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JAFES

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MEMS
Established 1981
Malaysian Endocrine
& Metabolic Society

MEMS ANNUAL CONGRESS
MAC 11 2021
30th July to 1st August 2021
UNRAVELLING THE INTRICACIES IN ENDOCRINOLOGY

Message from the MEMS President

"We are back!" After taking one year off, as a result of the unprecedented COVID-19 pandemic, we are now back! Bringing you the latest advances and updates in Endocrinology.

Thank you for joining us at the **all new Virtual MAC 11**!

We have VIRTUALIZED the scientific program. Although we would much prefer to have a face-to-face meeting, not only to learn about the advances in Endocrinology, but also because these Conferences allow us to meet, exchange ideas, opinions as well as renew friendships. Unfortunately, the ongoing pandemic has not been adequately and safely contained for this to happen.

Rest assured, the Organising Committee and Scientific Committee under the able leadership of Professor Dr. Norlaila Mustafa and Associate Professor Norasyikin A. Wahab have worked tirelessly to bring you a scientific program of the highest scientific standards. Hot topics include "COVID-19 and Endocrine disorders" given by Professor M. Puig-Domingo (Spain) and "Male reproductive endocrinology" by Professor Carolyn Allan (Australia). We would also like to welcome back Professor C. Munns (Australia), who will further enlighten us on paediatric metabolic bone disorders.

We continue to emphasize the interactive meet-the-expert sessions, which are the delegates' favourite part of the program and we hope that you will join these sessions and make the most of the opportunities to interact with the faculty/KOLs!

I must also extend a word of thanks and gratitude to our pharmaceutical company partners who continue to support our Conference. Without their help, it will not be as successful as it has become.

I wish everyone an enjoyable experience attending our MAC 11! We will be back next year, in whatever form the pandemic will allow us to. That's a promise!

In the meantime, stay safe!

Professor Dr Chan Siew Pheng
President
Malaysian Endocrine and Metabolic Society
2020–2022

Message from the Organising Chairperson

We take pleasure in welcoming you to view the abstracts presented in the 11th MEMS Annual Congress 2021 (MAC 11 2021) that will be held virtually! We have created this publication with the intention to share the interesting studies and endocrine-related cases written by our young and dedicated doctors despite the COVID-19 pandemic.

The theme for our 2021 Congress is 'UNravelling The Intricacies in Endocrinology' which will witness the invaluable scientific discussions using digital and social media during the pandemic to reach out to all audiences across the region.

We will use state-of-the-art technology to ensure that the scientific discussions, presentations as well as up-to-date topics are delivered to the delegates in a renewed programme. The effect of coronavirus in endocrine diseases will be the highlight of this congress. We will be organizing enticing activities for the delegates to participate throughout the three days meeting.

This annual congress is also about getting the young trainees, endocrinologists, and scientists together to learn and to present their work. To encourage this, we are preparing attractive incentives and prizes for those who walk away with awards in various categories for oral and poster presentations.

Altogether, we have accepted 119 abstracts which are relevant and thought-provoking, and inclusive of a diverse range of voices and outlooks from both paediatric and adult endocrine trainees as well as academic researchers. It is our intention to have all the accepted abstracts published in the JAFES.

We are extremely pleased with our JAFES team who have made this publication possible, and we are delighted that you are joining us as readers.

Yours sincerely,

Professor Dr Norlaila Mustafa
Chairperson
MAC 11 Organising Committee

MAC 11 ORGANISING & SCIENTIFIC COMMITTEE

Honorary Advisor:	Datuk Dr Zanariah Hussein
Organising Chairperson:	Professor Norlaila Mustafa
Scientific Chairperson (Adult Session):	Assoc Professor Norasyikin A. Wahab
Scientific Co-Chairperson (Paediatrics Session):	Dr Nalini M. Selveindran
Committee Members:	Dr Elliyyin Katiman
	Dr Joyce Hong Soo Synn
	Dr See Chee Keong
	Dr Subashini Rajoo
	Dr Syahrizan Samsuddin
	Ms Cheah Yet Mei

