI therapy.

CASE

We present a case of a 44-year-old female with Graves' Disease and persistently elevated fT3 levels. Her main symptoms were weight loss, palpitations and severe panic and anxiety attacks. She had mild ophthalmopathy and a moderate goitre but no compression symptoms. She was treated with carbimazole for 2 years but was unable to achieve euthyroidism.

Her initial thyroid function tests showed TSH <0.01 mIu/L (NR: 0.27 – 4.2), fT4 >100 pmol/L (NR: 12 - 22) and fT3 >50 pmol/L (NR: 3.5 - 6.5). Thyroid peroxidase (TPO) antibodies were elevated at 692 IU/ml (NR <35). With carbimazole, her fT4 normalized (range: 13 - 19) but fT3 remained elevated (range: 8 - 13). Carbimazole dose was increased and fT3 normalized to 5.1 pmol/L but fT4 decreased to 1.7 pmol/L. Her TSH remained suppressed throughout. She received RAI at 20 mCi with immediate relapse after 4 weeks (fT4 >100). Eight months later, she had second RAI with 20 mCi but remained hyperthyroid within 6 months of follow-up.

CONCLUSION

Despite a total RAI dose of 40MCi, her Graves' Disease remained active and thyroidectomy would be the next option. Her resistance to RAI may be related to her predominant pattern of elevated fT3 levels. The mechanism of this is unclear but may be related to impaired RAI uptake by the thyroid gland. Future studies may be useful to evaluate this further.

PA-A-38

CHARACTERISTICS OF COVID-19 PATIENTS WITH HYPERGLYCAEMIC EMERGENCY AND MORTALITY OUTCOMES: SINGLE CENTRE EXPERIENCE IN PAHANG

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INTRODUCTION

Individuals with diabetes have similar risk of contracting COVID-19 infection compared to those without diabetes. However, COVID-19 patients with diabetes are at a higher risk for severe outcomes and death. The occurrence of hyperglycaemic emergency and diabetic ketoacidosis (DKA) may worsen the outcomes of COVID-19 infection. This study will determine the characteristics of COVID-19 patients admitted with hyperglycaemic emergency and mortality outcomes in Hospital Sultan Haji Ahmad Shah, Temerloh, Pahang.

METHODOLOGY

All electronic records of COVID-19 patients admitted from March 2021 until March 2022 were reviewed for occurrence of hyperglycaemic emergency. Data regarding demographics, clinical presentation, laboratory investigations and clinical outcomes were collected. Further analysis with patients subcategorised into 2 timelines: March-December 2021 (group 1) and January-March 2022 (group 2) reflecting two surges of COVID-19 admission to the hospital was done.

RESULTS

Twenty-four COVID-19 patients with hyperglycaemic emergency [mean age 56.7 (SD 15.6) years, 54.2% female, 79.2% Malay ethnicity, 95.8% type 2 diabetes mellitus, 54.2% unvaccinated, 70.8% category 5 infection] were analysed. Majority of patients had DKA at 79.2% [mean pH 7.16(SD 0.12), mean HCO_3 10.80 (SD 3.07), mean glucose at diagnosis 25.3 (SD 11.0) mmol/L]. The mean length of hospitalisation was 11.42 (SD 7.4) days and mortality rate was 63.2%. Nine DKA cases were detected in group 1 compared to 10 cases during the shorter timeline in group 2. All patients had resolved DKA but the majority succumbed later due to complications of COVID-19 infection. Mortality rates in both groups were 66.7%(n=6) and 60%(n=6), respectively.

CONCLUSION

Despite high occurrence of uncontrolled diabetes during COVID-19 infection in this cohort, only a small proportion had hyperglycaemic emergency. In both timeline of hospitalisation surge, COVID-19 patients with concomitant hyperglycaemic emergency had poorer prognosis.

PA-A-39

A CASE OF HYPERCALCEMIA CRISIS IN PREGNANCY DUE TO GIANT PARATHYROID ADENOMA

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INTRODUCTION

Hypercalcemia in pregnancy affects 0.03% of reproductive women. Complications are directly related to maternal calcium level and include maternal nephrolithiasis, kidney injury, pancreatitis, pre-eclampsia and fetal loss. Primary hyperparathyroidism accounts for >90% of cases.

CASE

We report a 41-year-old female who presented at 4 weeks of gestation with a 1-week history of polyuria and 3-day history of epigastric pain.

Laboratory investigations showed the following: severe hypercalcemia with corrected serum calcium of 5.04 mmol/L, low serum phosphorous at 0.88 mmol/L, elevated intact PTH at 45.4 (NR:1.6-6.0 pmol/L), acute kidney injury with serum creatinine of 221 umol/L, and pancreatitis with serum amylase of 368 (NR: 62-106 u/L). Electrocardiogram showed Osborn waves. Kidney ultrasound showed bilateral renal medullary nephrocalcinosis with nephrolithiasis. Neck ultrasound revealed a 2.8x2.9x5.1 cm well defined solid lesion postero-inferior to the right thyroid lobe suggestive of parathyroid tumour.

Oral cinacalcet and subcutaneous calcitonin were initiated when saline diuresis failed to lower her calcium below 4 mmol/L. Calcitonin was discontinued after 2 days due to intolerability. At the 5th hospital day, serum calcium and creatinine levels decreased to 2.77 mmol/L and 103 umol/L, respectively, with high volume intravenous saline and cinacalcet.

A multidisciplinary discussion was done and the plan was to continue oral cinacalcet and parathyroidectomy at the second trimester. Unfortunately, serial beta-hCG showed decreasing levels and transvaginal ultrasound confirmed fetal nonviability. Left inferior parathyroidectomy was then performed on the same setting at day 7 of presentation. Histopathologic examination reported giant parathyroid adenoma weighing 23 g. Her calcium level normalised and she remained normocalcemic at follow-up 5 months post-surgery.

CONCLUSION

Our case highlights the management challenges for hypercalcemia in pregnancy due to safety concerns on standard pharmacotherapy and surgery. Acute management of severe hypercalcemia in pregnancy requires timely multidisciplinary decisions to achieve the best outcome and minimise morbidity and mortality.

PA-A-40

SEVERE HYPERTRIGLYCERIDEMIA SUCCESSFULLY TREATED WITH INSULIN INFUSION: A CASE REPORT

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INTRODUCTION

Patients with severe hypertriglyceridemia (HT) are at risk of developing life-threatening acute pancreatitis and cardiovascular disease. There is no standard guideline on managing severe HT in acute settings. Apheresis, heparin and insulin therapy has been utilised and reported.

CASE

We report a 42-year-old male who was referred to us from private healthcare for severe HT. He has hypertension and dyslipidaemia for 1 year and was prescribed with atorvastatin and fenofibrate for lipid management. He was only recently diagnosed with diabetes mellitus (DM) with HbA1c of 13%. There was no family history of hyperlipidemia or ischaemic heart disease. He did not have any abdominal pain or chest pain. On examination, there were multiple eruptive xanthomatas over the extensor surface of both elbows and knees and at the Achilles tendon area.

Laboratory investigations revealed severe HT with serum triglyceride (TG) of 44.6 mmol/L and total cholesterol of 19.6 mmol/L. His blood exhibited thick and milky supernatant. Serum amylase was not elevated. Liver function test was normal. In view of severe HT, the patient was admitted and variable rate insulin infusion was started. His TG decreased progressively to 22.7 mmol/L by day 2 of admission and finally to 10.7 mmol/L by day 6 of admission. He was discharged on statin and fenofibrate together with his antihyperglycaemic medications. Screening for his family members was also done. Although there was no family history, we planned for genetic study for him soon.

CONCLUSION

This case showed successful therapy for severe HT with insulin infusion. It is non-invasive and cost-effective treatment option for severe HT. Rapid reduction of high TG is important to reduce risk of pancreatitis.

PA-A-41

ACROMEGALY WITH SPONTANEOUS VENTRICULOSTOMY – A RARE PHENOMENON

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INTRODUCTION

Spontaneous ventriculostomy is a unique condition that occurs in patients with chronic obstructive hydrocephalus wherein spontaneous ventricular rupture results in communication between the ventricular system and subarachnoid space. We present a case of acromegaly who presented with spontaneous ventriculostomy on magnetic resonance imaging (MRI) of the pituitary with no prior history of neurosurgical intervention.

CASE

A 66-year-old male with chronic hypertension presented with long standing bilateral peripheral vision loss, worsening over the right eye for 3 months, obstructive sleep apnea symptoms and no symptoms of pituitary apoplexy. Clinically, he had classical features of acromegaly and ophthalmological assessment confirmed bitemporal hemianopia with no optic atrophy.

Pre-operative investigations confirmed elevated IGF-1: 240 ng/ml (NV: 40.2 - 225), random growth hormone (GH): 3.7 ng/ml (NV: <3) and prolactin (PRL): 805 mIU/L (NV: 45 - 375). Thyroid and cortisol levels were normal. Pre-operative MRI of the pituitary revealed a heterogenous sellar mass with cerebrospinal fluid (CSF) fistulous connection between the floor of third ventricle and sella turcica. He underwent endoscopic chiasmopexy which revealed dense arachnoid adhesions in the sellar region with CSF gush on manipulation. No tumour was removed as a discrete adenoma could not be identified. Post-operatively, IGF-1 normalised to 184 ng/ml (40.2-225), but GH and PRL remained elevated at 4.9 ng/ml and 474 mIU/L, respectively. Failure of GH suppression following 75 g OGTT at 2.8 ng/ml denotes persistent active acromegaly. As he had mild acromegaly with prolactin co-secretion and was unable to afford somatostatin receptor ligand therapy, he was commenced on cabergoline 0.25 mg twice a week.

CONCLUSION

Preceding case reports of spontaneous ventriculostomy secondary to obstructive hydrocephalus were due to neoplastic disease or benign aqueduct stenosis. We report a case of acromegaly with prolactin co-secretion who presented with a rare finding on pituitary MRI of spontaneous ventriculostomy.

