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MEMS
Established 1981
Malaysian Endocrine
& Metabolic Society

MEMS ANNUAL CONGRESS MAC 10 2019

Pre-Congress: 18 July 2019 | Congress: 19 - 21 July 2019
Hilton & Le Méridien Kuala Lumpur, Malaysia

SIMPLIFYING THE COMPLEXITY OF ENDOCRINOLOGY

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JAFES

EVENT ID CODE: CPDE 11860

MASTERCLASS IN PARATHYROID DISORDERS

MEMS
Malaysian Endocrine & Metabolic Society

Prof. Bart L. Clarke
Mayo Clinic USA

Dr Manju Chandran
Singapore General Hospital

19 October 2019 (Saturday)
Pullman Studio, Level 1
Pullman Hotel, Bangsar, Kuala Lumpur

PROGRAMME

TIME	TOPIC	SPEAKER
0900- 0940 (10 min Q&A)	Physiology of PTH, Vitamin D and Bone as an Endocrine Organ	Bart L. Clarke
0940- 1020 (10 min Q&A)	Primary Hyperparathyroidism: What's New?	Manju Chandran
1020- 1050	Coffee Break	
1050- 1130 (10 min Q&A)	Hyperparathyroidism in Chronic Kidney Disease: Practical Approach in Evaluation and Management	Bart L. Clarke
1130- 1150	Advances in Management of Primary Hyperparathyroidism a) Localisation Modalities: Role of Nuclear Imaging	Lee Boon Nang
1150- 1210	b) Surgical Approach	Normayah Kitan
1210- 1220	Q&A	
1220- 1300 (10 min Q&A)	Primary Hypoparathyroidism: What to do in the acute and chronic setting?	Manju Chandran
1300- 1400	Lunch	
1400- 1440 (10 min Q&A)	Clinical Approach to Rickets	Nalini Selvalingam
1440- 1525	Case Discussion 1 (Peadiatrics)	All Panels
1525- 1555	Coffee Break	
1555- 1640	Case Discussion 2 (Adult)	All Panels

8 CPD POINTS

To register, contact
cpd@mems.my
for more info

Who should attend?
Medical officers
Physicians
Endocrinologists
Surgeons

Payment to be completed upon registration.
Bank in to MEMS account
Account name:
Malaysian Endocrine & Metabolic Society
Bank & Account No:
CIMB 80-0050502-9

Registration fees
RM150 for MEMS members / Trainees
RM300 for Medical Professionals
USD100 for International Delegates

**Trainee to submit supporting documents from HOD*

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Message from the MEMS President

Greetings to all delegates and speakers from near and far, we highly appreciate your presence and support. It is with the greatest pleasure and pride that MEMS presents MAC 10 (2019), the one and only annual national-level endocrinology congress in Malaysia. We look forward to a few days of sound scientific discussion and intellectual discourse, whilst enabling plenty of opportunities for friendly social interactions and future professional networking.

This year we have ventured into few niche areas in endocrinology, starting out with a full day of pre-congress dedicated to an emerging area of multidisciplinary care in the management of endocrine tumours encompassing pheochromocytomas, paragangliomas and neuroendocrine tumours, a focus very close to my heart. We are extremely fortunate to have with us leading global and local experts in this field to update us on current and state-of-the-art developments in research, diagnostics and therapeutics.

The main congress ensures a broad yet in-depth coverage of endocrine topics which will certainly fulfil the needs of both the general and specialized medical practitioner. The congress theme "Simplifying the Complexity of Endocrinology" expresses the key mission and quest of our endocrinology fraternity which is the need to constantly ease the understanding of the multitude of hormonal dysfunctions and pathophysiology underlying various diseases. This will surely enable greater acceptance and practice of specific treatment approaches and interventions that have been formulated and currently recommended for various endocrine disorders.

We are also excited to highlight MEMS collaborative efforts in updating local management guidelines for thyroid disease, acromegaly and diabetes with cardiovascular disease. The congress provides a timely opportunity to share these special achievements with all of you first before we embark on efforts to disseminate them nationwide in the coming months.

Finally, on behalf of the MEMS executive committee, I convey our sincere gratitude to all involved in organizing MAC 10 and to the industry partners, for their keen involvement and generous support for our annual congress.

Wishing much peace and goodness for all and hope that all will enjoy a most pleasant and memorable experience at MAC 10 this year.

Zanariah Hussein
MEMS President 2018–2020

Message from the Organising Chairperson

Dear Friends and Colleagues,

On behalf of the organising committee of the 10th Malaysian Endocrine and Metabolic Society (MEMS) Annual Congress (MAC), I would like to express our gratitude and extend a warm welcome to all delegates who will be joining us this year. It has been an exhilarating experience for us in planning this event which will bring together eminent speakers, not only in the field of endocrinology, but from other disciplines including cardiology, nephrology, geriatric medicine and others. A special welcome to our international speakers who have committed their valuable time and effort to ensure a successful meeting for all of us.

We hope that the congress will achieve its objective to ***"Simplify the Complexity of Endocrinology"***, to highlight the complicated yet interesting and important practicalities of endocrine abnormalities. We are thrilled that the congress has been able to attract an increasing number of delegates over the past few years, and benefitting all levels of healthcare providers from nurses, students, general practitioners, trainees and specialists. This year, the congress has managed to obtain a number of participants and subsequently, in order to provide a comfortable and pleasant experience to the delegates, we have expanded the meeting venue to include two adjoining hotels, Hilton and Le Meredien Kuala Lumpur.

I would like to acknowledge the tireless efforts of the organising committee in putting together a robust and stimulating program that is comprehensive yet focused on recent hot topics in endocrinology. Our 'Meet the Expert' sessions are specifically planned to allow an intimate and effective small group discussions over difficult diagnostic or management dilemmas. We look forward to the concluding few lectures, which will be discussing a few 'hot' hormonal topics. The pre-congress on Neuroendocrine Tumours has received overwhelming response, exceeding our expected number of participants, which we hope will create heightened awareness on this increasingly common rare disease.

I would like to thank the delegates who had submitted their abstracts to our congress and congratulations to those whose abstracts had been accepted either as oral or poster presentations. An advanced congratulatory greetings to our winners in the adult, paediatrics and basic science categories of the Young Investigator Awards. We hope that this will further boost your research interests and inspire other young researchers as we aspire to elevate research standards in the country. Our utmost appreciation to the Editorial Board of the Journal of the ASEAN Federation of Endocrine Societies (JAFES) for agreeing to a Supplementary Issue of the congress abstracts. I believe this signifies a meaningful relationship towards many more future collaborations.

A special thank you to the excellent support from our partners in the pharmaceutical industry, with whom we had been working very closely. It is highly commendable that the industry shares our passion in academic discourse towards better knowledge and patient care.

Finally, we look forward to an impactful meeting among experts, robust discussions among colleagues, but most importantly an enjoyable gathering among friends. We hope that you will gain immensely from the congress and we hope to see you next year.

Thank you.

Best wishes,

Professor Dr. Rohana Abdul Ghani
MAC 10 Organising Chairperson

MAC 10 ORGANISING & SCIENTIFIC COMMITTEE

Honorary Advisor :	Dr. Nurain Mohd Noor
Organising Chairperson :	Prof. Dr. Rohana Abdul Ghani
Scientific Chairperson :	Dr. Fatimah Zaherah Mohamed Shah
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Scientific Co-Chairperson (Paediatric) :	Dr. Noor Shafina Mohd Nor
Committee Members :	Dr. Azriyanti Anuar Zaini
	Dr. Elliyyin Katiman
	Dr. Danish Ng Ooi Yee
	Dr. Lim Kim Piow
	Dr. Rohaya Abdul Razak
	Dr. Shalena Nesaratnam
	Ms. Cheah Yet Mei

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Professor Dr. Margaret Zacharin	*The Royal Children's Hospital, Melbourne, Australia*
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Professor Dr. Sotirios Tsimikas	*University of California San Diego, USA*
Dr. Carla Moran	*Addenbrookes Hospital, UK*
Dr Karel Pacak	*National Institutes of Health, USA*
Dr. Manju Chandran	*Singapore General Hospital, Singapore*
Dr. Rosemary Wong	*Eastern Health Melbourne, Australia*

LOCAL FACULTY

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Dr. Wu Loo Ling	*Subang Jaya Medical Centre*
Dr. Zanariah Hussein	*Hospital Putrajaya*

MEMS ANNUAL CONGRESS MAC 10 2019

Event ID Code: CPDE8933 (6 pts)

MEMS Established 1981
Malaysian Endocrine & Metabolic Society

MASTERCLASS IN PHEOCHROMOCYTOMA, PARAGANGLIOMA AND NEUROENDOCRINE TUMOURS

18th July 2019, Clarke Ballroom, Level 6, Le Meridien Kuala Lumpur

OBJECTIVE

- To improve the understanding of epidemiology, genetics and the role of various imaging modalities in pheochromocytoma, paraganglioma and neuroendocrine tumours (NETs)
- To provide the latest updates on the investigations and multimodal treatment options for pheochromocytoma, paraganglioma and NETs

PROGRAMME / TOPIC

7:45am Registration

8:15am **Welcome Speech & Overview of Pheochromocytoma in Malaysia**
Zanariah Hussein

8:30am **The Influence of Genotype on the Phenotype of Patients with Pheochromocytoma & Paraganglioma**
Leilani Mercado-Asis

9:10am **Understanding the Link between Genotype and Molecular Imaging Phenotype in Pheochromocytoma & Paraganglioma**
Rodney Hicks

9:50am **Advances in Molecular-Targeted Therapy in Pheochromocytoma and Paraganglioma: Impact on Treatment Decision - How Do We Choose?**
Karel Pacak

10:30am Tea Break

11:00am **New Horizon in the Management of Malignant Pheochromocytoma - Where Do We Stand?**
Karel Pacak

11:40am **Difficult Case Discussion**
Case 1 : Pelvic Paraganglioma with bone metastasis
Low Yen Nee
Case 2 : Metastatic paraganglioma/pheochromocytoma
Carolina Shalini
Case 3 : Bilateral Pheo and VHL: Can It Be More Complicated?
Mazidah Nordin

1:00pm Lunch

2:10pm **Pathology of NET in 2019**
Looi Lai Meng

2:40pm **Clinical, Radiologic and Biologic Markers - Are They Really Useful in Determining Prognosis in GEP NET?**
Zanariah Hussein

3:10pm **The role of endoscopy and EUS in GEP - NET**
Sharmila A/P Sachithanandan

3:40pm Tea Break

4:00pm **Systemic Therapy in NET: Current Options And Challenges**
Rodney Hicks

4:30pm **Difficult Case Discussion**
Case 4 : Refractory diarrhoea in VIPOMA
Eunice Lau Yi Chwen
Case 5 : Metastatic Non-functioning Pancreatic NET
Ida Ilyani bt Adam

5:10pm End of Programme

MEMS ANNUAL CONGRESS MAC 10 2019

SIMPLIFYING THE COMPLEXITY OF ENDOCRINOLOGY

19th – 21st July 2019, Hilton & Le Meridien Kuala Lumpur

FRIDAY - 19th July 2019

0730 - 0830	Registration		
0830 - 0915	**Plenary 1:** Syndromes of Resistance to Thyroid Hormone *Carla Moran*		
0915 - 0945	**Recommendations from the CPG for Management of Thyroid Diseases** *Mafauzy Mohamed*		
0945 - 1000	**Launch 'Practical Guide to DM Management across CV Continuum'**		
1000 - 1030	Tea Break		
1030 - 1200	**SYMPOSIUM 1**		
	OSTEOPOROSIS	**THYROID**	**PAEDIATRIC TRACK – DIABETES**
	Glucocorticoid Induced Osteoporosis *Hew Fen Lee* **Male Osteoporosis** *Mathis Grossmann* **Osteoporosis Management – Update and Controversies** *Chan Siew Pheng*	**Thyroid Nodules – Approach and Management** *Wong Ming* **Thyroid Dysfunction Post Immune Reconstitution** *Carla Moran* **Subclinical Thyroid Disease** *Malik Mumtaz*	**T2DM in Adolescents: Why We Do It Differently?** *Muhammad Yazid Jalaludin* **Transitioning T1DM from Paediatric to Adult Care** *Janet Hong Yeow Hua* **Difficult T1DM Adolescents? How does the New Guideline Help?** *Lim Song Hai*
1200 - 1240	**MEET THE EXPERT 1**		
	Hyperprolactinemia – Why Worry? *Noor Lita Adam*	**Female Hyperandrogenism** *Nurain Mohd Noor*	**Obesity in Children & Adolescents: Best Approach** *Arini Nuran Idris*
1240 - 1400	Eli Lilly Lunch Symposium **Intricacies of GLP-1 Receptor Agonist** *Sue-Anne Toh* Ballroom B, Hilton	AstraZeneca Lunch Symposium **Q-UEST Symposium: A New Chapter in T2D Therapies: What is your "Cocktail"?** *Lim Soo Kun* *Luc Van Gaal* Ballroom C, Hilton	Servier Lunch Symposium **Standard of Care in T2DM: What Have We Learnt from Real-World Evidence?** *Hew Fen Lee* **10 Years After ADVANCE: Has the Sun Set on Sulphonylureas?** *Nemencio Nicodemus JR* Clarke Ballroom, Le Meridien
1400 - 1440	**MEET THE EXPERT 2**		
	Managing Thyroid Disease in Pregnancy *Norhaliza Mohd Ali*	**Interpreting DEXA for Clinicians** *Alexander Tan Tong Boon*	**Epidemic Vitamin D Deficiencies in Adolescents** *Ting Tzer Hwu*
1440 - 1550	**SYMPOSIUM 2**		
	OBESITY	**NEUROENDOCRINE TUMOUR**	**PAEDIATRIC TRACK – PUBERTY**
	Obesity and Sleep Disorders *Andrea Ban Yu-Lin* **Obesity and Cancer – The Unseen Link** *Norlaila Mustafa* **Management of Obesity – Pharmacotherapy vs Surgery** *Masni Mohamad*	**Carcinoid Syndrome – Recognition and Management** *Zanariah Hussein* **Malignant Pheochromocytoma – Where Do We Stand?** *Karel Pacak* **Functional Imaging in the Diagnosis and Management of NET** *Rodney Hicks*	**Approach to Precocious Puberty in Girls with Disabilities: To Stop or Not To Stop** *Margaret Zacharin* **Pubertal Disorders in Adolescents with Thalassaemia** *Raja Aimee Raja Abdullah*
1550 - 1630	**Plenary 2:** Osteoporotic Fracture Risk Tools in Asia Pacific - With Emphasis on FRAX *Manju Chandran*		
1630 - 1730	MSD Hi-Tea Symposium **Delivering Tailored Care to Type 2 Diabetes Patients: Latest Evidence on DPP-4i** *Sue-Anne Toh* Ballroom B, Hilton		**Poster Presentation**

MEMS ANNUAL CONGRESS MAC 10 2019

SIMPLIFYING THE COMPLEXITY OF ENDOCRINOLOGY

19th – 21st July 2019, Hilton & Le Meridien Kuala Lumpur

SATURDAY - 20th July 2019

0730 - 0830

Merck Breakfast Symposium

Prediabetes: Let's Start with Reverse Gear
Aimee Andag-Silva

Ballroom B, Hilton

0830 - 0915

Plenary 3: Pheochromocytoma and Paraganglioma – New Insights
Karel Pacak

0915 - 1000

Plenary 4: Larger than Life: Acromegaly & Gigantism – What's New?
C Rajasoorya

1000 - 1010

Launch of Malaysian National Acromegaly Consensus (MyNAC)

1010 - 1030

Tea Break

1030 - 1200

SYMPOSIUM 3

DIABETES MELLITUS	PITUITARY	PAEDIATRIC TRACK – THYROID
Non-Alcoholic Fatty Liver Disease *Chan Wah Kheong*	**Non-Functioning Pituitary Adenoma – Updates in Management** *C Rajasoorya*	**Managing Difficult Graves Disease - Latest Guidelines and Consensus** *Wong Sze Lyn Jeanne*
Diabetes and Heart Failure *Sotirios Tsimikas*	**Hypophysitis – Recognizing the 'Silent' Headache** *Nor Azmi Kamaruddin*	**Hypothyroidism in Special Situations** *Noor Shafina Mohd Nor*
Diabetic Kidney Disease *Chong Yip Boon*	**Cushing Disease – The Evolving Spectrum** *Mohd Badrulnizam Long Bidin*	**Subclinical Hypothyroidism** *Suhaimi Hussain*

1200 - 1240

MEET THE EXPERT 3

Male Hypogonadism *Mathis Grossmann*	**Young Hypertension – When is it Hormonal?** *Norlela Sukor*	**Becoming the Opposite Gender: What is Wrong with Me?** *Wu Loo Ling*

1240 - 1400

Sanofi-Aventis Lunch Symposium **Glargine-300: Redefining Control with the Next Generation Basal Insulin** *Chan Siew Pheng* **iGlarLixi: An innovative Fixed Ratio Combination of Basal Insulin + GLP-1 RA** *Aimee Andag-Silva* Ballroom B, Hilton	Duopharma Lunch Symposium **Glycemic Variability of Biosimilar vs Innovator Insulin Glargine Using Continuous Glucose Monitoring** *Norlaila Mustafa* Ballroom C, Hilton	Boehringer Ingelheim Lunch Symposium **Behind the Paradigm Shift - The case for SGLT2i's in Management of T2D** *Sotirios Tsimikas* **Pairing Right – Optimising HbA1c Management with Pharmacotherapy** *Athena Philis-Tsimikas* Clarke Ballroom, Le Meridien

1400 - 1440

MEET THE EXPERT 4

Interpreting Abnormal Thyroid Function Tests *Rosemary Wong*	**Managing Complications of Pituitary Surgery – SIADH and DI** *Florence Tan*	**Delayed Puberty in Adolescents: What is the Best Practice?** *Margaret Zacharin*

1440 - 1610

SYMPOSIUM 4

LIPID	ADRENAL	REPRODUCTIVE ENDOCRINOLOGY
Statin in Primary Prevention – When Is It Indicated? *Al Fazir Omar*	**Hypothalamic-Pituitary-Adrenal (HPA) Axis Suppression** *Carla Moran*	**Amenorrhea – Evaluation and Management** *Lim Siang Chin*
Treating LDL To Target – How Low to Go? *Mafauzy Mohamed*	**Adrenal Incidentaloma – Approach and Management** *Azraai Bahari Nasruddin*	**Infertility – Approach and Management** *Zainul Rashid Mohd Razi*
Hypertriglyceridemia – To Treat or Not To Treat? *Luc Van Gaal*	**Adrenocortical Carcinoma – Updates** *Leilani Mercado-Asis*	**Testosterone Therapy – Update and Controversies** *Mathis Grossmann*

1610 - 1715

Novo Nordisk Hi-Tea Symposium **Choosing an Insulin Therapy: Time to Look Beyond Convention** *Saiful Kassim* Ballroom B, Hilton	**Oral Presentation: Adult** Ballroom C, Hilton	**Oral Presentation: Paeds** Clarke Ballroom, Le Meridien

1715 - 1900

MEMS Annual General Meeting — Clarke Ballroom, Le Meridien

1900 - 1930

Break

1930 - 2130

Taisho Pharmaceutical Dinner Symposium

Diabetes Care: Past, Present & Future
Chan Siew Pheng

Selective SGLT2-i for Type 2 Diabetes: From Trials to Practice
Keizo Kanasaki

Ballroom B, Hilton

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SUNDAY - 21st July 2019

0730 - 0830	Abbott Laboratories Breakfast Symposium **Complication of T2DM- How can We Better Protect our Patients?** *Wong Ming* Ballroom B, Hilton		
0830 - 0930	**SYMPOSIUM 5**		
	DIABETES MELLITUS	**METABOLIC BONE DISEASE**	**ADULT & PAEDIATRIC TRACK: Congenital Adrenal Hyperplasia**
	Diabetes in Pregnancy *Rohana Abdul Ghani* **Diabetes in Elderly** *Shahrul Bahyah Kamaruzzaman*	**Hypoparathyroidism – Insights into Disease and Treatment Options** *Manju Chandran* **Bone Disease and CKD** *Lim Soo Kun*	**The Paediatrician's Perspective** *Lim Poi Giok* **Transition To Adulthood, Late Onset CAH** *Shireene Vethakkan*
0930 - 1010	**MEET THE EXPERT 5**		
	Non-diabetic Hypoglycemia *Foo Siew Hui*	**Challenging Cases in Bone Disease** *Manju Chandran*	**Short Teens: Are We Too Late?** *Azriyanti Anuar Zaini*
1010 - 1030	Tea Break		
1030 - 1130	**SYMPOSIUM 6 – Exploring the Highs & Lows: The Endocrinologist's Perspective**		
	Adrenal Fatigue: Real or Myth? *Chan Siew Pheng* **Hormones and Happiness: Oxytocin, Serotonin, Endorphines – Are These the Key to Happiness?** *Anuar Zaini Md Zain*		
1130 - 1210	Zuellig-Amgen Lunch Symposium **Osteoporosis: In for the Long Haul** *Chan Siew Pheng* Ballroom B, Hilton		
1210 - 1230	Closing & MAC Prize-Giving Ceremony		

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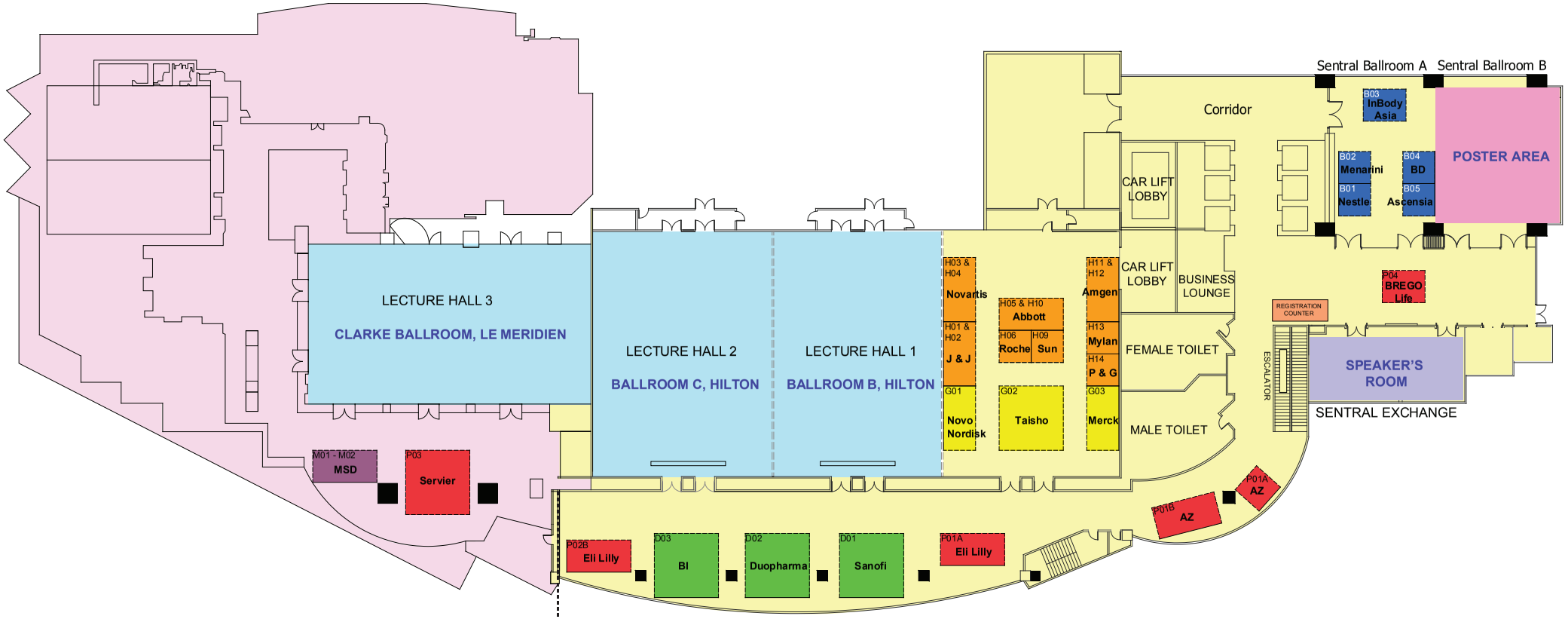
SIMPLIFYING THE COMPLEXITY OF ENDOCRINOLOGY

HILTON KL & LE MERIDIEN LEVEL 6



Le Meridien **Hilton Kuala Lumpur**

ORAL ABSTRACTS

ADULT

PAEDIATRIC

BASIC SCIENCE

POSTER ABSTRACTS

ADULT

PAEDIATRIC

BASIC SCIENCE

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ADULT

OP-A-01

Association of Serum Free Thyroxine and Glucose Homeostasis; Korea National Health and Nutrition Examination Survey

https://doi.org/10.15605/jafes.034.S1

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INTRODUCTION

Glucose homeostasis is elaborately controlled by multiple processes in various organs. Thyroid hormones are involved in a wide range of glucose metabolism functions. Overt thyroid dysfunctions are related to altered glucose homeostasis. However, it is not conclusive as to whether subtle changes in thyroid hormones within normal ranges can induce alterations in the parameters that represent glucose homeostasis. The aim of this study was to evaluate the association between thyroid hormone and glucose homeostasis parameters in subjects without overt thyroid dysfunction based on nationwide population data.

METHODOLOGY

In the KNHANES VI 2015 (n=7,380), data were collected from subjects with insulin and thyroid function measurements who were older than 19-years-old. After the exclusion of subjects who had FT4 ranges that were beyond normal ranges, a total of 1,543 patients were included in the analysis. Subjects were categorized into quartiles of the FT4. Fasting glucose, insulin, HOMA-IR and haemoglobin A1c (HbA1c) levels were considered to be glucose homeostasis parameters.

RESULTS

No differences in serum fasting glucose levels and HOMA-IR values were observed among subjects with the different FT4 quartiles. A significant inverse correlation between FT4 and A1c levels was observed (β=-0.261, p=0.025). In the logistic regression analysis, the highest quartile of FT4 was demonstrated to lower the risk of HbA1c to a greater degree than the median by approximately 40%, after adjusting for confounders, compared to the lowest quartile (p=0.028).

CONCLUSION

Without overt thyroid dysfunctions, an association between FT4 and A1c levels was observed. A1c is therefore a relevant parameter for the measurement of the net effects of thyroid hormone on glucose metabolism in subjects without diabetes. Subjects with the lowest FT4 quartile should be cautiously managed in terms of altered glucose homeostasis.

OP-A-02

Comparison of Vitamin D Level, Bone Metabolic Markers and Bone Mineral Density among Patients with Thyroid Disease: A Cross-Sectional Study

https://doi.org/10.15605/jafes.034.S2

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INTRODUCTION

Thyroid hormone has direct effect on bone mineral homeostasis. Hyperthyroidism and hypothyroidism are both associated with reduced bone mineral density (BMD) leading to fracture. Low vitamin D in this group leads to increased risk for osteoporosis. The objective of this study is to evaluate serum vitamin D level, serum calcium, phosphate, bone turnover markers and bone mineral density in patients with thyroid disease.

METHODOLOGY

This is cross-sectional study. Subjects with thyroid disease age 20 to 40 years old in 2 tertiary hospitals in Kelantan were recruited from June 2017 until June 2018. Control subjects were recruited from volunteers without underlying thyroid disease. Patients with chronic illness, pregnancy, lactation and medications that affect vitamin D level and bone metabolism were excluded in the study. Participants were divided into 4 groups (hyperthyroid, hypothyroid, euthyroid and control). Serum vitamin D, serum calcium, serum phosphate, bone resorptive and bone formation markers were measured. BMD was measured using z-score and bone density in g/cm^2 of the left hip and lumbar spine.

RESULTS

A total of 199 subjects were recruited. 135 patients with thyroid disease (64 hyperthyroid, 53 euthyroid, 18 hypothyroid) and 64 control subjects were involved. Mean serum vitamin D in all groups were insufficient (<50 nmol/L). Subjects with thyroid disease had high serum vitamin D level compared to control groups, (euthyroid 49.55 (18.57) nmol/L, hypothyroid 45.74 (15.17) nmol/L, hyperthyroid 43.6 (20.83) nmol/L, and control 37.38 (17.21) nmol/L, p value: 0.006). Serum calcium and phosphate were normal in all groups. Bone turnover markers were significantly higher in hyperthyroid group and lower in hypothyroid group. There was no difference in the z-scores between groups. Bone density in g/cm^2 of the hip was significantly lower in the hyperthyroid group, p value: 0.002.

CONCLUSION

Serum vitamin D was not affected by status of thyroid disease. Serum calcium and phosphate were normal in all groups. Bone turnover markers were higher in the hyperthyroid and lower in the hypothyroid groups. Hip bone mineral density in g/cm^2 was lower in the hyperthyroid group.

OP-A-03

Role of Basal Cortisol as Indicator of Adrenal Insufficiency and Predictive Factors of Critical Illness-related Corticosteroid Insufficiency: A Cross-Sectional Study

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INTRODUCTION
Critical illness-related corticosteroid insufficiency (CIRCI) is defined as the presence of impaired cortisol production during critical illness. The early identification of CIRCI is important as these patients may benefit from corticosteroid treatment. However, despite decades of debate, the role of corticosteroid therapy, diagnostic criteria and predictive factors of CIRCI remain controversial. The aim of this study is to determine basal cortisol level that will predict critical illness-related corticosteroid insufficiency in septic shock and its predictive factors.

METHODOLOGY
We performed a prospective analysis of 70 patients who were admitted for septic shock. All subjects underwent short corticotrophin test with 250 mcg of corticotrophin within 48 hours of onset of septic shock. CIRCI was defined as an increase of serum cortisol of <250 nmol/L after administration of corticotrophin. The Acute Physiology and Chronic Health Evaluation II (APACHE II) and Sequential Organ Failure Assessment (SOFA) scores were used to assess severity.

RESULTS
Overall, the incidence of CIRCI was 51% (36/70). SOFA score ($p<0.001$), APACHE II score ($p<0.001$) and serum lactate ($p=0.02$) were significantly higher in patients with CIRCI. There was no significant difference in basal cortisol in both groups (CIRCI: 502.44 nmol/L±257.14 vs no CIRCI: 526.32 nmol/L±226.39) ($p=0.882$). A receiver operating curve (ROC) analysis performed calculated level of cortisol of 606 nmol/L (ROC curve: 0.542, sensitivity of 0.69 and specificity 0.38) (95%CI, 0.41–0.68). Multivariate analysis showed that only SOFA score was an independent predictor of CIRCI (OR: 2.54, $p=0.001$). ROC curve analysis calculated SOFA threshold of 5.5 with sensitivity 0.92 and specificity 0.71.

CONCLUSION
CIRCI is commonly found in septic shock. High SOFA score is the only independent predictor of CIRCI. Although basal cortisol alone cannot be used to predict CIRCI but the combination with other clinical parameters may be useful.

OP-A-04

Cabergoline Therapy versus Repeated Surgery in Post-Operative Residual Non-Functioning Pituitary Adenomas (NFPA): A 10-Year Clinical Outcome Analysis

https://doi.org/10.15605/jafes.034.S4

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INTRODUCTION
Non-functioning pituitary macroadenomas (NFPAs) account for the highest proportion (1/3) of pituitary macroadenomas. Surgery is the primary mode of treatment of NFPAs however recurrence is seen in 50% of cases. There is no standard guideline in terms of treatment modalities for residual NFPAs with regards to repeat surgery, medical therapy, stereotactic or conventional radiotherapy.

METHODOLOGY
To analyse the clinical outcomes of secondary therapies for residual NFPAs following initial surgery by comparing cabergoline treatment versus repeated surgery and watchful surveillance. Data of patients with residual NFPAs following initial surgery from the endocrine and surgical clinics of Pusat Perubatan Universiti Kebangsaan Malaysia from 1997 to 2016 were retrieved and analysed. A total of 74 patients were enrolled, 30 patients in cabergoline group, 14 patients in repeated surgery group and 30 patients in watchful surveillance group.