INTERNATIONAL FACULTY

Professor Craig Munns	*University of Sydney, Australia*
Professor Francesco Giorgino	*University Of Bari Aldo Moro, Italy*
Professor Manel Puig-Domingo	*Hospital Germans Trias i Pujol and Research Institute, Spain*
Professor Nalini Shah	*King Edward Memorial Hospital, India*
Professor Sebastian M. Schmid	*University of Lübeck, Germany*
Assoc Professor Carolyn Allan	*Monash University, Australia*
Dr Juan Maria Ibarra O. Co	*Cardinal Santos Medical Center, Philippines*
Dr Chia Wee Yan	*John Hunter Children's Hospital, Australia*

LOCAL FACULTY

Professor Dato' Mafauzy Mohamed	*Hospital Universiti Sains Malaysia*
Professor Dato' Wan Mohamad Wan Bebakar	*Hospital Universiti Sains Malaysia*
Professor Chan Siew Pheng	*Subang Jaya Medical Centre*
Professor Chan Wah Kheong	*University Malaya Medical Centre*
Professor Muhammad Yazid Jalaludin	*University Malaya Medical Centre*
Professor Norlaila Mustafa	*Universiti Kebangsaan Malaysia Medical Centre*
Professor Rohana Abdul Ghani	*Universiti Teknologi MARA*
Professor Shireene Ratna Vethakkan	*University Malaya Medical Centre*
Assoc Professor Azriyanti Anuar Zaini	*University Malaya Medical Centre*
Assoc Professor Jeyakantha Ratnasingam	*University Malaya Medical Centre*
Assoc Professor Wan Mohd Izani Wan Mohamed	*University Sains Malaysia*
Datuk Dr Mohamed Badrulnizam Long Bidin	*Hospital Kuala Lumpur*
Datuk Dr Zanariah Hussein	*Hospital Putrajaya*
Dato' Dr Malik Mumtaz	*Island Hospital*
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Dr Nurain Mohd Noor	*Hospital Putrajaya*
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Dr Wong Sze Lyn Jeanne	*Hospital Putrajaya*
Dr Wu Loo Ling	*Subang Jaya Medical Centre*
Dr Yang Wai Wai	*Universiti Kebangsaan Malaysia Medical Centre*
Dr Yeap Swan Sim	*Subang Jaya Medical Centre*

11th MEMS Annual Congress 2021 (MAC 11) – VIRTUAL CONGRESS

UNravelling The Intricacies in Endocrinology

30th July – 1st August, 2021

FRIDAY 30th July 2021			
0850	Opening Speech *Chan Siew Pheng, President, MEMS* *Norlaila Mustafa, Organising Chairperson MAC 11*		
0900	Plenary 1: Unravelling the Endocrine Phenotype of COVID-19 *Manel Puig-Domingo*		
0930	MEET THE EXPERTS 1		
	MTE 1.1 - Assessment Tools for Fracture: Is FRAX Reliable? *Alexander Tan* *Yeap Swan Sim*	MTE 1.2 - Euglycemic DKA *Masni Mohamad* *Lim Siang Chin*	MTE 1.3 - Hypogonadotrophic Hypogonadism: Approach and Management *Nalini Shah* *Nalini Selveindran*
1030	*Tea Break / Poster Gallery / Trade Exhibition*		
1100	SYMPOSIUM 1		
	OBESITY	ADRENAL	PAEDIATRIC – BONE HEALTH
	Obesity-Mediated Pituitary Dysfunction *Manel Puig-Domingo* Sustainability of Intermittent Fasting *Norlaila Mustafa* Pharmacotherapy of Complex Obesity *Rohana Abd Ghani*	Evaluation and Management of Adrenal Mass *Wan Mohd Izani WM* Pheochromocytoma & Pseudopheochromocytoma *Zanariah Hussein* Management of Adrenocortical Carcinoma *Azraai Nasruddin*	Management of Hypophosphataemic Bone Disease *Craig Munns* Nutritional Rickets *Wong Sze Lynn Jeanne* Bone Health in Children on Chronic Steroids *Arini Nuran Md Idris* *Azriyanti Anuar Zaini*
1230	*QUIZ*		
1300	Sanofi Symposium Managing Diabetes with Injectable Therapy: Challenging the Existing Paradigm *Norlaila Mustafa* SoliMix Trial: Comparing FRC to Premix Insulin *Saiful Kassim*	MSD Symposium The Evolving Strategy of Combination Therapy in Type 2 Diabetes *Mark Cooper*	
1400	MEET THE EXPERTS 2		
	MTE 2.1 - Adult GHD: Need for Replacement? *Hew Fen Lee* *Sharmila Paramasivam*	MTE 2.2 - Inducing Fertility in PCOS *Wan Mohamad Wan Bebakar* *Abdul Kadir Abdul Karim*	MTE 2.3 - Pitfalls in the Management of Diabetes in the Young *Muhammad Yazid Jalaludin* *Suhaimi Hussain*
1500	Novo Nordisk Symposium GLP-1 RA: The New Frontier in Diabetes Care *Richard Holt*	Abbott Symposium The Impact of Combining Nutrition and Continuous Glucose Monitoring in Diabetes Management *Winnie Chee Siew Swee* Sensor-based monitoring in Diabetes Management *Matthew Tan Zhen-Wei*	
1540	*Announcement of QUIZ Winners*		
1550-2000	*Poster Presentation / Trade Exhibition*		