PA-A-42

NON-FUNCTIONING PITUITARY ADENOMA COMPLICATING PREGNANCY

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INTRODUCTION

Pregnancies are rare in women with pituitary adenoma. We describe a patient with non-functioning pituitary adenoma who had spontaneous pregnancy. She developed progressive worsening of vision and underwent successful transsphenoidal surgery (TSS) in the second trimester.

CASE

A 35-year-old female presented with secondary amenorrhoea and galactorrhoea for 6 months. A large pituitary macroadenoma with mass effect coupled with mild increment in prolactin raised a suspicion of prolactinoma. Menstruation returned and galactorrhoea ceased following cabergoline therapy. She had a left nasal hemianopia, central hypothyroidism and hypogonadotropic hypogonadism. The other pituitary hormones were intact. Although prolactin remained suppressed for a year with cabergoline, there was no reduction in tumour size and serial perimetry showed gradual worsening of visual fields in both eyes. She was scheduled for TSS but was postponed.

She presented at 17 weeks of a spontaneous pregnancy with left eye discomfort and no other symptoms of raised intracranial pressure. MRI of the pituitary showed unchanged tumour size exhibiting mass effect with no evidence of apoplexy. Perimetry showed worsening of peripheral scotoma on the left eye with optic atrophy. Hormonal evaluation showed new onset central hypocortisolism. She underwent TSS at 19 weeks POA. Histopathology confirmed pituitary adenoma but stained negative for prolactin. Post-operatively, she developed central diabetes insipidus requiring regular desmopressin. There was no improvement in vision.

CONCLUSION

Pregnancy is a known risk factor for pituitary apoplexy. However, worsening of mass effect could be due to physiological changes of pregnancy resulting in pituitary enlargement. Surgery is recommended early prior to pregnancy especially in those with large non-functioning pituitary adenoma for optimal pregnancy outcomes. Patients who become pregnant require multidisciplinary care and TSS in the second trimester is an option. Hormonal deficiencies and cranial diabetes insipidus should be addressed promptly.

PA-A-43

A RARE CASE OF AGGRESSIVE CALCITONIN-NEGATIVE MEDULLARY THYROID CARCINOMA

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INTRODUCTION
Medullary thyroid carcinoma (MTC), accounting for 5% of thyroid cancers, is a neuroendocrine tumour derived from parafollicular C-cells of the thyroid gland. MTC secretes calcitonin which is used as the gold standard biomarker for diagnosis and monitoring. Calcitonin-negative MTC (CNMTC) is rare with less than 80 cases reported in the literature.

CASE
We report a case of CNMTC presenting with aggressive clinical course. A 70-year-old female presented to the emergency department with a 2-day history of odynophagia, dyspnea and aphonia. She reported progressive worsening of neck swelling, dysphonia and dysphagia over the past 2 months. Examination revealed a hard right anterior neck mass (12 x 5 cm). She was treated for impending airway obstruction with intravenous dexamethasone and awake fiberoptic intubation. Neck CT scan showed 5.7 x 5.5 x 9.9 cm right thyroid mass with 5.2 x 4.0 x 6.5 cm matted cervical lymphadenopathy causing tracheal compression, right internal jugular vein and sternocleidomastoid muscle infiltration, right brachiocephalic artery and common carotid artery encasement. Metastatic work-up revealed liver metastases. Excisional biopsy of the thyroid mass reported malignant cells with CKAE1/AE3, CD56, synaptophysin and TTF-1 positivity suggestive of medullary thyroid carcinoma, awaiting further immunohistochemistry (IHC) staining with calcitonin. Thyroid function, serum calcium and carcinoembryonic antigen (CEA) level 1.41 ng/mL (N <5.0) were normal. Serum calcitonin was not available. Following tumour debulking and tracheostomy, histopathological examination showed high grade neuroendocrine tumour with Ki67 proliferation index >90%. Tumour IHC were negative for calcitonin and leucocyte common antigen (LCA). A final diagnosis of CNMTC was made. Patient refused further therapy and succumbed to her illness soon after.

CONCLUSION
CNMTC poses both diagnostic and management challenge due to its non-secretory state and the lack of guidelines on treatment and prognostication. Past literature reviews had shown variable clinical progress. The lack of calcitonin and CEA elevations further complicate post-operative surveillance.

PA-A-44

TYPE 1 DIABETES PATIENTS FOLLOW-UP IN DIABETES ONE-STOP CLINIC(DOSC) DURING COVID-19 PANDEMIC: SINGLE CENTRE EXPERIENCE IN PAHANG

https://doi.org/10.15605/jafes.037.S2.50

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INTRODUCTION
Management of type 1 diabetes mellitus (T1 DM) patients in early adulthood is associated with unique challenges. COVID-19 pandemic had significantly impacted the quality of patient follow-up and access to care. This study assessed the characteristics of T1 DM patients under diabetes one-stop clinic (DOSC) follow-up in Hospital Sultan Haji Ahmad Shah (HoSHAS), Temerloh, Pahang and the impact of the pandemic on diabetes control.

METHODOLOGY
In this cross-sectional study, all T1 DM patients under active follow-up were recruited. Data regarding demographics, diabetes control and COVID-19 infection status were reviewed. Further analyses were performed by dividing them into 2 groups according to COVID-19 infection status: COVID-19 positive (group 1) and COVID-19 negative (group 2).

RESULTS
Thirty T1 DM patients [60% female, 63.3% Malay ethnicity, mean age 24.4 (SD7.4) years, median weight 58.35(IQR 10.3) kg, median disease duration 6.0 (IQR 8.0) years, mean duration under DOSC follow-up 4.1(SD 1.6) years] were analysed. Incident retinopathy was seen in 10.0% of patients. Within the past 12 months, 26.7% had recent hospitalisation, majority due to diabetes ketoacidosis. Within the past 3 months, 13.3% had experienced hypoglycaemia. Mean HbA1c in T1 DM increased steadily from 2019 to 2020 and 2021 (8.87% vs 8.93% vs 9.35%). Thirteen T1 DM patients (46.4%) had COVID-19 infection between 2020 and 2022. Patients with COVID-19 infection had lower HbA1c than those not infected but it was not statistically significant (8.74% vs 9.07%, p=0.82). They also tended to have more microvascular complications.

CONCLUSION
COVID-19 pandemic had negatively impacted diabetes control in our cohort. There was also a high hospitalisation rate during this period. The HbA1c level was not associated with increased risk of COVID-19 infection in our cohort.

PA-A-45

CASE REPORT OF NON-INSULIN-DEPENDENT HYPOGLYCAEMIA IN RECURRENT SOLITARY FIBROUS TUMOUR OF THE LUNG

https://doi.org/10.15605/jafes.037.S2.51

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INTRODUCTION
Non-islet cell tumour hypoglycaemia (NICTH) is a rare paraneoplastic syndrome that secretes insulin growth factor 2 (IGF2), which results in stimulation of the insulin receptor and subsequently induces hypoglycaemia. Most commonly, IGF2–linked hypoglycaemia has been observed in patients with solid tumours that are either of mesenchymal or epithelial origin, such as hepatocellular carcinomas, adrenocortical tumours, fibrosarcomas and mesotheliomas.

CASE
A 69-year-old male with underlying hypertension and history of excision of a left solitary fibrous tumour of the left lung 7 years ago presented with recurrent left lung exudative pleural effusion. Chest radiography and CT imaging revealed a left lung mass. Ultrasound -guided biopsy was performed and the histopathology demonstrated recurrence of the solitary fibrous tumour. Debulking surgery was planned; however, while waiting for the surgery, he presented with impaired consciousness and serum glucose on admission was 1.4 mmol/L. He had no prior history of hypoglycaemia. He developed recurrent hypoglycaemia despite continuous dextrose infusion and dietary intervention.

At the time of hypoglycaemia, the levels of insulin and C-peptide were suppressed, consistent with non-insulin-mediated hypoglycaemia. Additionally, IGF1 levels were below the normal range and his renal, liver and adrenal function were normal. He was started on oral prednisolone and subsequently underwent median sternotomy and tumour debulking surgery. Histopathogical examination confirmed recurrent left lung solitary fibrous tumour. Hypoglycaemia resolved after tumour resection and prednisolone and dextrose infusion were discontinued. After 1 year of follow up, the patient remained well without any further reported hypoglycaemic episodes.

CONCLUSION
Solitary fibrous tumour is a rare tumour that induces NICTH due to overproduction of IGF2. It is interesting that a few cases reported episodes of hypoglycaemia on recurrence of the tumour, rather than at the initial presentation.

PA-A-46

CLINICAL CHARACTERISTICS OF PARATHYROID HORMONE-DEPENDENT HYPERCALCAEMIA: A CASE SERIES ON THE SERDANG EXPERIENCE

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INTRODUCTION
Primary hyperparathyroidism (PHPT) is characterized by hypercalcaemia with elevated or inappropriately normal parathyroid hormone (PTH) and can be due to parathyroid adenoma, hyperplasia, and carcinoma. The presentation varies from asymptomatic to symptomatic disease with osteoporosis, pancreatitis, and nephrolithiasis. The aim of this review is to look at the common clinical characteristics of PTH-dependent hypercalcaemic patients presented to Serdang Hospital.

METHODOLOGY
Retrospective analysis was performed to identify patients with PTH-dependent hypercalcaemia investigated and managed by the Endocrine Unit of Hospital Serdang from the years 2018 to 2022. Their clinical characteristics, presentations, complications and outcomes of hypercalcaemia were recorded for descriptive analysis.