RESULTS
The cabergoline group showed disease control in 86.7% of the patients and repeated surgery showed disease control in 42.9% of the patients (p value=0.002). The watchful surveillance group showed disease progression in 20% of patients compared with repeated surgery, 57.1% (p value=0.014). Complete suprasellar extension (p=0.035), complete parasellar extension (p=0.006) and tumor growth rate >10cm^3 were predictive for negative outcomes of secondary therapies.

CONCLUSION
Residual tumour size ranging from 110 mm^3 to 3, 200 mm^3, 86% can be effectively controlled by cabergoline therapy. Patients who underwent repeated surgery tended to have bigger tumours and higher tumour growth rate; hence the outcome of surgery was not good as patients who received cabergoline. Decision to choose smaller size tumours for cabergoline therapy is seemingly justified.

OP-A-05

The Effect of Intensive Lifestyle Intervention on Glycaemia, Body Mass Index and Lipid Profile in Overweight and Obese Women with Prediabetes and History of Gestational Diabetes Mellitus: A Randomized Controlled Trial

https://doi.org/10.15605/jafes.034.S5

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INTRODUCTION
Gestational diabetes mellitus (GDM) has been associated with increased risk for future diabetes mellitus. Due to high risk of progression to Type 2 diabetes mellitus (T2DM), postpartum care is very important. Intensive lifestyle intervention with physical activity and dietary intervention has proven to reduce or prevent T2DM in the future.

METHODOLOGY
This is a randomized controlled trial involving women with prediabetes and previous GDM. 22 subjects were randomized to either intensive lifestyle intervention (ILI) or standard medical care (SMC). The study duration was 6 months. Blood parameters were taken at baseline. Patients in ILI group received consultation including dietary and exercise intervention at baseline (0 month), 3 months and 6 months with monthly phone consultation and regular session via WhatsApp and emails. Subjects in SMC were seen at baseline (0 month), 3 months and 6 months and received standard health care advice. At 6 months, all subjects' weight were assessed and repeat blood test including OGTT, HbA1c and lipid profile were done.

RESULTS
A total of 21 subjects were included with 13 subjects in the ILI group and 8 subjects in the SMC group. One subject was excluded due to pregnancy. At baseline, all subjects in both groups had Impaired Glucose Tolerance (IGT) and Class I Obesity. Most of the baseline characteristics were the same in both groups except HDL-C and HbA1c. At 6 months, 46% of subjects in ILI group returned to euglycaemia while in SMC group, only 25% of subjects were euglycaemic. Changes in BMI and lipid parameters were not significantly different in both groups after 6 months.

CONCLUSION
Our result showed ILI resulted in higher percentage of subjects returning to euglycaemia compared to SMC. However, BMI and lipid changes were not significantly different when comparing both groups.

OP-A-06

Association Between Severity of Apnoea and Hepatic Steatosis in Patients with Obstructive Sleep Apnoea (OSA)

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INTRODUCTION
Obstructive sleep apnea (OSA) has been closely linked with non-alcoholic fatty liver disease (NAFLD), however the direct association is poorly described. Thus, this study aimed to determine the association between severity of OSA and degree of steatosis in a group of patients with OSA.

METHODOLOGY
This was a cross-sectional study, conducted at the Faculty of Medicine UiTM. 110 subjects between 18 to 65 years of age with confirmed OSA were recruited, with exclusion of patients with Hepatitis B or C, and significant alcohol intake. Anthropometric measurements were taken, and liver ultrasonography performed for diagnosis and grading of NAFLD. NAFLD was graded into 3 groups (NAFLD-1, 2 and 3) based on severity of steatosis. Apnea-hypopnea index (AHI) categorized as mild AHI ≥5-<15, moderate AHI ≥15-≤30, and severe AHI>30/hr based on polysomnography.

RESULTS
The prevalence of NAFLD was 81.8% (n=90). Almost half of them had NAFLD Stage 1 [42.7% (n=47)], 32% (n=42) had Stage 2 and 1 had Stage 3 (0.9%). The severity of OSA (AHI) among the NAFLD was significantly higher than the non-NAFLD group (mild AHI 24.4% vs 70%, moderate AHI 31.2% vs 25% and severe AHI 54% vs 5%, $p<0.001$). The correlation between stages of NAFLD and the severity of OSA (AHI) was statistically significant, in which worsening degree of steatosis correlated with increasing severity of AHI ($r=0.384$, $p<0.001$). Patients with OSA and severe AHI were 52.77 times more likely to have NAFLD compared to mild AHI (95%CI: 6.34-439.14, $p<0.001$).

CONCLUSION
This study revealed an alarmingly high prevalence of NAFLD in the OSA population. The degree of steatosis in patients with NAFLD was significantly correlated with severity of OSA, highlighting the need for increased awareness and institution of a surveillance plan for this group of patients.

PAEDIATRIC

OP-P-01

Presence of Metabolic Syndrome Predicts Advanced Liver Disease among Paediatric Patients with Non-Alcoholic Fatty Liver Disease

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INTRODUCTION
Non-alcoholic fatty liver disease (NAFLD) among paediatric population is increasing globally along with the growing obesity epidemic. Fibrosis is an important predictor of advanced liver disease, cardiovascular events and malignancy in adults. This study aims to investigate the relationship between hepatic steatosis, alanine aminotransferase (ALT) and components of the metabolic syndrome with NAFLD among children with obesity and diabetes.

METHODOLOGY
Children from paediatric diabetes and obesity clinic in University Malaya Medical Centre were invited to participate in the study between 2016 and 2019. All had transient elastography (Fibroscan, Echosens, Paris). NAFLD was assessed by liver stiffness measurement (LSM) and controlled attenuation parameter (CAP). We categorized LSM as 7.0 kPa for fibrosis stage F≥2, 8.7 kPa for F≥3 and 10.3 kPa for F4 (cirrhosis). Mild, moderate and severe steatosis (CAP=1, 2 and 3, respectively) were defined as >248 dB/m,>268 dB/m and>280 dB/m respectively. Data on basic demographics, anthropometric measurements and clinical components of metabolic syndrome were collected.

RESULTS
A total of 56 children (60.7% male) with ages between 6 to 18 years old (median 13 years) were recruited. There were 64.3% Malays, 19.6% Indians, 12.5% Chinese and 3.6% other ethnicities. ALT levels are positively correlated with LSM values and CAP score ($p<0.05$). A total of 20 (35.7%) had fibrosis, among which 10 (17.9%) had significant fibrosis (F2), 5 (8.9%) had advanced fibrosis (F3) and another 5 (8.9%) had cirrhosis (F4). Among 76.8% (n=43) of patients with steatosis, 2 (3.6%) had mild steatosis, 2 (3.6%) had moderate steatosis and 39 (69.6%) had severe steatosis. There were 18 (32.2%) who had diabetes mellitus, 5 (8.9%) had hypertension, and 23 (41%) fulfilled the criteria for metabolic syndrome. Fibrosis is significantly associated with presence of metabolic syndrome (OR=3.409, 95% CI: 1.089-10.676, p=0.032).

CONCLUSION
Obese children with metabolic syndrome are more likely to have advanced liver disease compared to those without metabolic syndrome.

OP-P-02

Utility and Cost Effectiveness of the Exercise Stimulation Test Compared with the Glucagon Stimulation Test in the Diagnosis of Growth Hormone Deficiency (GHD) in Childhood

https://doi.org/10.15605/jafes.034.S8

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INTRODUCTION
The diagnosis of growth hormone deficiency (GHD) in children requires comprehensive auxological assessment with provocation testing of the growth hormone axis. In National University Hospital Singapore, we use Exercise Stimulation Test (EST) as a first-line test. Only those who fail will subsequently require formal testing with pharmacological agents. Objectives: To compare the utility of EST with glucagon stimulation test in the diagnosis of GHD in childhood. And, to evaluate the cost-effectiveness of using EST as a first-line screening tool for GHD.

METHODOLOGY
We conducted a retrospective database study of children with short stature who underwent EST from 1 Jan 2012 to 31 Dec 2018. Information such as anthropometry, chronological and bone age at time of evaluation, peak serum GH and insulin-like growth factor (IGF-1), and height velocity (HV) were collected.

RESULTS
A total of 202 children were identified. After exclusion, 151 were eligible for analysis. The mean age was 11.19 (±2.33) years with mean height standard deviation score (SDS) of -2.39 (±1.06) and mean HV of 4.13 (±1.79) cm/year. 115/151 (76.2%) passed EST (peak GH ≥6.7 ug/L). The majority (112/115) continued to have normal HV within 1-year follow-up, translating to a negative predictive value (NPV) of 97.4%. Of the remaining children, 19/25 (76%) who failed EST passed glucagon stimulation testing. The cost-effectiveness of EST over glucagon testing was $450 per child.

CONCLUSION
EST has practical advantages over most other stimulation tests and coupled with its high NPV, it has an important place in the outpatient screening for GHD in short children.

OP-P-03

The Efficacy of High Dose Cholecalciferol in Treating Transfusion Dependent Thalassaemia in Adolescents with Vitamin D Deficiency

https://doi.org/10.15605/jafes.034.S9

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INTRODUCTION
The survival of patients with transfusion dependent thalassaemia has progressively improved with advances in therapy; however, vitamin D deficiency has been frequently reported in patients with thalassaemia in many countries. Adequate circulating level of vitamin D is therefore essential for optimal skeletal health and reducing fracture risk. Objectives: 1. To assess serum 25-OH vitamin D levels in transfusion-dependent thalassaemia patients and the prevalence of bone disease among them. 2. To assess the improvement of vitamin D status by supervised administration of high dose oral vitamin D as part of our current routine management of adolescent patients with thalassaemia in Penang General Hospital.

METHODOLOGY
We reviewed a total of 29 transfusion-dependent thalassaemia patients (aged 9.2 years to 20.6 years, mean age 15.49±3.36) treated in paediatric haematology unit Penang General Hospital. Measurement of serum 25-OH vitamin D and DEXA scan data which was done annually were obtained. Patients with vitamin D deficiency/insufficiency were supplemented with high dose (150000 IU) oral vitamin D (cholecalciferol) under supervision every 3-4 weeks during their transfusion visits over 6 months as part of the standard treatment.

RESULTS
25-OH vitamin D were deficient in 51.7% (n=15) of the patients and insufficient in 31% (n=9) of the patients. The T-score value was <-2.5 at the spine and at the hip in 58.6% and 13.8% of the patients respectively. Supervised administration of high dose oral vitamin D increased the mean value of 25-OH vitamin D from 46.7 nmol/L to 111.7 nmol/L ($p<0.001$).

CONCLUSION
Thalassaemia is associated with increased prevalence of 25 hydroxy vitamin D deficiency which may be responsible for poor growth in these children. Supervised high dose oral vitamin D supplementation is a safe, cheap, non-invasive and easy method for predictable improvement of vitamin D status in thalassaemia.

OP-P-04

Effects of Maternal Gestational Diabetes and Pre-Pregnancy Obesity on Postnatal Offspring's Growth

https://doi.org/10.15605/jafes.034.S10

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INTRODUCTION
Maternal glycaemic status and pre-pregnancy BMI are linked to fetal overgrowth and childhood obesity. This study aims to find the relationship between maternal GDM and pre-gestational obesity and their offsprings' growth parameters at birth up to 24 months old.

METHODOLOGY
This is a prospective longitudinal single centre cohort study from 2015 to 2018. Pregnant women were recruited at 13-34 weeks of gestation. Maternal demographic and anthropometry data were obtained. GDM status was based on oral glucose tolerance test (OGTT). Infants's weight, length, and head, mid-arm, waist and mid-thigh circumference were measured at birth until 24 months old. Statistical analysis was performed by comparing mean or median (t-test or Man Whitney U test), chi-square test for categorical variables and repeated measures ANOVA for serial anthropometric data.

RESULTS
Five hundred and fourteen pregnant women consented during antenatal visit. At birth, 321 infants were recruited, 125 (39%) were infants of GDM mothers. Seventy four (23%) babies were infants of mothers with pre-pregnancy obesity. There was no significant difference in all anthropometry measurements at birth and at postnatal visits between infants of GDM and non-GDM mothers. However, infants of obese mothers were heavier at birth, 12 and 24 months visit. Birth weight was statistically significant at birth (p=0.018). These infants have greater waist circumference at 24 months (p=0.013). Over the 24-month period, repeated measures ANOVA was significant for weight measurements and mid-arm circumference in these infants (p=0.013 and p=0.004 respectively). HbA1c level in our GDM mothers was lower compared to non-GDM mothers (5.19±0.47 versus 5.23±0.35).

CONCLUSION
No relationship is found between maternal GDM status and growth parameters at birth and postnatal, likely due to strict glycaemic control. Greater weight at birth and over the 24-month period is seen in infants of pre-pregnancy obese mothers.

BASIC SCIENCE

OP-BS-01

Serum Irisin Level is Elevated in Overweight/Obese Women, but not in Polycystic Ovary Syndrome

https://doi.org/10.15605/jafes.034.S11

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INTRODUCTION
Polycystic ovary syndrome (PCOS) is the most common endocrinopathy in reproductive-age women. It has been established that adipose tissue acts as an endocrine organ that secretes proinflammatory and anti-inflammatory adipokines. Similarly, skeletal muscle produces secretory molecules, called myokines, from contracting muscle fibers. Irisin, a myokine, is considered to play a role in metabolic disorder and PCOS. Our objectives were to 1) determine circulating irisin levels in women with PCOS and control subjects, 2) examine the relationship of irisin with glucose, insulin, HOMA-IR (Homeostatic Model Assessment of Insulin Resistance) and body mass index (BMI).

METHODOLOGY
Serum samples from 30 women with PCOS and 30 controls (Rotterdam criteria) were measured for irisin, glucose and insulin levels, and HOMA-IR was calculated. BMI for each woman was also calculated (healthy: BMI 18.5-24.9 kg/m^2, n=29; overweight/obese: BMI ≥25 kg/m^2, n=31).

RESULTS
Serum irisin level in the overweight/obese group was elevated compared to the group with healthy BMI (p=0.036). HOMA-IR was also higher in the overweight/obese group (p=0.048). However, irisin level in the PCOS group did not show significant difference compared to non-PCOS, although it was increased. No association was found between irisin and insulin, glucose or HOMA-IR.

CONCLUSION
From this limited data, it showed that circulating irisin is a useful marker for obesity. However, we could not suggest that irisin may be a useful biomarker for PCOS.

OP-BS-02

Bisphenol A Downregulates miR-17-5p Expression and Lead to Increase in Weight of Pregnant Rats

https://doi.org/10.15605/jafes.034.S12

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INTRODUCTION

Endocrine disruptor compounds such as bisphenol A (BPA) may act as an oestrogen at doses within the range of environmental exposure and could interfere with hormones and cell signaling pathways. Over the past 10 years, several human epidemiological studies have associated BPA exposure with adverse health outcomes such as obesity, premature births and neuro-behavioural disturbances. However, its impact on the pregnant outcomes and miRNA expression (epigene) are not well understood. In here, we aimed to investigate the impact of daily BPA exposure on pregnancy outcomes and expression of important miRNAs in normal cardiac function using pregnant Sprague Dawley (SD) rats.

METHODOLOGY

The pregnant rats were grouped into three; 1) Control vehicles (Tween-80), 2) 0.05 mg/ml BPA exposure and 3) 0.2 mg/ml BPA exposure. Observation on weight gained and water intake of pregnant rats was noted throughout the pregnancy day (PD). Numbers, weight and gender of foetuses produced were compared among treatment groups. miRNA PCR analyses of the extracted pregnant hearts were performed on 9 targeted miRNAs related to cardiac development and disease.

RESULTS

Significant changes in weight gained were observed as pregnancy progressed ($p<0.001$). No significant differences on water intake during pregnancy and foetus outcomes (number, weight and gender) between treatment groups ($p>0.05$) were observed. Significant changes on miR-17-5p expression were observed for both BPA-exposed groups; 0.05 mg/ml BPA ($p=0.007$) and 0.2 mg/ml BPA ($p=0.002$).

CONCLUSION

The weight gained among control and treated groups was significant, thus highlighting the impact of BPA on pregnancy health. Alteration in miR-17-5p is linked with cardiac diseases and metabolic disorders in BPA-exposed subjects. Our result postulated that BPA exposure during pregnancy increases the risk of obesity and cardiac disease development in mother. However, further investigation is required to elucidate the impact of BPA exposure in pregnant mother especially at cellular levels.

ADULT

PP-01

Investigations of Hyperthyroidism – A Systemic Review (Malaysia 2019 Management of Thyroid Disorders Clinical Practice Guideline)

https://doi.org/10.15605/jafes.034.S13

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INTRODUCTION
Hyperthyroidism is a spectrum of disorder with a rather common clinical presentation with different aetiologies. The aetiological diagnosis is important as the management differs. The aim of this review is to outline the algorithm of diagnostic testing for aetiology of hyperthyroidism.

METHODOLOGY
We examined relevant literature using a systematic PubMed search supplemented with additional hand searched articles. Of the 1151 search results, 1080 studies were removed after reviewing titles/abstracts. Finally, after reviewing 62 full texts, 22 articles were relevant to our search topic.

RESULTS
In patients with suspected hyperthyroidism, serum thyroid stimulating hormone (TSH) and free thyroxine (fT4) should be obtained at the initial evaluation. fT3 should be measured if TSH is suppressed and fT4 is within normal range. Thyroid ultrasonography with color flow doppler has reasonable sensitivity and specificity to distinguish between Graves' disease and thyroiditis; and is recommended in situation where scintigraphy is not available or feasible (e.g. pregnancy or lactation). Meanwhile, patients with hyperthyroidism without clinical stigmata of Graves' disease, TSH Receptor Antibody (TRAb) is useful to distinguish between Graves' disease and other causes of hyperthyroidism. Thyroid scintigraphy should be obtained if the clinical presentation suggests a toxic adenoma or toxic multinodular goiter or whenever the diagnosis is in doubt.

CONCLUSION
The aetiology of hyperthyroidism should be determined at diagnosis. If the aetiology is not apparent based on the clinical examination, diagnostic testing should be done which includes TSH receptor antibody, thyroid scintigraphy and thyroid ultrasound with color flow doppler. However, the choice of diagnostic testing depends on the cost, availability, and local expertise.

PP-02

Capillary Blood Glucose Point of Care Testing for Clinic Screening: Beneficial or Wastage

https://doi.org/10.15605/jafes.034.S14

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INTRODUCTION
Glycated haemoglobin (HbA1c) and home blood glucose monitoring are the recommended tools for assessing glycemic control among patients with diabetes. However, health clinics and hospitals are still utilising capillary blood glucose point of care testing (CBG POCT) either as clinic routine screening or for assessment of patients. The accuracy and benefits of this CBG POCT is doubtful and a potential waste.

METHODOLOGY
This study aimed to determine the clinical relevance of CBG POCT in detecting symptomatic hypoglycaemia or hyperglycaemia during clinic visit and its correlation with HbA1c. This was a cross-sectional study conducted for 1 month that included all patients attending diabetes clinic in Hospital Sultan Haji Ahmad Shah Temerloh. All CBG POCT data were collected and corresponding fasting blood sugar (FBS) and HbA1c were retrieved from patient information system.

RESULTS
97 patients (mean age 49.4±16.3 years) were included with mean CBG POCT 11.6±4.5 mmol/L. All CBG were post-prandial glucose. Only 2% (n=2) of patients had hypoglycaemia (CBG<4 mmol/L) and 17.5% (n=17) had markedly elevated CBG (>15 mmol/L). All of these patients were asymptomatic. 90% (n=87) of patients who attended clinic had HbA1c taken. Mean HbA1c was 9.6±2.5% and 50% had HbA1c above 10%. However CBG POCT did not correlate with patient's recent HbA1c.

CONCLUSION
CBG POCT did not reliably reflect glycemic control of patients and was influenced by postprandial variability. Most patients attending clinic already had HbA1c and FBS taken prior to clinic visit. This reflects a wastage in clinical practice. In general, cessation of CBG POCT in government practice would reduce cost of RM540/year (RM0.45 per test). Additionally cessation of CBG POCT would reduce screening time and prevent unnecessary needle stick injury. Capillary blood glucose use in clinic screening is a waste and not justified in both clinical value and cost.

PP-03

Obesity and Metabolic Syndrome Increase Risk Of Non-Alcoholic Fatty Liver Disease (NAFLD) in Patients With Sleep Apnea

https://doi.org/10.15605/jafes.034.S15

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INTRODUCTION
Obstructive sleep apnea (OSA) has been closely associated with non-alcoholic fatty liver disease (NAFLD), with some shared features of metabolic syndrome. We aimed to study the effect of various components of metabolic syndrome on development of NAFLD in OSA patients.

METHODOLOGY
This was a cross-sectional study conducted at UiTM Medical Faculty. 110 subjects between 18 to 65 years of age with confirmed OSA were recruited, with exclusion of patients with Hepatitis B or C, and significant alcohol intake. Anthropometric measurements were taken, and liver ultrasonography performed for diagnosis of NAFLD. Apnea-hypopnea indices (AHI) were categorized as mild AHI≥5-<15, moderate AHI≥15-≤30, and severe AHI>30/hr based on polysomnography.

RESULTS
The prevalence of NAFLD within our study population was 81.8% (95%CI: 74.5-89.1) (n=90). Mean weight in the NAFLD group was significantly higher compared to the non NAFLD group (94.77kg±21.85 vs 74.67kg±16.80, p<0.001), with 82.2% of NAFLD group being obese (p<0.001). The prevalence of NAFLD was 81.8% (n=90). Subjects with NAFLD had significantly higher weight compared to those without NAFLD (94.77kg±21.85 vs 74.67kg±16.80, p<0.001). There were statistically significantly higher mean systolic blood pressure, waist circumference, hip circumference, waist hip ratio and severity of OSA (AHI) among the NAFLD and vs the non NAFLD groups (143.23 mmHg±16.33 vs 129.35 mmHg±19.96 mmHg, p=0.001; 109.44cm±16.26 vs 91.45cm±15.61, p<0.001, 113.11cm±14.58 vs 100.30cm±12.46, p<0.001, and 0.97±0.08 vs 0.91±0.07, p=0.002, mild AHI 24.4%vs70%, moderate AHI 31.2%vs25% and severe AHI 54%vs5%, p<0.001), respectively. Patients with BMI>27.5 had the highest risk of NAFLD (OR: 17.27, CI: 4.18-71.25, p<0.001), followed by hypertension (OR: 4.33, CI: 1.56-12.06, p=0.005), and diabetes (OR: 3.00, CI: 1.01-8.95, p=0.049).

CONCLUSION
This study highlights the increased risk of NAFLD in patients with OSA and components of metabolic syndrome, prompting the need for increased surveillance and modification of risk factors in this group of patients.

PP-04

Comparison of Diagnostic Performance and Clinical Utility of Different HbA1c Criteria against Oral Glucose Tolerance Test (OGTT) in Screen Detection of Diabetes in Penang, Malaysia

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INTRODUCTION
Glycated haemoglobin (HbA1c) cut-off of 6.5% has been recommended for diagnosing diabetes mellitus. However, HbA1c levels can vary due to functional glucose-independent attributes like ethnicity, which could influence diagnostic performance across different populations. The Malaysian Clinical Practice guideline advocates a lower HbA1c diagnostic cut-off of 6.3% based on one large national study. This study compared the diagnostic performance and clinical utility of HbA1c cut-offs of 6.5% and 6.3%, against the gold standard OGTT in diagnosing diabetes.

METHODOLOGY
A total of 298 subjects without diabetes aged ≥30 years old were purposively sampled across general hospitals, health clinics and community centers in Penang between February 2016 and December 2017. HbA1c cut-offs of 6.3% and 6.5% were validated against the 2-hour OGTT results. Sensitivity, specificity and predictive values were analyzed using SPSS version 22.0. Likelihood ratios (LR) with 95% CIs for diagnostic accuracy were yielded using MedCalc statistical software.

RESULTS
The sample constituted of 175 (58.7%) women and 123 (41.3%) men with mean age (50.9±11.5 years) and mean BMI (26.4±5.50 kg/m^2). The prevalence of diabetes was 21.8% using OGTT, 22.8% using an HbA1c cut-off of 6.5% and 30.2% using an HbA1c cut-off of 6.3%. At HbA1c level of 6.5%, the sensitivity was 72.3% and specificity was 91% with positive and negative predictive values of 69% and 92%. Likelihood ratios (LR+ and LR-, 95% CI) were 8.0 (5.2-12.39) and 0.3 (0.2-0.5), respectively. In contrast, HbA1c cut-off of 6.3% yielded a sensitivity of 84.6%, specificity of 85% with positive and negative predictive values of 61% and 95%. Likelihood ratios (LR+ and LR-, 95% CI) were 5.6 (4.1-7.8) and 0.2 (0.1-0.3), respectively.

CONCLUSION
HbA1c cut off of 6.5% demonstrated better diagnostic performance and clinical utility compared to 6.3%. Larger studies are needed to identify the optimal HbA1c diagnostic criteria for multiethnic Malaysia.

PP-05

The Relationship between Nutritional Status, Glucose and Lipid Levels in Pulmonary Tuberculosis and Multi-Drug-Resistant Tuberculosis in Patients with Diabetes Mellitus

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INTRODUCTION
Diabetes mellitus (DM) poses a significant risk for development of active tuberculosis (TB) and a higher risk of developing multi-drug-resistant tuberculosis (MDR-TB). The purpose of this study was to analyze the correlation between nutritional status, glucose and lipid levels in pulmonary tuberculosis and multi-drug-resistant tuberculosis in persons with diabetes.

METHODOLOGY
The study was designed as a cross-sectional study of 69 patients with DM at Haji Adam Malik Hospital, divided into group 1 (n=37) for patients with TB and group 2 (n=32) for patients with MDR-TB, from the internal medicine ward from January to December 2018. Data included the patients' demographic characteristics, history of illness, and clinical examination (BMI). Laboratory tests for evaluation of glucose (FPS, PPS, HbA1C), albumin, lipids (Total Cholesterol, TG, LDL-C and HDL-C,). Spearman and Pearson correlation tests were used to correlate numerical variables.

RESULTS
The average age for group 1 was 56,16+8,55 years old, and 52,41+8,38 years old for group 2. Diabetes duration, BMI, albumin, HbA1C and HDL-C were significantly different between group 1 and group 2 ($p<0,005$). In group 2, the duration of diabetes, HbA1C, BMI and albumin were significantly higher compared to group 1. A significant correlation was found between HbA1C and BMI ($r=-0.357$, $p=0.030$), HbA1c with albumin ($p=0.037$, $r=-0.315$) but no correlation with lipids ($p>0.05$).

CONCLUSION
In diabetes mellitus with TB and MDR-TB, HbA1C correlated significantly with BMI and albumin.

PP-06

Association Between Neck Circumference and Dyslipidemia in Obesity Patients

https://doi.org/10.15605/jafes.034.S18

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INTRODUCTION
Obesity remains a major health issue in Malaysia with increasing prevalence each year. Obesity is associated with metabolic syndrome and increased mortality due to cardiovascular disease. Metabolic syndrome is a group of conditions which includes central obesity; plus 2 metabolic parameters such as raised blood pressure, raised fasting plasma glucose, raised triglyceride (TG) level and reduced high density lipoprotein (HDL) levels. Neck circumference is a measure of visceral adiposity and is associated with obesity and metabolic syndrome.

METHODOLOGY
We performed a retrospective analysis of patients who were attending the University Teknologi MARA (UiTM) Weight Management Clinic. We studied the patient records and assessed association between neck circumference and dyslipidemia. We performed Pearson's Correlation to determine relationship between TG and HDL levels and various parameters such as weight, BMI, waist circumference and neck circumference.

RESULTS
A total of 92 patients attended the clinic with a median BMI of 43.2±9.6 kg/m^2. Median weight was 118±26 kg. There was a negative correlation between waist circumference and HDL level ($r=-0.251$; $p=0.02$). This negative correlation is also seen with neck circumference and HDL ($r=-0.469$; p 0.00). Neck circumference also has a positive correlation with TG levels ($r=0.422$; $p=0.00$) but no statistically significant correlation between waist circumference and TG. There was also no statistically significant correlation between both weight and BMI with TG and HDL levels.

CONCLUSION
Neck circumference is associated with high TG levels and low HDL which is consistent with metabolic syndrome. Waist circumference and neck circumference is a more direct measure of obesity and seems to be a better predictor of development of metabolic syndrome, especially dyslipidemia compared to weight and BMI.

PP-07

Defining Morning Serum Cortisol Cut-off Value in Predicting Normal Response to Short Synacthen Test: A Single Centre Retrospective Study

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INTRODUCTION
Ambulatory morning serum cortisol<100 nmol/L has been demonstrated in some studies to be predictive of adrenal insufficiency with reasonable accuracy. However, data on the serum cortisol level that predicts adrenal sufficiency is inconclusive. This study aims to determine the serum morning cortisol value best predictive of normal response to Short Synacthen Test (SST) in our patient cohort.

METHODOLOGY
A retrospective study was conducted on SSTs performed from September 2016 to December 2018 in Endocrine Unit, Hospital Sultanah Aminah Johor Bahru (HSAJB). Relevant information including demographic data, indications for SST, baseline morning serum cortisol levels and SST results were derived from clinic notes as well as cobas® infinity central laboratory system. Normal response to SST was defined as a 30-min or 60-min post-Synacthen cortisol of >500 nmol/L.

RESULTS
Thirty [median age 55 years (IQR 32.50, 65.25), 53.3% male] out of 55 patients who underwent SSTs from September 2016 to December 2018 were included in the analysis. Exogenous steroid usage constituted one-third of the indications for SST; followed by pituitary tumour +/- surgery (30%) and Rathke's cleft cyst (6.7%). Fourteen patients (46.7%) demonstrated normal response to SST. Baseline morning cortisol was demonstrated to be an unsatisfactory tool to predict adrenal sufficiency in our patient cohort [area under curve (AUC) 0.518, 95% CI 0.306–0.730]. The cut-off level most predictive of adequate adrenal reserve was identified to be >266 nmol/L with a specificity of 93.7%, but at the expense of a very low sensitivity (14.3%). Age was a statistically significant predictor of adrenal reserve. Increasing age was associated with a reduction in the likelihood of exhibiting adequate SST response (odds ratio 0.860, 95% CI 0.741–0.997, p=0.046).

CONCLUSION
Baseline morning cortisol has a low overall predictive value of passing SST in our patient cohort. Rising age increases the probability of failing SST.

PP-08

Sodium Glucose Cotransporter-2 Inhibitor Tolerability and Renal Safety During Ramadan Fasting

https://doi.org/10.15605/jafes.034.S20

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INTRODUCTION
During Ramadan, typically Muslims fast for 14 hours a day. For persons with diabetes, taking sodium glucose cotransporter-2 inhibitors may induce polyuria and dehydration leading to acute kidney injury. This study looked into the tolerability and renal function of persons with diabetes starting SGLT2 inhibitors during Ramadan fasting.

METHODOLOGY
This is a prospective cohort, interventional study conducted during April and May 2019. Muslim subjects with diabetes who were willing to fast during Ramadan were recruited from diabetic clinic Hospital Tengku Ampuan Afzan. Baseline blood and anthropometry measurements were taken. They were given Empagliflozin 25 mg OD starting 2 weeks prior to Ramadan and continued throughout fasting. During the 2nd visit between 2nd to 4th week of Ramadan, patients had their blood testing and interview via questionnaire. Visit 3 was done 1-month post visit 2.

RESULTS
Thirty-four subjects were recruited. 2 subjects subsequently withdrew. Mean duration of diabetes was 9.8 years and HbA1c was 10.08%. 41.3% of subjects reported thirst after starting the drug whilst 42.4 % experienced polyuria. 31% had hunger sensation but only 1 subject had documented hypoglycaemia. 17.2% of subjects need to take breakfast earlier. None reported UTI symptoms. Mean delta urea was -0.78 mmol/L and mean delta creatinine -7.2 umol/L. 25% had changes of creatinine above 20%. One subject was withdrawn as her serum creatinine doubled after commencing treatment. Her prior medicine included multiple diuretics (frusemide, hydrochlorothiazide and spironolactone). However, subject denied uraemic symptoms and renal function improved once study drug was stopped.