SATURDAY 30th July 2021			
0830	Abbott Symposium Managing Diabetic Dyslipidemia beyond Statin *Kiran Nair*		
0900	MEMS Legacy Award		
0915	Plenary 2: Acromegaly: Update on Genetics, Diagnosis & Treatment *Sebastian M. Schmid*		
0945	*Tea Break / Poster Gallery / Trade Exhibition*		
1015	MEET THE EXPERTS 3		
	MTE 3.1 - Difficult Diabetes During Pregnancy *Shireene Vethakkan* *Nurain Mohd Noor*	MTE 3.2 - Thyroid Eye Disease *Mohd Shazli Draman* *Norlaila Talib*	MTE 3.3 - Osteogenesis Imperfecta: Current and Future Treatment Perspectives *Craig Munns* *Lim Poi Giok*
1115	SYMPOSIUM 2		
	PREDIABETES	PITUITARY	PAEDIATRIC – ADRENAL / PHEO
	Prediabetes and Metabolic Syndrome: Which Patients Are at Risk? *Noor Lita Adam* Screening for Prediabetes: OGTT vs HbA1c *Chan Siew Pheng* Pharmacotherapy for Prediabetes: Are We Moving Forward? *Florence Tan*	Aggressive Cushing's Disease: What are the Options? *Juan Maria Ibarra O. Co* Pituitary Stalk Thickening: Differential Diagnosis and Management *Jeyakantha Ratnasingam* Emerging Therapies in Pituitary Diseases *Mohamed Badrulnizam Long Bidin*	Pheochromocytoma / Paraganglioma in Childhood *Nalini Shah* Long term Outcomes in Patients with CAH *Lim Song Hai* Children with CAH: Surgical Perspectives *Chia Wee Yan* *Noor Shafina Mohd Nor*
1245	*QUIZ*		
1300	BI Symposium Should We Still be Asking When to Start SGLT2i in Diabetes Treatment? *Roger Chen* Don't Forget your Beans: The Role of SGLT2i in T2D and Kidney Disease *Ng Eng Khim*	Zuellig Pharma Symposium Multi factorial Approach in the Reduction of Cardiovascular Risk & Disease in Type 2 Diabetes Patients *Chee Kok Han* Primary & Secondary CV Risk Reduction: The Way Forward in Type 2 Diabetes Management with GLP-1RA *Francesco Giorgino*	
1400	MEET THE EXPERTS 4		
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1500	Duopharma Symposium Biosimilar Basal Insulin – From Clinical Trials to Real World Experience *Norlaila Mustafa*	Astra Zeneca Symposium Protecting the Precious Pair – How Much You Have Left to Spare? *Hiddo Heerspink*	
1540	*Announcement of QUIZ Winners*		
1550-2000	*Oral Paper Presentation / Trade Exhibition*		

SUNDAY 1st August 2021			
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0900	SYMPOSIUM 3		MEET THE EXPERTS 5
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1030	*Tea Break / Poster Gallery / Trade Exhibition*		
1045	Plenary 3: Advances in Male Reproductive Endocrinology *Carolyn Allan*		
1115	Servier Symposium ADVANCE 20 years ON: The Evolving Role of Sulphonylureas *David Matthews*		
1155	Closing Ceremony: MAC YIA Prize-Giving & Tour d'MAC winners Announcement / Draw *Norlaila Mustafa, Organising Chairperson MAC 11*		

All information and programme has been prepared in good faith and is correct at the time of sharing. There will be changes as the congress planning progresses in our effort to put together an interesting programme for our delegates. For regular updates, please visit our website.