RESULTS
A total of 13 patients were recorded. Majority of patients with PTH-dependent hypercalcaemia were female (57.14%), with median age of 50 years old (IQR 41-61). Seven (7) out of 13 patients were symptomatic at presentation, with 2 patients presenting with neurological symptoms (fitting and altered mental status). Median corrected serum calcium at presentation was 3.1 mmol/L (IQR 2.9-3.6), phosphate was 0.8 mmol/L (IQR 0.66-0.91), and eGFR was 74.8 ml/min per 1.73m2 (IQR 35.8-97.3). Median level of Vitamin D was 43.16 nmol/L (IQR 29.69-56.12). Positive parathyroid ultrasound (USG) findings were found in 5 out of 13 patients, the results concordant with their sestamibi scans, while another 4 had negative USG but positive sestamibi. Four patients had nephrocalcinosis at diagnosis. Three patients underwent parathyroid operation and histopathology revealed 1 case of parathyroid carcinoma, 1 parathyroid adenoma and 1 parathyroid hyperplasia. 1 case was associated with mediastinal NET, 1 case is PHPT in pregnancy and is awaiting surgery.

CONCLUSION
In conclusion, the majority of our PHPT patients in Serdang Hospital have symptomatic disease that require surgery.

PA-A-47

ROLE OF TEMOZOLAMIDE IN MACROPROLACTINOMA COMPLICATED BY DOPAMINE AGONIST INTOLERANCE AND REFRACTORY TO SURGERY: A CASE REPORT

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INTRODUCTION
Prolactinomas comprise approximately 40% of all pituitary adenomas, the majority of which are treated with dopamine agonists (DAs). Patients who fail conventional treatment may be considered for surgery or radiotherapy.

CASE
We describe a patient who was treated with temozolamide, an alkylating agent, following multiple DAs intolerances and unsuccessful surgery. A 43-year-old female with secondary amenorrhea, primary infertility and galactorrhea was diagnosed to have macroprolactinoma with a prolactin level of 8143 mIU/L (59-619 mIU/L). Pituitary MRI revealed a parasellar and carvenous sinus soft tissue lesion measuring 1.2 cm (AP) x 1.1 cm (W) x 0.8 cm (CC). Cabergoline was initiated and unfortunately, she developed severe headache and vomiting that necessitated hospitalisation. Similar problems occurred when cabergoline was switched to bromociptine. Due to the side effects, she could not comply with her medications. The prolactin level gradually increased to 11636 mIU/L. Endoscopic transsphenoidal surgery was performed as a salvage treatment. Post-operatively, the prolactin level remained as high as 19722 mIU/L, complicated by secondary hypothyroidism and hypocortisolism. Temozolamide 150 mg/m^2 for 5 days every 28 days was initiated with monthly surveillance of parameters. She exhibited good tolerability. Following the 12th cycle of temozolamide, the prolactin was 3956 mIU/L, a rapid 80% reduction from the peak in 1 year.

CONCLUSION
Temozolamide is an effective alternative in treating prolactinoma after unsuccessful conventional modalities. Future research is needed to establish the role of temozolamide in the treatment algorithm.

PA-A-48

THYROID FUNCTION TEST IN SEVERE COVID-19 PATIENTS IN HOSPITAL SUNGAI BULOH

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INTRODUCTION
COVID-19 may have widespread effects throughout the body, including the endocrine glands, which can be impaired by different mechanisms. Several recent reports have described the onset of thyroid dysfunction in previously healthy patients diagnosed with COVID-19. Thus, we aimed to describe the pattern of abnormal thyroid function tests (TFTs) in severe COVID-19 patients in Hospital Sungai Buloh.

METHODOLOGY
Thyroid stimulating hormone (TSH) and free thyroxine (fT4) were received from all critical care wards catering for severe COVID-19 adult patients (Clinically Stage 4 and 5) from December 2020 till June 2021. It was retrospectively reviewed in Laboratory Information System (LIS) with exclusion of thyroid disease, pregnancy or immunotherapy. SARS-CoV-2 infection was confirmed by RT-PCR of nasopharyngeal swab samples and severity classification was based on the Malaysia MOH guideline. Analysis of TFT was performed on Siemens Atellica using chemiluminescent immunoassay

RESULTS
From 184 TFT results analysed, about 120 patients (65%) had abnormal thyroid function, of which 62.5% had low TSH level with normal fT4 and 15.8% had low TSH with high fT4. This indicated that abnormal TFT is common among COVID-19 patients, with low TSH being most common. However, we are unable to exclude steroid use as a cause of low TSH levels, as steroid are one of the main treatments prescribed in severe COVID-19 cases.

CONCLUSION
There was a high proportion of abnormal TFT in severe COVID-19 patients even in the absence of pre-existing thyroid conditions. Clinicians directly involved in treating these patients need to be vigilant in interpreting thyroid function abnormalities in COVID-19 infection.

PA-A-49

SERENDIPITOUS DISCOVERY OF HYPERCALCEMIA IN PREGNANCY IN A PATIENT WITH ASYMPTOMATIC BRADYCARDIA ON BETA BLOCKER

https://doi.org/10.15605/jafes.037.S2.55

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INTRODUCTION

Hypercalcemia in pregnancy is uncommon and the diagnosis is challenging due to its nonspecific symptoms which may mimic those of pregnancy. The risk of adverse outcomes for the mother and neonate is significant and should be identified earlier.

CASE

We report a case of a patient with parathyroid-dependent hypercalcemia diagnosed in the third trimester of pregnancy with subsequent complications necessitating emergency caesarean section at 35 weeks of gestation.

A 30-year-old pregnant female with chronic hypertension presented at 30 weeks of gestation with asymptomatic bradycardia while on treatment with a beta blocker. She also complained of abdominal discomfort for the past week. On examination, her heart rate was 40-50 beats per minute with no other remarkable findings. Laboratory investigations revealed parathyroid hormone-dependent hypercalcemia with a serum calcium of 2.9 mmol/L and a parathyroid hormone level of 13.3 pmol. 24-hour urine calcium/creatinine clearance ratio was 0.06 and 25-hydroxyvitamin D level was adequate at 80.81 nmol/L. Neck ultrasonography was negative for parathyroid adenoma. Patient was admitted for hydration, however, due to persistent hypercalcemia, cinacalcet 25 mg daily was commenced at 33 weeks of gestation. Serial foetal growth scans demonstrated a small for gestational age (SGA) fetus. She presented at 35 weeks of gestation with severe preeclampsia, pancreatitis and serum calcium level of 3.03 mmol/L, requiring an emergency caesarean section. A male baby, weighing 1970 g, was delivered without any calcium disturbances observed. Patient's calcium levels remained elevated post-partum, requiring saline hydration and subcutaneous calcitonin. Her serum calcium level normalised over the next few days after a dose of pamidronate was given at day 4 post-partum.

CONCLUSION

Hypercalcemia in pregnancy may result in significant maternal and foetal complications. A high index of suspicion is required for early diagnosis and institution of treatment to improve maternal and foetal outcomes.

PA-A-50

EFFICACY OF 50% INSULIN LISPRO AND 50% INSULIN LISPRO PROTAMINE SUSPENSION(HUMALOG MIX50) VERSUS BIPHASIC INSULIN ASPART (NOVOMIX 30) IN PATIENTS WITH TYPE 2 DIABETES MELLITUS DURING RAMADAN

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INTRODUCTION

The month of Ramadan has always been challenging to patients and doctors due to the increased risk of hypo- and hyperglycaemia attributed to large meals during the breaking of fast. Previous studies demonstrated that both Humalog Mix 50 and NovoMix 30 are safe in Ramadan. However, there is little information on their efficacy and safety in Asian populations.

The aim of this study is to evaluate the efficacy and safety of Humalog Mix 50 in comparison to NovoMix 30 in patients with type 2 diabetes mellitus (T2DM) during Ramadan.

METHODOLOGY

We performed a prospective study in T2DM patients seen at the Endocrinology Clinic of UITM in the year 2018, who fasted during Ramadan. They were randomized to receive either Humalog Mix50 or NovoMix 30. Weight and fructosamine pre- and post-Ramadan, capillary glucose at 4-points per day (pre-sahur, noon, pre-iftar and post-iftar) were recorded.

RESULTS

Twenty-three (23) patients (15 on NovoMix 30 and 8 on Humalog Mix 50) with an overall mean age of 57 were analysed.

NovoMix 30 showed a better glycaemic trend at pre-sahur (8.3 ± 1.8 vs 9.3 ± 1.4), during the day (7.4 ± 0.9 vs 7.7 ± 1.5), and 2-hours post-iftar (10.1 ± 2.7 vs 10.4 ± 3.8), although not significant. There were 4 patients who experienced hypoglycaemia in the NovoMix 30 arm (one with glucose 3.3 mmol/L (noon during fasting), and the others with glucose 3.8 mmol/L. Fructosamine difference pre- and post-Ramadan showed reduction of 12.62 mmol/L (HbA1c 1.82%) with Humalog Mix 50 and 7.133 mmol/L (HbA1c 1.73%) with NovoMix 30 (p=0.69).

Weight and waist circumference differences pre- and post-Ramadan were not significant; there was more weight reduction (-1.48 vs -0.53 kg) and waist circumference reduction (-1.07 vs +1.50 cm) with NovoMix 30.

CONCLUSION
Humalog Mix 50 demonstrated similar efficacy and safety compared to NovoMix 30 during Ramadan in T2DM with a potential benefit on fructosamine reduction.

PA-A-51

EUGLYCAEMIC DKA CASES: TWO CAUTIONARY TALES

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INTRODUCTION
Euglycaemic diabetic ketoacidosis (euDKA) presents with a triad of high anion gap metabolic acidosis, ketonemia and normal blood glucose. It has been increasingly reported with the increased use of SGLT-2 inhibitors. Here, we describe two euDKA cases of different aetiologies.