CONCLUSION
Dehydration and polyuria are main issues faced by subjects on SGLT2 inhibitors during Ramadan. There are safety concerns of worsening renal functions especially when subjects cannot counteract polyuria due to fasting. Physicians should exercise caution when SGLT2 inhibitor is prescribed with a diuretic as it potentiates dehydration. Frequent checking of renal function during Ramadan is also advised.

PP-09

The Incidence of Dyslipidemia and Diabetes Mellitus Type 2 among People Living with Human Immunodeficiency Virus Using the First Line Highly Active Antiretro-Viral Therapy for at Least Twelve Months in Southern Philippines HIV-AIDS Core Team Hub

https://doi.org/10.15605/jafes.034.S21

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INTRODUCTION
The introduction of highly active antiretroviral therapy has improved the survival rate of people living with HIV. However co-morbid conditions such as cardiovascular disease have emerged. Risk factors identified include dyslipidemia and toxicity from ART. Some of the metabolic complications of chronic use of HAART include Diabetes mellitus type 2 (DM type 2) and dyslipidemia.

METHODOLOGY
This study is a retrospective analytical study. All patients with HIV enrolled in SPMC HACT treatment hub who are on first line HAART and who have given their verbal consent were included. Data were gathered through a chart review from the medical records.

RESULTS
A total of 146 patients were included. The incidence of dyslipidemia is 67.1% and DM type 2 is 2.7%. Majority of the participants are male with average age of 30 years old and normal BMI. 28% are smokers and 30% are alcoholic beverage drinkers with normal kidney and liver function test screening. 12 months after HAART, a significant increase was noted in triglyceride levels by 0.78 mg/dl, LDL levels by 0.46 mg/dl and FBS levels by 0.18 mg/dl. The odds ratio of the different first line combination HAART to dyslipidemia and DM type 2 is highest with Lamivudine+ Tenofovir+Nevirapine.

CONCLUSION
Diabetes Mellitus type 2 and dyslipidemia have an increasing incidence in people living with HIV on 1st line HAART. Therefore, regular monitoring and proper management of these diseases is recommended.

PP-10

Adrenal Venous Sampling Success Rate and Concordance with Imaging: A Single Center Experience in Malaysia

https://doi.org/10.15605/jafes.034.S22

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INTRODUCTION
The two most common subtypes of primary aldosteronism are aldosterone producing adenoma and bilateral adrenal hyperplasia. These require specific therapeutic approach consisting of either unilateral adrenalectomy or lifelong mineralocorticoid receptor antagonists. Adrenal venous sampling (AVS) is the gold standard for subtype diagnosis. However, it is technically challenging and has limited availability.

METHODOLOGY
This study describes the success rate at our centre, with implementation of the intraprocedural Quick Cortisol Assay (QCA). A total of 60 AVS procedures were performed by two radiologists consecutively at Institut Kanser Negara from January 2016 to February of 2019.

RESULTS
The overall success rate was 72% (43/60). The success rate of cases performed prior to QCA was 60% (9/15) compared to 79% (11/14) with use of QCA. Subsequent successful cannulation rates improved to 86% (12/14) despite discontinuation of QCA use with the same radiologist. Introduction of a different radiologist in 2018 resulted in success rates of 64% (9/14) without use of QCA. The most common cause of failure was inability to cannulate the right adrenal vein (76%, 13/17). Concordance rates between AVS and imaging findings were 79% (34/43) while discordance rates were 9% (4/43). The remaining patients had non-specific findings. The use of AVS potentially changed management in 23% (10/43) of patients.

CONCLUSION
This illustrates the benefit of QCA in improving the success rates and operator learning curve. The concordance rates were relatively high between AVS and imaging for our centre with most imaging findings showing unilateral lesion with concordant lateralization.

PP-11

Perception, Awareness and Knowledge of Menopausal Transition in Malaysia

https://doi.org/10.15605/jafes.034.S23

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INTRODUCTION
Perimenopause starts several years before the actual menopause and it is a difficult coping time in women's life. The fluctuating hormonal level causes physical, physiological and psychological changes in a woman. These symptoms coupled with socioeconomic factors may negatively affect the quality of life. Knowledge of perimenopause and menopause, symptoms management and positive perception may improve health, comfort and happiness. This study aims to find out the level of knowledge and awareness of menopause and its management, beside prevalence of menopausal symptoms in a perimenopausal group of women.

METHODOLOGY
A cross-sectional study was conducted. Self-administered questionnaires were distributed and retrieved from perimenopausal women aged 40 to 51 years old. They were enrolled during clinic visits in the General Practitioner clinic.

RESULTS
A total of 182 participants were recruited. Majority were Malay (77%), had secondary school education (36.3%), and were married (85.7%). Only 47.8% had normal BMI. The mean knowledge score was 11.60±3.63. 54% had good knowledge on definition of menopause and menopausal symptoms management. A significant association was observed between level of knowledge and marital status, (p=0.002), educational background (p=0.038), and number of children (p=0.02). Perimenopausal symptoms were prevalent, notably the musculoskeletal symptoms, lack of energy, sleep disturbances and mood swing. However, there was poor awareness in attributing these symptoms to perimenopause despite the high incidence reported. Only a mere 14.8% were aware of methods to help ease symptoms. Women of perimenopausal age perceive menopause more positively compared to younger women.

CONCLUSION
This study suggests that about half of participants had poor level of knowledge about perimenopause. Harnessing this knowledge will likely influence their health and treatment seeking behaviour. A concerted effort by media, magazines, educational programmes and active discussion with the health providers are invaluable.

PP-12

Continuous Glucose Monitoring Evaluation of Replacing Insulin Glargine U100 with Insulin Glargine U300 and Hypoglycemia in Type 2 Diabetes Mellitus (CERAH)

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INTRODUCTION
Despite being the most potent glucose-lowering agent, optimization of insulin therapy is often confounded by the risk of hypoglycemia. Insulin glargine U300 (Gla-300) has equivalent glycemic efficacy but with benefit of a lower risk of hypoglycemia than glargine U100 (Gla-100). There has been no prior study on the risk of hypoglycemia comparing Gla-100 and Gla-300 using continuous glucose monitoring system (CGMS) among T2DM patients.

METHODOLOGY
This pilot project was a prospective, single-arm study. We recruited patients with T2DM who had previously experienced hypoglycemia while on Gla-100 and then were switched to Gla-300. We assessed the differences in hypoglycemic events measured by CGMS, the percentage of time below target range (<3.9 mmol/L and <3.0 mmol/L) and time within target range (3.9 – 7.8 mmol/L), before and 4 weeks after switching Gla-100 to Gla-300. The secondary outcomes were the changes in glycemic variability, HbA1c level, fructosamine level, dose of basal insulin and body weight from baseline to prior and 4 weeks after insulin switch.

RESULTS
Among the 60 patients who consented, 48 (80%) completed the study (mean age 63.4 years, disease duration 22.9 years). After switching to Gla-300, the number of CGMS detected clinically significant nocturnal hypoglycemia (<3.0 mmol/L) was reduced (0.275 vs 0.126 events per patient day, P=0.032). In those with nocturnal hypoglycemia, the percentage of nocturnal period below 3.9 mmol/L was significantly reduced with Gla-300 (15.96 vs 7.99%, P=0.027). Both HbA1c (8.269 vs 7.99%, P<0.001) and fructosamine (280.063 vs 248.125 umol/L, P<0.001) improved during Gla-100 phase. HbA1c level further reduced significantly (7.99 vs 7.77%, P=0.001) with no change in insulin dose and weight after 4 weeks of Gla-300. There was no change in glycemic variability.

CONCLUSION
Gla300 (switch from Gla-100) is effective within a short duration (4 weeks) in reducing the risk of clinically significant nocturnal hypoglycemic events and the percentage of time below range during nocturnal hours.

PP-13

Pituitary Metastasis: Central Diabetes Insipidus Unmasked by Corticosteroids – Case Series and Review of Literature

https://doi.org/10.15605/jafes.034.S25

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INTRODUCTION

Metastasis to the pituitary is rare and is most common amongst the elderly population with advanced malignancy. An estimated 1% of pituitary tumours resected are metastatic. Primary sites that frequently metastasize include breast and lung carcinomas. Advancement with multiple modalities of therapy has led to prolonged survival of patients with advanced malignancy. Herein, we present three cases and review of literature of pituitary metastases presenting as central diabetes insipidus (CDI) incidentally unmasked following administration of corticosteroids.

CASE

Three cases of CDI in pituitary metastases were presented. A total of 9 cases published from 2007-2018 were reviewed. Search resulted in 161 articles, ultimately, 18 pertinent references relevant to this research. The objective; establish common clinical features, presentation variations and natural progression of disease.

Nine reported cases of CDI unmasked by corticosteroids from 2007 to 2017 along with the present 3 cases were reviewed. There was equal gender prevalence with a mean age of 61 years old. More than 75% of cases described had previously been diagnosed with advanced malignancies. The remaining 25% presented with varying symptoms of hypopituitarism as harbinger to discovery of the primary neoplasm. Amongst cases presented, primary malignancies with pituitary metastases included lung adenocarcinoma (33%), breast carcinoma (25%), nasopharyngeal carcinoma (16%), renal cell carcinoma (8%), hepatocellular carcinoma (8%) and gastric adenocarcinoma (8%). It is noteworthy that two of the three presented cases were the result of direct infiltration of nasopharyngeal carcinoma to the pituitary. There is limited data documenting the prevalence of nasopharyngeal carcinoma with pituitary metastasis within the Asian population.

CONCLUSION

CDI unmasked by corticosteroids is less recognized, potentially lethal but fully reversible complication of pituitary metastasis. Symptoms or signs of CDI should be sought in all patients with advanced malignancies presenting with polyuria and hypernatremia. Prompt restoration of pituitary hormones is warranted to allow timely restoration of hormonal balance and preventing endocrine emergencies.

PP-14

Adrenal Histoplasmosis and Bilateral Adrenal Enlargement: A Case Series in PPUKM

https://doi.org/10.15605/jafes.034.S26

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INTRODUCTION

Histoplasmosis is an opportunistic systemic mycosis caused by the endemic dimorphic fungi H. capsulatum. Adrenal histoplasmosis can occur as a sequela of disseminated histoplasmosis especially in immunosuppressed individuals, presenting as unilateral or bilateral adrenal enlargement with constitutional symptoms and/or adrenal insufficiency. Often these patients are initially investigated as malignancies with secondary adrenal metastases before eventually having their diagnosis established by histopathological examination (HPE) of the adrenal tissues.

METHODOLOGY

This is a retrospective study of 4 cases presented as bilateral adrenal masses and later diagnosed with adrenal histoplasmosis by HPE in Pusat Perubatan Universiti Kebangsaan Malaysia from 2008-2018.

RESULTS

Four patients were diagnosed with adrenal histoplasmosis and all of them were Malay men (mean age 68.8 years). Two were retired army officers, while 1 was a retired agricultural officer. One patient had no occupational exposure but has exposure to bat guano in his residence. One had diabetes, while another had chronic kidney disease due to long-standing hypertension. None of them were HIV positive. The most common presentation was constitutional symptoms (75%) while two presented as Addisonian crisis. All of them had bilateral enlarged adrenals on abdominal CT with the largest dimension ranging from 3.0-7.3 cm. All of them were diagnosed on HPE by the presence of small ovoid yeast-like organisms identified in Periodic-Acid-Schiff (PAS) and Gomori Methenamine-Silver (GMS) stains in the adrenal necrotic tissue with granulomatous inflammation. Three of them received anti-fungal treatment for at least 1-year duration but 1 had residual primary adrenal insufficiency requiring steroid replacement.

CONCLUSION

The diagnosis of adrenal histoplasmosis should be ruled out in all patients with bilateral adrenal enlargement by HPE as the prognosis is good with early treatment. However, these patients will require life-long corticosteroid replacement as the adrenal insufficiency did not improve despite completing the treatment.

PP-15

Vildagliptin Efficacy in Combination with Metformin for Early Treatment of T2DM (VERIFY): Baseline Characteristics of Enrolled Participants from Malaysia

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INTRODUCTION
Durable glycaemic control can delay diabetic complications and lead to improved quality of life in people with type 2 diabetes mellitus (T2DM). The ongoing VERIFY trial is the first study that aimed to determine the durability of glycaemic control with an early combination of vildagliptin and metformin versus metformin monotherapy in drug-naïve people with T2DM. Here we report the baseline characteristics of the subjects enrolled in the ongoing VERIFY study in Malaysia.

METHODOLOGY
VERIFY is a 5-year, recently concluded, multi-national, multi-ethnic, randomised, double-blind, two-arm, parallel-group study conducted across 34 countries in 254 centres. We randomised 28 participants from multi-ethnic population in Malaysia (global, n=2001), age ranged between 18–70 years, having glycated haemoglobin (HbA1c) levels between 48– 58 mmol/mol (6.5–7.5%) and body mass index (BMI) 22–40 kg/m^2. Baseline measurements including HbA1c, fasting plasma glucose (FPG) and homeostasis model β-cell and insulin assessments were obtained at the screening visit, or at the next visit prior to initiation of metformin uptitration.

RESULTS
Among the patients randomized, there were 57.1% women; the median (±SD) disease duration was 1.1±3.22 months; mean (±SD) age was 49.9±10.04 years; weight 76.8±8.35 kg, and BMI 30.2±3.75 kg/m^2. A total of 7.1% of participants were smokers. Baseline HbA1c was 6.9±0.2% and FPG was 6.6±0.81 mmol/L. The global HOMA-%β and% sensitivity values were 84% (60, 116) and 46% (31, 68), respectively.

CONCLUSION
The population in this VERIFY study reflects the presence of insulin resistance with increased demand for insulin, and obesity. This study will provide information on opportunity for therapeutic intervention that focuses on durability of early glycaemic control.

PP-16

Hyperglycaemic Emergency Admission, Post-Discharge Care and 6-months Outcome in Hospital Bentong

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INTRODUCTION
Diabetic ketoacidosis (DKA) and hyperglycemic hyperosmolar state (HHS) are two acute complications of diabetes with increased morbidity and mortality if not treated appropriately. Outcome and follow-up care of patients after recovery and discharge for DKA/HHS is relatively under-reported and unknown. The aim of this study was to assess DKA and HHS admission and post-discharge care and outcome.

METHODOLOGY
This is a cross-sectional study including all patients with DKA and HHS admitted to Hospital Bentong from January 2017 to December 2018. Clinical records were reviewed for demographics, DKA/HHS characteristics, post-discharge care and diabetes control after 6 months.

RESULTS
44 patients with validated hyperglycemic emergency diagnosis were recorded during study period. 70.5% (n=31) for DKA and 29.5% (n=13) for HHS admission. Mean age of patients was 55.5 years old (SD 16) with predominantly females 55% (n=24). 90% (n=40) of patients had Type 2 diabetes mellitus. Two (4.5%) patients had diabetic emergency as first presentation of diabetes diagnosis. 6.8% (n=3) of the patients required ventilation

and ICU admission. Mean length of hospital stay was 5.8 (SD 3.7) days and mortality rate was 6.8%. Upon discharge, 38.6% (n=17) followed-up in nearby health clinics, 20.4% (n=9) in medical outpatient department (OPD), 15.9% (n=7) in general OPD, 13.6% (n=6) in other hospitals and 4.5% (n=2) with private GPs. 6.8% (n=3) of patients defaulted their follow-up in Hospital Bentong (MOPD and OPD) with unknown outcomes. Patients who had follow-up in Hospital Bentong, had 6.25% readmission rate within 6-months of discharge with no documented mortality. Mean HbA1c was 10.67% (SD 3.68). 62.5% (n=10) of patients had documented proteinuria. 75% (n=12) of patients were on insulin therapy with mean total daily dose of 49.5 (SD 9.7) units.

CONCLUSION

There are significant pitfalls in follow-up of patients after hyperglycaemic emergency admission, evidently with poor glycaemic control. A standardized follow-up protocol with comprehensive monitoring is needed for these patients with continuous emphasis on glycaemic targets to prevent diabetic complications.

PP-17

Prevalence of Non-Alcoholic Fatty Liver Disease in Patients with Type 2 Diabetes Mellitus

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INTRODUCTION

The prevalence of NAFLD is increasing but has not been frequently studied in Malaysian population. NAFLD is associated with risks such as Type 2 Diabetes Mellitus (DM), obesity and dyslipidemia. We aim to study the prevalence of NAFLD amongst Type 2 DM patients and identify its correlation with Hba1c, Triglyceride, Low-Density Lipoprotein, High Density Lipoprotein levels and BMI.

METHODOLOGY

This is a cohort study reviewing patients with Type 2 DM who are under MOPD, HTAN follow-up from year 2012. Patients with Type 2 DM who met the inclusion criteria were selected and subjected to ultrasonography. Data analysis was done using chi square test.

RESULTS

A total of 525 patients were recruited, however there was a drop-out of 250 patients. 105 of 275 patients (38.2%) had NAFLD. In our study, we found that the prevalence of NAFLD was more in patients with higher BMI (≥23 kg/m^2). 40.2% of patients with BMI ≥23 kg/m^2 had NAFLD versus 20.7% of patients with BMI <23 kg/m^2 (p=0.040). The prevalence of NAFLD was also more in patients with higher triglyceride levels (triglyceride ≥1.7 mmol/L); 46.8% of patients with triglyceride ≥1.7 mmol/L had NAFLD versus 32.3% of patients with triglyceride <1.7 mmol/L (p=0.015). This was also the same for persons with diabetes with HbA1C level of ≥6.5%. 41.0% of patients with HbA1c level ≥6.5% had NAFLD as compared to 26.4% of patients with HbA1c<6.5% (p=0.050).

CONCLUSION

The prevalence of NAFLD was higher in patients with higher BMI (≥23kg/m^2), triglyceride levels (≥1.7 mmol/L), and Hba1c levels (≥6.5%). Therefore, it is vital to address these risk factors to reduce the prevalence of NAFLD in patients with type 2 DM.

PP-18

Grave Back Pain: A Case of Somatostatin Receptor Negative Metastatic Pancreatic Neuroendocrine Neoplasm

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INTRODUCTION
Somatostatin receptor (SSTR) status is an important prognostic marker in gastroenteropancreatic neuroendocrine neoplasms (NEN). Most NEN's are SSTR-positive with only approximately 7.6% being receptor negative. Among these SSTR-negative neoplasms, 75% are in the pancreas.

METHODOLOGY
We describe a 60-year-old Malay male who presented with progressive lower back pain for six months, associated with constitutional symptoms and a palpable left supraclavicular lymph node.

RESULTS
Chest radiography revealed a mediastinal mass. Computed tomography (CT) scan showed metastatic disease with generalised lymphadenopathies, a subcutaneous right anterior chest wall nodule and multiple lesions in the lung, liver and tail of the pancreas. Magnetic resonance imaging revealed extensive spinal metastases. CT-guided core biopsy of the mediastinal lymph node was suggestive of NEN with a low proliferative index, Ki-67 (<5%). An endoscopic ultrasound-guided biopsy of the pancreatic lesion confirmed primary tumour. Clinical and biochemical assessment concluded the NEN to be non-functional. We proceeded with a Gallium-68 DOTATOC PET-CT scan, which showed absence of SSTR avid disease. A multidisciplinary meeting conceded the disease to be unresectable and chemotherapy with spinal radiation was concurred as definitive management. Systemic therapy options were limited by the SSTR-negative status, rendering him unsuitable for SSTR-dependant therapies. He deteriorated with a rapidly enlarging anterior chest wall mass. Unfortunately, he was unfit for chemotherapy due to recurrent infections and succumbed within two months of diagnosis.

CONCLUSION
In our patient, the low Ki-67 index reported from the biopsied specimen didn't correlate with his rapid disease progression most probably due to intratumoural heterogeneity of Ki-67 expression in NEN. SSTR-negative status carries a poor prognosis. It is associated with high grade tumours with limited treatment options. More research is required to explore the best therapeutic strategy in this uncommon setting. The overall prognosis is poor in view of the negative SSTR status, bulky metastases and unresectable primary.

PP-19

Delay in Diagnosing Aldosterone-producing Adenoma: Can We Do Better?

https://doi.org/10.15605/jafes.034.S31

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INTRODUCTION
Incidence of primary hyperaldosteronism is rising due to better detection and awareness among physicians. However, there is delay in patients receiving appropriate care. In these 2 case-series of aldosterone-producing adenoma, we summarized the key events until tumour removal.

METHODOLOGY
All case notes of new patients attending endocrine clinic Hospital Tengku Ampuan Afzan from 1st January 2017 till 1st May 2019 were screened. Cases fulfilling the diagnosis of primary hyperaldosteronism were included. Key events were reviewed and summarized.

RESULTS
Case 1 is a lady with hypertension for 7 years and hypokalaemia for 3 years. ARR done in December 2016 was positive. She was seen in endocrine clinic about 2 months later, saline suppression test (SST) was done after 2 weeks, but CT of the adrenals was done 3 months after SST. She was referred 3 months later to endocrine Hospital Putrajaya where adrenal vein sampling (AVS) was done. Results of AVS was made available after 1-month. She was referred to an endocrine surgeon after 6 weeks and operated 2 months later. Total time from ARR to table was 13 months. Case 2 is another lady with hypertension and hypokalaemia for 15 years. ARR was done in April 2017. She was only referred to endocrine clinic after 3 months. SST was done 6 weeks later, but the results were only reviewed after 3 months. CT of the adrenals was done after 3-month time. She was referred to endocrine Hospital Putrajaya for AVS which was done after 2 weeks. Finally, she was operated 6 months after AVS. Total time from ARR to table was 18 months.

CONCLUSION
There is delay from screening until definitive treatment. The process can be improved if there is proper diagnostic workflow for similar cases. Proper result-tracing and faster scans are desired. With improved diagnosis speed, hopefully there will be faster action to benefit the patients.

PP-20

A Clinical Audit on Diabetes Care in a Multidisciplinary-Team Diabetes Clinic

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INTRODUCTION
The implementation of a Diabetes Multidisciplinary-team Clinic (DMTC) is a step taken to help more patients achieve their glycemic goal. In 2018, Kajang Hospital Endocrine Unit has set up a team consisting of doctors, diabetes educators, pharmacists and dietitians to provide a unique and optimum care for every person with diabetes seen.

METHODOLOGY
We randomly audited patients referred to DMTC in 2018. The diabetes care components were audited before (baseline) and after (4 and 8 months) the implementation of DMTC. Data were compared against local guidelines to achieve target HBA1c, blood pressure (BP), and low-density lipoprotein-cholesterol (LDL-C). We described demographics of the patients and compared the mean difference in target goals between visits.

RESULTS
There were 100 patients recruited in this study. The mean age was 51±2.2 years old, where 60% of the patients were more than 50 years old. Most patients were female (59%). 54% were Malay while 33% were Indians. Chinese and other races constitute 11% and 2%, respectively. We observed a significant reduction in HbA1c compared to baseline levels after 8 months (10.4±2.5 vs 9.9±2.5%; p=0.001). Patients had significantly improved mean systolic BP after 8 months from baseline (139.47±18.6 mmHg vs 135.12±14.6 mmHg; p=0.003), but not the diastolic BP (80.34±12.6 mmHg vs 77.77±10.5 mmHg; p=0.183). The LDL-C levels, however, did not improve from baseline and the percentage of achieving target LDL-C levels were not any better after 4 and 8 months of follow up.

CONCLUSION
The results of this audit were generally positive and emphasized the feasibility of improving the current clinical practice. Further effort and more structured approach are needed to identify the treatment gaps between the current practice and target goal.

PP-21

Oncocytic Adrenocortical Neoplasms: A Report of 10 Cases with Emphasis on the Malignant Subgroup

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INTRODUCTION
Oncocytic adrenocortical neoplasms (OANs) are rare and unique tumors with distinctive biologic behavior and prognosis from conventional adrenocortical neoplasms. The Lin-Weiss-Bisceglia (LWB) system is recommended to differentiate benign from malignant OANs. Despite this classification system, the biologic behavior and clinical outcome for malignant OANs remain uncertain.

METHODOLOGY
We describe the clinical, histopathological features and immunohistochemistry analysis of 10 histologically confirmed OANs categorized by the LWB criteria.

RESULTS
Of 10 OAN cases, 6 were males with a mean age of 62±3 years. 70% of OANs were incidentalomas, large tumors (mean=89.7 mm ± 19.2) and 50% were functioning. By LWB criteria, 8 (80%) were malignant, 1 (10%) borderline and 1 (10%) benign. In the malignant group, there were more males (75%), larger tumour size (108±20.7 mm vs 68 mm and 24 mm) and heavier (240g (63.5-968 g) vs 60g and 23g) compared to the borderline and benign group. 6 cases (75%) were pure OANs. 5/9 cases (62.5%) achieved R0 resection. MIB index was >5% (5-50%) in 4/5 cases and 1 case <1% in the malignant group. 50% of malignant OANs were treated with adjuvant therapy (mitotane), chemotherapy or radiotherapy. Two cases (28%) developed recurrence and distant metastases leading to one mortality within 24 months of diagnosis and the other alive with clinical evidence of disease 65 months of diagnosis.

CONCLUSION
In this series, malignant OAN was associated with male gender, larger tumour size at presentation and higher MIB index. LWB system appears robust to differentiate benign lesions from its malignant counterpart. MIB index may improve prognostication but further biological marker is needed to predict behaviour and outcomes for malignant OANs in order to inform appropriate surveillance and therapeutic strategies.

PP-22

The Imaging Performance of Preoperative Cervical Ultrasonography and 99mTc-Sestamibi Scintigraphy in Primary Hyperparathyroidism: A Single Centre Experience

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INTRODUCTION
Primary hyperparathyroidism is the third commonest endocrine disorder globally. Parathyroidectomy provides the only curative treatment in the management of primary hyperparathyroidism (PHPT). Therefore, accurate preoperative localisation by cervical ultrasonography (US) or 99mTc-sestamibi scintigraphy study (Sestamibi) of enlarged pathological parathyroid gland is crucial.

METHODOLOGY
All PHPT cases who underwent parathyroidectomy and had preoperative localisation by either cervical US, Sestamibi scan or a combination of both in Queen Elizabeth II Hospital from year 2012 to 2018 were retrospectively analysed. The imaging findings were compared to intraoperative findings and histopathological examination correlation of parathyroid lesions.

RESULTS
40 patients had parathyroidectomy and intraoperatively, 92.5% (37/40) were single-gland and 7.5% (3/40) were multiple-gland diseases. 80% (32/40) were parathyroid adenomas and 20% (8/40) were parathyroid hyperplasias. All patients had US scan performed and 77.5% (31/40) of patients had Sestamibi scan. Cervical US detected enlarged parathyroid glands in 55% (22/40) and Sestamibi in 100% (31/31) of the cases. US demonstrated a sensitivity of 53.8% and positive predictive value of 95.5% while Sestamibi alone or in combination with US demonstrated a sensitivity of 100% and positive predictive value of 71%. 73.3% (11/15) of patients who had Sestamibi following negative US findings correctly identified abnormal parathyroid gland intraoperatively. 5% (2/40) of the cases did not achieve remission postoperatively.

CONCLUSION
Combination of both US and Sestamibi scan may increase the success of localizing abnormal parathyroid gland. However, in our centre selective use of Sestamibi following negative US findings may be more cost effective.

PP-23

The Great Mimicker – Tuberculosis

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INTRODUCTION
Endocrinopathies have been reported to occur in patients with tuberculosis.

METHODOLOGY
We present 2 case reports illustrating pituitary gland tuberculosis in the immunocompromised i.e. in retroviral disease and in poorly controlled diabetes.

RESULTS
A 40-year-old man, with retroviral disease and smear-positive tuberculosis was referred for further evaluation of a 2 week-history of ataxic gait. History revealed that patient had erectile dysfunction and postural giddiness with double vision. Examination findings showed diplopia in all 4-gaze direction with no cerebellar signs. Cerebrospinal fluid analysis showed increased proteins with low/ normal glucose levels. Magnetic resonance imaging of the brain showed left fronto-temporal enhancing lesion with a suprasellar mass. Biochemical investigations suggest hypocortisolism and hypothyroidism. Patient was started on levothyroxine and hydrocortisone replacement therapy adjuvant to tuberculous meningitis treatment. Patient is currently 14 months into anti-tuberculous therapy, and resolution in the aspect of visual, neurological symptoms and radiological findings were seen. Repeated brain imaging showed resolution of white matter lesions and unchanged suprasellar mass. A 43-year-old lady, presented with hyperosmolar hyperglycemic syndrome (HHS) with acute delirium and agitation. Despite resolution of HHS, she constantly had altered mentation. Magnetic resonance imaging of the brain ensued and showed lobulated enhancing hypothalamic, both mammillary body, optic chiasm and pituitary stalk lesions suggestive of chronic granulomatous disease. Computed tomography of the thorax, abdomen and pelvis revealed consolidation over the upper lobe of the right lung warranting tuberculosis to be excluded. Further investigations showed that she also has concomitant hypocortisolism with hypothyroidism. Cerebrospinal fluid analysis showed normal glucose with elevated protein levels. She was diagnosed with tuberculoma complicated by hypopituitarism. Empiric tuberculosis treatment was started with the patient showing good response to therapy.

CONCLUSION
Physicians should be aware of extrapulmonary manifestations of tuberculosis, not uncommonly, the endocrinopathies.

PP-24

Comparison of Lipid Profiles of Patients with Pulmonary Tuberculosis (TB) with and without Human Immunodeficiency Virus (HIV)

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INTRODUCTION
Pulmonary tuberculosis (TB) can co-occur with Human Immunodeficiency Virus (HIV). The inflammatory condition that accompany the infection causes the release of free radicals and Reactive Oxygen Species (ROS) which can affect the lipid profile through increase of lipid peroxidase. Previous studies showed that low serum triglycerides were found in TB and HIV-positive patients compared to the control group. Hypocholesterolemia encourages the development of TB while hypercholesterolemia leads to protection against TB with Mtb. This condition needs to be considered because it can affect the prognosis of HIV coinfected TB. The purpose of this study is to compare lipid profiles in patients with TB with and without infection with HIV.

METHODOLOGY
This is a comparative analytic study. Data were taken from medical records. The population of this study were all patients with pulmonary TB with and without HIV infection in Haji Adam Malik Medan General Hospital on January 2014 to October 2018 with 72 samples for each group. Simple random sampling method was used. Data were analyzed using independent t test and Mann-Whitney U test.

RESULTS
We found that triglyceride levels were significantly higher in TB-HIV group (p<0,05) compared to TB group. The Zidovudin+Lamivudin+Efaviren regimen caused an increase in lipid profiles compared to other regimens. There were no significant differences in LDL, HDL and total cholesterol between the two groups.

CONCLUSION
The triglyceride levels in pulmonary TB-HIV patients are higher than pulmonary TB patients without HIV.

PP-25

Radioiodine Therapy as an Effective Convenient Modality of Treatment for Thyrotoxicosis: An Attempt to Settle the Dust Once and For All!

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INTRODUCTION
Thyrotoxicosis when treated inadequately with oral antithyroid drugs for longer than a decade may result in premature cardiovascular morbidity and mortality. In this respect, radioactive iodine therapy (RAI) has been used for more than seven decades in order to achieve lifelong remission. However not all patients become euthyroid or hypothyroid following a single dose of RAI. In view of a recent publication showing a dismal result of RAI therapy (a meager 50% success rate) in a local tertiary institution, we have embarked on a similar quest in order to address this issue once and for all.

METHODOLOGY
Participants were identified from the list of patients who underwent RAI therapy for thyrotoxicosis in our institution from January 2013 to April 2018. All of the patients were referred for RAI following failure of conventional antithyroid therapy to induce lifelong remission. Patients' characteristics, clinical outcomes and laboratory results were retrieved from the medical and laboratory records. Descriptive statistics were used to describe the data. Relationships were explored with appropriate statistics with significant findings established at p<0.05.

RESULTS
A total of 168 patients were identified. The mean age was 44.81+15.7 years; 73% (n=123) were females. 73% (n=119) had Graves' disease and 23% had multinodular goitre (n=39). Majority (88%) had a single course of RAI, whereas 12% needed a second course. The dose used was 15 mCi in 46% and 12 mCi in 48% of cases. Five (3%) patients were lost to follow-up following first RAI. Overall 85% (n=142) of patients achieved remission as defined by hypothyroid or euthyroid state without any further intervention beyond 6 months of RAI.