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ADULT

OP-A-01

HORMONAL, ECG AND EEG CHANGES DURING RELATIVE HYPOGLYCEMIA IN UNCONTROLLED TYPE 2 DIABETES MELLITUS PATIENTS: A PILOT STUDY

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INTRODUCTION
Counter-regulatory mechanisms lead to autonomic and neuroglycopenic symptoms in response to hypoglycaemia. Elevated cortisol, glucagon and epinephrine affect heart and brain activities. The effect of relative hypoglycemia is not known. Our aim was to evaluate cortisol, glucagon and epinephrine levels and determine EEG and ECG changes during relative hypoglycemia in patients with uncontrolled type 2 diabetes (T2D).

METHODOLOGY
Fifteen patients with uncontrolled T2D were started on Actrapid® infusion at a rate of 0.05 unit/kg/hour. The rate was titrated by 1 unit/hour every 10 minutes until the onset of hypoglycemic symptoms. Blood glucose was monitored at five minute intervals. Blood glucose, cortisol, glucagon, epinephrine, EEG and ECG were assessed at baseline and repeated during relative hypoglycemia.

RESULTS
The patients had a mean age of 47.2 ± 9.59 years and median diabetes duration of 5 years. Mean weight, body mass index, HbA1c and fasting blood glucose were 76.67 ± 12.19 kg, 30.2 ± 4.29 kg/m^2, 10.4 ± 1.4% and 11.25 ± 3.58 mmol/L, respectively. Mean pre-procedure blood glucose was 9.69 ± 2.25 mmol/L, while median glucose during relative hypoglycemia was 6.70 mmol/L. Thirteen (86.7%) patients experienced autonomic symptoms, mainly hunger, sweating and palpitations. Mean baseline glucagon level was significantly higher than relative hypoglycemia (4842.93 versus 4300.13 ng/L, p=0.041). There were no statistically significant differences in cortisol and epinephrine levels during relative hypoglycemia compared to baseline (296.87 versus 254.2 nmol/L and 1028.0 versus 1324.0 pmol/L, respectively). Eight (53.3%) patients showed generalized background attenuation in EEG during relative hypoglycemia. None of the patients had ECG changes.

CONCLUSION
High baseline glucagon levels were seen in the patients with T2D. Anxiety during relative hypoglycemia leads to high epinephrine levels and EEG changes. ECG changes were not seen possibly because these would be observed with lower plasma glucose.

OP-A-02

CARDIOMETABOLIC PROFILE OF OLDER PERSONS IN THE 8TH PHILIPPINE NATIONAL NUTRITION AND HALTH SURVEY

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INTRODUCTION
The prevalence of metabolic syndrome (MetS) among Filipino adults was found to be 12 to 15% in 2003. While diet has been one of the identified modifiable risk factors targeted to prevent cardiovascular disease or its complications, the association of each macronutrient component with MetS remains unclear. In the absence of Philippine data on macronutrient intake and cardiometabolic diseases, the primary objective of this study was to determine the association of food intake with cardiometabolic diseases among Filipino adults.

METHODOLOGY
This study utilized a cross-sectional analytic design. Data from the results of the 8th National Nutrition Survey (NNS) in 2013 to 2015 by the Food and Nutrition Research Institute was used. Filipino adults from different regions of the Philippines who consented to participate in the interview, anthropometrics, blood collection for clinical data and other measurements were included in this study.

RESULTS
There were 8,056 adults included in the NNS 2013. The prevalence of metabolic syndrome was 33%. Median total calorie intake per day was 1,524.1 kcal (range 148.3 to 7349.5). Median total carbohydrates, protein and fat intake in one day were 273.3 g (range 33.8 to 1309.2), 49.4 g (range 2.8 to 273.3) and 19.8 g (range: 0.2 to 334.9), respectively. Multivariate analysis showed that the following were associated with an increased risk for MetS: increased total protein intake [OR 1.391 (1.150-1.684)], increased daily consumption of meat and poultry [OR 1.397 (1.163-1.677)], and low vegetable intake [OR 1.3 (1.080-1.565)].

CONCLUSION
Increased age, higher socioeconomic status, female sex, increased total protein intake and daily consumption of meat and poultry and low vegetable intake are associated with an increased risk for MetS.