CASES
The first case is a 29-year-old pregnant female with type 1 diabetes diagnosed at 8 years old with good control pre-partum (HbA1c 6.8%) and only 1 previous DKA at diagnosis. During pregnancy, glycaemic control worsened, requiring high doses of insulin. She presented at 33 weeks of gestation with reduced fetal movement alongside epigastric discomfort, vomiting and dyspnoea. Ultrasound by her obstetrician revealed no fetal movement and investigations showed high anion gap metabolic acidosis with pH 6.9, bicarbonate 12 nmol/l while capillary blood glucose (CBG) was 10.3 mmol/l and serum ketone was 6.5 mmol/l. EuDKA precipitated by intrauterine death was diagnosed, treatment was started and patient underwent C-section. Postoperatively, acidosis and ketonaemia resolved and CBG was controlled with low dose insulin.

The second case is a 56-year-old female with poorly-controlled type 2 diabetes (HbA1c 12%) who was diagnosed with upper gastrointestinal bleeding. Blood investigations showed CBG 8.5 mmol/l, normal blood gasses and disproportionate urea:creatinine ratio. She was kept nil by mouth while waiting for gastroscopy. Eight hours later she developed tachypnoea and worsening epigastric pain; repeat blood investigations showed pH 7.0, bicarbonate 17 nmol/l, CBG 11 mmol/l and serum ketone 4.3 mmol/l. EuDKA was diagnosed and she was treated promptly and acidosis and ketonaemia resolved.

CONCLUSION
These two cases illustrate the need for a high index of suspicion for euDKA in diabetics undergoing stressful conditions and the importance of measuring serum ketone in metabolic acidosis even in patients with normal blood glucose.

PA-A-52

METASTATIC BLADDER PARAGANGLIOMA WITH UNDERLYING SHDB MUTATION

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INTRODUCTION
Phaeochromocytoma and paraganglioma (PPGL) are rare tumors with up to 40% associated with inherited germline mutations. SHDB mutation is associated with an increased risk of metastasis.

CASE
A 36-year-old male presented with hypertensive emergency. He was diagnosed to have a bladder paraganglioma at age 32 when he presented with hypertensive crisis. Ga-68 DOTANOC PET/CT scan then showed a localized 4.7 x 5.3 cm bladder paraganglioma and he underwent complete surgical resection with resolution of his symptoms. Genetic testing done showed SHDB, deletion (exon 1), heterogenous pathogenic variant. He remained asymptomatic and was lost to follow-up due to COVID-19 until his recent admission.

During this admission, he had labile blood pressure with symptoms of palpitations and lethargy. He was found to have a 4.3x elevated urine normetanephrine (1639 ug/day, N<374.7). Metanephrine and 3-methoxytyramine levels were normal. His blood pressure was controlled with phenoxybenzamine 20 mg TDS (1 mg/kg), telmisartan 40 mg OM and carvedilol 25 mg BD with improvement in his symptoms. Subsequent anatomical imaging with CT and functional imaging with Ga-68 DOTATATE showed a small recurrence at the bladder wall with metastatic lesions at the left sacral ala measuring 4.5 x 5.1 cm, and multiple lytic lesions over the spine, ribs and also the left acetabulum with the highest uptake of Ga-68 DOTATATE at the C2 vertebra (SUV max 93). He is now planned for peptide receptor radionuclide therapy (PRRT).

SHDB mutation is associated with a higher risk of metastatic disease which has remained unexplained. Treatment for metastatic disease include surgical resection where possible, targeted therapy such as PRRT, meta-iodobenzylguanidine (MIBG) therapy, radiotherapy and also systemic therapy such as chemotherapy and tyrosine kinase inhibitors.

CONCLUSION

Patients with PPGL, especially those with SHDB mutation, require monitoring at regular intervals to screen and detect metastasis to reduce mortality and morbidity.

PA-A-53

A CASE OF HASHIMOTO'S THYROIDITIS IN A PATIENT WITH HEPATITIS C: THE EFFECT OF DIRECT-ACTING ANTIVIRAL (DAA)

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INTRODUCTION

The first discovery of a Hepatitis C Virus (HCV) association was found in mixed cryoglobulinemia. Multiple organs and systems were then affected including the thyroid. HCV may interfere with the functions and mechanisms of self-recognition of both the immune system and thyroid cells and may directly destroy thyroid tissue or mimic the structure of some components of the thyroid gland, thereby initiating autoimmune disease. Interferon (IFN) is a drug used in treating HCV, and studies have shown that IFN-induced thyroid autoimmunity can cause both hyperthyroidism and hypothyroidism.

CASE

A 45-year-old Malay male with underlying diabetes mellitus was admitted for difficulty of breathing and was diagnosed with Hashimoto's thyroiditis with positive anti-TPO and anti-thyroglobulin antibodies complicated with pericardial effusion in 2018. His liver enzymes were abnormal and investigations revealed that he had HCV with liver cirrhosis secondary to heroin use in 2018. He was treated with DAA for 6 months in 2019. Repeated investigations showed that he achieved sustained virologic response (SVR).

After SVR, his thyroxine dosage remained at 1.4 mcg/kg/day, ensuring compliance to medication timing. No antibodies were repeated. In terms of upper gastrointestinal bleeding, ascites, or bleeding tendency, the development of hypothyroidism did not seem to worsen liver cirrhosis.

CONCLUSION

The above case shows that DAA had no impact on thyroid autoimmunity in preexisting Hashimoto's thyroiditis with HCV. Nonetheless, variations in the accuracy of the test techniques and other variables, such as iodine consumption and drugs, contribute to this discrepancy. Patients with HCV infection and autoimmune thyroid disease are influenced by a complex network of cytokines, chemokines, and their receptors. To determine how beneficial these mediators may be as thyroiditis prognostic indicators in the follow-up of HCV positive patients, more research with bigger populations are required.

PA-A-54

POOR KNOWLEDGE BUT GOOD ATTITUDE TOWARDS ANABOLIC ANDROGENIC STEROIDS AMONG STUDENTS IN A LOCAL TERTIARY INSTITUTION

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INTRODUCTION

Non-medical use of anabolic androgenic steroids (AAS) is a widespread public health concern, with up to 8% of university students using it for aesthetic purposes. Studies have reported poor knowledge and attitude towards AAS among university students. Our study aims to study the knowledge and attitude on AAS among male undergraduate students in University Tunku Abdul Rahman (UTAR).

METHODOLOGY

One thousand three hundred eight (1308) male university students were recruited via convenience sampling and given an online self-administering questionnaire between December 2021 – February 2022. The questionnaire documented their socio-demographic parameters, as well as assessed their knowledge and attitude towards AAS.

RESULTS

68.6% of our respondents had poor knowledge on AAS; students from the urban campus or those who spent >30 minutes in the gym had significantly higher knowledge. Interestingly, the level of knowledge on AAS was lower among students who participated in competitive sports. Most of the students were not aware that AAS abuse may affect their mental health or even result in other complications such as gynaecomastia. On the contrary, 83% of the students had a good attitude towards AAS. There was a significant association between family history of AAS use and poorer attitude. Most of the students (79.1%) admitted they would not use AAS in the future, while only 7.7% agreed that AAS should be used freely among athletes. Only 35% agreed that the public should be allowed access to AAS under medical supervision. There is a significant but mild positive correlation between the knowledge scores and attitude scores among the participants.

CONCLUSION

Our study is the first in Malaysia that depicts poor knowledge but good attitude of male university students towards AAS. Hence, there is a need for university students to be exposed to information regarding AAS abuse and its complications.

PA-A-55

AN EVALUATION OF THE MANAGEMENT OF PATIENTS WITH HYPOPARATHYROIDISM IN HOSPITAL PUTRAJAYA

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INTRODUCTION
Hypoparathyroidism is a rare endocrine disorder characterized by hypocalcaemia, associated with an inappropriately low parathyroid hormone concentration. Since there is no Malaysian guideline for the management of hypoparathyroidism, we evaluated our management practice against published European guidelines.

METHODOLOGY
We reviewed the medical records of 36 patients aged 21–76 years old with hypoparathyroidism for at least one year, who were managed in the Internal Medicine and Endocrine Clinics of Hospital Putrajay. Data were obtained from the computerized clinical notes database and the pathology database.

RESULTS
It was found that the most common etiology of hypoparathyroidism was previous thyroidectomy (86.1%). Serum calcium and phosphate were measured at least annually in almost all patients (94.4%). Serum creatinine was checked at least annually in 94.4%. Serum vitamin D was measured in 61.1%. 24-hour urine calcium excretion was only checked in 25.0%. The target for calcium and phosphate was stated in only 2.8%. Calcium phosphate product was not documented for any of the patients. Kidney ultrasound was done in 22.2% and cataract screening was performed in 5.6%.

Almost half of the patients (44.4%) were admitted for symptomatic hypocalcemia, and 16.7% developed renal impairment.

Most patients (91.7%) were prescribed with calcium carbonate. Alfacalcidol was prescribed to 61.1%. None was on adjunctive treatment.

CONCLUSION
This study shows that the long-term outpatient monitoring and recording of hypoparathyroidism is inadequate in the local setting. We are therefore undertaking the task of constructing a checklist of relevant diagnostic and therapeutic procedures that will standardize management for this disease.

PA-A-56

A RARE CASE OF SPINDLE CELL LIPOMA OF THE RIGHT ADRENAL GLAND

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INTRODUCTION
Spindle cell lipoma is a rare variant of lipoma that usually arises from subcutaneous tissue of the posterior neck and shoulder. Some cases of spindle cell lipoma may be found in the intraabdominal and retroperitoneal areas.

CASE
We report a 58-year-old female who presented with right abdominal pain and distension for one month. CT scan of the abdomen was done and revealed a large right adrenal mass (16.5 cm x 13.7 cm x 20.5 cm), with normal hormonal workup. Right adrenalectomy was performed and histopathological examination (HPE) confirmed Spindle Cell Lipoma.

CONCLUSION
This case represents a rare case of adrenal Spindle Cell Lipoma, which presented as a large adrenal mass with normal biochemical workup.