CONCLUSION
Our study conclusively support the results obtained from other reputable centres in the West where RAI is effective in rendering hypo- or euthyroid state in more than 85% of patients with thyrotoxicosis following failed conventional antithyroid therapy.

PP-26

Diabetes Insipidus as a Clinical Signs for Adult Langerhans Cell Histiocytosis: A Case Series

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INTRODUCTION
Central diabetes insipidus (CDI) is characterized by polyuria, nocturia and polydipsia mainly by reduction of antidiuretic hormone secretion from the neurohypophyseal system. It is a rare condition. CDI more frequently caused by inflammatory processes and neoplastic infiltrations in adults as seen in germinoma, craniopharyngioma and Langerhans cell histiocytosis (LCH). Remote cases such as trauma resulting from surgery or by accident and genetic defects in the synthesis of vasopressin can also lead to CDI. Otherwise, about 30 to 50 per cent of cases is idiopathic.

METHODOLOGY
We reported three cases who are diagnosed to have Langerhans cell histiocytosis with CDI encountered by our endocrine department, Hospital Putrajaya.

RESULTS
Two women were diagnosed with CDI following the typical presentation of polyuria, polydipsia and extreme thirst. Biochemical evaluation consistent with hyperosmolar hypernatraemia followed by subsequent water deprivation test confirmed the diagnosis for both of them. Supplementation with MRI has shown both women also had a thickened pituitary stalk. Surprisingly, following that, cervical lymphadenopathy was seen in one woman and the other developed lytic lesion of the femur. Confirmatory diagnosis of LCH was made in both women following tissue biopsy of the respective area, thus they were co-managed by our haematology team. On the other hands, we have one man diagnosed with CDI following a year of LCH diagnosis and currently on hormone replacement therapy.

CONCLUSION
Our cases concluded that CDI can precede the diagnosis of LCH or can happen following the diagnosis of LCH. Hence, the diagnosis of LCH should be considered in an adult who presented with CDI symptoms.

PP-27

Thyrotoxicosis with Severe Hepatic Dysfunction: A Series of Four Cases

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INTRODUCTION
Hepatic dysfunction in thyrotoxicosis is common but rarely severe. It may be due to a multitude of reasons, namely uncontrolled thyrotoxicosis, antithyroid drugs, hepatic congestion from heart failure and associations such as autoimmune hepatitis.

We report four cases with thyrotoxicosis presenting with severe hepatic dysfunction, each with a unique etiology.

CASE 1:
A 33-year-old lady with type 1 diabetes mellitus and Graves' disease presented with severe mixed cholestatic-hepatocellular injury without fulminant hepatic failure 3 weeks after initiating propylthiouracil (PTU). Her liver function test (LFT) improved gradually 1 week after withholding PTU.

CASE 2:
A 36-year-old man with Graves' disease presented with severe cholestatic jaundice after taking carbimazole for 1 month. Total bilirubin was markedly elevated at 426 μmol/L with mild transaminitis and normal liver ultrasound. He made a full recovery after carbimazole was discontinued.

CASE 3:
A 33-year-old man presented with thyroid storm and thyrotoxic cardiomyopathy in failure. There was acute liver failure evidenced by INR of 4, total bilirubin of 173.8 μmol/L, alanine aminotransferase of 3227 U/L and aspartate aminotransferase of 3748 U/L. His LFT improved remarkably after adequate diuresis and normalization of thyroid function with Lugol's iodine, prednisolone and cholestyramine.

CASE 4:
A 53-year-old man presented with thyroid storm and jaundice with bilirubin level of 165μmol/L. Failure to improve his LFT following biochemical control with Lugol's iodine, prednisolone and cholestyramine led to the diagnosis of autoimmune hepatitis with positive anti smooth-muscle antibody and elevated immunoglobulin G level.

CONCLUSION
Severe hepatic dysfunction in patients with thyrotoxicosis carries a high mortality and limits the choice of thionamide therapy because of hepatotoxicity. It is imperative to distinguish the etiology early, attain rapid biochemical control followed by early definitive therapy with radioactive iodine or thyroidectomy.

PP-28

Prevalence of Metabolically Healthy Obese (MHO) Individuals: A Weight Management Clinic Experience

https://doi.org/10.15605/jafes.034.S40

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INTRODUCTION
Obesity remains a major health issue in Malaysia which is associated with metabolic syndrome. As per International Diabetes Federation (IDF) criteria, metabolic syndrome is defined as presence of central obesity; plus any 2 metabolic abnormalities such as raised systolic (>130 mmHg) and diastolic (>85 mmHg) blood pressure, raised fasting plasma glucose (FPG) (≥5.6 mmol/L), raised triglyceride (TG) level (≥1.7 mmol/L) and reduced high density lipoprotein (HDL) levels (<1.03 mmol/L in men and <1.29 mmol/L in women). However, there exists a population of obese individuals which do not fulfil the metabolic syndrome criteria. This is referred to as metabolically healthy obese (MHO) population.

METHODOLOGY
We performed a retrospective analysis of patients who were attending the University Teknologi MARA (UiTM) Weight Management Clinic. We studied patient records and assessed the prevalence of metabolic derangements indicative of metabolic syndrome in our obese population using the IDF criteria.

RESULTS
A total of 92 patients attended the clinic with a median body mass index (BMI) of 43.2±9.6 kg/m^2. Normal TG level was seen in 79.5% of patients. 56.9% of men and 51.2% of women had appropriate HDL levels. FPG levels remained normal in 46.4% of patients. Thirty eight percent had SBP less than 130 mmHg while 75% had DBP less than 85 mmHg. In our cohort, 30 out of 92 patients (32.6%) had normal metabolic profile consistent with MHO individuals.

CONCLUSION
Prevalence of MHO individuals attending our weight management clinic is 32.6% and consistent with the reported prevalence in other populations. This falsely reassuring normal metabolic profile should be acted upon as MHO individuals have an increased risk of developing diabetes mellitus and cardiovascular disease. They should receive proper screening and advice on lifestyle modifications as preventive measures.

PP-29

The Predictive Value of the Burch-Wartofsky Point Scale (BWPS) in Clinically Diagnosing Thyroid Storm

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INTRODUCTION
Thyroid Storm (TS) is a life-threatening manifestation of thyrotoxicosis. The current method for diagnostic classification includes using the Burch-Wartofsky Point Scale (BWPS). A BWPS score of 45 or more is highly suggestive of TS, between 25 to 44 indicative of impending TS, and less than 25 unlikely TS. Our objectives were to evaluate the predictive value of BWPS in a group of patients clinically diagnosed as TS, impending TS or compensated thyrotoxicosis (CT).

METHODOLOGY
This was a retrospective study of adult hospitalized patients in Hospital Tengku Ampuan Afzan (HTAA) during a one-year period (March 2018 to March 2019), clinically diagnosed as TS.

RESULTS
Of 20 thyrotoxic patients, 4 were clinically diagnosed as TS, 5 as impending TS and the remaining 11 as thyrotoxicosis. Among the 4 clinically treated as TS, 3 were later biochemically proven as TS, with BWPS score of 60, 85 and 65, respectively. The remaining patient had a BWPS score of 50 but thyroid function test (TFT) results later confirmed otherwise. The 5 patients diagnosed as impending TS were all later confirmed as compensated thyrotoxicosis (CT). All 11 patients diagnosed as thyrotoxicosis did not have biochemical evidence of TS in their TFT results. Among the components of BWPS, the rates for fever, tachycardia and altered mentation contributed the highest scores for clinically diagnosing TS. Using the BWPS, the positive predictive value (PPV) and negative predictive value (NPV) of diagnosing TS was 75% and 100%, respectively.

CONCLUSION
The BWPS is a good diagnostic and predictive tool for clinically evaluating TS, thus allowing administration of prompt treatment.

PP-30

Euglycemic Diabetic Ketoacidosis (DKA) – A Study of Two Cases

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INTRODUCTION
Euglycemic DKA is characterised by increased anion gap metabolic acidosis, ketonemia or ketonuria and normal blood glucose levels. Here we describe 2 different cases of euglycemic DKA.

CASE 1
A 40-year-old lady who was newly diagnosed with type 2 diabetes mellitus was started on Empaglifozin 12.5 mg OD by her general practitioner. Four days later, she presented with acute abdominal pain and gastrointestinal losses. Further history revealed total carbohydrate restriction one week prior to presentation in an effort to improve her glucose control. Upon admission there was severe metabolic acidosis (pH 7.035 and HCO3 6.3 mEq/L on arterial blood gas analysis), slightly elevated capillary blood glucose (CBG) (8.0 mmol/L), and high serum ketones (4.2 mEq/L). Fluid resuscitation with normal saline was initiated, and dextrose and insulin infusion were maintained. We withheld the sodium glucose cotransporter 2 inhibitor (SGLT2i) and she was discharged well with low dose basal bolus insulin.

CASE 2
A 44-year-old lady with background history of diabetes mellitus, hypertension, hyperlipidemia and morbid obesity, was electively admitted for laparoscopic Roux-en-Y gastric bypass surgery. She was prescribed with a very low-calorie diet as per protocol 2 weeks prior to surgery. Postoperatively she developed vomiting accompanied by metabolic acidosis with persistent ketosis, requiring ICU admission. She was put on continuous insulin and dextrose infusion and subsequently referred to our dietitian, aiming for total calorie intake of 800 kcal/day. Glucose was well controlled in the ward with eventual resolution of acidosis and ketosis. She was discharged well.

RESULTS
We illustrated 2 cases of euglycemic DKA: one was precipitated by SGLT2i use and the other by prolonged starvation with severe carbohydrate restriction prior to bariatric surgery.

CONCLUSION
High clinical suspicion is required to diagnose euglycemic DKA, as normal blood glucose levels masquerade the underlying DKA and may cause a delay in diagnosis and institution of appropriate therapy.

PP-31

Giant Parathyroid Adenoma versus Parathyroid Carcinoma: Two Case Reports and Literature Review

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INTRODUCTION
Primary hyperparathyroidism is not an uncommon disorder in our region. Eighty to 90% of cases of primary hyperparathyroidism are due to solitary parathyroid adenoma, with only 1% due to parathyroid carcinoma. Giant parathyroid adenoma is defined by a tumor weight or >3.5 g. Parathyroid carcinoma should also be considered in patients with giant adenoma.

METHODOLOGY
Case 1 is a 78-year-old Chinese lady, with underlying hypertension and breast cancer in remission. She presented with dizziness and mild hypercalcemic symptoms. Serum calcium level was 3.61 mmol/L, with intact parathyroid hormone (iPTH) level of 88.2 pmol/L. Neck ultrasonography showed a large right inferior pole parathyroid adenoma, measuring 5.5 cm x 3.0 cm x 6.6 cm. Intraoperatively, a large parathyroid gland weighing 38 g was resected and reported as parathyroid carcinoma with soft tissue and vascular invasion. She developed mild hypocalcemia postoperatively. Case 2 is a 19-year-old Malay lady who presented with bilateral pathologic fractures of the hip and severe hypercalcemic symptoms. Elevated serum calcium (4.18 mmol/L) and iPTH (186 pmol/L) levels were noted. Neck ultrasonography revealed a left parathyroid adenoma measuring 2.2. cm x 1.5 cm x 3.5 cm. Intraoperatively, a 7 g parathyroid gland was resected, which was subsequently reported as parathyroid adenoma. Postoperatively, she developed hungry bone syndrome with prolonged hospital stay (16 days). Repeated iPTH and serum calcium done 6 weeks postoperatively were normal for both patients.

RESULTS
Giant parathyroid adenoma is a rare entity with distinct manifestations, but may also be asymptomatic. Patients have higher preoperative serum calcium and iPTH levels, with significant occurrence of symptomatic postoperative hypocalcemia, as presented by Case 2. On the other hand, parathyroid carcinoma should also be suspected in a patient with an unusually large tumor, higher serum calcium (>3.5 mmol/L) and iPTH (10 times the normal upper limit) levels, as in Cases 1 and 2. Histopathologic examinations will confirm parathyroid carcinoma.

CONCLUSION
It is important to suspect both cases parathyroid carcinoma or giant adenoma as this will determine the surgical and further management.

PP-32

Insulin Tolerance Test versus Short Synacthen Test to Assess Hypothalamus-Pituitary Adrenal Axis in Patients Post-transsphenoidal Surgery

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INTRODUCTION
Patients undergoing pituitary surgery are routinely given perioperative glucocorticoids as protection for hypocortisolism. Early post-operative assessment should be done to determine hypocortisolism. However, there is still uncertainty regarding the most appropriate test to assess the integrity of hypothalamus-pituitary-adrenal (HPA) axis. The insulin tolerance test (ITT) is the gold standard, but this can be distressing and resource-intensive. Recently, many have been advocating the use of conventional short Synacthen test (SST) as an alternative to ITT. Our objectives were to evaluate the feasibility of SST and ITT to assess the HPA axis integrity post-surgery.

METHODOLOGY
This was a retrospective study of 5 patients who underwent pituitary surgery requiring ITT or SST for HPA assessment from March 2018 until March 2019. For the ITT, appropriate cortisol response was considered as a peak cortisol value of >500 nmol/L with adequate hypoglycaemia (plasma glucose <2.2 mmol/L). For the standard SST test, appropriate cortisol response was considered as a 60-minute value >550 nmol/L.

RESULTS
All 5 patients underwent transsphenoidal surgery for nonfunctioning pituitary adenoma. Of these, 2 had undergone ITT successfully, while the remaining 3 patients were unable to achieve significant hypoglycaemia. They proceeded to the SST to assess HPA axis integrity.

CONCLUSION
While the ITT is the gold standard to determine hypocortisolism, achievement of proper hypoglycaemia is proven difficult, with a 60% failure rate. SST provides a suitable substitute for patients who are unable to achieve adequate hypoglycaemia during ITT. It is an easier alternative and less labour-intensive compared to ITT. The preference of the patient is also important. However, the specificity of the short Synacthen test at a supraphysiological dose of 250 μg needs further evaluation, as such dose may overstimulate partially atrophied adrenals, leading to falsely reassuring results.

PP-33

Establishment of Reference Ranges for Serum Thyroid Function Tests for the Beckman Coulter DxI-800 Analyzer in Hospital Putrajaya

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INTRODUCTION
Thyroid status is best assessed biochemically by measurement of plasma thyroid stimulating hormone (TSH) and free thyroxine (FT4) concentrations. Free tri-iodothyronine (FT3) may be measured if T3 thyrotoxicosis is suspected. The laboratory diagnosis of hyperthyroidism depends on the demonstration of a high plasma concentration of FT4 with a suppressed TSH. The laboratory diagnosis of primary hypothyroidism depends on the findings of high plasma TSH concentration and low FT4 concentration. Accurate and reliable reference intervals are very important for proper diagnosis and patient management. Nearly 80% of medical decisions are made based on laboratory reports. Medical laboratories may choose to use reference ranges (RR) provided by the manufacturer of the reagents used to run such tests. However, the RR given by the manufacturer may not represent the biological variation of the local population. It is best to verify or establish the RR for the tests offered as these RR should represent the local population.

METHODOLOGY
A cross-sectional and prospective study involving healthy adults were done in Hospital Putrajaya in order to establish the RR for thyroid function tests. Eligible volunteers above 18 years old were invited and had their blood taken and analysed for TSH, Free T4, Free T3 and anti-thyroid peroxidase. These samples were analysed using the Beckman Coulter DxI-800. The data collected were analysed using the SPSS version 22.

RESULTS
The results from data collected from the local population in Hospital Putrajaya showed correlation with the RR provided by the manufacturer. The study also showed a narrower TSH reference value for subjects age 40 and below.

CONCLUSION
This study showed that the RR of the local population in Hospital Putrajaya were similar to the RR provided by the manufacturer.

PP-34

Severe Bacterial and Opportunistic Infections in Endogenous Cushing's Syndrome: A Case Series

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INTRODUCTION
Cushing's syndrome is a clinical condition characterised by elevated serum cortisol levels from either exogenous or endogenous glucocorticoids. Hypercortisolemia impairs immune function and increases host susceptibility to bacterial, viral and fungal infections. We report two cases of endogenous Cushing's that succumbed to severe bacterial and opportunistic infections.

CASE 1:
A 69-year-old lady with diabetes and hypertension presented with lower limb weakness, easy bruising and severe hypokalemic alkalosis. Biochemical investigations confirmed Cushing's as demonstrated by elevated 24-hour urine cortisol and non-suppressible cortisol after overnight and low dose dexamethasone suppression test. Adrenocorticotropic hormone (ACTH) was suppressed while dehydroepiandrosterone sulfate (DHEAS) and androstenedione were elevated. Magnetic resonance imaging of the abdomen revealed an adrenocortical carcinoma with liver and lung metastases. She required high doses of insulin, potassium and ketoconazole to control her disease. She developed severe Klebsiella pneumonia with aspergillosis and finally expired.

CASE 2:
A 59-year-old lady was diagnosed with ACTH-dependent Cushing's syndrome when she presented with weight gain, hirsutism and persistent hypokalemia. Initial workup revealed a mediastinal mass which was reported as a neuroendocrine tumour by biopsy. Biochemical investigations were consistent with Cushing's, with elevated serum ACTH. She was given ketoconazole and metyrapone and was subsequently admitted for hospital-acquired and opportunistic fungal pneumonia. She underwent removal of the mediastinal tumour. Post-surgery, her disease was still active with a residual tumour. Ketoconazole was restarted but she succumbed to Salmonella sepsis despite aggressive treatment.

CONCLUSION
Patient's with Cushing's syndrome are susceptible to severe and life-threatening infections. The diagnosis of infections is often made late because the signs and symptoms are often masked by hypercortisolemia. Treatment with anti-cortisol drugs often unmasks infections. Hence, there is a need for a high index of suspicion in order to diagnose opportunistic infections early.

PP-35

Treatment Modalities for Advanced Metastatic VIPoma: A Case Report

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INTRODUCTION
Pancreatic neuroendocrine tumors (pNET) secreting vasoactive intestinal peptide (VIP) are rare tumors, with an annual incidence of 1 per 10 million individuals. The diagnosis is made based on a combination of laboratory evaluation (serum VIP level), imaging findings [functional positron emission tomography-computed tomography (PET-CT)] and histological analysis. The first line of treatment is still surgical excision in benign and non-metastatic disease. However, there is no accepted standard management for patients with metastatic disease, which is seen in 60 to 80% of cases.

METHODOLOGY
We present a case that highlights the challenges in managing metastatic unresectable VIPoma. This is also the first case report in Malaysia using peptide receptor radionuclide therapy (PRRT) as the treatment for metastatic unresectable VIPoma.

RESULTS
We present a case of 62-year-old Chinese gentleman who presented with chronic diarrhoea since 2014. Initial investigation revealed a pancreatic mass at the tail of the pancreas measuring 6.5 cm x 5.2 cm. He underwent distal pancreatectomy and splenectomy. Histopathology report showed a grade 1 pNET with a Ki67 index of <2% and negative margins. He remained asymptomatic post-surgery until 2017, when surveillance CT scan showed a local recurrence at the body of pancreas measuring 2.0 cm x 2.2 cm with multicentric liver lesions, the largest of which measured 4.5 cm x 3.1 cm in segment VIII and 3.6. cm x 3.9 cm in segment IVa. Trans-arterial hepatic chemo-embolization was deemed unsuitable. Since March 2018, the patient had multiple hospitalisations for profuse watery diarrhoea, severe electrolyte imbalance and

metabolic acidosis. A trial of short-acting Sandostatin was able to alleviate the symptoms temporarily. He was then started on Octreotide LAR 30 mg every 4 weeks, which dramatically improved his diarrhoea. Unfortunately, the effect of Octreotide LAR was transient. In view of refractory diarrhoea despite the combination of short- and long-acting somatostatin analogues, systemic therapy via PRRT was started in October 2018.

CONCLUSION

PRRT offers a step-change in the therapeutic options for functioning pancreatic neuroendocrine tumour. However, data on the efficacy of this treatment on individual functional pNET secreting VIP is still lacking.

PP-36

Characteristics of Primary Hyperparathyroidism in a Tertiary Referral Centre and Incidence of Hungry Bone Syndrome

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INTRODUCTION

Primary hyperparathyroidism (PHPT) is a common endocrine disorder discovered by routine biochemical screening. The most commonly reported aetiologies are parathyroid adenoma (80 to 85%), parathyroid hyperplasia (15%) and parathyroid cancer (5%). This condition is associated with excess morbidity and mortality.

METHODOLOGY

We described the clinical characteristics, biochemical findings and treatments that influence the outcome of parathyroidectomy and the incidence of hungry bone syndrome in our PHPT patients. We conducted a retrospective review of confirmed PHPT cases who underwent parathyroidectomy in Hospital Putrajaya, an endocrine referral centre, from January 2002 to February 2018. Electronic medical records were reviewed and patient details such as clinical data, laboratory results, medications, imaging, surgical treatment and post-operative outcomes were analysed using SPSS 17.

RESULTS

Of the 345 patients included for analysis, majority were female (n=228, 66.1%) with a mean age of 52.15 years (±14.78), with 141 subjects (41%) younger than 50 years. Majority were Malays (41.4%), followed by Chinese (38.8%) and Indian (17.7%). Hypercalcemic manifestations were seen in 82.8%, presenting as renal calculi (46.4%), bone pain (30.1%), fatigue (17.1%), gastritis (14.2%) and fracture (5.5%). While mean serum calcium at presentation was 3.10 mmol/L (±0.61), 82.6% had serum calcium more than 2.85 mmol/L and 17.2% had severe hypercalcemia (≥3.5 mmol/L). Mean levels of serum phosphate, intact parathyroid hormone and alkaline phosphatase were 0.79 mmol/L (±0.25), 27.95 pmol/L (range 5.5 to 616) and 126 IU/L (range 28 to 2879), respectively. The mean estimated glomerular filtration rate (eGFR) was 38.3 mL/min/1.73 m^2, with renal impairment (eGFR <60 mL/min/1.73 m^2) in 38.6%. Nearly two-thirds received at least one medical therapy preoperatively (saline diuresis, bisphosphonate or subcutaneous calcitonin). Majority of the cases were histologically confirmed adenoma (76.7%), with the rest being hyperplasia, normal or carcinoma. Hungry bone syndrome postoperatively was seen in 10.8%.

CONCLUSION

PHPT cases in our setting were more symptomatic, with higher serum calcium levels and more frequent findings of nephrolithiasis and renal impairment.

PP-37

Catecholamine Requests in Malaysia: Hospital Kuala Lumpur's Experience

https://doi.org/10.15605/jafes.034.S49

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INTRODUCTION

The Chemical Pathology Unit in Hospital Kuala Lumpur is one of the centres that offer 24-hour urinary catecholamines in Malaysia. Urinary catecholamine determination is a specialised and expensive test offered in limited centres in Malaysia. It is important to reduce inappropriate requests as they can make up a large proportion of laboratory workload leading to unnecessarily increased cost. We review the clinical indications and the significance of results obtained for each catecholamine request sent to our laboratory.

METHODOLOGY

This is a retrospective study involving all requests for 24-hour urinary catecholamine tests sent from all over Malaysia that were available from 2014 until 2016. Clinical indications for requesting the test were reviewed based on information provided in the request forms. Catecholamine results were gathered from the laboratory information system. Clinical indications were classified into 5 categories. Results were tabulated into 3 groups: normal, borderline and abnormal.

RESULTS
A total of 3,151 requests and results were reviewed. The main indication for the test was for hypertension work-up (85%), followed by nonspecific indications (9.4%), adrenal mass work-up (4%), neuroblastoma (1%) and MEN syndromes (0.1%). Out of 3,151 results, 0.5% were reported as abnormal (with significant elevation in any catecholamine metabolites) and 8% borderline (with non-significant elevation). For screening of secondary causes of hypertension, only 0.3% was found to have abnormal results. Some interventions taken by the laboratory to improve laboratory test utilisation include continuous feedback to clinicians for nonspecific indications, and revision of laboratory policy which allows only specialists to order the test.

CONCLUSION
In our institution, only 0.5% of the urinary catecholamine results were reported abnormal, consistent with the rare nature of the related diseases. The very low percentage of abnormal results for screening of secondary causes of hypertension may indicate the need to review the test ordering practices among clinicians.

PP-38

Incidence, Mortality and Clinical Outcome of Patients Hospitalised for Thyrotoxicosis with and without Thyroid Storm in a Single Tertiary Hospital

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INTRODUCTION
Current evidence on the incidence and outcomes of patients with thyroid storm in Malaysia is limited. We determined the incidence of thyrotoxicosis with and without thyroid storm and clinical outcomes among hospitalised patients in a tertiary hospital during an 8-year period.

METHODOLOGY
A retrospective analysis of clinical characteristics, mortality, hospital length of stay and treatment of thyrotoxic patients with age more than 18 years old in a tertiary hospital with an endocrine service from 2000 to 2018 was performed. Electronic medical records were reviewed to obtain data on predisposing factors, associated conditions and treatment during hospitalisation.

RESULTS
A total of 249 hospitalised patients with thyrotoxicosis were included. Most were female (73.9%), with a mean age 48.23±0.154 years, and of Malay (26.1%), Chinese (13.7%) and Indian (3.2%) ethnicity. Only 19 (7.7%) were diagnosed with thyroid storm. Graves' disease (59.8%) was the most common cause of hyperthyroidism, and 15.7% of these hospitalised patient were admitted after one month of being diagnosed. Majority of the patients received carbimazole (81%), with a mean dosage of 20.7 mg OD (±0.77). Precipitating factors included a history of non-compliance to anti-thyroid medication (27.7%) and surgical procedure (10.8%). Mortality and mean length of stay for thyrotoxicosis with or without storm is 6% and 5.91 days (±0.356), respectively. The associated conditions that may have increased morbidity were found in many patients: these included atrial ffibrillation (18.9%), acute heart failure (11.6%), acute respiratory failure (10%), acute coronary syndrome (8%), acute renal failure (4.8%), invasive ventilation (4.4%), diabetic ketoacidosis (3.6%), acute ischemic stroke (3.2%), cardiac arrest (2%), acute liver failure (1.8%), ssupraventricular tachycardia (1.2%), cardiogenic shock (1.2%), non-invasive positive pressure ventilation (1.2%), encephalopathy (1.2%), intracranial haemorrhage (1.2%), adrenal insufficiency (0.8%) and pulmonary embolism (0.4%).

CONCLUSION
Associated conditions were found to be frequent in hospitalized patient with thyrotoxicosis with or without thyroid storm. The small percentage of thyroid storm may reflect underreporting or under recognition.

PP-39

Favourable Outcomes of Lithium Carbonate in the Management of Concomitant Thyrotoxicosis and Acute Dengue-Induced Hepatitis and Neutropenia

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INTRODUCTION
Dengue is one of the most important arthropod-borne viral diseases in tropical countries. The liver is one of the most common organs affected, seen in approximately 60 to 90% of patients. It is an arduous task for clinicians to predict the clinical outcomes of dengue-induced hepatitis and neutropenia, particularly in the presence of concomitant thyrotoxicosis and the attendant risks of its

therapy. Lithium has been used as an adjuvant therapy in thyrotoxicosis because of its ability to inhibit thyroid secretion. This is a case report of thyrotoxicosis complicated by dengue-induced hepatitis and neutropenia successfully treated with lithium.

CASE 1: ***Thyroid storm triggered by dengue***

A 24-year-old lady with Graves' disease presented with acute delirium on day 2 of fever. Laboratory tests included a positive dengue NS1 antigen, suppressed thyroid stimulating hormone (TSH) <0.008 mIU/L [normal value (NV), 0.55 to 4.78] and elevated free thyroxine (FT4) 118.46 pmol/L (NV 11.6 to 22.7). The diagnosis of thyroid storm was made based on delirium, fever, diarrhoea and rapid atrial fibrillation. Prompt treatment with propylthiouracil (PTU), propranolol, Lugol's iodine, intravenous hydrocortisone and appropriate dengue supportive care were instituted. However, on day 3 of fever, the absolute neutrophil count (ANC) plummeted to 0.3 (NV 2 to 7 x 10^3/μL) and transaminases demonstrated an increasing trend. PTU was substituted with lithium 300 mg TDS and continued for 3 days. She recovered completely on day 6 of illness with normalized liver function tests and ANC.

CASE 2: ***Thyrotoxicosis with dengue***

A 36-year-old lady with Graves' disease on PTU 300 mg OD presented with 5 days of fever, vomiting and bleeding tendency. She was clinically in a hyperthyroid state. Laboratory tests revealed positive dengue NS1 antigen and IgM, suppressed TSH (<0.01 mIU/L), borderline FT4 (21.3 pmol/L), low ANC (0.5 x 103/μL), and elevated transaminases [ALT 213 U/L (NV 10 to 49) and AST 817 U/L (NV 0 to 34)]. She was started on intravenous N-acetylcysteine for the significant dengue-induced hepatitis. Lithium 300 mg BD was initiated instead of PTU/carbimazole for 3 days. Liver enzymes and ANC improved, and she recovered completely on day 8 of illness.

CONCLUSION

Lithium is an alternative option for thyrotoxicosis especially in the setting of dengue-induced hepatitis and neutropenia.

PP-40

Insulin Basalog is Associated with Low Glycemic Variability in Type 2 Diabetes Subjects

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INTRODUCTION

Basalog is a biosimilar insulin that has been proven to be safe and efficacious, with the added potential to reduce healthcare costs. Glycemic variability (GV) refers to oscillation in blood glucose throughout the day either due to hypoglycaemia or postprandial increments. Continuous glucose monitoring (CGMS) is a useful tool to measure GV. To date, there has been no study describing the glycemic variability of insulin Basalog in type 2 diabetes (T2D) patients.

OBJECTIVE

To describe the glycemic variability of T2D patients on insulin Basalog

METHODOLOGY

A total of 55 T2D patients were recruited in a single centre study. Basalog was added in patients with uncontrolled diabetes on oral hypoglycemic agents. CGMS was started at least 6 weeks following the addition of Basalog. GV was analysed using the EasyGV software that calculated mean blood glucose (MBG), SD, mean amplitude of glycemic excursions (MAGE), average daily risk ratio (ADRR), lability index (LI), J-Index, low blood glucose index (LBGI), high blood glucose index (HBGI), continuous overlapping net glycemic action (CONGA), mean of daily differences (MODD), glycemic risk assessment in diabetes equation (GRADE), mean glucose (M-value) and mean absolute glucose (MAG).

RESULTS

The parameters for glycemic variability were calculated as follows MBG 9.7±3.01, SD 2.6±1.00, MAGE 4.4±1.28, ADRR 24.4±13.94, LI 2.9±1.62, J-Index 52.8±34.23, LBGI 3.0±5.31, HBGI 10.8±10.2, CONGA 8.9±3.02, MODD 2.4±1.08, GRADE 9.0±7.26, M-Value 16.3±22.7 and MAG 1.5±0.42. The calculated coefficient of variation was 26.8%. The M-value showed 74.5% patients to have good control over their blood glucose. Majority of the patients had a low risk of glycemic variability: 72.7% based on LBGI, 65.5% based on HBGI and 41.8% from ADRR.

CONCLUSION

Basalog was demonstrated to have low glycemic variability with lower risk of hypoglycaemia and postprandial hyperglycaemia.

PP-41

Delayed Diagnosis of Primary Aldosteronism in a Patient with Autosomal Dominant Polycystic Kidney Disease

https://doi.org/10.15605/jafes.034.S53

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INTRODUCTION

Hypertension is a common manifestation for both autosomal dominant ppolycystic kidney disease (ADPKD) and primary aldosteronism (PA). The occurrence of PA in ADPKD patients is extremely rare. The presence of multiple renal cysts makes identification of adrenal adenomas very challenging. Approximately 5 to 10 percent of adults with hypertension have a secondary cause. Hypertension is a common early finding in ADPKD, occurring in 50 to 70 percent of cases before any significant reduction in glomerular filtration rate. Cross-sectional and prospective studies report PA in >5% and possibly >10% of hypertensive patients, both in general and in specialty settings. PA is a condition well worth detecting because it is associated with excessive morbidity. We report an interesting case of a man with hypertension secondary to ADPKD being diagnosed with PA 9 years later.