PA-A-57

CLINICAL CHARACTERISTICS, GLYCAEMIC CONTROL AND HYPOGLYCAEMIA EVENTS AMONG TYPE 1 DIABETES PATIENTS USING CONTINUOUS GLUCOSE MONITORING SYSTEMS IN HTAA

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INTRODUCTION
The incidence of T1D in Asia is approximately 2-5 per 100,000 person-year. Hypoglycaemia is common among patients with T1D and a number of T1D patients are asymptomatic for hypoglycaemia. Continuous glucose monitoring systems appear to be a useful tool in detecting hypoglycaemia events.

METHODOLOGY
We conducted a retrospective audit of the medical records of 26 patients diagnosed with T1D consulting at the diabetes clinic at Hospital Tengku Ampuan Afzan (HTAA) from January 1, 2021 until December 31, 2021. Demographic data, anthropometric measurements, and biochemical data were collected. The number of events and duration of hypoglycaemia for patients with CGMS data using Flash Libre™ system were analysed. All data were presented in median and interquartile ranges.

RESULTS
Twenty six (26) patients with T1D were analysed. Most of them were Malay, 69.3% were female and the median age was 27 years old (23-35 years old). Mean age at diagnosis was 19 years old (15-25 years old). Average HbA1c was suboptimal at 9.65% (8.4%-12.2%). Total daily dose (TDD) of insulin used was 37.5 units/day (30-44) and 0.68 units/kg/day (0.54-0.77). Among patients with T1D, five subjects had CGMS. The median number of hypoglycaemia events was 11 (5.5-11.5) in fourteen days and the duration of hypoglycaemia events was 102 minutes (80-183).

CONCLUSION
In our cohort, the median HbA1c was similar to the national average (10.8%). However, the number of hypoglycaemia events documented via CGMS was high. This could be explained by the high TDD of insulin used. Higher TDD of insulin might have contributed to hypoglycaemia leading to defensive eating which resulted in hyperglycaemia. The study was limited by the number of patients with CGMS due to limited acceptance of CGMS by the patients. CGMS should be recommended to all T1D patients who are known to have a higher risk of hypoglycaemia.

PA-A-58

GRAVES' DISEASE WITH CONCOMITANT MYASTHENIA GRAVIS: IMPROVEMENT OF POST-RAI HYPOTHYROIDISM AFTER THYMECTOMY

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INTRODUCTION
There is a known association between autoimmune thyroid disease and myasthenia gravis (MG) with shared autoimmunity, and treatment of one condition can affect the other. We describe an interesting case where thymectomy resulted in improvement of the thyroid hormone profile.

CASE
A 14-year-old female presented with irritability, insomnia, ophthalmopathy and a diffuse goiter was diagnosed with Graves' disease and started on treatment. She had minimal improvement of her symptoms, with persistent subclinical hyperthyroidism. A year later she had worsening muscle weakness with diplopia and fatigability. Diagnosis of MG was confirmed with positive anti-cholinesterase-antibody and the presence of a thymoma on the CT Scan of the Thorax. Treatment with pyridostigmine improved myopathy and diplopia temporarily.

After 18 months of treatment for hyperthyroidism, she underwent radioactive-iodine (RAI) therapy at a dose of 15 mCi due to persistent biochemical hyperthyroidism with mood disturbances and intermittent muscle weakness. She was rendered hypothyroid within 5 months after RAI. Following initiation of L-thyroxine and normalization of her thyroid function, her MG also improved and pyridostigmine was discontinued. However, she developed persistent hypothyroidism a few months later, with worsening constipation and depression with suicidal ideation despite increasing doses of L-thyroxine. A year after stopping pyridostigmine, she had a flare of MG necessitating resumption of pyridostigmine at higher doses. However, with worsening constipation and difficulty in controlling both her hypothyroid and myasthenic state attributed to reduced absorption of pyridostigmine, she underwent thymectomy 4 years after the diagnosis of MG. Following thymectomy, her MG and hypothyroidism improved markedly, with reduction in constipation and improvement of thyroid function tests.

CONCLUSION
We illustrate a case of concomitant autoimmune thyroid disease and MG, describing both the 'see-saw' and reverse 'see-saw' relationship. Interestingly, treating MG with thymectomy resulted in better control of post-RAI hypothyroidism, which is postulated to be due to the improvement in gut motility and subsequent absorption of medication.

PA-A-59

DENSE CALCIFICATION IN A CASE OF GIANT GROWTH HORMONE-SECRETING PITUITARY ADENOMA

https://doi.org/10.15605/jafes.037.S2.65

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INTRODUCTION
Calcification is an uncommon feature of pituitary adenomas and extensive calcification evident radiologically is especially rare and is technically challenging for surgical removal. We report a case of a giant growth hormone (GH)-secreting pituitary adenoma with dense tumoral calcification which is an uncommon presentation.

CASE
A 31-year-old male first presented to the surgical ward for infected sebaceous cyst and newly diagnosed diabetes mellitus. He was incidentally noted to have features of acral overgrowth for fourteen years. He had an occasional headache but did not have any visual symptoms. On review, he has prominent acromegalic features with bilateral temporal hemianopia. His diagnosis of acromegaly was based on markedly elevated IGF-1 and non-suppressible GH after 75 g OGTT.

Pituitary MRI showed giant pituitary macroadenoma 4.1 x 2.5 x 4.1cm in size, with cavernous sinus invasion and extrasellar extension. Preoperative medical treatment with octreotide-LAR was started considering the invasive features of the macroadenoma and he was scheduled for endoscopic transsphenoidal excision of macroadenoma following multidisciplinary team discussion. Intraoperatively, the tumour was found to have soft and firm areas with components of calcification and bone fragments. Complete removal was not feasible due to adherence of calcified tumour to the optic nerve and arachnoid plane. The patient still requires inpatient monitoring for post-operative CSF leakage at present. It is important to recognise the presence of calcification within a pituitary tumour as its extent may influence the choice of surgical approach. MRI was not able to verify the true extent of calcification due to signal dropout of calcium. As complete resection is technically challenging in calcified large adenomas, medical therapy and/or radiotherapy are usually required to achieve biochemical remission.

CONCLUSION
Recognising calcification in pituitary adenomas on preoperative imaging is important in decision-making. Total resection can be difficult to achieve in extensive calcification and necessitates non-surgical management to achieve disease control.

PA-A-60

VALUE OF 30 AND 60-MINUTE CORTISOL VALUE DURING SHORT SYNACTHEN TEST – CAN WE DO AWAY WITH ONE OR THE OTHER?

https://doi.org/10.15605/jafes.037.S2.66

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INTRODUCTION
The short synacthen test (SST) using 250 mcg synthetic ACTH is the most widely used test to identify adrenal insufficiency (AI). The standard testing protocol that requires both 30 and 60-minute cortisol values increases resource utilisation and cost. We examine the utility of 30-minute versus 60-minute single time point cortisol values in identifying AI, compared with the convention of values at both time points.

METHODOLOGY
A retrospective analysis of SSTs done at a single centre between 2018-2021 was done. Serum cortisol was measured at 0, 30 and 60 minutes after 250 mcg of intravenous synacthen. Adequate response was defined as cortisol values of ≥500 nmol/L at either or both time points. We compared 30 and 60-minute values against overall response during SST.

RESULTS
A total of 360 patients (age: 61.5 ± 17.7 years, 44% male) were studied. Indications for SST were exogenous steroid use (41%), pituitary disease (13%), low morning cortisol (27%), hyponatremia (6%), hypotension (4%) and others (9%). Median (IQR) cortisol values at 0, 30 and 60 minutes were 250 (165-371), 581 (427-724), and 651 (479-819) nmol/L respectively. Adequate response was seen in 217 (60.3%) while 96 (26.7%) had inadequate response at both 30 and 60 minutes respectively. Inadequate response at 30 minutes but adequate response at 60 minutes was seen in 42 (11.6%), while 5 (1.4%) had adequate response at 30 minutes but inadequate response at 60 minutes. Using 60-minute cortisol alone was found to have a sensitivity of 98.1% and specificity of 100%, with 100% positive predictive value and 95.1% negative predictive value.

CONCLUSION
The probability of overdiagnosis of AI is significantly higher if only 30-minute cortisol values were to be considered without the 60-minute cortisol values. This study highlights the importance of measuring the 60-minute cortisol value to avoid misclassification of AI.

PA-A-61

DESCRIPTIVE COST ANALYSIS OF TELECONSULTATION IN UMMC DIABETES CLINIC

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INTRODUCTION
Teleconsultation has become an increasingly important service in managing T2DM especially with the ongoing COVID-19 pandemic and is assumed to be less costly to patients compared to physical visits. This study aimed to compare patients' cost for a teleconsultation session vs physical clinic visit.

METHODOLOGY
This was a cross-sectional study from June 2020 to December 2021 in UMMC which included patients who had successfully participated in teleconsultation sessions. Patient interviews were conducted to collect demographics, detailed cost items (direct/ indirect cost) and a self-administered Patient Satisfaction Questionnaire Short Form (PSQ-18). HbA1c and average self-monitoring blood glucose (SMBG) records at baseline and 3-months after teleconsultation were obtained from electronic medical records (EMR).

RESULTS
A total of 36 patients were recruited. The median cost of attending a physical visit was significantly higher compared to teleconsultation (RM 123.41 [54.29, 219.51] vs RM 41.41 [30.55, 49.66]; $p<0.001$) with a median cost difference of RM 81.24 [20.20,171.69]. Indirect costs (income loss from absence) made up the majority of the cost saving with teleconsultation (teleconsultation RM 10.71 [0.00,18.45], physical visit RM95.24 [0.00,182.74]; $p<0.001$). There was a reduction in HbA1c (9.45% [7.98, 11.38] to 8.25% [7.42, 9.49]; $p<0.001$) and average fasting SMBG (8.11 mmol/L [6.75, 9.70] to 7.20 mmol/L [6.22, 8.71]; $p=0.03$) after 3 months of teleconsultation. Patients reported high satisfaction levels with teleconsultation, with an overall PSQ-18 score of 78%.

CONCLUSION
Teleconsultation service in UMMC Diabetes outpatient clinic was cost saving to patients compared to physical visits without compromising blood glucose control. Teleconsultation may be a viable option of healthcare provision for many patients and may be considered as part of routine care.

PA-A-62

USE OF BACILLUS CALMETTE–GUERIN VACCINATION TO PRESERVE BETA CELL FUNCTION IN TYPE 1 DIABETES MELLITUS

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INTRODUCTION
The Bacillus Calmette–Guerin (BCG) vaccine is a suspension of live attenuated Mycobacterium bovis used to prevent tuberculosis. It has been shown to modulate immune responses and decelerate the progression of type 1 diabetes mellitus (T1DM).

METHODOLOGY
We report a case of T1DM in partial remission after receiving repeated BCG vaccination. A 57-year-old female diagnosed to have T1DM at the age of 53, presented with severe diabetic ketoacidosis requiring intubation. HbA1c on presentation was 14.1% with elevated anti–glutamic acid decarboxylase (anti-GAD) of >250 IU/ml. She was discharged on basal bolus insulin regimen, with a total daily dose (TDD) of 44 units of insulin daily (0.88 units/kg/day).

RESULTS
A total of four doses of BCG vaccination were given within 24 months, with the first dose given 6 months after diagnosis. TDD of insulin was reduced to 24 units/day (0.48 units/kg/day) 3 months after the first dose, TDD further reduced to 16 units/day (0.32 units/kg/day) after the last dose of BCG vaccination. HbA1c levels remained stable at <6% 3.5 years post diagnosis and fasting C-peptide level increased from 32.23 pmol/L to 299.1 pmol/L (reference range 370-1470). Patient achieved partial remission of T1DM, which is defined by HbA1c <6% and TDD of insulin of ≤0.5 unit/kg/day.

CONCLUSION
BCG vaccine plays an important role in preserving pancreatic beta cell function and delaying the progression of T1DM. The impact of BCG vaccine on blood glucose appeared to be driven by the resetting of the immune system. BCG vaccine acts by releasing tumour necrosis factor which reduces the levels of suppressor T-cells that are responsible for pancreatic islet cell destruction in T1DM. BCG vaccine administration also shifts glucose metabolism from overactive oxidative phosphorylation to aerobic glycolysis.

PEDIATRIC

PA-P-01

SUBCUTANEOUS FAT NECROSIS OF THE NEWBORN AND TREATMENT OF SEVERE HYPERCALCEMIA WITH LOW DOSE OF IV PAMIDRONATE: A CASE REPORT

https://doi.org/10.15605/jafes.037.S2.81

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INTRODUCTION
Subcutaneous fat necrosis of the newborn (SCFN) is an uncommon entity that occurs in neonates who experience perinatal stress. Current treatment of patients with SCFN-related hypercalcemia includes hydration, furosemide, glucocorticoids, and diets low in calcium and vitamin D. We report the use of pamidronate, a bisphosphonate, to control hypercalcemia in a 5-week-old infant with SCFN.

METHODOLOGY
A term neonate was born via EMLSCS due to non-reassuring fetal status. Antenatally mother had gestational diabetes mellitus, group B streptococcus carrier and antenatal scan at 29 weeks detected fetus with dilated small bowel. Baby was born vigorous but complicated with bowel perforation requiring fluid resuscitation and a bedside glove drain. He underwent laparotomy for small bowel perforation secondary to ileal atresia and was started on TPN postoperatively while his feeding was established. At his 3rd week, he had palpable purplish lumps at his trunk and limbs associated with severe hypercalcemia and hypertriglyceridemia supporting the diagnosis of subcutaneous fat necrosis. His hypercalcemia was resistant to treatment with initial hyperhydration and IV furosemide.

Further investigations showed appropriately suppressed PTH level with deficient Vitamin D levels. There was no calcification in the heart or cranium but there were pelvic, medullary and bladder calculi.

RESULTS
He was treated with low dose IV Pamidronate (0.2 mg/kg/dose). Post single dose of IV Pamidronate calcium levels were reduced to 2.2-3 mmol/L and furosemide was discontinued. On discharge, he tolerated low calcium formula milk. During his first follow up the calcium level remained stable at 2.5 mmol/L and repeated ultrasound showed resolution of the renal pelvis and bladder calculi with persistence of the medullary nephrocalcinosis.

CONCLUSION
SCFN has a potentially life-threatening complication due to development of severe hypercalcemia. Pamidronate is a safe treatment option that does not need prolonged therapy.

PA-P-02

NEONATAL GRAVES' DISEASE: AN UNUSUAL METABOLIC AND CARDIAC ASSOCIATION FROM PRESENTATION TO RESOLUTION

https://doi.org/10.15605/jafes.037.S2.82

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INTRODUCTION
Neonatal Graves' disease is a rare disorder seen in 1 in 25000 births, caused by transplacental passage of TSH receptor antibody. Despite serious potential multisystem complications, it can be transient.

METHODOLOGY
We describe a newborn born to a mother with undiagnosed Graves' disease.

RESULTS

A male neonate was born prematurely at 31-weeks gestation via emergency lower segment caesarean for fetal distress with a birth weight of 1.7 kg. He was admitted to the neonatal intensive care unit due to respiratory distress requiring non-invasive ventilation. Newborn examination revealed hepatosplenomegaly with conjugated hyperbilirubinemia, hence, he was empirically treated for congenital infections. At 72 hours, the patient developed tachycardia and further work up resulted in suppressed cTSH. At that time mother was incidentally noted to have features of clinical Graves' disease which was confirmed by 2 thyroid function tests and positive TSH receptor antibody. Further radiological assessment of the newborn revealed periportal fibrosis and pulmonary hypertension. He was commenced on carbimazole and short course of prednisolone which resulted in resolution of hyperthyroidism, pulmonary hypertension, periportal fibrosis and thrombocytopenia.

CONCLUSION

Pulmonary hypertension and periportal fibrosis are rare clinical manifestations of neonatal Graves' disease which are reversible with resolution of hyperthyroidism.

PA-P-03

X-LINKED CONGENITAL ADRENAL HYPOPLASIA: A CASE REPORT

https://doi.org/10.15605/jafes.037.S2.83

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INTRODUCTION

Adrenal hypoplasia congenita is a rare disease. It is characterized by primary adrenal insufficiency and/or hypogonadotropic hypogonadism (HH). Approximately 60% of affected males experience acute infantile onset while the remaining 40% have childhood onset. NR0B1/ DAX1 plays a pivotal role in the development and function of the adrenal and reproductive axes. Loss of NR0B1/ DAX1's inhibitory property due to NR0B1 mutations was demonstrated to be responsible for the pathology of X-linked adrenal hypoplasia congenita (AHC) and hypogonadotropic hypogonadism (HH).

CASE

We present a 15-year-old male who was initially referred to us at 1 year old when he presented with adrenal crisis. He was treated empirically with Hydrocortisone, Fludrocortisone, and sodium supplementation which was weaned off after infancy.

Synacthen test showed poor adrenal response with peak cortisol of <30 nmol/L, low 17OHP with ACTH levels of 9.7 pmol/L, suggestive of primary adrenal Insufficiency. During the course of follow-up he was noted to have delayed puberty. Physical examination showed no dysmorphism, normal blood pressure, prepubertal Tanner Staging with AH1PH1 and testicular volume of 2 mls bilaterally.

Stretched penile length was 5 cm with width of 1.5 cm (<10th centile). LHRH stimulation test confirmed HH, after which IM Testosterone was started. Genetic testing revealed a pathogenic mutation in the NR0B1 gene. (NP_000466.2:p. Ser175ValfsTer14) Hemizygous

CONCLUSION

In conclusion, we report a patient with adrenal hypoplasia congenita with novel mutation of NR0B1/ DAX-1 gene. Early diagnosis is important for long-term treatment in terms of endocrine and reproductive function and genetic counseling; the possibility of a NROB1/ DAX- 1 mutation must be considered in male patients with adrenal insufficiency.

PA-P-04

TURNER SYNDROME WITH ARNOLD CHIARI TYPE I MALFORMATION: A CASE REPORT

https://doi.org/10.15605/jafes.037.S2.84

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INTRODUCTION

Turner Syndrome (TS) is a genetic disease caused by absence of one X chromosome, and is uncommonly linked with congenital CNS abnormalities. Arnold-Chiari Malformation is rarely associated with TS. Furthermore, there are limited reports available on the outcome of growth hormone (GH) therapy in this group of patients.

CASE

We described a 17-year-old female who was referred to us 3 years ago due to suspicion of TS in view of dysmorphism, short stature and primary amenorrhea.

Her karyotyping confirmed 45,X. Her height at presentation was 132 cm (- 4.98 SDS), weight 45.55 kg (-1.28 SDS), BMI of 26 kg/m^2 (+1.72 SDS), with MPH 153 cm. She was prepubertal with Tanner staging of A1, B1, PH1. In consistent with primary gonadal failure, her LH and FSH were elevated at 18.1 IU/L and 95 IU/L respectively with low Oestradiol <18.3 pmol/L. Her renal ultrasound was normal.

She has no other endocrinopathies. Her other comorbidities include coarctation of aorta, bicuspid aortic valve with severe aortic stenosis, post-balloon valvulotomy and coarctation repair. In view of her short stature, she was planned for GH therapy. Assessments pre-GH therapy revealed an incidental finding of central apnoea from polysomnography with an Apnoea-Hypopnea Index (AHI) of 22.5/H. This has led to MRI brain that revealed cerebellar tonsil descended 7 mm below the foramen magnum, consistent with Arnold-Chiari Type I malformation.

CONCLUSION

This case highlights the challenge of initiating GH therapy for a patient with Turner Syndrome and Arnold Chiari Type I malformation. Proper counselling with the patient and family is crucial to balance the harm and benefit of GH therapy. The decision to start GH therapy requires multidisciplinary management with close follow-up to monitor any complications and to avoid adverse events.