CONCLUSION

Patients with PA have higher cardiovascular morbidity and mortality than age- and sex-matched patients with essential hypertension and the same degree of BP elevation. Diagnosing and treating patients with PA ameliorate the impact of this condition on important patient outcomes. Only a minority of patients with PA (9 to 37%) present with hypokalaemia, with hypokalaemia probably present in only the more severe cases. PA should be suspected when hypokalaemia occurs in a patient with hypertension. The echogenicity of the adrenal glands is similar to that of the retroperitoneal fat. It is even more difficult to visualize the adrenal glands on the ultrasound of a patient with polycystic kidneys. Hence, the methods of choice in the assessment of adrenal pathologies are computed tomography and magnetic resonance imaging.

PP-42

Lactic Acidosis and Transaminitis in a Type 1 Diabetes Patient with Recurrent Diabetic Ketoacidosis

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CASE

We report an interesting case of a 16-year-old boy with type 1 diabetes mellitus, who had 14 admissions for diabetic ketoacidosis (DKA) since 2016. During many of his admissions for severe DKA, despite resolution of DKA and being clinically well, he continued to have lactic acidosis and markedly elevated aminotransferases. Lactic acidosis is a common finding in DKA, whereas glycogenic hepatopathy (GH) is a rare complication of poorly controlled diabetes mellitus characterised by transient liver dysfunction, elevated liver enzymes and associated hepatomegaly. Lactic acidosis in DKA is multifactorial in aetiology, from anaerobic glycolysis due to inadequate tissue perfusion and oxygenation, as well as metabolic derangements in DKA itself contributing to elevated lactate levels. On the other hand, the pathophysiology of GH is incompletely understood, and clinical characteristics have not been fully characterised. It is believed to be the consequence of recurrent fluctuations in glucose level with hyperglycaemia, hypoglycaemia and hyperinsulinization.

CONCLUSION

Awareness of the occurrence of lactic acidosis and glycogenic hepatopathy in patients with uncontrolled diabetes presenting with DKA should be increased among clinicians to guide further management appropriately. With this, we can increase our patient data pool to better understand patient characteristics and associated risk factors.

PP-43

Bilateral Genu Valgum as an Unusual Presentation of Primary Hyperparathyroidism

https://doi.org/10.15605/jafes.034.S55

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INTRODUCTION

Primary hyperparathyroidism (PHPT) is a disorder of bone and mineral metabolism caused by autonomous secretion of parathyroid hormone (PTH). The most common cause is parathyroid adenoma, followed by parathyroid hyperplasia and rarely parathyroid carcinoma. Parathyroid adenoma can occur sporadically or as part of multiple endocrine neoplasia (MEN) type 1 or type 2A. Sporadic PHPT in adolescents is uncommon and is often associated with severe symptomatic end organ damage compared to adults. The skeletal manifestations include bone pain and fractures. Limb deformity is an atypical and rare presentation.

We report a young patient with bilateral knock knee who was subsequently diagnosed to have a parathyroid adenoma.

CASE

A 15-year-old Malay boy presented with bilateral knock knee of six months' duration. He had no history of recurrent fractures, bone pain, abdominal pain, vomiting or constipation. There was no family history of renal calculi or MEN related disorders. Physical examination showed bilateral genu valgum deformity with short stature. He had elevated levels of serum calcium (3 mmol/L), alkaline phosphatase (1258 U/L) and intact PTH (154 pmol/L). His serum phosphate level was 0.8 mmol/L with normal renal function. Ultrasonography of the neck showed a left inferior parathyroid adenoma. Following parathyroidectomy, histopathologic examination was consistent with parathyroid adenoma. His serum calcium 2 months after surgery returned to normal (2.14 mmol/L). Genu valgum has been described as one of the skeletal manifestations of primary hyperparathyroidism in adolescents. The exact mechanism is still not understood. It can be hypothesised that elevated parathyroid hormone levels may have direct effect on the growth plates and bone remodelling during pubertal growth spurt, resulting in genu valgum. In a young patient with parathyroid adenoma, MEN-related disorders should be considered. Parathyroidectomy is the mainstay of treatment in adolescents.

CONCLUSION

Primary hyperparathyroidism in adolescents can present with isolated genu valgum deformity.

PP-44

Primary Bilateral Adrenal Diffuse Large B Cell Lymphoma: A Case Report

https://doi.org/10.15605/jafes.034.S56

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INTRODUCTION

Primary adrenal lymphoma of the adrenal gland is very rare and is identified in <1% of cases of non-Hodgkin's lymphoma. It is primarily bilateral but secondary involvement of the adrenal gland is typically unilateral. Diffuse large B cell lymphoma is the most common subtype, which represents 70% of cases.

CASE

We report a case of high-grade lymphoma of both adrenal glands found in a 77-year-old man. The patient was admitted to our hospital with progressively increasing pain and fullness in the right upper quadrant of his abdomen, generalised weakness and decreased appetite of 2 weeks' duration. On examination, he had a blood pressure of 140/89 mmHg with no postural drop, a pulse rate of 90 beats/minute and no fever. His past medical history was significant for diabetes mellitus, hypertension and coronary artery bypass grafting 20 years ago. Computed tomography (CT) revealed adrenal gland measurements of 7.2 cm × 7.1 cm × 7.3 cm on the right, 5.1 cm x 4.4 cm x 5.1 cm on the left, with bilateral hypodense lesions associated with perilesional fat streakiness, Further laboratory workup revealed serum Na 131 mmol/L, serum K 5 mmo/L, haemoglobin 10.8 g/dL, white blood cell count 6.3 x 10^3/μL, platelet count 267 x 109/L, erythrocyte sedimentation rate 37 mm/hour, early morning cortisol 371 nmol/L and LDH 547 U/L. The patient underwent CT-guided biopsy of the right adrenal. Histopathological test results showed a diffuse large B-cell lymphoma. Immunohistochemical stains were strongly positive for CD20 and LCA while negative for CD3, CD5, and cyclin D1. The patient's Ki67 (Mib-1) index was approximately 90%. He was referred to a haematology centre for chemotherapy.

CONCLUSION

Primary bilateral adrenal non-Hodgkin's lymphoma should be considered as the differential diagnosis of adrenal masses. It is extremely rare but rapidly progressive. Early diagnosis and treatment might dramatically affect the clinical outcome.

PP-45

A Case of Paraganglioma and Cyanotic Congenital Heart Disease: A Rare Co-occurrence

https://doi.org/10.15605/jafes.034.S57

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INTRODUCTION

Pheochromocytoma and paraganglioma (PPGL) are rare neuroendocrine tumors. Cyanotic Congenital heart Disease (CCHD) refers to a collective of heart defects presenting at birth with low level of oxygen in the blood leading to chronic hypoxemia. An association between these two rare diseases has been reported in several case studies.

CASE

A 23-year-old female presented with a history of post-bidirectional cardiopulmonary shunt at the age of 6 for dextrocardia, atrioventricular canal defect and pulmonary stenosis. She had further complications of chronic hypoxemia, secondary polycythemia, cavernous sinus thrombosis and type 2 diabetes mellitus. During follow-up, the patient was found to present with persistent elevation of blood pressure with the triad of palpitations, headaches and diaphoresis. Catecholamine hypersecretion was suspected. Twenty-four hour urine catecholamines revealed norepinephrine 548.2 µg/day [normal value (NV) 12.1 to 85.5], epinephrine 11.6 µg/day (NV 1.7 to 22.4) and dopamine 233 µg/day (NV <496.1). She had no hypertensive retinopathy, but had proteinuria with an estimated glomerular filtration rate of 60 mL/min/1.73 m^2. Thyroid function tests were normal. Other tests showed elevated haemoglobin (20.8 g/dL), low pO2 (51.2 mmHg) and an Hba1c of 7%. Abdominal computerised tomography showed a left large oval paraaortic mass consistent with a paraganglioma with no features suggesting metastasis. After extensive discussion, due to the high-risk procedure and financial limitations, surgery was rejected and the patient family opted for medical treatment. She was treated with rivaroxaban 20 mg OD, prazosin 2 mg TDS, metoprolol 100 mg BD, atorvastatin 40 mg OD, aspirin 100 mg OD and sitagliptin + metformin 50 mg/500 mg OD. Her blood pressure is stable.

CONCLUSION

CCHD patients are at higher risk to develop PPGL due to chronic hypoxia that increases angiogenic factors leading to tumour development. Therefore, active screening and early treatment for PPGL by biochemical or radiological methods may be beneficial for CCHD patients. Clinicians should continue a long-term follow-up to monitor PPGL recurrence if hypoxia is not corrected. Further research is needed for better understanding and revealing the deeper pathogenic connection between hypoxia and PPGL.

PP-46

Misdiagnosis in Discordant Free T4 and TSH Concentrations: Detecting Assay Interference by Method Comparison

https://doi.org/10.15605/jafes.034.S58

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INTRODUCTION

Thyroid function tests (TFTs) are important tools in diagnosing thyroid disorders. In rare cases, TFTs can be misleading due to assay interference which may result in false diagnosis. We describe a patient who presented with neck swelling and falsely elevated free thyroxine (FT4) due to assay interference and discuss a useful strategy to demonstrate assay interference.

CASE

A 40-year-old lady with thyrotoxicosis was previously treated with carbimazole until 2017. Her care was subsequently transferred to another centre. Here, she was found to have elevated FT4 (52.5 pmol/L) and non-suppressed TSH (0.95 mIU/L) using Siemens® platform. She was started on carbimazole 5 mg OD. After a month of treatment, the tests revealed elevated FT4 [127.9 pmol/L, normal value (NV) 11.5 to 22.7] and elevated TSH [34.76 mIU/L, NV 0.55 to 4.78). Carbimazole was increased to 20 mg OD. Her serial FT4 and TSH levels were persistently elevated despite her being euthyroid. In view of discordant biochemical and clinical presentation, thyroid hormone assay interference was suspected. Her TFTs were repeated in 3 different platforms, which revealed low FT4 and elevated TSH concentrations suggestive of severe hypothyroidism.

Assay interferences are usually due to interfering antibodies. By methods of comparison using 3 different two-step immunoassays (Abbott Architect, Beckman DxI 800 and Cobas Roche), all showed low FT4 concentrations and above reference range TSH levels, suggestive of hypothyroidism. Only the Siemens® platform showed a falsely elevated fT4, demonstrating an assay interference with this immunoassay.

CONCLUSION

Assay interference should be considered when there is a discrepancy between clinical picture and biochemical results to prevent inappropriate management. Method of comparison between immunoassays is a useful strategy to demonstrate the presence of autoantibodies as the source of assay interference.

PP-47

Delayed Diagnoses of Prader Willi Syndrome in a 19-Year-Old

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INTRODUCTION

Prader-Willi syndrome (PWS) is a complex genetic disorder caused by lack of expression of genes on the paternally inherited chromosome 15q11.2-q13. Hypothalamic dysfunction has been implicated in many manifestations of this syndrome, including multiple endocrine abnormalities. These include growth hormone deficiency, central adrenal insufficiency, hypogonadism, hypothyroidism, and complications of obesity such as type 2 diabetes mellitus

CASE

We report a 19-year-old lady who was initially referred to the Endocrine Unit for primary amenorrhoea by a gynaecology clinic. She has one younger brother with normal pubertal development. Further history revealed that she had developmental delay and learning difficulty. She was also noted to have polyphagia and gradual weight gain since 3 years of age. Findings on physical examination were body mass index of 44 kg/m^2 and height of 150 cm (below third centile), compared to midparental height of 158 cm. Pubic hair and breast development were Tanner stage II. She had no features of Cushing's syndrome.

Basal hormonal evaluation revealed follicle stimulating hormone (FSH) of 11 IU/L, luteinising hormone (LH) of 2.6 IU/L and low estrogen level of 19.4 pmol/L, indicative of secondary hypogonadism. Other hormone results were as follows: cortisol 158.6 nmol/L, insulin-like growth factor -1 (IGF-1) 99 µg/L (normal value 284 to 713), prolactin 10.34 ng/L, T4 14.6 pmol/L and TSH 1.40 mIU/L. Her 17-OH progesterone level was not elevated. Short Synacthen test showed adequate adrenal response. Magnetic resonance imaging of the brain reported a normal pituitary gland. Pelvic ultrasonography showed an anteverted uterus 5.6 cm x 2.5 cm with normal ovaries. Genetic study by DNA methylation testing confirmed the clinical diagnosis of PWS. She is currently managed by a multidisciplinary team consisting of a gynaecologist for cyclic oral contraceptive pills, occupational sports medicine for her weight loss program and dietary plans, and endocrinology for regular screening of endocrine manifestations of PWS.

CONCLUSION

PWS is a genetic syndrome in which early diagnosis and careful attention to detail regarding all the potential endocrine and behavioural manifestations can lead to a significant improvement in health and developmental outcomes. The importance of the roles of the providers caring for patients with PWS cannot be overstated.

PP-48

Spectrum of Thyroid Disorder in Amiodarone-Induced Thyroid Dysfunction – A Case Report

https://doi.org/10.15605/jafes.034.S60

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INTRODUCTION

Amiodarone is the most commonly used anti-arrhythmic drug worldwide. It can lead to both hypothyroidism (amiodarone-induced hypothyroidism, AIH) and less commonly, hyperthyroidism (amiodarone-induced thyrotoxicosis, AIT). While AIH is more common in iodine-sufficient populations, AIT is seen more frequently in iodine-deficient areas.

CASE

A 53-year-old man had hyperthyroidism and subsequently had hypothyroidism following amiodarone treatment. He had underlying non-ischaemic cardiomyopathy with recurrent ventricular tachycardia requiring ICD insertion in 2008. He was dependent on amiodarone for a few years in view of recurrent ventricular tachycardia, despite having two cardiac ablations. Initially, he developed hyperthyroidism following amiodarone treatment and was started on Carbimazole. Subsequently, he became hypothyroid. Clinically, he was euthyroid with no palpable goiter. Anti-thyroid stimulating hormone (TSH) receptor antibody was undetectable. Ultrasonography of the thyroid revealed normal thyroid gland with reduced vascularity. Thyroid uptake scan showed a hypofunctioning thyroid gland. Based on his series of thyroid function tests, he had AIT type 2 and subsequently developed overt AIH. We noticed, however, that the patient had elevated free thyroxine (FT4) with high TSH and was asymptomatic for 3 months duration while still on amiodarone. Upon review one year later, he currently has subclinical hypothyroidism.

CONCLUSION

This case illustrates the spectrum of thyroid function abnormalities in patients on amiodarone. In the absence of hypothyroid symptoms or thyroid antibodies, patients with moderately elevated serum TSH (<20 mIU/L) but high-normal or raised serum FT4 may reflect amiodarone-induced alteration in thyroid function parameters or subclinical hypothyroidism. Therefore, thyroid function test results while on amiodarone should be scrutinized before definitive treatment is instituted. A baseline evaluation will help identify patients who may be predisposed to developing thyroid dysfunction while on amiodarone.

PP-49

Hospital Sungai Buloh's Experience in Using Fixed Insulin Infusion for Diabetic Emergencies

https://doi.org/10.15605/jafes.034.S61

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INTRODUCTION

Diabetic ketoacidosis (DKA) and hyperglycemic hyperosmolar state (HHS) are diabetic emergencies that cause high mortality and morbidity. The mainstay of treatment for diabetic emergencies is insulin and fluid therapy. Various methods of insulin initiation are commenced in different healthcare settings based on their respective standard practice guidelines.

CASE

A clinical audit was carried out based on the data of patients age 12 to 80 years admitted for diabetic emergencies in Hospital Sungai Buloh for a period of 11 months (May 2018 to April 2019). All patients were commenced on the fixed insulin infusion scale regime at point of diagnosis.

Results showed that the average time of resolution of DKA/HHS of less than 24 hours was achieved by almost 87% of total patients who were admitted for diabetic emergencies from May 2018 to April 2019.

CONCLUSION

Our experience of using the fixed insulin infusion scale regime in the treatment of diabetic emergencies has shown good outcomes.

PP-50

Implications of Steroid Therapy in the Management of an Immunocompromised Patient with Severe Graves' Ophthalmopathy (GO)

https://doi.org/10.15605/jafes.034.S62

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INTRODUCTION

Severe GO is four times more common among males. Immunosuppressive therapy is aimed at combating inflammation and preserving sight. Kahaly et al found that high dose intravenous pulsed methylprednisolone for moderate to severe GO had favorable response rates compared to oral prednisolone. However, the treatment is associated with significant morbidity among diabetes, renal and liver patients. The possible complications are systemic bacterial and fungal infection, cataract, osteoporosis and hypoadrenalism.

CASE

A 42-year-old gentleman, non-smoker, with known history of diabetes, hypertension, old stroke, chronic kidney disease (CKD) stage 4 and bilateral severe non-proliferative diabetic retinopathy, presented with painful red eyes with proptosis of the left eye of 4 months' duration. Visual Acuity (VA) and clinical activity score (CAS) assessments were 6/24 and 3/7 on the right eye and 6/36 and 6/7 on the left, respectively. He had severe GO without optic nerve compression confirmed by magnetic resistance imaging. He was clinically and biochemically euthyroid. He was started on oral prednisolone but relapsed within a month. Subsequently, he was given pulsed intravenous methylprednisolone totaling 10.25 g in combination with oral cyclosporine. During this period, he developed neutropenic sepsis, herpes zoster and deterioration of CKD requiring temporary dialysis. After initial response to steroid, his condition declined to sight-threatening left GO with optic nerve compression resulting in near blindness. He underwent orbital wall decompression followed by peribulbar triamcinolone injection. While CAS improved significantly to 0/7 on both eyes, his vision did not recover, with VA 6/24 on the right and only hand movement on the left. Orbital radiotherapy was not offered due to advanced diabetic retinopathy.

CONCLUSION

This case highlights the challenges in using steroid therapy in a patient complicated by diabetes and other comorbidities in an attempt to save sight, while taking the risk of life-threatening infection and deterioration of renal function.

PP-51

Challenges in Managing a Rare Case of Female Kallman Syndrome

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INTRODUCTION

Kallmann syndrome (KS), characterised by anosmic hypogonadotrophic hypogonadism, is a very rare genetic disorder in females. Delayed diagnosis presents additional management challenges. We report the case of a 58-year-old female diagnosed at 37 years old.

CASE

She had asymptomatic primary amenorrhoea, anosmia, absence of secondary sexual characteristics and low body mass. There were no eunuchoidal features but her weight was subnormal, with hypogonadotrophic hypogonadism. Breakthrough menstruation with progestin challenge test suggested anovulation. Her gender was confirmed with cytogenetic analysis. Hormone replacement therapy (HRT) was initiated with a priming dose of conjugated estrogen. Subsequently, estrogen was increased to 0.625 mg BD (day 1 to 21) and progesterone 5 mg (day 14 to 12) was added. In the first 6 months after HRT initiation, there were notable physical changes including increase in axillary hair growth and breast development of stage 2 to 3. Comorbidities of multinodular goitre, osteoporosis, dyslipidemia and paroxysmal supraventricular tachycardia evolved during the follow up, and were intensively investigated and managed accordingly. Despite HRT and subsequent anti-osteoporotic treatment with alendronate and optimal nutrition for 2 years, there was no improvement in bone mineral density.

CONCLUSION

To the best of our knowledge, we reported the first female Kallmann syndrome in the postmenopausal age group with multiple comorbidities. While dyslipidemia may reflect the weaning of HRT, the evidence base on how to optimise the benefits of HRT in a female patient with Kallmann syndrome including type, combination, dosage and duration of treatment, are lacking. Following delayed presentation beyond the period of accrual of peak bone mass, instituting HRT may not optimise bone mineral composition. Furthermore, the use of bisphosphonate in this patient is based on extrapolation of findings in subjects with postmenopausal osteoporosis. Prompt diagnosis and treatment in early childhood and prepuberty as well as continual active surveillance are important in managing the female patient with KS.

PP-52

Discordant Thyroid Function Tests Due to Dysalbuminemic Hyperthyroxinemia Confounds Management of Thyroid Autoimmunity

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INTRODUCTION

Familial dysalbuminemic hyperthyroxinemia (FDH) is a cause of discordant thyroid function tests (TFT) due to interference in free thyroxine (FT4) assays caused by the mutant albumin. The coexistence of thyroid disease and FDH can further complicate diagnosis and potentially result in inappropriate management.

We describe a case of Hashimoto's thyroiditis and Graves' disease occurring on a background of FDH.

CASE

A 42-year-old lady with longstanding autoimmune hypothyroidism was treated with varying dosages of thyroxine because of discordant TFTs, showing high (FT4) and normal thyroid stimulating hormone (TSH). Discontinuation of thyroxine led to marked TSH rise but with normal FT4 levels. She then developed Graves' disease and thyroid ophthalmopathy, with markedly elevated FT4 (62.7 pmol/L), suppressed TSH (0.03 mIU/L) and positive anti-TSH receptor antibody levels. However, propylthiouracil treatment even in low dosage (100 mg daily) resulted in profound hypothyroidism (TSH 138 mIU/L, FT4 4.8 pmol/L), prompting its discontinuation and recommencement of thyroxine. Discordant thyroid hormone measurements using two different methods suggested analytical interference. Elevated circulating total T4 (TT4) [227 nmol/L, normal range (NR) 69 to 141] but normal thyroxine binding globulin (TBG) levels (19.2 μg/mL, NR 14.0 to 31.0) together with increased binding of patient's serum to radiolabeled T4 suggested FDH. ALB sequencing confirmed a causal albumin variant (R218H).

CONCLUSION

This case highlights the difficulty in ascertaining true thyroid status in patients with autoimmune thyroid disease and coexisting FDH. Early recognition of FDH as a cause for discordant TFTs, with use of either TSH or FT4 measured by equilibrium dialysis as markers of true thyroid status, may improve patient management.

PP-53

Acute Severe Hyponatraemia in a Patient with Right Eye Ptosis

https://doi.org/10.15605/jafes.034.S65

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INTRODUCTION

Hyponatraemia is a common electrolyte imbalance in oncology. Syndrome of inappropriate anti-diuretic hormone secretion (SIADH) contributes to approximately 30% of cases. However, it remains a diagnosis of exclusion. In oncology, other possible contributing causes include reduced sodium intake, gastrointestinal and renal losses, chemotherapy and radiotherapy. However, for hyponatraemia in head and neck tumours, pituitary or hypothalamic involvement needs to be ruled out. We report a case of severe hyponatraemia and complex ophthalmoplegia in a patient with nasopharyngeal carcinoma (NPC) as a presentation of pituitary extension.

The clinical records of a patient who was diagnosed with NPC were reviewed.

CASE

A 43-year-old gentleman presented with double vision, headache and weight loss for 2 months. It was associated with right third and sixth cranial nerve palsies, as well as left submandibular lymphadenopathy. Computerized tomography scan and lymph node biopsy confirmed the diagnosis of nasopharyngeal carcinoma. Prior to commencement of chemotherapy, he also presented with acute severe hyponatraemia which was resistant to supportive treatment. Urine osmolality and serum osmolality pointed toward SIADH, but the patient was not responsive to fluid restriction and hypertonic saline correction. Pituitary gland function tests and magnetic resonance imaging subsequently confirmed pituitary extension of the NPC causing central hypocortisolaemia with concomitant SIADH. Hyponatraemia was successfully treated with oral hydrocortisone and oral sodium chloride.

CONCLUSION

This case study illustrates important presentations of NPC progression. Complex ophthalmoplegia and hyponatraemia are both warning signs of intracranial NPC extension.

PP-54

A Rare Case of Double Adrenocorticotropic Hormone-Secreting Pituitary Adenoma

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INTRODUCTION

When distinct pituitary hypersecretory manifestations coexist, the differential diagnoses include plurihormonal or multiple pituitary adenomas. We describe a rare case of Cushing's disease and central diabetes insipidus caused by two non-contiguous pituitary adenomas, one located within the anterior pituitary and the other in the infundibulum.

CASE

A 14-year-old female presented with unexplained weight gain, central obesity, hirsutism, polyuria and polydipsia. Hormonal studies indicated Cushing's disease, and magnetic resonance imaging showed a small focal area of delayed enhancement in the right pituitary gland. While other anterior pituitary hormonal tests were negative, osmolality and water deprivation test confirmed central diabetes insipidus. Endoscopic transsphenoidal surgery revealed 2 lesions containing cheesy-like material at the posterior part of the anterior pituitary and another compressing the infundibulum. The 2 clearly separated pituitary adenomas identified in the same gland were completely resected. Immunohistochemistry and pathology revealed that the double adenomas were positive for adrenocorticotropic hormone (ACTH), thyroid stimulating hormone, growth hormone, luteinising hormone, prolactin and follicle stimulating hormone. Postoperatively, the levels of ACTH and cortisol decreased rapidly. However, she developed panhypopituitarism with persistent diabetes insipidus, requiring hormonal replacement therapy.

Multiple pituitary adenomas (MPA) are defined as 2 or more immunocytochemically and/or morphologically distinct tumours that are detected in only 0.37 to 2.6% of surgical specimens and in 1.6 to 3.3% of Cushing's disease patients. Our patient is the youngest reported patient to our knowledge so far and is considerably rare, due to the presence of a second pituitary adenoma in the same gland detected only intraoperatively and not radiologically, isolated ACTH-secreting tumours, and clinical presentation of diabetes insipidus.

CONCLUSION
The coexistence of double adenomas can pose diagnostic and management challenges for the pituitary neuroendocrine team and is a common cause for surgical failure. Intraoperative evaluation is important in the identification of multiple pituitary adenomas in a patient presenting with multiple secretory manifestations.

PP-55

Brittle Bones and Leaking Phosphate

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INTRODUCTION
Fanconi syndrome is an established cause for low bone mineral density (BMD). Confirmed cases of acquired Fanconi syndrome due to tenofovir have been reported worldwide. The mean duration of therapy with tenofovir before the development of Fanconi syndrome is reported to be 11 months. The implicated agent was discontinued in all cases after which renal function tests and electrolytes normalised. We present a case of acquired Fanconi syndrome following tenofovir use.

CASE
A 57-year-old male with Hepatitis B infection who had been on tenofovir for 5 years presented with a low impact calcaneal fracture while standing up from a squatting position 3 years ago. Over the past two years, he experienced gradually worsening proximal muscle weakness and weight loss of 6 kg. Physical examination revealed a man of small build with proximal muscle weakness and tenderness. Blood parameters showed hypokalaemia and hypophosphatemia with inappropriately elevated urinary phosphate and potassium clearance. Thyroid function and serum testosterone were normal. His 25-hydroxyvitamin D levels were sufficient. Electromyography reported diffuse neurogenic pattern with secondary myogenic changes suggestive of a metabolic cause. Abdominal ultrasound revealed bilateral renal calculi. Dual x-ray absorptiometry scan showed osteoporosis at the lumbar spine and distal third of the radius. A diagnosis of acquired Fanconi syndrome associated with tenofovir therapy was made. He was started on oral phosphate and potassium supplements while tenofovir was replaced with entecavir. Upon review 6 months later, he was much better with no muscle pain or weakness. Repeated serum potassium and phosphate levels were within normal limits.

CONCLUSION
Tenofovir use is associated with acquired Fanconi syndrome which can lead to osteoporosis. A high index of suspicion is necessary among patients on this medication who present with low impact fractures as timely intervention can prevent significant morbidity.

PP-56

The Invisible Evil Twin of an Adrenal Adenoma

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INTRODUCTION
Primary aldosteronism (PA) causes a persistently elevated blood pressure (BP) due to excessive release of the hormone aldosterone from the adrenal glands. It can be cured with surgical resection of the aldosterone-secreting adenoma leading to resolution of hypertension and reduction in cardiovascular risk. There is known discordance between identification of adenoma with computed tomography (CT) and confirmation of aldosterone hypersecretion with adrenal venous sampling (AVS).

CASE
We present the case of a man with previous ischemic heart disease who presented with resistant hypertension. He had been diagnosed with essential hypertension 5 years prior. Investigations for secondary causes of hypertension were performed, as he subsequently required 5 anti-hypertensive medications to control his hypertension. Work-up revealed an elevated serum aldosterone of 924 pmol/L [normal range (NR) 111 to 860] with suppressed plasma renin activity of 0.4 ng/mL/hr (NR 1.5 to 5.7); and aldosterone-to-renin ratio of 2060 (NR <750). Saline suppression test confirmed the diagnosis, with failure of suppression of aldosterone with salt loading. CT of the adrenal glands revealed a left adrenal adenoma measuring 1.4 cm x 1.5 cm with a Hounsfield Unit (HU) of 12 and absolute washout of 60%. The right adrenal gland was normal.

AVS was performed. There was lateralisation to the right adrenal gland indicating aldosterone hypersecretion but with normal adrenal imaging. The Lateralisation index ratio was 8.6 (NR <3). The patient subsequently underwent a repeat AVS which produced similar results. One month later, he underwent laparoscopic right adrenalectomy which improved his BP control. Histologic features were consistent with adrenal cortical adenoma.

CONCLUSION
This case highlights the importance of recognizing the need to investigate for secondary causes of hypertension. It also underscores the importance of dynamic tests such as AVS to confirm hypersecretion of aldosterone from the correct adrenal gland resulting in the best treatment option.

PP-57

Thyroid Storm with Acute Flaccid Quadriparesis due to Thyrotoxic Myopathy

https://doi.org/10.15605/jafes.034.S69

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INTRODUCTION

Severe thyrotoxicosis is known to cause myopathy, but is rarely associated with acute flaccid quadriparesis. It is imperative to distinguish this from other potentially life-threatening conditions such as Guillain-Barré syndrome, myasthenia gravis and hypokalemic periodic paralysis that may present with similar clinical features.

We report a case of thyroid storm presenting with acute flaccid paralysis.

CASE

A 25-year-old lady was diagnosed with Graves' disease one year ago but was poorly compliant to antithyroid drugs. She presented with 3 days' history of fever and rapidly progressive generalised body and limb weakness rendering her bedridden. Neurologic examination identified flaccid quadriparesis with areflexia and intact sensation. She was agitated, febrile, tachycardic with atrial fibrillation in failure and was diagnosed with thyroid storm with Burch and Wartofsky score of 60. Her thyroid stimulating hormone level was <0.01 mIU/L and free thyroxine was 43.56 pmol/L. Serum electrolytes and creatinine kinase were normal, and type 2 respiratory failure was not demonstrated. Other investigations were unremarkable including viral serology, autoimmune markers and anti-ganglioside antibodies. Her nerve conduction study and electromyography were suggestive of generalized myopathy without neuromuscular junction abnormalities. She was intubated, ventilated and commenced on hydrocortisone, Lugol's iodine, propylthiouracil, cholestyramine and propranolol, resulting in marked clinical improvement and normalisation of thyroid function in 7 days. Total thyroidectomy was done before discharge as definitive treatment. She regained muscle power and function gradually over months following biochemical remission.

CONCLUSION

Acute thyrotoxic-induced myopathy should be considered in uncontrolled thyrotoxicosis presenting with flaccid quadriparesis. Contributing features may include increased cellular metabolism and energy utilisation, increased catabolism and protein degradation, and inefficient energy utilisation. Early definitive therapy with radioactive iodine or thyroidectomy is crucial in achieving rapid biochemical control, preventing future occurrence of acute thyrotoxic induced myopathy, and improving muscle recovery.

PP-58

Hypothyroidism: The Great Mimicker

https://doi.org/10.15605/jafes.034.S70

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INTRODUCTION

Hypothyroidism is a common endocrinopathy presenting with an assortment of well-described symptoms and signs. Less commonly, myopathy may be the sole presenting manifestation, making it perplexing to ascertain the diagnosis from other systemic and local aetiologies. This is a case of severe hypothyroidism which had manifested itself in the form of persistently raised creatine kinase (CK) following a presumed episode of non-ST elevation myocardial infarction (NSTEMI).

CASE

A 57-year-old gentleman first presented to a district hospital in December 2016 with atypical chest pain. His electrocardiogram showed T-wave inversion over leads V2 to V6, I and AVL. Along with his raised CK (3,448 U/L), the impression then was NSTEMI and he was treated accordingly. Throughout his admission, his CK showed a declining trend and was 2,481 U/L upon discharge. An echocardiogram revealed good ejection fraction of 65% with no regional wall motion abnormalities.