PA-P-05

46,XY DSD WITH HETEROZYGOUS MUTATION IN THE NR5A1 GENE: A CASE REPORT

https://doi.org/10.15605/jafes.037.S2.85

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INTRODUCTION

Disorders of Sexual Development (DSD) is a rare disorder with a wide variable phenotype. These conditions occur rarely with a prevalence of about 1 per 5000 live births. Despite advances in genetic diagnostics, the underlying genetic cause in many of these patients remains elusive. One genetic cause for DSD, especially in individuals with 46,XY karyotype, is mutations in the NR5A1 (Nuclear receptor subfamily 5, group A, member 1) gene. NR5A1 encodes the transcription factor Steroidogenic Factor-1 (SF1) that plays a pivotal role in adrenal and gonadal development as well as in steroidogenesis. SF-1 is expressed in the bipotential gonad and regulates its differentiation towards testes and ovaries.

CASE

A 4-year-old child presented at birth with ambiguous genitalia. There was significant ambiguity of the genitalia presenting as micropenis (stretched penile length: 1.4 cm), perineal hypospadias, bifid scrotum with bilateral descended testis in the scrotum.

Initial investigations revealed chromosomal study of 46,XY, normal adrenal response on the ACTH stimulation test and an appropriate gonadotrophin surge during minipuberty. Beta HCG stimulation test revealed a poor testosterone response and the antimullerian hormone results were normal. Ultrasound of the pelvis and abdomen showed bilateral testes seen within the scrotal sacs and no Mullerian structures. Gender was subsequently decided as male following discussion with parents. Subsequently blood was sent for whole exome sequencing (WES) which revealed a heterozygous variant in NR5A1 gene.

CONCLUSION

In conclusion, we report a patient with 46,XY DSD with a heterozygous mutation in the NR5A1 gene. Patients with NR5A1 mutations regardless of phenotype at birth, may demonstrate considerable virilization at puberty. Therefore, it is important to consider gender assignment carefully in all patients.

PA-P-06

A CASE OF TRANSIENT DIABETES MELLITUS POST COVID-19 INDUCED DIABETES KETOACIDOSIS

https://doi.org/10.15605/jafes.037.S2.86

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INTRODUCTION

The recent COVID-19 pandemic has highlighted the intimate connection between this novel virus and numerous endocrinopathies. Several studies reported increased incidence of paediatric diabetes particularly Type 1 diabetes mellitus presenting with diabetes ketoacidosis (DKA). We report a case of transient diabetes mellitus that presented in DKA secondary to COVID-19 infection.

CASE

A 15-year-old male with underlying pineal gland germinoma previously treated with surgery and cranial irradiation presented with a COVID-19 infection. He was treated for panhypopituitarism with thyroxine, hydrocortisone and DDAVP. Low dose growth hormone (GH) (0.016 mg/kg/day) was started after 5-years clinical remission. Pre-GH, his BMI was 24.2 kg/m^2 and the HbA1c was 4.9%. He complained of fever, respiratory distress, lethargy and reduced oral intake. At presentation, the plasma glucose was 52.2 mmol/L with high serum ketones of 7.6 mmol/L. Blood gas was acidotic (pH 7.25, bicarbonate 14.2 mmol/L). The HbA1c was 12.5% and the C-peptide was low. His COVID-19 PCR was positive. Fluid bolus was delivered, and he was managed as per DKA protocol. Stress dose hydrocortisone was given. After 12 hours he was transitioned to basal bolus subcutaneous insulin. After 1 month, he had recurrent hypoglycaemia prompting a reduction in the insulin doses and discontinuation after 2 months. The HbA1c and C-peptide level without insulin were 6.2% and 2.9 mg/ml respectively. His diabetes autoantibodies were negative.

CONCLUSION

COVID-19 infection is a potential trigger for development of new onset diabetes mellitus due to glucose dysregulation or autoantibody development. In our case, antibodies were negative and insulin dependency was temporary despite classically presenting with DKA. Long term follow up is required to monitor his glycaemic status.

PA-P-07

CENTRAL CONGENITAL HYPOTHYROIDISM IN AN INFANT OF A MOTHER WITH GRAVES' DISEASE

https://doi.org/10.15605/jafes.037.S2.87

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INTRODUCTION

We report a case of central congenital hypothyroidism in a preterm baby born to a mother with hyperthyroidism.

CASE

The mother has been on treatment for hyperthyroidism since 2018. She developed thyrotoxicosis at 30 weeks pregnancy requiring Lugol's iodine, carbimazole and propranolol. She subsequently developed pre-eclampsia and went into labour. Her Thyroid Stimulating Hormone (TSH) receptor antibody levels were high, while anti-peroxidase and anti-thyroglobulin antibodies were negative. The child was born at 31 weeks gestation.

Initially the cord TSH level was 0.021 mIU/L. Subsequently, regular thyroid function tests continued to show very low TSH with normal T4. At one month of life, the T4 levels were low with persistent very low TSH and therefore the child was started on L-thyroxine. TSH receptor antibodies were positive. He was noted to have constipation and an umbilical hernia during this review. The diagnosis of central congenital hypothyroidism (CCH) was made, and the child was started on L-thyroxine. After initiation of therapy, T4 levels have normalised.

CCH is a rare condition with prevalence of 1 in 180 000 children. The risk is significantly increased in infants born to mothers with Graves' disease. In Graves' disease, patients may have TSH-blocking antibodies that bind to TSH receptors but do not initiate intracellular signaling, resulting in hypothyroidism. These antibodies can freely cross the placental, especially during the second and third trimester. Fetal thyroid matures functionally at around 25 weeks of gestation and because of this the hypothalamic-pituitary-thyroid axis can be affected in utero or postnatally.

CONCLUSION

This case highlights the importance of monitoring T4 and TSH levels in infants born to women with Graves' disease.

PA-P-08

A CASE OF A RENIN-SECRETING TUMOUR IN AN ADOLESCENT: A RARE YET CURABLE CAUSE OF HYPERTENSION

https://doi.org/10.15605/jafes.037.S2.88

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INTRODUCTION

Reninomas are benign tumours of the juxtaglomerular apparatus that autonomously secrete renin. Only 100 cases have been reported in the literature. Adolescents with reninomas typically present with refractory hypertension that requires treatment with multiple anti-hypertensives. However, hypertension secondary to reninomas are curable with surgery. Another, minimally invasive procedure, known as cryoablation has been successfully used to cure hypertension in an adult with reninoma, but this has not been reported in an adolescent.

CASE

We conducted a retrospective chart review of the pertinent clinical, biochemical, radiological and histopathological details. We report on a 14-year-old male with a hypertensive emergency; blood pressure 180/100 mmHg and Bell's palsy. His initial investigations showed hypokalaemia 2.2 mmol/L, metabolic alkalosis, raised plasma renin activity 2235 mU/L and aldosterone 8056 pmol/L, suggesting a high-renin mineralocorticoid excess syndrome. A right-sided renal cortical cyst was seen on abdominal computed tomography, measuring 0.9 x 1.6 cm. In order to accurately establish lateralisation of the autonomous renin secretion, renal vein sampling (RVS) was conducted to determine renin ratios, which confirmed lateralisation to the right renal vein (ratio 2.72). His hypertension was difficult to control despite amlodipine, prazosin and verapamil and captopril. There were no complications. Following adequate optimisation of his hypertension, he underwent cryoablation of the lesion. The histopathology was conclusive for a juxtaglomerular tumour. One week post ablation, he had resolution of his hypertension and normalisation of the plasma renin activity to 13.4 mU/L after 1 month.

CONCLUSION

Reninoma, though rare, should be considered in adolescents who present with a triad of refractory hypertension, hypokalaemia, and metabolic alkalosis. It is a curable with surgery, but cryoablation should be given due consideration. This case report illustrates that cryoablation can be used successfully for the management of reninoma in adolescents.

PA-P-09

A CASE OF RECURRENT CRANIOPHARYNGIOMA POST-OPERATIVE WITH RESIDUAL DISEASE AND GH DEFICIENCY

https://doi.org/10.15605/jafes.037.S2.89

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INTRODUCTION

Craniopharyngioma is an uncommon intracranial tumour in childhood. Even though it is a benign tumour, recurrence of disease may occur which is commonly complicated with endocrinopathy. We present a case of recurrent craniopharyngioma post-resection with residual tumour complicated with multiple pituitary hormone deficiencies, including growth hormone (GH) deficiency.

CASE

A 7-year-8-month-old male presented with persistent headache and symptoms of increased intracranial pressure. MRI Brain showed suprasellar cystic mass. He underwent total resection of the tumour. HPE confirmed craniopharyngioma. He developed central diabetes insipidus, central hypothyroidism and ACTH deficiency post-operatively. Eleven months later, he presented with blurring of vision and increased sleepiness. Brain MRI confirmed recurrence of the tumour. Near-total-excision of the tumour was done as the tumour was adhered to the optic nerve and chiasma. After the surgery, he was under close surveillance for recurrence of disease. Annual MRI Brain surveillance showed stable residual disease.

The patient is currently 12-years-old. Apart from the endocrinopathies mentioned, he is now showing signs of growth hormone deficiency such as hypothalamic obesity with weight BMI at +3.35SDS. He has poor height velocity at 3 cm/year. He has metabolic syndrome including dyslipidaemia, and fatty liver. He also has delayed bone age and poor IGF-1 level. Family counselling was done to explain the role of GH therapy for him, including the risks and benefits.

CONCLUSION

This case highlights the challenge of initiation of GH therapy, in a patient with a background history of recurrent craniopharyngioma and residual disease. Proper counselling with the patient and family is crucial to explain the clinical indications, risks and benefits of the GH therapy. A multidisciplinary approach of the management involving the paediatric endocrinologists, oncologists, neurosurgeons, radiologists, rehab physicians and dietitians together with close surveillance of primary disease are extremely important.