However, during his subsequent visit, his CK did not normalise. Initial concern of statin-induced myopathy resulted in his statin being withheld. Nevertheless, his CK showed a further rise to 4,328 U/L in May 2017. Further history revealed symptoms of cold intolerance, fatigue and constipation, suggestive of hypothyroidism. He denied muscle aches or weakness and there was no demonstrable proximal myopathy. His subsequent thyroid function test demonstrated extremely high thyroid stimulating hormone (TSH) (>100 μIU/mL) with low free thyroxine (0.8 pmol/L). Following commencement of thyroxine replacement, his TSH (0.67 μIU/mL) and CK normalised.

CONCLUSION

In hypothyroidism, the involvement of skeletal muscles may vary, ranging from an asymptomatic rise in creatine kinase (CK) to overt muscle weakness. Because hypothyroidism can be a great mimicker, a high index of suspicion is imperative.

PP-59

Diabetic Ketoacidosis as First Presentation of a Growth Hormone and Prolactin Co-Secreting Pituitary Macroadenoma

https://doi.org/10.15605/jafes.034.S71

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INTRODUCTION

Diabetic ketoacidosis (DKA) is an uncommon initial presentation in acromegaly. Acromegaly is a state of elevated levels of both growth hormone (GH) and insulin-like growth factor-1 (IGF-1), known to cause insulin resistance subsequently leading to hyperglycaemia. The association between hyperprolactinemia and insulin resistance has also been described widely in literature. This is the first case ever reported as growth hormone and prolactin co-secreting pituitary macroadenoma initially presenting as DKA.

CASE

We report the case of a 46-year-old Malay gentleman with obesity and smoking history who presented with fever, vomiting, lethargy and altered behaviour for 3 consecutive days. Biochemically fulfilled criteria of severe DKA was resolved with vigorous intravenous fluid administration and high dose intravenous insulin infusion. He was subsequently shifted to high dose subcutaneous insulin to achieve optimum glucose control.

Further exploration revealed that he had experienced mild increased size of hands and feet. Physical examination showed mildly coarsened, enlarged facial features. Initial computed tomography of the brain showed widened sella turcica. Magnetic resonance imaging of the brain confirmed the presence of a pituitary macroadenoma with local mass effect. Blood screening revealed an elevated IGF-1 (681 ng/mL) and an extremely high level of prolactin (>10,000 mIU/L). Growth hormone suppression test taken in an outpatient setting when the patient was euglycemic revealed unsuppressed GH. Ophthalmological examination revealed bilateral visual field defect. She was started on cabergoline treatment and was later referred to the neurosurgical team for further surgical management.

CONCLUSION

This case highlights the importance of considering acromegaly as an alternative cause of DKA at initial presentation, other than the more common causes of type 1 or 2 diabetes. Early identification of the primary cause for DKA will ensure appropriate further investigation and management, whether medical or surgical, which will positively affect the patient's prognosis and outcome.

PP-60

Granulocyte-Colony Stimulating Factor in the Treatment of Carbimazole-Induced Agranulocytosis

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INTRODUCTION

Agranulocytosis is a rare complication of anti-thyroid treatment and may have life-threatening consequences. Current management involves timely identification of the condition and cessation of the causative drug. Supportive management and broad-spectrum antibiotics remain the mainstay of treatment. Granulocyte-colony stimulating factor (G-CSF) may also be considered. This is usually followed by definitive treatment of hyperthyroidism once the patient has recovered.

CASE

A 51-year-old gentleman with a history of thyrotoxicosis started on carbimazole 6 months ago presented with fever and odynophagia.

A full blood count showed agranulocytosis with a neutrophil count of 0.03 10^3/μL. He was admitted to the hospital and given filgrastim and broad-spectrum antibiotics. His counts showed improvement after 10 days and radioactive iodine treatment was subsequently planned. This gentleman showed poor response to initial filgrastim treatment and only appeared to respond subsequently after a higher filgrastim dose (600 μg).

CONCLUSION

Studies have shown mixed results in terms of reduction in haematologic recovery time after G-CSF administration. Possible explanations include the differences in doses of G-CSF used in various studies and differences in bone marrow characteristics of the treated patients. The cost-effectiveness and usefulness of routine total white count monitoring in asymptomatic patients is debatable. This case illustrates the possible role of G-CSF in the management of anti-thyroid medication induced agranulocytosis although more research is required in this area. Patient education and awareness remains a major area of concern. Early education by their treating physician is essential.

PP-61

A Rare Presentation of Thyroid Cancer in Young Adult, with Concomitant Subclinical Hyperthyroidism

https://doi.org/10.15605/jafes.034.S73

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INTRODUCTION

Thyroid malignancy is uncommon in children and adolescents. It accounts for 1.5 to 3% of all carcinomas in this age group. Thyroid cancers are rarely associated with thyroid hyperfunction. The incidence of this co-incidence is highly variable, reported to be as low as 0.15%.

CASE

A previously healthy 19-year-old woman presented with one day history of neck swelling and sore throat. She was clinically euthyroid. Review after 2 weeks showed a persistent mass, consistent with thyroid nodule. Examination showed a blood pressure of 112/74, heart rate of 80 beats/minute and normal body temperature. Her body mass index was 21 kg/m^2. There was a palpable 3 cm x 3 cm non-tender right thyroid nodule with no palpable lymph nodes. Thyroid function test (TFT) revealed subclinical hyperthyroidism on 2 separate occasions [thyroxine (T4) 13.8 and 15.5 pmol/L, thyroid stimulating hormone (TSH) 0.49 and 0.39 mIU/L, respectively]. Anti-thyroid peroxidase and anti-thyroglobulin were both negative. Ultrasonography (US) of the thyroid showed multiple suspicious solid hypoechoic right thyroid nodules with microcalcification and increased vascularity, with the largest nodule measuring 2.7 cm x 1.5 cm with mixed solid and cystic appearance. US-guided fine needle aspiration (FNA) biopsy showed benign colloid nodule with degeneration.

In view of the subnormal TSH, she underwent thyroid uptake scan which revealed non-toxic multinodular goitre with a cold nodule in the lower pole of the right thyroid lobe, corresponding to a hypodense solid lesion on computerised tomography, and no uptake at the surrounding lymph nodes. Repeated US-guided FNA cytology of the corresponding cold nodule was read as papillary thyroid carcinoma Bethesda 5. She underwent hemithyroidectomy. Intra-operative histopathology concurred with well-differentiated papillary thyroid carcinoma.

CONCLUSION

This was a common case with an uncommon presentation. Thyroid malignancy is uncommon in children and adolescents. The slow growing nature of a thyroid carcinoma would give a subtle rather than acute presentation. Subclinical hyperthyroidism is usually associated with hyperfunctioning of the thyroid gland rather than malignancy.

PP-62

Recurrent Acute Pulmonary Oedema during and after Pregnancy in Adrenal Cushing: A Case Report

https://doi.org/10.15605/jafes.034.S74

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INTRODUCTION

Cushing's syndrome (CS) during pregnancy is a rare condition and only few cases are reported in literature. Diagnosis and treatment of CS is often difficult. Though most report uncomplicated pregnancy, we report a complicated pregnancy and tumultuous adverse events following delivery.

CASE

We report a 21-year-old lady who first presented at 23-weeks of gestation with acute pulmonary oedema (APO) requiring non-invasive ventilation and ICU admission. She was investigated for Cushing's syndrome as she exhibited clinical features of purplish striae, thin skin and easy bruising. Her clinical care was later transferred to another hospital due to logistic issues. Unfortunately at 27-weeks of gestation, she presented with another APO event and hypertensive emergency. She underwent emergency caesarean section during that admission and delivered a 1.1 kg premature baby girl.

Postpartum investigation confirmed that she had ACTH independent CS with unsuppressed overnight-dexamethasone test cortisol (646 nmol/L), low-dose-dexamethasone test cortisol (699 nmol/L) and suppressed ACTH levels (1.1 pmol/L). She was then admitted for another episode of APO after 2-months postpartum. She responded to diuretic therapy and required 3 anti-hypertensive agents. At 4-months postpartum, she developed severe lower back pain which correlated with a T12-L1 compression fracture. As patient was not compliant with follow-up, CT-adrenal was only completed at 6-months postpartum after another APO admission. CT-adrenal revealed a 3 cm right medial-limb adrenal adenoma. She is currently awaiting optimisation for right adrenalectomy.

CONCLUSION

This case highlights the rare occurrence of recurrent APO during pregnancy and postpartum in a patient with adrenal Cushing. The potential link between CS and cardiomyopathy would need further exploration.

PP-63

Refractory Thyrotoxicosis – Challenges in Management

https://doi.org/10.15605/jafes.034.S75

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INTRODUCTION

Refractory Graves thyrotoxicosis is a rare condition in which hyperthyroidism fails to respond to the conventional thionamides. Patient with severe hyperthyroidism or allergy to thionamide may benefit from alternative medical therapies namely radioactive iodine therapy, glucocorticoids, cholestyramine or lithium. Thyroidectomy is the definitive treatment for Graves thyrotoxicosis that is recommended when medical therapies have failed or are contraindicated.

The medical records of the patient were traced and reviewed.

CASE

Here we report a 14-year-old girl who was diagnosed with Graves' disease a year ago. She had thyrotoxic symptoms with positive thyroid autoantibodies. She was initially started on carbimazole and developed agranulocytosis from it. She had cushingoid syndrome with myopathy from steroid, gastrointestinal side effects from cholestyramine and severe lithium toxicity requiring hemodialysis. She developed severe myopathy compromising her airway and requires mechanical ventilation and needed prolonged intubation. She was initially planned for radioactive iodine therapy but remained clinically and biochemically hyperthyroid despite trial of 4 cycles of plasmapheresis. The only therapy that managed to control her hyperthyroidism temporarily was Lugol's iodine. Thus the initial plan for radioactive iodine treatment was not feasible. In general, we would usually aim for patient to be in euthyroid state prior to surgery to minimize potential peri-operative complications. A short course of Lugol's iodine was reinitiated and she was referred for inpatient thyroidectomy. She successfully underwent thyroidectomy without any peri-operative complications and is currently in euthyroid.

CONCLUSION

In conclusion, inpatient thyroidectomy should be considered in patient with refractory Graves thyrotoxicosis that is resistant to conventional therapies to prevent secondary complications.

PP-64

Ampullary Hyperplasia in a Patient with Poorly Controlled Acromegaly: A Case Report

https://doi.org/10.15605/jafes.034.S76

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INTRODUCTION

The complexity of acromegaly management increases exponentially when a patient is still uncontrolled after undergoing primary pituitary surgery, pituitary radiotherapy and concomitant somatostatin analogue treatment. Poorly controlled disease has definite increased risk of malignancy.

CASE

A 60-year-old lady with acromegaly and concomitant diabetes and hypertension had undergone transsphenoidal pituitary surgery in 2011. Post-operatively, somatostatin analogue (octreotide) was started since she had residual tumour and elevated IGF-1 levels. Despite this her IGF-1 levels remained elevated. Conventional pituitary radiotherapy was opted partly due to her fear of second surgery in 2016. Unfortunately, her disease remained active, evidenced with persistently elevated IGF-1 levels, poorly controlled diabetes and hypertension and frequent headaches.

In December 2018, she developed symptoms of obstructive jaundice and subsequent ERCP revealed presence of ampullary tumour with choledocho-doudenal fistula and grossly dilated common bile duct with no filling defects. Tumour marker CA19-9 was markedly elevated. HPE of tumour biopsy revealed high-grade glandular dysplasia. Acromegaly patients have increased risk of developing colonic polyps and malignancy but association of acromegaly and biliary duct tumour has not been established and rarely reported. Though in uncontrolled disease, elevated levels of IGF-1 promotes angiogenesis and malignancy.

CONCLUSION

This case illustrates a rare finding of obstructive jaundice and ampullary tumour in poorly controlled acromegaly. This patient would require Whipple's procedure for the tumour but optimisation for surgery would be extremely difficult. This include controlling her diabetes, hypertension and growth hormone excess. In this reassessment for pituitary surgery would be vital.

PP-65

A Rare Case of Co-Existence Pituitary Macroadenoma with Mayer-Rokitansky-Kuster-Hauser (MRKH) Syndrome

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INTRODUCTION

Mayer-Rokitansky-Kuster-Hauser (MRKH) syndrome or Müllerian agenesis is a congenital failure of the Müllerian duct to develop, resulting in complete or partial absence of the cervix, uterus, and vagina. It can be isolated (MRKH type I) or associated with renal, vertebral, auditory and cardiac defects (MRKH type II). It is not known that pituitary disease has any association with this condition.

We report a patient who has MRKH type I and a pituitary macroadenoma, diagnosed concomitantly.

CASE

A 17-year-old lady was referred with primary amenorrhoea, occasional headache, nausea and lethargy. She denies any reduction or loss of vision. On clinical assessment, she had normal secondary female sexual characteristics, with Tanner stage 3. There was no significant family history. Hormonal investigations showed high prolactin level; 4200 miU/L (post dilutional). Estradiol was low, 37 pmol/l (93–1400 pmol/l), as well as FSH 2.38 U/L, LH 0.96 U/L, progesterone <0.3 nmol/L and testosterone <0.45nmol/L. Cortisol level 206 nmol/L, FT4 7.5 pmol/L with TSH 5.091 mIU/L. MRI of pituitary showed 2.7 cm (AP) x 3.7 cm (W) x 4.6 cm (CC) pituitary macroadenoma, with mass effect, infiltration into left cavernous sinus and encasement of cavernous portion of left ICA. MRI pelvis showed absent uterus, cervix and 2/3 upper vagina confirming Müllerian hypoplasia. Cytogenetics showed 46XX. Diagnosis of Mayer Rokitansky Kauser Hauser Syndrome and panhypopituitarism secondary to pituitary macroadenoma was made. She was treated with hydrocortisone, levothyroxine and cabergoline. Follow up MRI has shown reduction in tumour size. However, she has remained amenorrhoeic.

CONCLUSION

The estimated prevalence of MRKH syndrome is one in 4500 female births. The etiology of MRKH syndrome remains unclear. There is no known association with pituitary disease. To the best of our knowledge this is the first case of co-existing MRKH syndrome and pituitary adenoma reported from the ASEAN world.

PP-66

The Hiding Giant: A Case of an Incidental Functioning Metastatic Adrenal Carcinoma

https://doi.org/10.15605/jafes.034.S78

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INTRODUCTION

The majority of incidental adrenal tumours diagnosed by imaging are non-functioning and small in size. However, in this case, a follow through from a CT angiogram of lower limbs led to the findings of a giant functioning metastatic adrenal carcinoma.

CASE

A 59-year-old lady with hypertension and T2DM on insulin was admitted for seizure with hypoglycaemia and hypokalaemia secondary to poor oral intake due to Left Lower Limb Necrotising Fasciitis. A CT angiogram of the left lower limb found necrotic aortocaval lymph nodes. Upon follow up a month later, to rule out either TB or malignancy, a CT abdomen/pelvis was done and showed a huge heterogenous suprarenal mass (10 x 11.6 x 8.7 cm) with metastases to the lymph nodes and lungs. On examination, patient was cushingoid and generally weak. Hormonal screen suggests Cushing's syndrome and hyperandrogenism. A further CT adrenal protocol supports the diagnosis of adrenocortical carcinoma with referrals made for surgical intervention in Putrajaya Hospital but patient died of Severe Hospital Acquired Pneumonia with Upper GI Bleeding before surgical review.

CONCLUSION

Even though her admission was protracted there was no early identification of Cushing syndrome until CT abdomen/pelvis was done. Therefore, clinical suspicion of cortisol hypersecretion is crucial once there is hypertension with hypokalaemia. Hyperandrogenism, is extremely rare in adrenal carcinoma. However, this patient exhibited raised DHEAS levels combined with increased testosterone which support a diagnosis of a malignant adrenocortical tumour. This patient did not receive any treatment for her cancer. Should she have survived, surgical resection would be suggested despite lacking data for its benefit in metastatic disease. However, there is evidence that adrenalectomy coupled with chemotherapy may provide better survival.

PP-67

VIPoma: A Rare Cause of Chronic Diarrhoea with Hypokalemia, Metabolic Acidosis and Pancreatic Mass

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INTRODUCTION

Vasoactive intestinal peptide tumour or VIPoma is a rare pancreatic neuroendocrine tumour (PNET) with the incidence of 1 in 10 million population. The characteristic presentation of VIPomas are profuse diarrhoea with hypokalaemia and metabolic acidosis.

We report a case of VIPoma who presented to our centre and was thoroughly investigated for his chronic diarrhoea.

CASE

A 40-year-old gentleman had 7-months history of chronic watery diarrhoea and severe weight loss despite multiple courses of antibiotics. Clinically he was cachexic looking with no other abnormalities on examination. Upon presentation there was hypokalaemia, hypophosphataemia, metabolic acidosis and acute kidney injury. He was thoroughly investigated for infections which were negative, while his endoscopies showed only mild gastritis and colitis. Despite intensive fluid replacements, anti-emetics and anti-diarrhoeals his symptoms persisted. CT Abdomen revealed a large pancreatic tail mass with hypodense necrotic centre and calcification. Classical tumour markers for pancreatic adenocarcinoma (CA-19-9 and CEA) were negative. A diagnosis of VIPoma was made based of the clinical features but serum VIP levels were not sent due to patient's financial constraint. There was also a remarkable response to a trial of somatostatin analogue with symptoms resolving upon administration of octreotide, subcutaneously. Distal pancreatectomy and splenectomy were performed and patient's gastrointestinal symptoms resolved immediately. Histopathological examination (HPE) confirmed a grade 1 (pT3 N1 Mx) PNET but unfortunately immunohistochemical staining for VIP is not available in our centre. Post-operatively, patient is recovering well and is scheduled for a 68-Ga-DOTATATE PET/CT scan.

CONCLUSION

This case illustrated a patient diagnosed as VIPoma based on (i) characteristic diarrheagenic symptoms, (ii) typical biochemical features, (iii) radiological evidence of a distal pancreatic mass, (iv) positive response to somatostatin analogue and (v) HPE findings of a NET.

PP-68

A Case of Resistant Hypertension with Hypokalaemia due to Co-Secreting Cortisol and Aldosterone in a Patient with Bilateral Adrenal Adenomas

https://doi.org/10.15605/jafes.034.S80

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INTRODUCTION

Aldosterone and cortisol co-secreting adrenal tumours are rare. We report a case of subclinical Cushing's syndrome (CS) with co-secreting aldosterone in a patient with bilateral adrenal adenomas.

CASE

A 53-year-old Indonesian lady with hypertension and diabetes for 15 years, presented to our hospital with hypertensive urgency and symptomatic hypokalaemia. Clinically there were skin-tags and acanthosis nigricans but no pathognomonic features of CS. Fundoscopy showed narrowing of retinal arteries and silver wiring. Urine microscopy showed macroalbuminuria. Her ECG showed left ventricular hypertrophy which was confirmed on echocardiogram. She was discharged with metformin, a DPP4-inhibitor, four antihypertensives and potassium supplements of 7.2 g/day. During workup for hypertension and hypokalaemia, she demonstrated a positive screening test for primary aldosteronism during which her creatinine was 112 umol/L with eGFR of 57 mls/min/1.73 m^2. A 24-hour urinary cortisol was within normal. The patient underwent a 1-mg overnight dexamethasone suppression test during which her serum cortisol was elevated; 429 nmol/L. Subsequently, a low dose dexamethasone suppression test showed inability to decrease cortisol level below the cut off value to rule out CS; 290 nmol/L. Pheochromocytoma was excluded with normal 24-hour urinary catecholamine levels. A confirmation test for primary aldosteronism was not done in view of worsening renal function to stage-4 CKD. A CT scan of the adrenals revealed benign features of bilateral adrenal adenomas with rapid wash-out, measuring 2.6 cm and 1.5 cm by the largest diameter of the right and left adenomas respectively. The patient opted for conservative management. Her hypertension and hypokalaemia status improved while on spironolactone 75 mg BD. All potassium supplements were stopped and her BP was much easier controlled on three medications.

CONCLUSION

This interesting case illustrates that adrenal adenomas might be capable of secreting both aldosterone and cortisol without clinical features of CS.

PP-69

Osteonecrosis of Jaw in a Patient Transitioning from Bisphosphonates to Denosumab

https://doi.org/10.15605/jafes.034.S81

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INTRODUCTION

Osteonecrosis of the jaw (ONJ) is a rare but severe side effect of anti-resorptive therapy with bisphosphonates or RANK-ligand antibody denosumab in patients with osteoporosis. Most patients with ONJ have a history of prior dental or oral surgical manipulation in contrary to spontaneous ONJ. Median time to development of ONJ varies with the type of bisphosphonate used. ONJ could occur as early as 10 months with intravenous bisphosphonates whereas about 4.6 years with oral bisphosphonates. In Denosumab treated patients the risk of ONJ seemed to plateau between year 2-3 whereas the risk of ONJ increased with duration of use of bisphosphonates.

CASE

A 66-year-old retired lady nurse with history of premature ovarian insufficiency at the age of 40 years old was noted to be osteoporotic at the age of 48 when she presented with a clavicle fracture. She was initially treated with hormone replacement therapy, raloxifene and subsequently put on alendronate for 9 years duration. She developed fracture of right metatarsal while on alendronate. Thereafter, she was switched to Denosumab for 3 years. She presented with painful swelling over right cheek and jaw for 3 weeks duration. She was confirmed to have ONJ Stage 3 and underwent debridement of necrotic bone of right maxilla. There was also fistula to the right maxillary sinus for which she required recurrent debridement and perioperative antibiotics before complete healing.

CONCLUSION

Transitioning antiresorptive therapy from bisphosphonate to denosumab may be an additional risk factor for developing ONJ. A study by Voss PJ et all showed those transitioning from bisphosphonate to denosumab had 3 times more relapses of ONJ compared to those on bisphosphonate monotherapy. In these patients, treatment was also associated with complications such as fistula. Continuous surveillance of risk factors and additional dental screening before transitioning should be initiated to prevent ONJ.

PP-70

A Rare Encounter of Suprasellar Abscess in a Young Woman: A Case Report

https://doi.org/10.15605/jafes.034.S82

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INTRODUCTION

Sellar/suprasellar abscess is a rare entity. We report a case of an immunocompetent young woman with a suprasellar abscess.

CASE

A 29-year-old female with no known medical illness first presented with worsening headache for 1 year and amenorrhoea since her last childbirth. Her last childbirth was uneventful, which was 4 years prior to that. She breastfed for 3 years but remained amenorrhoeic subsequently. She developed episodes of headache since approximately 2 years postpartum. CT Brain reported a pituitary adenoma, size 1.7x1.7x2.2cm. MRI Brain reported a well-defined suprasellar lesion measuring 2.3x1.8x2.0cm, with homogenous enhancement on post contrast study. MRI conclusion was a pituitary macroadenoma. Her last preoperative hormonal workup was normal except for hypogonadotrophic hypogonadism. As she experienced persistent headache despite no other compressive symptoms i.e. no visual field abnormality, she underwent endoscopic transsphenoidal surgery. Operative finding was of thick pus seen after dura exposed. Post-operative diagnosis was pituitary abscess. There were no symptoms and signs of infection prior to or after surgery. She was treated with 1 week of intravenous antibiotics; cultures were negative. Postoperatively her headache resolved. Tissue histopathological examination revealed mucosal tissue. The initial MRI was then reassessed. An extra pituitary lesion was described, which compresses the pituitary gland inferiorly, with rim enhancement post-contrast. Noted another small lobulated lesion in the right sphenoid sinus with suspicious communication with the extra pituitary lesion. The neuroradiologist's impression was a suprasellar abscess, possibly ascending infection from sphenoid sinus or an infected hypothalamus/arachnoid cyst/stalk lesion.

CONCLUSION

Suprasellar abscesses are even more rarely described compared to sellar abscesses. Intraoperative findings require imaging correlation to confirm the diagnosis, as in this case.

PP-71

Intractable Hypoglycaemia with Hyperlactatemia in a Newly Diagnosed Patient with Diffuse Large B-Cell Lymphoma Requiring Mega Dose Glucose Infusion

https://doi.org/10.15605/jafes.034.S83

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INTRODUCTION
Hypoglycaemia is an extremely rare complications in lymphoma. We report a case of intractable hypoglycaemia with hyperlactatemia in a non-diabetic retroviral disease patient with newly diagnosed Diffuse Large B-Cell Lymphoma (DLBCL) requiring extremely high glucose infusion to maintain euglycaemia.

CASE
A 27-year-old man with underlying retroviral disease presented with fever and constitutional symptoms associated with left axillary lymphadenopathy for 2 months. Excisional biopsy of the left axillary lymph node confirmed DLBCL. CT staging of the thorax, abdomen and pelvis showed enlarged nodal groups on both sides of the diaphragm. There were no lesions involving both adrenal glands, the liver, and the pancreas on the CT scan. During hospitalisation, he developed persistent hypoglycemia with capillary blood glucose of 2.7-3.9 mmol/l. His renal and liver functions were normal. Serum insulin, c-peptide levels sent during severe hypoglycaemia were normal. Serum cortisol and thyroid studies were normal with low IGF-I. Despite maintenance with dextrose 10% and 20% infusion, the hypoglycaemia persisted necessitating frequent boluses of dextrose 50% (D50%) that was successively converted to a continuous infusion via central venous access. Ensuring that central venous catheter was functioning at all times, the D50% infusion rate was up-titrated to a maximum steady rate of 210 mls/hr using pure D50%; equivalent to glucose 105 g/hr to maintain capillary blood glucose above 4.0 mmol/L. We noticed the patient's serum lactate level persistently elevated despite no evidence of tissue hypoperfusion and hypoxia. Concomitant oral glucocorticoids were introduced whilst on D50% infusion with subsequent reduction of D50% requirement. The patient remained in euglycaemia state while on glucocorticoid after successful tapering off of D50% and initiation of chemotherapy.

CONCLUSION
This rare case of intractable hypoglycaemia illustrate the need to treat hypoglycaemia aggressively. Glucocorticoids and chemotherapy had maintained euglycaemia in this patient.

PP-72

Autoimmune Polyglandular Syndrome Type II in a Patient presenting with Gynaecological Symptom: A Case Report

https://doi.org/10.15605/jafes.034.S84

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INTRODUCTION
Autoimmune polyglandular syndromes (APS) are rare endocrinopathies characterized by the coexistence of at least two endocrine gland insufficiencies that are based on autoimmune mechanisms.

We report a 45-year-old lady who was diagnosed as APS-2 following a presentation of menorrhagia.

CASE
A 45-year-old lady with underlying primary hypothyroidism on thyroxine replacement, presented with menorrhagia. Further history revealed significant weight loss, lethargy, loss of appetite, alopecia and skin darkening over the ears. On examination, blood pressure was 110/59 mmHg, hyperpigmentation was found at buccal mucosa, palmar creases, trunks and extremities. Gynaecological assessment revealed no abnormalities. Initial blood investigations showed pancytopenia, normal electrolytes and normal thyroid function test. She was treated as symptomatic anaemia secondary to abnormal uterine bleeding and received blood transfusion. Subsequently, she became confused, disoriented and had pre-syncopal attack. The clinical suspicion of Addison's disease was raised after review of her clinical profile. The raised ACTH (260.0 pmol/L) and short synacthen test (0 min cortisol 69.4 nmol/L, 30 minutes 78.2 nmol/L, 60 minutes 69.8 nmol/L) confirmed the suspicion of primary adrenal insufficiency. Serum Dehydroepiandrosterone sulphate was <0.14 umol/L. Plasma aldosterone and renin was sent concurrently. Patient had mixed iron and vitamin B12 deficiency and was treated accordingly. The aetiology of the primary adrenal insufficiency was postulated to be autoimmune origin. Further evaluation including Computer tomography of the adrenal glands; anti-parietal cell antibodies and anti- 21-OH antibodies were planned. Patient showed marked improvement in symptoms after initiation of hydrocortisone replacement and discharged in stable condition.

CONCLUSION
This case highlights the significance of a timely diagnosis and appropriate treatment of APS-2. Physicians need to sharpen their awareness of the potentially serious and life-threatening consequences.

PP-73

A Case of Refractory Bradycardia Secondary to Baroreflex Failure in a Patient with Suprasellar Germinoma

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INTRODUCTION

Germinoma in the fourth ventricle is an extremely rare occurrence and it has not been reported in association with baroreflex failure.

CASE

We report a 21-year-old man who presented with polyuria and polydipsia associated with gradual weight loss, headache and postural giddiness for 8 months. Physical examination revealed a blood pressure of 72/42 mmHg and a pulse rate of 42 beats per minute. Neurological examination revealed cranial nerves VI, IX and X palsies. His sodium was 150 mmol/L, serum osmolarity 333mosm/kg and urine osmolarity 217 mosm/kg. MRI brain revealed a large suprasellar mass measuring 5.6 x5.6 x 5.0 cm extending into the sellar with enhanced lesions at the ependymal lining of the fourth ventricle. The diagnosis of panhypopituitarism with cranial diabetes insipidus was made. Intravenous hydrocortisone, oral desmopressin and levothyroxine were administered and a biopsy confirmed the suspicion of germinoma. Despite inotropic support, he remained bradycardic. Attempts to increase his heart rate and normalise his blood pressure with fludrocortisone, oral salt, temporary pacemaker and octreotide were futile. The inotropic support was finally withdrawn with the introduction of oral methylphenidate which is a central nervous system stimulant and peripheral vasoconstrictor. The patient subsequently underwent adjuvant chemotherapy and radiotherapy.

Intact baroreflex function is required for appropriate cholinergic and adrenergic influence on heart rate and blood pressure. Input from the carotid sinus is delivered to the nucleus tractus solitarii located near the fourth ventricle via the glossopharyngeal nerve which then sends signals to the heart and blood vessels via sympathetic and parasympathetic nerve fibres.

CONCLUSION

Baroreflex failure should be suspected in patients with suprasellar or sellar tumours with fourth ventricle involvement who present with severe bradycardia and hypotension despite being adequately replaced with hydrocortisone and thyroxine. The use of methylphenidate should be considered when there's failure of other treatment options.

PP-74

A Rare Case of Contralateral Recurrence of an Aldosterone-producing Adenoma

https://doi.org/10.15605/jafes.034.S86

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INTRODUCTION

Primary aldosteronism is commonly caused by unilateral aldosterone producing adenoma (APA) or bilateral idiopathic hyperaldosteronism. Laparoscopic adrenalectomy for unilateral disease is usually curable and is the treatment of choice. Recurrent APA after an adrenalectomy on the same side is extremely rare. Contralateral recurrence of an aldosterone-producing adenoma (APA) in a previously normal adrenal gland after the initial adrenalectomy is also exceedingly rare.

CASE

We report a 31-year-old Malay male who first presented in 2009 with hypertension, hypokalemia and metabolic alkalosis. Investigation for hypertension in the young revealed primary aldosteronism (elevated aldosterone renin ratio, ARR and a nonsuppressible aldosterone on confirmatory testing). CT scan of the adrenal glands revealed a right adrenal adenoma measuring 1.9 cm x 0.9 cm with a normal left adrenal. He was diagnosed with Conn's syndrome and underwent laparoscopic right adrenalectomy. HPE of the right adrenal was consistent with adrenocortical adenoma. Post operatively, hypokalemia resolved and he was discharged with only a single antihypertensive agent. He subsequently defaulted his medication and was lost to follow up. He presented 8 years later in 2017 with hypertensive intracranial bleed.

He was again found to have hypokalemia with metabolic alkalosis and investigations revealed recurrent primary aldosteronism. CT adrenals showed left adrenal adenoma measuring 1.3 cm x 1.2 cm. A lesion was also seen at the previous right adrenalectomy site adjacent to the surgical clips. Possibility of recurrent disease on the right side or contralateral left APA was entertained. We proceeded with adrenal vein sampling (AVS) which confirmed a left APA.

CONCLUSION

He was started on spironolactone and his BP is currently well controlled with normal potassium levels.

PP-75

Delayed Diagnosis of Severe Osteomalacia in a Patient with RTA

https://doi.org/10.15605/jafes.034.S87

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INTRODUCTION

A 37-year-old lady was admitted to the medical ward for complaints of worsening body and muscle weakness and generalized bony pain for the past 4 years following a minor motor vehicle accident causing significant debility and disability. She was diagnosed with RTA in 1999 complicated by nephrocalcinosis however had defaulted follow up and medications. Her sister was also diagnosed with RTA albeit with milder symptoms.

CASE

Clinical examination revealed generalized proximal muscle weakness with no focal neurological signs or cranial nerve deficits. Biochemical investigations revealed normal anion metabolic acidosis, hypokalemia (K 2.5 mmol/l), hypophosphatemia (PO4 0.49 mmol/L), normal corrected calcium of 2.20 mmol/L, a high ALP level of 549 IU/L and a normal PTH level of 19.6 pg/ml. The Fractional excretion of phosphate was elevated at 21.09% suggestive of urinary phosphate wasting with no hypercalciuria. Vitamin D level (25 OH Vitamin D) was low at 10 nmol/L. Radiographs of the extremities and pelvis done showed multiple looser zones at the right scapula, pelvic rami and right neck of femur. A BMD scan revealed a Total T score of -4.0 and -3.5 at the hip and spine respectively. Nerve conduction study done during the admission was suggestive of chronic myopathy of systemic disease.

A diagnosis of severe osteomalacia secondary to RTA with coexistent Vitamin D deficiency was made. The patient was started on high dose Vitamin D, Shohl's solution with potassium supplementation and was referred for rehabilitation and physiotherapy.

CONCLUSION

Phosphate levels normalized and repeated Vitamin D level improved to 29 nmol/L and the patients pain and muscle power has significantly improved since then. A BMD scan is planned in a year to reassess response to therapy.

PP-76

Triple Synchronous Tumors presenting as Right Nasolabial Basal Cell Carcinoma, Papillary Thyroid Carcinoma and Prolactinoma: A Rare Case Report

https://doi.org/10.15605/jafes.034.S88

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INTRODUCTION

A 57-year-old female presented with triple synchronous tumors with a rare combination of basal cell carcinoma (BCC) of the right nasolabial area, papillary thyroid carcinoma (PTC) and prolactinoma. The case initially presented a diagnostic dilemma in approaching multiple tumors from different endocrine organs. On work up, serum prolactin was elevated and an enhancing thyroid mass on neck CT scan and a pituitary mass on cranial MRI were noted. Bromocriptine was given and she underwent total thyroidectomy and wide excision of the right nasolabial BCC. On follow up, repeat serum prolactin decreased back to normal from baseline. This case report aims to provide an organized approach to multiple tumors involving endocrine organs and to reconcile the challenge in ruling out metastasis and syndromic disorders such as Multiple Endocrine Neoplasia. This paper also aims to highlight the need for a multidisciplinary team in the management of multiple tumors.

CASE

After extensive literature review, this is the first documented case of triple synchronous tumors with a combination of BCC of the right nasolabial area, PTC and prolactinoma in local, national and international studies. Double primary tumors are rare with a prevalence rate of 3-5%. Triple primary tumors are even rarer having an occurrence of 0.5%.

CONCLUSION

Accurate knowledge on disease prevalence, pathophysiology and symptomatology correlated with guided history taking and astute physical examination is very important in rare medical conditions and complicated cases. Extensive work up based on sound clinical knowledge and judgement aids also in answering clinical questions encountered in a diagnostic dilemma.

PP-77

Doege-Potter Syndrome: A Rare Case of Metastatic Hemangiopericytoma with Persistent Hypoglycemia in a 27-year-old Male

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INTRODUCTION

Doege-Potter syndrome (DPS) is a rare paraneoplastic condition characterized by hypo insulinemic hypoglycemia secondary to a solitary fibrous tumor. The underlying mechanism is secretion of pro-insulin-like growth factor (IGF) II by the tumor which causes decreased release of glucose into the circulation resulting to hypoglycemia. Only forty-five (45) cases of DPS have been reported since 1979 worldwide.

CASE

This is a case of a 27-year-old Filipino male who had multiple admissions due to the recurrence of a right temporo-zygomatic mass. He underwent excision five times and eventually was subjected to radiotherapy. The patient was asymptomatic with no evidence of disease for two years until a recent consultation was sought due to hypoglycemia presenting as seizure and decrease in sensorium. Metastatic work-up revealed multiple metastases in the liver, the lungs and the right adrenal gland; hence, a suspicion of hypoglycemia as a paraneoplastic event was entertained. This was confirmed by a 72-hour fast protocol which ruled out Insulinoma and pointed towards a non-islet cell tumor as the culprit of hypoglycemia.

The patient was initially managed with continuous dextrose infusion, increase in caloric intake and steroids which ameliorated hypoglycemic episodes. He was eventually started on a weekly doxorubicin as a palliative treatment with an intent of lessening the tumor burden.

CONCLUSION

Due to its complexity, the management of DPS from a metastatic hemangiopericytoma was challenging and required a multidisciplinary approach; hence, an early screening for metastases was emphasized to prevent the undesirable sequelae of this disease process.

PP-78

Ectopic Parathyroid Adenoma, a Diagnostic Challenge

https://doi.org/10.15605/jafes.034.S90

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INTRODUCTION

Primary hyperparathyroidism is the most common cause of hypercalcemia. Approximately 85% of primary hyperparathyroidism is caused by solitary parathyroid adenomas and 5-10% of cases derived from ectopic adenomas. Ectopic parathyroid glands remain a diagnostic and operative challenge in terms of localizing the culprit gland.

CASE

We reported a case of primary hyperparathyroidism due to ectopic parathyroid adenoma in the thymus. This 31-year-old gentleman presented with renal calculi, confirmed primary hyperparathyroidism with hypercalcemia.

However initial ultrasound and CT neck were unable to localize the parathyroid adenoma. Technetium – 99 (Tc-99m) sestamibi scan repetitively showed focus in the anterior mediastinum. CT Thorax showed a nodule in the mediastinum, which coincides with the focus of increased uptake in the sestamibi scan. He subsequently underwent median sternotomy and thymectomy. Intra-operatively found left thymus with a nodule size less than 1 cm within. Histopathology confirmed an ectopic parathyroid adenoma within the left thymus. Post operatively his calcium level remains stable with minimal calcium supplement.

CONCLUSION

This case illustrates the challenges in localizing ectopic parathyroid adenoma, which lead to delay in the surgery.

PP-79

Androgen and Cortisol Secreting Adrenocortical Oncocytoma with Uncertain Malignant Potential

https://doi.org/10.15605/jafes.034.S91

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INTRODUCTION

Adrenal oncocytic tumours are a rare variant of adrenocortical tumours and consist of oncocytic cells which are abundant in granular eosinophilic cytoplasm. It is usually found incidentally as most are benign and nonfunctional.

We report a case of androgen and cortisol secreting adrenal oncocytic tumour of uncertain malignant potential in a young lady.

CASE

An 18-year-old lady with prior history of bronchial asthma presented with 4 months history of irregular menstruation and was subsequently amenorrhoeic for a year. She had increased facial hair as well as hair growth over her lower limbs during that period. In addition, she also noticed she had deepening of her voice. On examination she had moonlike facies with acne. There was no abdominal striae and genital examination revealed clitoromegaly. Her laboratory examination showed features consistent with hyperandrogenism with raised testosterone 13.7 nmol/L (0.42-7), dehydroepiandrosterone sulfate 65.7 umol/L (4.7-6.7) and she had non-suppressed serum cortisol level with an overnight dexamethasone suppression test of 204 nmol/L. CT abdomen showed a large left heterogenous isodense adrenal tumour with scattered areas of fluid attenuation measuring 10 x 10 x 8.3cm with smooth margins and no calcification. She underwent an uneventful open left adrenalectomy and biopsy results reported an oncocytic adrenal cortical neoplasm with uncertain malignant potential with low mitotic activity and Ki67 proliferative index of less than 5%. Post-surgery she was started on hydrocortisone replacement which was gradually tapered off and follow-up FDG-PET scan was unremarkable.

CONCLUSION

Adrenal oncocytic tumours with uncertain malignant potential are a rare entity and its long term behaviour is unknown. Due to its malignant potential, close patient surveillance is required in order to detect recurrence.

PP-80

A Rare Case of Multiple Endocrine Neoplasia 1

https://doi.org/10.15605/jafes.034.S92

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INTRODUCTION

Multiple endocrine neoplasia type 1 (MEN-1) is a rare condition with an incidence of 1 in 30,000. It is commonly familial but sporadic forms may occur rarely. The syndrome is diagnosed by the presence of overproduction of hormones that involve either the parathyroid, pituitary and gastroenteropancreatic (GEP) tract. The parathyroid gland is the main endocrine organ that is involved in approximately 90% of patients with insulinoma accounting for only 10%.

CASE

We report a case of a 59-year-old male who presented with a five-month history of recurrent hypoglycemia and weight gain. The patient presented with Whipple's triad and underwent a 72-hour fasting protocol which revealed high insulin and C-peptide levels. Computed tomography (CT) scan of the abdomen revealed a mass in the tail of the pancreas. Further work-up revealed increased intact parathyroid hormone with normal calcium level and normal pituitary gland.

Patient underwent distal pancreatectomy and histopathology confirmed insulinoma. Postoperatively, there was resolution of hypoglycemia. As for the asymptomatic hyperparathyroidism, the patient will undergo yearly screening for signs of hypercalcemia.

CONCLUSION

Hypoglycemia which is commonly encountered in the daily practice of physicians may be easily managed but beyond its simplicity it could reveal a rare syndrome commonly missed. It is important that when we are presented with a single endocrine problem, we should work up for a larger entity as missed diagnosis can have serious clinical implications.

PP-81

Profound Endocrinopathies in a Delayed Presentation of Transfusion-dependent Thalassaemia Intermedia

https://doi.org/10.15605/jafes.034.S93

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INTRODUCTION

Two-thirds of Malaysian children with transfusion-dependent thalassaemia experiences at least one endocrine dysfunction. Endocrine and metabolic complications in these individuals are partly attributed to chronic iron overload and high cellular turnover for erythropoiesis. This is a case report of endocrinopathies in a delayed presentation of transfusion-dependent thalassaemia intermedia.

CASE

A 17-year-old-lady with no known comorbid presented with bilateral lower limb swelling, orthopnoea and reduced effort tolerance. She has short stature with primary amenorrhoea. One of her siblings has transfusion-dependent thalassaemia. On examination, her height was 124 cm (<5th centile), weight 24.9 kg (<5th centile) BMI 16.1 with absent secondary sexual characteristics (Tanner Stage I). Midparental height was 159.5 cm. She was jaundiced, pale with frontal bossing, maxillary expansion, saddle nose, depressed cranial vault suggestive of extramedullary haematopoesis, exhibited genu valgum and hepatosplenomegaly.

Investigations showed microcytic hypochromic anaemia with Hb of 1.7 g/dL (12.0-15.0), MCV 72.1fL (83.0-110.0), MCH 18.6 pg (27.0-32.0), iron 42.5 umol/L (5-31), ferritin 204 ug/L (10-291). Hb analysis confirmed beta thalassemia intermedia. Endocrine investigations revealed FBS 5.3 mmol/L, TSH 2.78 mIU/L(0.48-4.17), FT4 12.36 pmol/L (10.70-18.40), serum cortisol 457 nmol/L, IGF1 122 ug/L(246-533), prolactin 169.2 mU/L (89.9-489.7) corrected Ca 2.2 mmol/L (2.16-2.60) iPTH 6.4 pmol/L(1.95-8.49), FSH 0.5IU/L (2.2-10.1), LH <0.1IU/L (1.0-52.2), oestradiol 66.7 pmol/L, 25-hydroxyvitamin D 34.0 nmol/L(60-160.0). MRI pituitary was normal. Glucagon stimulation test and insulin tolerance test demonstrated inadequate growth hormone response with good cortisol peak. Radiographs showed ricket-like porous lesion with delayed bone age of 7 years old and platyspondyly of the vertebra. Bone mineral densitometry awaiting. She was initiated on regular blood hyper transfusion every 3 weeks, cholecalciferol 1000 iu/day, calcium carbonate 500 mg BD, folic acid 5 mg OD, growth hormone therapy with a view to inducing puberty subsequently.

CONCLUSION

Optimal quality care for these patients is the basic prerequisite to achieve good quality of life. Early intervention, screening and regular monitoring are imperative towards prevention of significant morbidities. Coordinated multidisciplinary approach is paramount to achieve this aim.

PAEDIATRIC

PP-82

Transient Congenital Hypothyroidism: Cut off Value for Diagnosis and Time to Normalization of Thyroid Function

https://doi.org/10.15605/jafes.034.S94

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INTRODUCTION
Congenital hypothyroidism is one of the most commonly known cause of preventable mental retardation but detection at birth is difficult. As a continuum of this, screening programme was developed worldwide, which identified not only permanent hypothyroidism, but also group of disorders which was unidentified before due to unapparent clinical course namely transient congenital hypothyroidism (elevated thyroid stimulating hormone (TSH), decreased free thyroxine (FT4)) and transient congenital hyperthyrotropinaemia (elevated TSH, normal FT4). This study intended to look into cut off value for earlier discrimination between transient and permanent hypothyroidism, to determine median time for thyroid function to normalize upon cessation of treatment in transient group and its affecting factors.

METHODOLOGY
55 cases of congenital hypothyroidism were identified from retrospective record reviews. 37 cases were with permanent hypothyroidism and 18 cases were with transient hypothyroidism. The optimal cut off value of initial TSH and FT4 level were analyzed using receiver operating characteristics (ROC) curve analysis for both groups. Kaplan-Meier survival analysis was conducted to estimate median time for thyroid function to normalize within the transient hypothyroidism group. Both Simple and Multiple Cox Regression analysis were used to determine factors affecting the median time.

RESULTS
The cut off value for initial free T4 was 13.45 pmol/L with area under ROC curve of 70.5% (sensitivity 72.2%, specificity 64.7%). The median time obtained was 12 weeks and both the initial TSH and initial free T4 (p value <0.05) were the significant affecting factors identified.

CONCLUSION
The initial free T4 has a predictive value to differentiate between transient and permanent hypothyroid. It takes 12 weeks for thyroid function to normalize once treatment ceased and both initial TSH and initial free T4 affects the median time.

PP-83

Dyslipidaemia in Children with Type 1 Diabetes Mellitus (T1DM)

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INTRODUCTION
Children with T1DM are at risk of early microvascular and macrovascular complications. Poor glycaemic control and insulin resistance status in adolescents are known risk factors. This audit studies the prevalence of dyslipidemia in children with T1DM seen in UMMC.

METHODOLOGY
This is a retrospective data collection involving all children with T1DM under UMMC follow-up between 2016-2018. Children between 11-18 years old were included. Demographics on onset of diabetes, diabetes control and lipid profiles were analysed. Optimal HbA1c is <7.5% and dyslipidemia are defined if total cholesterol (TC)>5.2 mmol/L, triglycerides (TG)>1.7 mmol/L and high LDL level is >2.6 mmol/L which requires interventions on metabolic control and lifestyle. Statin should be commenced in children aged≥11 years if LDL is >3.4 mmol/L [ISPAD].

RESULTS
65 (33%male) children were eligible for the audit. Only 56 (86%) children had dyslipidemia screening. There were 28% Malay, 17% Chinese and 17% Indian children. The current mean age was 14.3±1.9 years old. 7.7% were underweight and 26.1% were overweight/obese. Mean age at diagnosis was 8.7±3.0 years old. Mean diabetes duration was 5.7±3.2 years. Mean HbA1c was 9.9±2.4% with 89% of them having sub-optimal control. Thirty-eight (68%) had dyslipidemia; 38% had abnormal TC levels, 23% had abnormal TG levels and 57% had abnormal LDL levels. 39% of children had LDL between 2.6-3.4 mmol/L and 18% had LDL>3.4 mmol/L. Only 2 were treated with statins. The odds of having dyslipidemia is highest in most poorly controlled T1DM (OR8.6 in HbA1c>11.1%, OR3.7 in 9-11%, OR1.5 if HbA1c 7.5-9%) and 2.31 in those who are overweight/obese. However, despite having good control (HbA1c<7.5%), 5.5% of T1DM children have dyslipidemia.

CONCLUSION

Children with T1DM are at risk of early onset dyslipidemia. Poor diabetes control and obesity are contributing factors. Current practice is to optimise diabetic control instead of using statins as initial treatment. Long term outcome on early statin use may influence the current practice.

PP-84

Eating Disorder in Adolescents with T1DM: A Concern on the Rise

https://doi.org/10.15605/jafes.034.S96

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INTRODUCTION

Type 1 Diabetes (T1DM) is a chronic illness which affects the young. Managing diabetes is all about balancing the need for insulin with food. Adolescents with T1DM are at risk of having more eating disorder as compared to general population. This study aims to learn about the nutritional status and risk of eating disorder in adolescent with T1DM.

METHODOLOGY

Adolescents with T1DM were invited to participate in the study. The study was done over eight weeks, during diabetes clinic visits at University Malaya Medical Centre. Nutritional status will be determined by anthropometric measurements which includes body mass index and body fat percentage (PBF). BMI<-2SDS is considered underweight and>85Th centile for age is overweight. Eating disorder was identified using Diabetes Eating Problem Survey-Revised (DEPS-R) questionnaire. Data on diabetes control (HBA1c) and other histories were obtained from medical records.

RESULTS

There were 43 respondents, 61% were boys. Eighteen percent were Malays, 16% Indians and 9% Chinese. There were 13 adolescents between 10-12 years-old, 19 (12-15 years-old) and 11 (16-18 years old). Mean duration of having T1DM were 4.9±3.5 years and their mean HbA1c at study period were 10.3±2.7%. A total of 16% were found to be underweight and 14% were overweight and obese. There were more cases of underweight (27%) in adolescents between 16-18 years old. Boys were found to have higher PBF than girls. There were 35% adolescents who are at risk of eating disorder. Between BMI and Hba1c, BMI was found to have higher correlation to have eating disorder p=0.07 rs=0.3.

CONCLUSION

Adolescents with T1DM were found to have a high risk of having eating disorder. Screening should start early and formal assessment would assist with early diagnosis. Early referral to child psychologist may be necessary.

PP-85

Diabetes Nephropathy among Adolescents with Type I Diabetes Mellitus

https://doi.org/10.15605/jafes.034.S97

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INTRODUCTION

Diabetic nephropathy (DN) is a common cause of mortality and morbidity of young T1DM adult patients. This study is to assess the prevalence of DN in T1DM among adolescents, and its association with duration of diabetes and control.

METHODOLOGY

This is a multicenter retrospective study in paediatric department University Malaya Medical Centre (UMMC) and paediatric department University Teknologi MARA (UiTM), involving children between 10 to 20 years old. Data collection on patient background, control and treatment were obtained. Patients are considered to have DN if the urine albumin/creatinine ratio is >3.5 mg/mmol (girls) >2.5 mg/mmol (boys) in 2 out of 3 samples within 6 months.

RESULTS

109 patients (40% boys) were eligible in the study. Mean age is 15.1±2.7 years old (10.6-20.3). The mean age of diagnosis is 8.8±3.5 years old. The prevalence of DN is 10.1%. Amongst patients with DN, the mean duration of diabetes is 5.9±2.5 years, and the mean HbA1C at year of DN diagnosis was 11.3±2.3%. Only one patient was diagnosed with DN <11 years old. This is due to initial poorly controlled DM. One patient had hypertension at the point of DN diagnosis. The odds of having DN is higher with poorly controlled T1DM (OR 6.9 if HbA1c>9% vs OR 0.76 if HbA1c 7.5-8.9%).

CONCLUSION
This study has shown children with T1DM may exhibit earlier changes of DN. Poor control is a known contributing factor. Consistent screening and early treatment should be routinely done.

PP-86

Hyperthyroidism in Children – A Malaysian Tertiary Centre Experience

https://doi.org/10.15605/jafes.034.S98

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INTRODUCTION
Graves' Disease (GD) and Hashimoto thyroiditis (HT) are the most common cause of acquired hyperthyroidism in children. Use of Anti-thyroid drugs (ATD's) should be monitored and should aim for disease remission within 2 years. Radioactive iodine therapy or thyroidectomy is considered if remission is not achieved. We aim to study progress with ATD, thyrotoxicosis control and remission rate.

METHODOLOGY
This retrospective study is conducted in paediatric endocrine clinic, involving children who are diagnosed with acquired hyperthyroidism from 2006-2019. Subclinical hypothyroidism is considered if TSH is elevated with normal T4 levels. Complete remission is achieved when both clinical and biochemical parameters are euthyroid for 6 months after cessation of ATD.

RESULTS
Total of 20 patients (75% girls) were studied. Average age at diagnosis was 9.75±4.30 years old. All had carbimazole as ATD. Mean dose at diagnosis was 0.50±0.35 mg/kg/day, and propranolol 0.21±0.30 mg/kg/day. It took 2.68±2.29 months for the initial thyrotoxicosis symptoms to resolve. Mean duration on ATD was 34.40±20.96 months. Throughout treatment, 45% (n=9) had subclinical hypothyroidism (11 events), 35% (n=7) biochemical hypothyroidism (9 events) and 10% (n=2) clinical hypothyroidism (2 events). None had complete remission on ATD. One (5%) developed agranulocytosis which resolves with cessation of therapy. No hepatotoxicity reported. On average, every patient would have 1.4 episodes of relapse clinical thyrotoxicosis throughout duration of ATD. There is no significant difference between age of diagnosis and frequency of relapses (p=0.394). Two (10%) patients had thyroidectomy after an average of 41.5 months on ATD.

CONCLUSION
Whilst clinical thyrotoxicosis state can be managed with adequate dosing of carbimazole, we should consider proposing and executing definitive treatment earlier as per latest guidelines to minimise long term complications associated with hyperthyroidism.

PP-87

Lipid Profiles in Children and Adolescents with Type 2 Diabetes Mellitus

https://doi.org/10.15605/jafes.034.S99

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INTRODUCTION
The incidence of Type 2 Diabetes Mellitus (T2DM) in children has increased significantly over the last two decades. T2DM is associated with high morbidity and mortality secondary to cardiovascular disease. This association has significant pathologic implications in paediatrics where earlier onset and accelerated progression of atherosclerosis has a profound impact on mortality and quality of life.

METHODOLOGY
The objective of this study was to evaluate dyslipidaemia in a paediatric population with T2DM. The electronic medical records (EMR) of patients under the age of 18 years (n=34) with T2DM and who were under the follow-up of the Paediatric Endocrine Unit, Hospital Putrajaya were reviewed.

RESULTS
The mean age of the population was 14.5 (2.5) years with median duration of diabetes 3[1.4–4.35] years. Mean age of onset of diabetes was 11 (1.8) years with the youngest age of onset at 8 years old. The patients were 61.8% female and 38.2% male. Mean BMI z-score was 2.1±0.05 and mean HBA1c was 9.6 (2.7). On complication screening 14.7% had hypertension, 26.5% had microalbuminuria, 55.8% of patients had an elevated LDL level and 35.3% had an elevated triglyceride level. BMI z scores were positively associated with elevated LDL and triglyceride level. Patients with a HbA1c >8% had a significantly higher total cholesterol, LDL and triglyceride level ($p<0.05$).

CONCLUSION
Increased HbA1C and BMI were associated with adverse lipid profiles in children and adolescents with T2DM. Therefore, poor glycaemic control and obesity represent two major modifiable factors to reduce cardiovascular risk in children with T2DM.

PP-88

SDHB Mutation in a Child with Paraganglioma: A Case Report

https://doi.org/10.15605/jafes.034.S100

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INTRODUCTION

Paediatric paraganglioma (PGL), a rare endocrine tumor, originating from neural crest along sympathetic or parasympathetic chain, is highly associated with the syndromic presentation of MEN, NF1 or von Hippel-Lindau, and the germline mutations that affect succinate dehydrogenase gene (SDH).

RESULTS

We described a 12-year-old girl who had insidious onset of heat intolerance, diaphoresis and palpitation for 1 year. Her symptoms were initially transient but became intense and associated with episodic attacks of abdominal pain and vomiting. She was hyperglycemic during admission with weight loss of 3 kg, polyuria and polydipsia for 2 months. Clinical examination revealed hypertension and a vague mass palpable over right lumbar region. CT abdomen showed a right retroperitoneal enhancing mass with vascular displacement and compression. Urine catecholamine revealed raised norepinephrine 1658.0 ug/day (15-80). She was commenced on oral phenoxybenzamine with addition of oral metoprolol during the 2nd week. Her blood sugar was controlled with SC insulin. She had liberal intake of oral fluid and oral NaCl supplement up to 4.5 gram/day. PET scan (DOTANOC) showed somatostatin receptor avid primary disease with no distant metastasis. Laparotomy was performed and a well-circumscribed mass measuring 6 cm x 4 cm, which was not adherent to the kidney vessels, was resected successfully. Transient hypertensive crisis occurred during surgical resection and responded to bolus intravenous sodium nitroprusside. Postoperatively, she did not require SC insulin and antihypertensive medications. Histopathological findings are consistent with paraganglioma. Her genetic results showed heterozygous mutation in SDHB gene for a variant designated c136C>T.

CONCLUSION

All paediatric paraganglioma should ideally have mutation analysis. Higher risk of metastatic disease and tumor recurrence are associated with SDHB mutation. Regular follow-up and monitoring of plasma metanephrine and normetanephrine or 24 hour urinary fractionated metanephrines are warranted.

PP-89

Hypertriglyceridemia Thalassemia Syndrome in an Infant Presented with Anemia: A Case Report

https://doi.org/10.15605/jafes.034.S101

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INTRODUCTION

Hypertriglyceridemia Thalassemia Syndrome is a rare condition with few reported cases. In here, we reported an interesting case of Hypertriglyceridemia Thalassaemia Syndrome in a young infant presented to our centre.

CASE

A 1-year-old Malay girl presented with poor growth, progressive pallor and lethargy for the past six months. She had no significant family history of blood or lipid disorder. On examination, she is small for her age, pale and icteric. Liver and spleen were palpable 4cm below costal margin respectively. She has no lymphadenopathy or xanthomas. Laboratory investigations showed low haemoglobin level (Hb 7.2 g/dL) but normal platelet count (375 x 10^9/L), and white cell count (10 x 10^9/L). She had raised reticulocytes count (11%) and lactate dehydrogenase (LDH 532U/L). Direct coombs test was negative. Peripheral blood smear revealed hypochromic microcytic red blood cells with polychromasia and severe anis poikilocytosis. Her serum was grossly lipidemic after centrifugation. Lipid profile showed raised triglyceride level (TG 9.05 mmol/L) but other lipid parameters are in normal range (total cholesterol 2.85 mmol/L, HDL-c 0.26 mmol/L, LDL -1.25 mmol/L). Her infective status is negative and her thyroid function test is normal. Other acquired causes of hypertriglyceridemia are also excluded. She was transfused with total 40 cc/kg pack cells and her Hb raised to 12 g/dl and no more lipidemic serum sample. Hb analysis revealed HbE- Beta thalassemia. Her mother`s blood showed Hb-E trait with normal lipid profile. She defaulted follow up until 4 months later she presented to our care again with similar presentation.

CONCLUSION

Hypertriglyceridemia thalassemia is rare reported association and regular blood transfusion usually resolved the high TG level. Early recognition is essential to deal with complications such as acute pancreatitis or increased coronary risk.

PP-90

Not Quite Hickam's Dictum

https://doi.org/10.15605/jafes.034.S102

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INTRODUCTION
Myasthenia gravis is a rare autoimmune neuromuscular disease. Rarer still is the combination of myasthenia gravis and Graves' disease, especially so in the paediatrics population, bringing to mind Hickam's Dictum. However, considering that both diseases are antibody-mediated, it should not be surprising to find them occurring simultaneously. Of more concern, though, is the effect these diseases have on each other's natural progression, and the challenges in managing them. Indeed, it has been observed that concurrent myasthenia gravis worsens hyperthyroidism, and improved thyroid function worsens muscle weakness.

CASE
We present a 3-year-old girl with concurrent exophthalmos and ptosis, diagnosed to have ocular myasthenia gravis and Graves' disease. We discuss the course of her disease and challenges in managing it. The course of her disease was as reported in adults, where her hyperthyroidism was difficult to control, and her ophthalmoplegia worsened when her hyperthyroidism improved.

CONCLUSION
We are reminded that the presence of exophthalmos and ptosis simultaneously should ring warning bells of concurrent myasthenia gravis and Graves' disease.

PP-91

Dilemma in Gender Assignment in Vanishing Testis Syndrome: Report of Two Cases

https://doi.org/10.15605/jafes.034.S103

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INTRODUCTION
Vanishing testis syndrome, or Testicular regression syndrome (TRS) is a developmental anomaly characterized by the absence of one or both testicles with partial or complete absence of testicular tissues. Vanishing testis syndrome may vary from normal male with unilateral non-palpable testis through phenotypic male with micropenis, to phenotypic female. The phenotype depends on the extend and timing of the intrauterine accident in relation to sexual development.

Here we present 2 cases of vanishing testis syndrome with different gender assignment.

CASE 1
10-month-old baby with chromosome 46XY presented with genital ambiguity with phallus-like structure, labioscrotal fold and non-palpable gonads. Follicular stimulating hormone (FSH) and luteinizing hormone (LH) level suggest of gonadal failure. Beta human chorionic gonadotropin stimulation test shows poor testosterone response. Laparoscopic exploration revealed bilateral spermatic cord and vessels with atrophic testes. In view of severe undervirilised phenotype, parents registered child as a female.

CASE 2
12-year-old child already registered as a boy, was referred for bilateral undescended testes and micropenis. Chromosome is 46XY. Laparoscopic exploration revealed atrophic testicular tissues at the end of spermatic cord. Histopathological examination shows structure resemble vas deferens and benign adrenal rest tissues. The child was given testosterone replacement during pubertal age.

CONCLUSION
Diagnosis of vanishing testis is based on clinically non-palpable testis with a blind-ending spermatic cord. It has a typical clinical and histopathological characteristic, but with a wide spectrum of clinical presentation and phenotype. The degree of masculinization depends on the duration of testicular function prior to its loss. Thus, gender assignment needs careful consideration and involves extensive discussion among the parents and multidisciplinary teams. Long-term outcome of clinical status, gender identity and sexual orientation need to be monitored.

PP-92

A Case Report on Congenital Hyperinsulinism due to ABCC8 Gene Mutation

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INTRODUCTION

Congenital Hyperinsulinism (CHI) is the most common cause of persistent hypoglycemia in infants. It is a disorder caused by dysregulation of insulin secretion from pancreatic β-cells. There are 12 different gene mutations identified at this moment with ABCC8 and KCNJ11 genes mutation encode SUR 1 and KIR 6.2 subunit of the ATP-sensitive potassium channel (KATP) being the most common. Children with homozygous ABCC8 and KCNJ 11 mutations usually do not respond to diazoxide.

CASE

We report a female Indonesian infant with autosomal recessive CHI secondary to ABCC8 gene mutation.

She was born term with birth weight of 4080 gram without history of maternal gestational diabetes. She developed symptomatic hypoglycemia at 10 hours of life with random blood glucose of 1.7 mmol/L. She needed a high glucose delivery rate up to 18 mg/kg/min and glucagon infusion to maintain normoglycemia. Critical blood sampling confirmed hyperinsulinism with an elevated serum insulin level of 18.1 U/ml at a random plasma glucose of 1.6 mmol/L. She had recurrent hypoglycemia despite an optimal dose of diazoxide. Subsequently, she was transferred to our center at the age of 2 months and started on subcutaneous octreotide injection four times daily; needing up to 35 mcg/kg/day to maintain blood glucose levels above 4 mmol/L. Genetic testing revealed a homozygous mutation in the ABCC8 gene which is known to be associated with poor response to oral diazoxide. Recessive ABCC8 mutation is associated with diffuse form of CHI hence optimizing medical treatment will be the preferred option before deciding for near total pancreatectomy.

CONCLUSION

This case illustrates a severe neonatal hypoglycemia unresponsive to diazoxide, where genetic confirmation helps to prognosticate the outcome and to plan for treatment strategy. It is vital to make an early diagnosis of CHI and initiate appropriate management to prevent hypoglycemia related permanent neurological damage.