PA-P-10

MIXED GONADAL DYSGENESIS WITH ISODICENTRIC Y CHROMOSOMES: A CASE SERIES

https://doi.org/10.15605/jafes.037.S2.90

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INTRODUCTION

Isodicentric Y chromosomes are formed by intrachromosomal recombination or fusion of sister chromatids following Y chromosome breakage.

CASES

CASE 1

A four-month-old male with ambiguous genitalia had a stretched penile length (SPL) of 2.4 cm, glandular hypospadias, palpable right gonad and empty left scrotum. External genitalia score (EGS) was 7 and external masculinization score (EMS) was 6.5. Investigation showed normal 17-OHP [33.04 nmol/L, reference value (RV) 12-36], ACTH (2.1 pmol/L, RV 1.6-13.9) and s erum cortisol (239.15 nmol/L, RV 145-619); and elevated renin (>550 mU/L, RV 4-89). He was in mini-puberty at three months, with LH 1.7 mU/mL, FSH 5.4 mU/mL, testosterone 3.14 nmol/L and anti-Müllerian hormone (AMH) 350.3 pmol/L (RV 235.5-1125.9). Ultrasonography showed a right testis with empty left scrotal sac and no Müllerian structures. Karyotype revealed 73% (45,X) and 27% (46,X idic{Y}) p11.2 with isodicentric chromosome Yq.

CASE 2

A four -month-old male presented with ambiguous genitalia, SPL 2.5 cm, perineal hypospadias, palpable right testis at the inguinal region, impalpable left testis, EGS 5.5 and EMS 5.5. Work-up showed normal 17-OHP (19.9 nmol/L) and serum cortisol (255 nmol/L); and elevated aldosterone (>3656 pmol/L) and renin (128.9 mU/L). Investigations post-delivery revealed mini-puberty with LH 6.59 IU/L, FSH 4.84 IU/L, testosterone 5.86 nmol/L and estradiol 43 pmol/L. AMH at 4 months was 435.8 pmol/L. Abdominal ultrasonography showed embedded penis with bilateral inguinal testes and no Müllerian structures. FISH with SRY gene probe revealed the first cell line (74.5%) of isodicentric chromosome Y and the second cell line (25.5%) of 45,X.

CONCLUSION

Patients with isodicentric Y chromosomes have various presentations necessitating follow-up to monitor growth, puberty, fertility, gonadal dysgenesis and short stature.

PA-P-11

CLINICAL FEATURES AND SHORT-TERM OUTCOMES OF CHILDREN WITH TURNER SYNDROME IN A CHILDREN'S HOSPITAL

https://doi.org/10.15605/jafes.037.S2.91

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INTRODUCTION

Turner syndrome (TS) is the most common sex chromosome abnormality in females. This syndrome is usually diagnosed in females with characteristic features and a partial or complete absence of one X chromosome. We aimed to describe the clinical features and short-term outcomes of the children with TS being seen at our hospital.

METHODOLOGY

This is a descriptive study. Children with TS who attended the endocrine clinic in Sabah Women and Children's Hospital were enrolled. We obtained their pertinent data through a review of their case folders. Diagnosis of TS was confirmed via chromosomal study postnatally. Their clinical features and short-term outcomes were described.

RESULTS

Four females with TS were included in our study. The mean age at diagnosis was 6.3 ± 4.8 years old. All had previous medical encounters before diagnosis. All four females had 45, X mosaicism by chromosomal analyses. All of them had the classical features of short stature, webbed neck, broad chest, and deep-seated nails. Two had thyroid antibodies detected but only one had thyroid dysfunction. None had hearing loss, cardiac or renal problems. Two received growth hormone treatment, however only one completed the treatment with a modest response in height gain. Three received pubertal induction at a mean age of 11.4 ± 0.3 years with pubertal progression.

CONCLUSION

A high index of suspicion is needed to diagnose females with TS despite this being a relatively common syndrome. Early diagnosis may confer a better outcome in this group of children.

BASIC SCIENCE

PA-BS-01

STEROID HORMONE ESTROGEN INDUCES METASTATIC PROCESS IN BREAST CANCER THROUGH REGULATION OF GENE SPLICING EVENT IN VITRO

https://doi.org/10.15605/jafes.037.S2.75

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INTRODUCTION

The misregulation of alternative pre-mRNA splicing (AS) has important roles in tumor progression and metastasis. The connection between AS and cancer cells metastasis was first established when specific CD44 splice variants were detected in metastatic pancreatic cancer cells that were not present in the primary tumor. Notably, estrogen signaling has been reported to involve abnormal gene splicing which leads to metastatic phenotype change in breast cancer cells. This study aimed to investigate the mechanism by which estrogen affects gene-splicing that promotes progression of estrogen receptor positive (ER+) breast cancer cells in vitro.

METHODOLOGY

For all experiments, ER+ breast cancer cell line MCF7 was cultured and stimulated with 10 nM estrogen (17-beta estradiol, E2) for 24 hours. Protein samples were run for proteomic analysis using LC-MS/MS, as well as for protein and gene expression by western blot and RT-PCR, respectively. For monitoring the abnormality in gene splicing, CD44 gene was used as a splicing reporter. The change in cellular behavior was monitored for 24 hours using xCELLigence® real-time cell monitoring system.

RESULTS

Proteomic analysis showed that serine-arginine protein kinase 1 (SRPK1), one of the key kinases in regulating alternative splicing mechanisms, was among the ER-signaling targets and was upregulated seven-fold in the stimulated cells. Both SRPK1 protein and gene expression were also upregulated. The level of CD44 splice isoform, CD44s, was found increased by 50%. No significant change was detected in CD44v6 level, suggesting positive correlation between increased SRPK1 and CD44s expression. Finally, cell monitoring assay showed a slight increase in proliferation after 24 hours of estrogen treatment.

CONCLUSION

This study demonstrated that estrogen can induce overexpression of SRPK1 and trigger abnormal splicing of CD44 gene which eventually accelerates breast cancer progression by increased proliferation ability.

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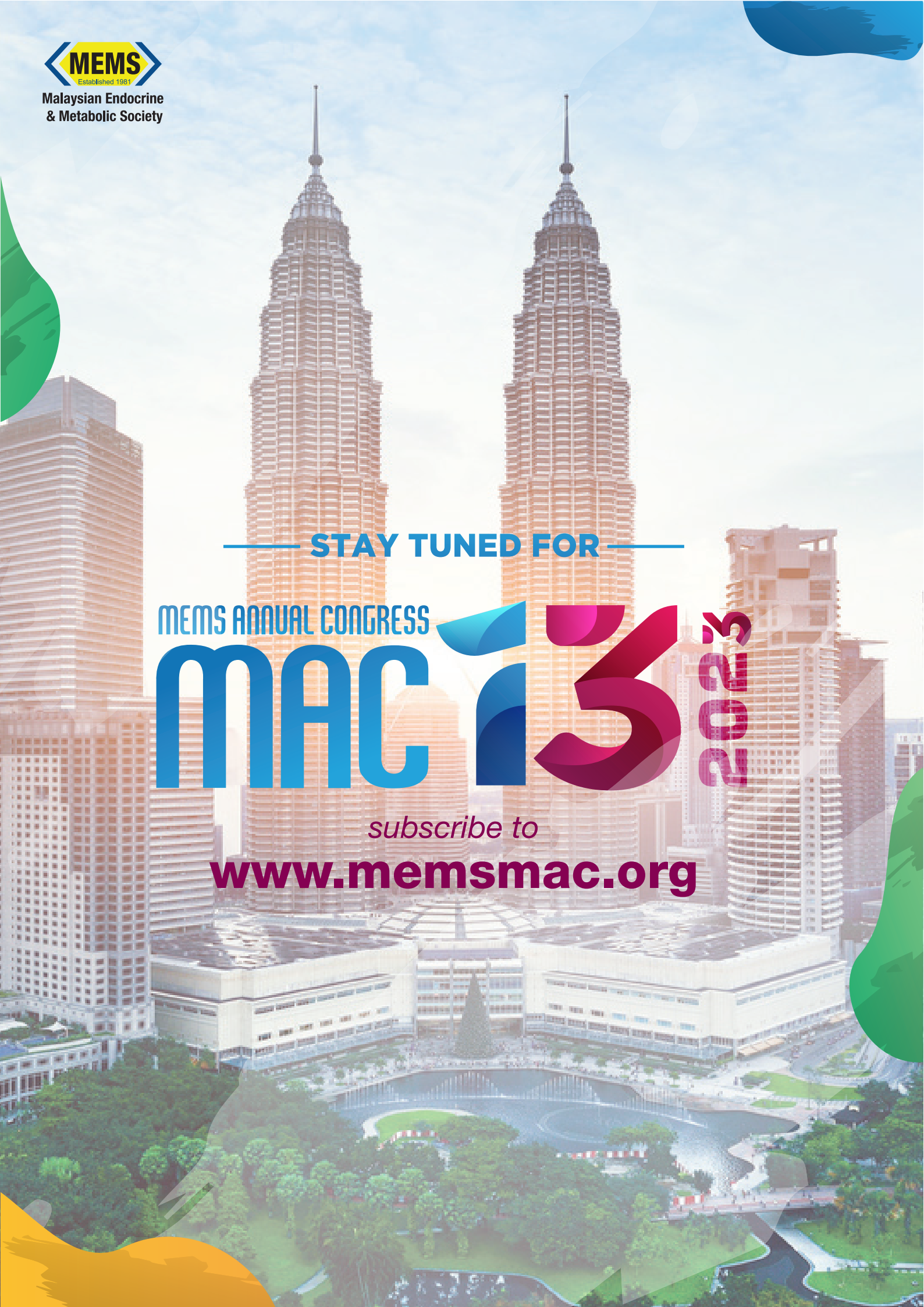
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