PP-93

Thyroid Abscess in Children: A Case Series

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INTRODUCTION

Thyroid gland has low risk of infection due to good vascular supply, lymphatic drainage, high iodine content and enveloping thick fibrous tissue. Thyroid abscess is rarely found in children. We report two cases of thyroid abscess.

CASE 1

A 2-month-old girl presented with painless neck swelling for 2 days. There was no history of fever, respiratory or thyroid symptoms. No history of maternal thyroid disease. Examination revealed firm non-tender midline neck swelling measuring 3 cm x 3 cm, normal overlying skin and accompanying cervical lymph nodes. White cells were raised $19.9x10^9$ with increased ESR 97 mm/hr and CRP 6.58 mg/dL [NR <3 mg/dL] with normal thyroid function test (TFT). Thyroid autoantibodies were not performed. Ultrasound revealed well-encapsulated heterogenous mass from left lobe measuring 2.2 cm x 3.9 cm x 4.0 cm causing deviation of trachea medially and left CCA IJV laterally. Aspirated pus yielded Klebsiellae pneumoniae and Enterobacteriae cloacae. TB culture was negative. She received intravenous cloxacillin and cefuroxime and discharged well.

CASE 2

A 7-year-old boy presented with one-week history of neck pain, fever and neck swelling. There was no trauma or flu-like symptom. Examination revealed 7 cm x 4 cm swelling at anterior, right neck with multiple shotty cervical lymph nodes. TFT was normal with negative inflammatory markers, anti-TPO and anti-TG antibodies. Ultrasound showed heterogenous right lobe measuring 2.8 cm x 3 cm x 5.1 cm with multiple right cervical lymph nodes (largest 0.6 cm). FNAC showed inflammation with perivasculitis, vasculitis with no granuloma or malignant changes. Patient

developed purulent discharge after 2 weeks but afebrile. Well-circumscribed swelling was noted at the right anterior neck. Purulent discharge was aspirated with negative culture. Histopathology showed granulation tissue with infiltration by inflammatory cells with micro abscesses. Patient was given co-amoxiclav and discharged well.

CONCLUSION

Thyroid abscess must be considered although very rare in children. Intensive and appropriate treatment is necessary to prevent recurrence. Anatomical abnormalities like pyriform sinus fistula must be considered especially with atypical organisms or recurrent presentation.

PP-94

Use of Thiazide Diuretics in the Management of Central Diabetes Insipidus in a Neonate

https://doi.org/10.15605/jafes.034.S106

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INTRODUCTION

The treatment of central diabetes insipidus (DI) with Desmopressin in the neonatal period is challenging because of the significant risk of hyponatremia. The fixed anti-diuresis action of Desmopressin and the obligate high fluid intake with milk feeds may lead to considerable risk of water intoxication and hyponatremia in neonates. Few case reports described the use of thiazide diuretics for treatment of central DI in infancy which was switched to Desmopressin later in life.

METHODOLOGY

We present a case of a premature female baby with midline defect, central DI and poor weight gain.

RESULTS

She was started with oral hydrochlorothiazide dose of 0.5 mg per kg per dose two times daily. Throughout the hospital stay, the dose was adjusted to 0.48 mg per kg per dose twice daily to achieve a stabilized serum sodium values ranging between 140-145 mmol/L. She has no obvious complications of hyponatremia. She was thriving well during follow up.

CONCLUSION

Oral thiazide diuretics is an alternative treatment of central DI in neonates. It is effective to achieve adequate control of DI without wide serum sodium fluctuations.

PP-95

Adrenocortical Carcinoma Presenting as Malignant Hypertension with Intracranial Bleed

https://doi.org/10.15605/jafes.034.S107

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INTRODUCTION

Adrenocortical carcinomas are rare tumours with a bimodal distribution, peaking at the age of less than 5 years and also around the 5th decade. In children, virilisation is the most common presentation while Cushing's syndrome and hyperaldosteronism are less frequent.

CASE

We present a 6-month-old girl of Bangladeshi descent who presented at the age of 2 months old with status epilepticus following a trivial fall. She sustained a left intraventricular bleed with right front parietotemporal subarachnoid bleed. She underwent a right ventriculoperitoneal shunt insertion for obstructive hydrocephalus. Post operatively, she was noted to have recalcitrant hypertension with poor response to three antihypertensive therapy i.e. oral nifedipine, prazosin and captopril. During her hospitalisation, she developed rapid weight gain with development of facial acne and increasing facial, pubic and axillary hair.

Hormonal investigations revealed elevated testosterone of 52.05 nmol/L, elevated DHEA of >27.1 µmol/L and elevated 17 hydroxyprogesterone of >60.6 nmol/L. Her morning (8am) cortisol was 1494 nmol/L while 12 midnight cortisol was 1493 nmol/L. A CT abdomen revealed a large right suprarenal mass measuring 5.5 cm x 6.4 cm x 6.6 cm. The tumour (9 cm x 8 cm) was removed completely at five months old, however intraoperatively it was noted to have capsular breach and tumour spillage. Histopathological examination confirmed the diagnosis of high-grade adrenocortical carcinoma. A repeat CT abdomen done two weeks post-operative, unfortunately revealed tumour recurrence measuring 3.9 cm x 4.5 cm x 4.8 cm at the subhepatic region. Hence chemotherapy (Cisplatin/Etoposide/Doxorubicin) was initiated with addition of Mitotane. Postoperatively, her hypertension is gradually resolving within six weeks after surgery.

CONCLUSION

Invasive adenocarcinoma carries a poor prognosis. Early evaluation for this condition is vital in the presence of hypertension and virilisation in young children.

PP-96

GLUD 1 Mutation Causing Non Ketotic Hypoglycemia with Concomitant Hyperammonaemia: A Case Report

https://doi.org/10.15605/jafes.034.S108

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INTRODUCTION

Hypoglycemia is a medical emergency which carries serious short term and long-term consequences. The time of crisis is the best time to collect critical samplings to make the diagnosis. In hyperinsulinaemic hypoglycemia (HH) due to the inhibitory effect of insulin on lipolysis and ketogenesis, there is suppressed ketone body formation, leading to increased risk of hypoglycemic brain injury. Mutations in 12 different key genes (ABCC8, KCNJ11, GLUD1, GCK, HADH, SLC16A1, UCP2, HNF4A, HNF1A, HK1, PGM1 and PMM2) that are involved in the regulation of pancreatic beta cells have been described to be responsible for the underlying molecular mechanism leading to congenital HH.

CASE

A 10-year-old girl, presented at 4 months old with afebrile seizures. Noted recurrent hypoglycemia needing glucose infusion up to 15 mg/kg/min. Born premature at 34 weeks, birthweight 2.2 kg with no postnatal complications. Physical examinations were unremarkable. Critical sampling done during hypoglycemia; RBS: 1.8 mmol/L, insulin 5.67 uIU/mL (<1), C-peptide 632 ng/mL (0.9-7.1), lactate 6.57 mmol/L (0.63-2.4), ammonia 266.9 umol/L (14.7-55.3), growth hormone 11.3 ng/ml (>10), cortisol 351 nmol/L (>250). Normal LFT and VBG. She was started on oral Diazoxide and hydrochlorothiazide and responded well. Genetic study confirmed heterozygous for a novel missense mutation, G446V, in exon 12 of the GLUD1 gene. Trial of stopping Diazoxide at 9-year-old failed.

Hyperinsulinaemia-hyperammonaemia (HI/HA) is the second most common cause of hyperinsulinaemic hypoglycemia. It is caused by mutation in GLUD1 gene resulting in a decreased inhibitory effect of guanosine triphosphate on the glutamate dehydrogenase (GDH) enzyme. HI/HA syndrome patients are Diazoxide responsive and in some cases dietary protein restriction might be necessary.

CONCLUSION

The importance of establishing the correct diagnosis in hyperinsulinism from critical samplings results and genetic study is of importance to predict the prognosis and proper counselling to patient and family.

PP-97

Graves' Disease: Clinical Features and Short-Term Outcomes

https://doi.org/10.15605/jafes.034.S109

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INTRODUCTION

Graves' disease is an uncommon disease in childhood with prevalence of 0.02%. It accounts for most of the thyrotoxicosis in paediatric population. Treatment option is limited and the reported remission rate is low.

METHODOLOGY

This is a descriptive study. All patients with Graves' disease who attended the endocrine clinic in Sabah Women and Children's Hospital are enrolled. Data was obtained through review of their medical records. Their clinical features and treatment outcome were described. Results are expressed as numerical values (percentages) for categorical variables and medians (25th, 75th percentiles) for continuous variables.

RESULTS

A total of nine patients were studied whereby 78% of them are female. Their median age of presentation is 9.0 years old (3.5, 11.6). Most common presenting features are goitre, exophthalmos and tachycardia. At presentation, their median FT4 is 51 pmol/L (29, 75). Most patient had a positive thyroid receptor antibody. All patients were treated with carbimazole, median dose of 0.6 mg/kg/d (0.5, 1.0). One patient had additional thyroxine to the treatment (block and replace) due to wide fluctuation in thyroid function. None of the patients experienced side effects from treatment. Median duration of follow up is 3.4 year (1.1, 8.2). Only one patient (11%) in this cohort achieved remission.

CONCLUSION

Our study shows that achieving remission is challenging in paediatric Graves' disease. Carbimazole is a safe treatment option within the duration of follow up in our cohort.

PP-98

Hyperthyroidism in Children – Clinical and Demographic Review

https://doi.org/10.15605/jafes.034.S110

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INTRODUCTION

Acquired hyperthyroidism in children is rare with reported incidence of 0.9 per 100, 000<15 years-old in UK and Ireland. The most common causes are Hashimoto's thyrotoxicosis (HT) and Graves' disease (GD). Children with Down syndrome (DS) are at higher risk to have thyroid disease.

METHODOLOGY

This is a retrospective, descriptive study looking at children with confirmed diagnosis of hyperthyroidism seen at paediatric endocrine unit, University Malaya Medical Centre. Patients demography and clinical profiles were obtained through medical record system.

RESULTS

A total of 20 patients were diagnosed from 2006-2018. Female predominates with the ratio of 3:1. There were 50% Malay, 45% Chinese and 5% Indian. Their mean age at diagnosis was 9.9±4.3 years. Two (10%) were diagnosed<5 years-old, 35% between 5-9 years, 35% between 10-14 years and 20% between 15-20 years-old. 45% had positive family history. Thirteen (65%) were diagnosed with GD, 20% had HT, 5% had multinodular goitre, TSH resistance syndrome and antibody negative hyperthyroidism respectively. Four (20%) of them had DS. At presentation, 50% had weight loss, 35% had goitre, 30% had palpitations and hyperactivity, 20% diarrhea, heat intolerance and lethargy, 15% had eye symptoms and excessive diaphoresis, 10% had sleep disturbances and deteriorated school performance and 5% had thyrotoxic hypokalemic periodic paralysis and acute psychosis. Of the 13 patients diagnosed with GD confirmed with positive autoantibody (TRab and TSI), 85% were female, and 30.8% had eye signs. No thyroid storm or hypertensive crisis recorded. These children have had symptoms with a mean duration of 15.8±16.6 weeks prior to diagnosis.

CONCLUSION

Despite common manifestation of acquired hyperthyroidism, there is a marked delay in diagnosis. Diagnosis of GD should not rely on eye symptoms alone and routine tests for TRAb/TSI should be done to confirm diagnosis.

PP-99

Malignant Clival Chordoma in a Child with Turner Syndrome Diagnosed after 4 Years of Growth Hormone Therapy

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INTRODUCTION

Paediatric chordomas are rare malignant tumours originating from primitive notochordal remnants with a high recurrence rate. Only 5% of them occur in the first two decades; less than 300 paediatric cases have been described so far in the literature. Turner syndrome has been found to be associated with an increased rate of extra-gonadal neoplasm, sporadic report of Turner syndrome with various brain tumours such as medulloblastoma and meningioma have been found in the literature. However to date there's insufficient data to establish a definite relationship between brain tumours and Turner Syndrome.

CASE

We described the first case of a 14-year-old girl with underlying Turner Syndrome who was started on growth hormone therapy for the past 4 years. She achieved good height velocity with no side effects reported and her serial IGF-1 was within normal range. She developed intermittent headache which later associated with bilateral distal upper limb weakness and numbness.

Presence of upper motor neuron signs on examination prompted further evaluation with MRI of brain and spine which revealed a deep seated cystic lesion occupying the prepontine and retropharyngeal region measuring 5.9 cm x 4.8 cm x 6.8 cm. Histopathological examination of the mass biopsied confirmed the diagnosis of clival chordoma. Parents have opted for conservative management in view of high operative risk.

CONCLUSION

Current literature reviewed; no case of chordoma and Turner Syndrome that has been reported to date. Although Turner's syndrome is not one of the congenital chromosomal abnormalities which demand routine CNS screening, neuroimaging should be done in patients with Turner Syndrome that presents with neurological symptoms.

PP-100

A Case of Central Precocious Puberty Secondary to Hypothalamic Hamartomas with Gelastic Seizure

https://doi.org/10.15605/jafes.034.S112

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INTRODUCTION

Central Precocious Puberty (CPP) is caused by early maturation of the hypothalamic- pituitary-gonadal axis, characterized by sequential development of secondary sexual characteristics before 8 years in girls and 9 years in boys. We reported a case of CPP secondary to Hypothalamic Hamartomas (HH) which was initially referred for sexual precocity.

CASE

NAI, currently 6 years old, presented with monthly episodes of per vaginal bleeding at 2 months old. There was concurrent breast enlargement associated with peculiar body odor and episodes of inappropriate giggling during infancy. There was positive family history of epilepsy on the paternal side. Physically, NAI is not dysmorphic, appears tall and overweight for age with Tanner staging of B4, A1, P1. There were neither neurocutaneous signs nor virilization of the external genitalia.

Basal and stimulated LH, FSH values and ultrasound pelvis showed pubertal values with advancement of bone age noted on bone age assessment. Following this, she was commenced on monthly IM Lucrin injection which showed favorable biochemical and clinical response after 3 months of treatment. An EEG done showed abnormal epileptic records after she developed recurrent episodes of gelastic seizure since May 2016. An MRI of the brain showed the presence of a well define solid/lobulated mass in hypothalamus measuring 2.1 x 2.3 x 2.8 cm, with no mass effect to adjacent structure. An MRI was repeated after 2 years due to uncontrolled seizure despite being on oral Keppra, and showed similar findings as before.

CONCLUSION

Hypothalamic Hamartomas are rare congenital lesions presenting with classic triad of central precocious puberty, gelastic epilepsy and development delays. CPP responds well to treatment with GNRH agonist. However, gelastic seizure can differ in severity and evolution in different individuals. Majority are resistant to antiepileptics hence our patient may benefit from surgical removal of hamartomas either via transcallosal approach or minimally invasive surgery.

PP-101

A Case of Delayed Puberty and Anosmia

https://doi.org/10.15605/jafes.034.S113

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INTRODUCTION

A 26-year-old lady presented at the age of 13 years with delayed puberty and faltering growth. She had a past history of left eye squint surgery for underlying optic disc coloboma, but was otherwise systemically well. She was found to have absent sense of smell. There were no prior feeding problems and she had normal intelligence. Initial assessment revealed a proportionately small-sized girl who was prepubertal, there were no obvious dysmorphic features.

CASE

Her karyotype was 46XX. Her bone age was 8 years at chronological age of 13 years. A combined pituitary function test showed poor LH and FSH response with peak responses of 0.34 IU/L and 2.62 IU/L respectively. Serum estradiol was <37 pmol/L. GH, TSH and cortisol responses were normal. MRI of the pituitary was normal. The findings of isolated hypogonadotropic hypogonadism with anosmia pointed to a clinical diagnosis of Kallmann syndrome. She was commenced on hormonal replacement therapy for induction of puberty. She complained of hearing difficulties at the age of 19 years. Pure tone audiometry confirmed bilateral conductive hearing loss. Subsequent CT temporal bones showed bilateral absence of all the semi-circular canals. The clinical diagnosis was revisited and revised to possible CHARGE syndrome as the patient fulfilled 3 major criteria of CHARGE syndrome i.e. coloboma, anosmia and absent semi-circular canals and 1 minor criterion i.e. delayed puberty secondary to hypogonadotropic hypogonadism. This was confirmed by a detectable pathogenic CHD 7 gene mutation.

CONCLUSION

The presence of non-reproductive anomalies including anosmia, coloboma and hearing defects, are red flag indicators of an underlying congenital hypogonadism. CHARGE syndrome is a major differential diagnosis of Kallmann syndrome and should be considered especially in girls. Patients with anosmia and hypogonadotropic hypogonadism should be screened for clinical features consistent with CHARGE syndrome.

PP-102

Hypogonadotrophic Hypogonadism – A Case Report

https://doi.org/10.15605/jafes.034.S114

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INTRODUCTION

Hypogonadotrophic hypogonadism (HH) is a rare condition usually affecting the males. The estimated incidence is 1-10:100000 live births. Common presentations are infertility and delayed puberty.

CASE

We report a case of HH who has been followed up for the past 17 years since birth. The clinical courses including presenting features, diagnosis and management will be described.

The patient was referred for micropenis with left retractile gonad at birth. Initial investigations showed a normal male karyotype of 46XY, low testosterone level and normal renal ultrasonography. Gonadotrophins were not available. There was history of micropenis in the maternal family member. He was subsequently followed up as outpatient for under-virilised male. At the age of 4, left orchidopexy was done. MRI pituitary was done to rule out central defect and noted to be normal. Human chorionic gonadotrophin stimulation test was done and showed poor testicular response. His growth parameter has always been within the normal centile. Other pituitary hormones were normal. At 12 years old, he was noted still pre-pubertal. Gonadotrophin releasing hormone test revealed a poor gonadotrophin response and diagnosis was made. Retrospectively, he did report poor sense of smell. He was started on intramuscular testosterone therapy at 12.5 years. Puberty progressed with induction and he achieved stage five of Tanner staging at 15 years old. However, his testes remained small and penile length is less than 2.5 standard deviation below the adult mean.

CONCLUSION

This is likely a congenital HH which involves lifelong treatment and monitoring. Early diagnosis allows better counselling and preparation for the family and patient throughout the course of disease.

PP-103

Case Report: Pamidronate Infusion in a 3-Month Old Infant with Osteogenesis Imperfecta

https://doi.org/10.15605/jafes.034.S115

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INTRODUCTION

Bisphosphate is a well-recognised treatment for children with osteogenesis imperfecta (OI). However, for neonatal-onset or young infants, there are no large groups reported and no clear guideline on the safest dosing regimen.

CASE

Our patient presented with a left femur fracture at the age of 1.5 months. A week later, she was diagnosed with severe OI when she suffered four more fractures despite minimal handling; bilateral humerus, left clavicle and right femur. Her sclerae had a tinge of blue at first review. She was started on pamidronate two-monthly cycle (regimen as below) at 3 months old after the fractures had healed. Prior to pamidronate, she was started on cholecalciferol with optimisation of vitamin D level>75 nmol/L. 1st cycle 0.25 mg/kg for 1 day, 2nd cycle 0.25 mg/kg for 3 days, Subsequent cycles 0.5 mg/kg for 3 days every 2 months (total dose 9 mg/kg/year). For the 1st cycle of pamidronate, she had transient hypophosphatemia and mild hypocalcemia 2.02 mmol/L post-infusion, easily corrected with oral calcium carbonate and calcitriol. For the 2nd cycle, she was also given a short course of oral calcium carbonate and calcitriol as post-infusion her calcium level was borderline at 2.1 mmol/L. Subsequently for her 3rd and 4th cycle, her calcium levels were stable post-infusion with no need for additional supplements.

In total, she received 4 cycles 2 monthly apart (total cumulative dose 3.8 mg/kg) and did not had any recurrent fractures since treatment. There had also been a marked improvement in her gross motor development and mobilisation.

CONCLUSION

We report a young infant with OI who showed a good short-term outcome with pamidronate treatment and tolerated well our dosing regimen.

PP-104

High Alkaline Phosphatase Post Kasai Procedure, Should We Look Beyond the Liver?

https://doi.org/10.15605/jafes.034.S116

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INTRODUCTION
Metabolic bone disease (MBD) is a recognized complication in patients post Kasai procedure. In biliary atresia (BA), metabolic disturbance is caused by impairment of the passage of bile salts into the alimentary canal causing inadequate emulsification of fat and thus incomplete absorption of vitamin Progressively, liver cirrhosis develops in BA leading to further impairment of hydroxylation of vitamin D.

METHODOLOGY
We report a 5-year, 7-month-old girl with post Kasai procedure done successfully at Day 71 of life for Biliary Atresia with incidental increase in ALP during routine clinic review. Unfortunately no serial liver function was done as she had defaulted follow up. She did not sustain any fractures before. Clinically she was pink and not jaundiced. She was not clubbed but small for age. Per abdominal examination yield no significant findings apart from healed rooftop scar. Her wrists were swollen. No rachitic rosary noted.

RESULTS
Full blood count revealed Hemoglobin (Hb) 13.4 g/dL and platelets of 329 10^3/UL. Liver function test revealed Alanine Aminotransferase (ALT) 26.31 U/L, Aspartate aminotransferase (AST) 61.77 U/L, alkaline phosphate (ALP) 6996 U/Total serum bilirubin was 5.95 umol/Direct bilirubin of 3.5 umol/L Gamma-Glutamyl-transferase (GGT) was 134 U/Coagulation profile revealed INR 0.96 and APTT 50.8 sec. Vitamin D level unfortunately was rejected and intact Parathyroid hormone was 63.6 pg/mL. Hepatobiliary Ultrasonography showed no biliary tree obstruction with cirrhotic liver. No nodular lesion. We started her on oral calcitriol 1 mcg once daily. The ALP begins to decrease from 6996 U/L to 800 U/L within two months. She has been well during outpatient review.

CONCLUSION
Vitamin D is essential for the bone growth and development. Sustained vitamin D deficiency in children may cause bone deformity, pain, or pathological fractures (i.e., rickets). The management of Vitamin D deficiency include oral vitamin D supplement and pamidronate (bisphosphonates). Clinicians need to remain vigilant in monitoring for MBD especially in patients post liver surgery.

PP-105

The Eyes and Skin as the Windows to the Brain

https://doi.org/10.15605/jafes.034.S117

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INTRODUCTION
The pituitary glands and the eyes stem from the same embryonic origin, which is the anterior neural ridge. Hence, various ocular malformations are reported in the presence of hypopituitarism. Aplasia cutis congenita, on the other hand, is characterized by partial or complete absence of the skin as a result of failure in ectodermal fusion. It can occur as a constellation of ocular involvement, skin lesion and cerebral malformations. We aim to report on a case of aplasia cutis congenita with microphthalmia and coloboma, and subsequently diagnosed as hypopituitarism.

METHODOLOGY
A baby girl was delivered at full term via emergency LSCS due to poor progress of labour. Ventriculomegaly and absence of corpus callosum were detected antenatally. Clinically, there was a defect over left side of her forehead and temporal scalp. The lesion, measuring 7 cm x 3 cm, was longitudinal in shape, erythematous with visible membranous-like structure underneath. Ophthalmology assessment revealed left microphthalmia and optic disc coloboma at the right eye. MRI brain showed atrophied left globe associated with colpocephaly, callosal agenesis and cerebellar hypoplasia. Pituitary glands appeared to be normal.

RESULTS
Her thyroid function test at day 5 of life (T4 9.34 pmol/L/ TSH 2.23 mIU/L) was suggestive of hypothyroidism. L-thyroxine was started. At day 7 of life, she developed hypernatraemia (serum sodium ranged 151-156 mmol/l). Her urine osmolarity (89 mOsm/kg) and serum osmolarity (324 mOsm/kg) were suggestive of diabetes insipidus. The biochemical abnormality resolved with desmopressin. Despite euglycaemia and normal blood pressure, her serum cortisol was low (87.7 nmol/l). She was started on hydrocortisone. She was discharged well and will be reviewed in our outpatient clinic.

CONCLUSION
Current literature has yet to report on the association between aplasia cutis congenita and hypopituitarism. In the presence of other malformations, in particularly ocular involvement, it will be worth screening for pituitary insufficiencies for early detection and intervention.

PP-106

Less Hassle = Better Control?

https://doi.org/10.15605/jafes.034.S118

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INTRODUCTION

Type 1 Diabetes Mellitus (T1DM) accounts for more than 90% of childhood and adolescent diabetes worldwide. Malaysian Diabetes in Children and Adolescents Registry reports that from year 2006 – 2008, T1DM made up 71.8% of diabetics under the age of 20 years. Good glycaemic control early in the disease has been shown to reduce chronic diabetes complications. However, management of this disease remains a challenge in most centers. A main contributing factor to a poor glycaemic control is inadequate home blood glucose monitoring, especially in younger children where pain from frequent finger pricking is a hindrance to frequent monitoring. Over the years, advancement of technology has facilitated better management of diabetes in many aspects. Of late, the introduction of a glucose flash monitor has reduced the need of frequent finger-prick checks. It allows more frequent monitoring of a patient's glucose level in the body. This aims to achieve a better glycaemic control with better home blood glucose monitoring.

METHODOLOGY

Here, we observe the use of the glucose flash monitor in 10 of our T1DM patients and compared if there was a difference in their control pre and post usage of this new intervention.

RESULTS

We explored the factors that encouraged or discouraged these patients to use the glucose flash monitor over conventional finger-prick tests.

CONCLUSION

In conclusion, the advent of the glucose flash monitor has allowed for potentially much better glycaemic control among type 1 diabetes patients. However, patient education and knowledge remains the crux of matter – it is crucial to educate patients on the information garnered from such devices, to be able to utilize this technology to its full purpose.

BASIC SCIENCE

PP-107

Is Alzheimer's Disease Risk Factor, Apolipoprotein E Polymorphism, A Risk Factor of Type-2 Diabetes Mellitus?

https://doi.org/10.15605/jafes.034.S119

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INTRODUCTION
Individuals with Type-2 Diabetes Mellitus (T2DM) are known to have higher risk of developing Alzheimer's Disease (AD). One of the most prominent risk factors of AD is Apolipoprotein E (ApoE) polymorphisms. While ε2 allele is known to have suppression effect, ε4-carriers have 5-30-fold increased risk of developing AD compared to ε3-carriers. In this study, we have developed an efficient blood-based APOE genotyping method to investigate if APOE polymorphism plays roles in T2DM.

METHODOLOGY
Whole blood were collected from 409 participants (88 pre-diabetes, 202 diabetes, 119 healthy) under approved study protocol NMRR-15-980-26563. Four allele-specific primers were designed with intentional mismatches at each single nucleotide polymorphism (SNP) sites at rs429358 and rs7412, and two common primers flanking the non-allele-specific region. Single plex polymerase chain reaction (PCR) was carried out using a panel of 5 primer sets, whole blood 2 μL/reaction and KAPA Biosystem's Blood PCR Mix. Analysis of APOE genotypes against T2DM status were compared using ANOVA tests and chi-square tests (α=0.05).

RESULTS
Definitive APOE genotype were obtained for 407 participants (99.5% of total subjects). Genotype of two participants were further confirmed using follow-up samples. As expected, ε3 allele (84.23%) is the most common, followed by ε2 (9.05%) and ε4 (6.72%). Interestingly, ε4 is significantly linked to Malays (10.69%, p-value=0.0035). However, no statistical difference is found in the allele distribution across pre-diabetic, diabetic, and healthy participants (p-value=0.763), suggesting there is no direct association of ApoE genotype and T2DM in our cohort. Further analysis also found no particular links of fasting blood glucose, HbA1c and BMI with ε2-, ε3- and ε4-carriers.

CONCLUSION
ApoE polymorphism is not directly indicative of T2DM in our cohort. However, given that ε4-carriers have increased risk of developing AD, it is imperative to follow up with T2DM ε4-carriers, especially the Malay ethnic, who has a significant prevalence as ε4-carrier.

PP-108

Identification of Chromosome Conformation Signatures involved in Progression of Type-2 Diabetes Mellitus Using EpiSwitch™

https://doi.org/10.15605/jafes.034.S120

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INTRODUCTION
Prevalence of Type-2 Diabetes Mellitus (T2DM) has increased more than 50% in 2006-2015 (National Health and Morbidity Survey, 2015). Oxford Biodynamics has demonstrated using Chromosome Conformation signatures (CCS) (Salter M. et al, 2018), as the most informative molecular entity in epigenetics for stratification of phenotypes. The proprietary EpiSwitch™ biomarker discovery platform is employed to find markers informative of T2DM progression.

METHODOLOGY
We have recruited a total of 409 subjects and categorised them into 4 groups, i.e. healthy, pre-diabetes, diabetes treatment naïve and treated diabetes; n=122, 90, 77, 120, respectively, based on glycated haemoglobin (HbA1C), fasting blood glucose (FBG) and oral glucose tolerant test. HbA1C, FBG and relevant clinical data of these subjects were followed up for 2 years at a 6-month interval. Five pre-diabetes, 6 diabetes treatment naïve and 6 treated diabetes samples were selected based on baseline data and compared against a pool of 16 healthy controls using proprietary microarray.

RESULTS
Follow-up blood tests showed 2 pre-diabetes samples progressed to diabetes. After comparing against samples regressing either from pre-diabetes to healthy, diabetes to pre-diabetes, diabetes to healthy and samples that are constantly diabetes, 59 unique progression markers have been identified. Functional analysis of the 59 markers

using STRING database showed that the markers are significantly involved in T2DM and insulin resistance pathway; false discovery rate 1.87e-09 and 5.39e-09 respectively.

CONCLUSION

Four markers overlapped and interconnected between insulin resistance and T2DM pathways demonstrate the significance and robust outcome of the methodology. CCS of these markers can be used to stratify risk among healthy and pre-diabetes people. The developed blood-based testing not only provides unprecedented early solutions for management, diagnosis and treatment of T2DM but also promising clues on the mechanism of T2DM progression. A further validation with cohort collected is to follow.

PP-109

Islet Cell Autoantibody Profile in a Malaysian Type-2 Diabetes Mellitus Population

https://doi.org/10.15605/jafes.034.S121

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INTRODUCTION

Latent autoimmune diabetes in adults (LADA) accounts for 2-12% of all adult diabetes, where progressive islet cell failure leads to insulin deficiency. Insulin sensitivity is a major factor in the development of Type-2 diabetes mellitus (T2DM). This study aims to investigate islet cell autoantibody profile in a multi-ethnic T2DM cohort.

METHODOLOGY

ELISA assays of insulin antibodies, glutamic acid decarboxylase 65 (GADA65) and tyrosine phosphatase-related islet antigen 2 (IA2) (EUROIMMUN AG, Germany) were performed for 88 subjects (50 diabetes, 31 pre-diabetes and 7 healthy). Assay was performed using subjects' sera in duplicates and absorbance was read at wavelength 405 nm using a microplate reader. Titer positivity for anti-GAD65 and anti-IA2 were defined at ≥10 IU/ml. Subsequently, subjects were categorised into good control (HbA1C <5.6%, n=8) and bad control (≥5.6%, n=80). Statistical analysis of demographic factors was performed using chi-square test and ANOVA.

RESULTS

Eleven anti-GAD65 positives subjects were detected, and 1 subject presented positivity for both anti-GAD65 and anti-IA2. Among them, none are healthy subjects, 2 are pre-diabetic and 9 are diabetic, reflecting a gradual increment of β-cells failure from pre-diabetic to diabetic. A higher anti-GAD65-positives was also observed in Chinese (n=6/11, 54.5%) and in females (n=8/11, 72.7%). Comparing to anti-GAD65-negatives, anti-GAD65-positive subjects tend to be older (mean=57.6 years,±10.2), with higher HbA1c (mean=7.7%,±2.1), and higher BMI (5 overweight, 45.5% and 3 obese, 27.3%).

CONCLUSION

Anti-GAD65-positives detected is higher (18%) compared to studies in Singapore (7%) and China (5.9%). No statistical significance was observed when comparing autoantibody profiles with demography factors probably due to the small sample size. However, the higher prevalence of β-cell failure in T2DM diagnosed individuals in Malaysia indicates the necessity to study with a larger cohort.

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