OP-A-03

PREVALENCE OF SUBCLINICAL CUSHING'S SYNDROME AMONG POORLY CONTROLLED TYPE 2 DIABETES MELLITUS SUBJECTS

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INTRODUCTION

The prevalence of subclinical Cushing's syndrome (SCS) among diabetes mellitus patients varies from 0 to 9.4%. The absence of a single gold standard test to confirm SCS is complicated by the lack of standardization in the diagnostic criteria and cortisol measurements using different assays. This study was performed to determine the prevalence of SCS among overweight patients with poorly controlled type 2 diabetes and hypertension.

METHODOLOGY

A cross-sectional study was performed in the Universiti Kebangsaan Malaysia Medical Centre from June 2019 to June 2020. We examined 169 participants with HbA1c of more than 8%. First-line screening with 1 mg overnight dexamethasone suppression test (ODST) and midnight salivary cortisol (MSC) were performed; if any test was abnormal, a low dose dexamethasone suppression test (LDDST) was then done. The cortisol cut-off value for ODST and LDDST was 50 nmol/L, while 11.3 nmol/L was used for MSC. SCS was confirmed if any two out of the three tests were positive: ODST, MSC and a 24-hour urine total cortisol (24UTC).

RESULTS

Six participants (3.6%) demonstrated abnormal MSC, while seven (4.1%) others had abnormal ODST. From these 13 participants, 11 proceeded with LDDST and ACTH. All 9 participants who performed 24UTC had normal results. Two participants showed autonomous cortisol secretion, with ODST and LDDST serum cortisol levels more than 138 nmol/L and high ACTH. However, with normal MSC and 24UTC results, they did not fulfill the criteria for SCS. Therefore, the prevalence was zero percent.

CONCLUSION

The low prevalence of SCS in this study is consistent with previous studies. Poor glycaemic control among our study population could be due to long duration of diabetes with beta cell decline, poor adherence to diet and medications and lack of intensification of insulin which was not explored.

OP-A-04

THE USE OF MULTIMODALITY TREATMENT FOR AN ATYPICAL, RECURRENT AND AGGRESSIVE MEDULLARY THYROID CANCER

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INTRODUCTION

Medullary thyroid cancer is a rare type of cancer of neuroendocrine origin, comprising about 1 to 3% of all types of thyroid cancers. Its clinical presentation is a complex spectrum. We present an extremely rare case of a calcitonin-negative medullary thyroid cancer that had an aggressive recurrence, presenting with superior vena cava syndrome, and managed with multimodality treatment in the form of radiotherapy and cytotoxic chemotherapy for local control and palliation.

RESULTS

A 53-year-old man presented with a 20-year history of a gradually enlarging anterior neck mass, initially noted as a marble-shaped lesion. Six months prior to consult, the patient observed a marked increase in the size of the mass along with a palpable lymph node on the left side of the neck. The patient underwent total thyroidectomy with radical neck dissection. Histopathology revealed a well-differentiated medullary thyroid carcinoma with lymphovascular invasion. Immunohistochemical staining was positive for calcitonin. Serum carcinoembryonic antigen (3.11 ng/mL, normal value <3.00) and calcitonin (<2.00 pg/mL, normal value 0 to 18.20) were both normal. The patient noted multiple, enlarging neck masses four months after surgery. Radiotherapy was administered for a total of 25 Gy in five fractions. Cytotoxic chemotherapy with cyclophosphamide, vincristine, and dacarbazine was initiated. The combination of radiotherapy and cytotoxic chemotherapy were considered viable treatment modalities in the pursuit of local control and palliation of this unusually aggressive disease.

CONCLUSION

This case demonstrates how non-surgical management through multiple modalities can be utilized for local control and palliation of this aggressive disease. Therapeutic options may be limited in the developing world especially when a tumor is at its advanced stage, but much can still be done for the holistic care of the cancer patient.

OP-A-05

EMPAGLIFLOZIN AND DEHYDRATION DURING RAMADAN: IS THERE A CONCERN?

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INTRODUCTION

Ramadan fasting is compulsory for healthy Muslims. In persons with type 2 diabetes (T2D), the risk of hypoglycaemia, hyperglycaemia and diabetes-related complications may increase, depending on background treatment and the presence of diabetic complications. Empagliflozin increases water excretion via glycosuria, leading to volume depletion. This study was done to examine the impact of empagliflozin use during Ramadan, specifically on volume status.

METHODOLOGY

This was an observational, case-control study conducted in single centre in the east coast of Malaysia. Individuals aged 18 to 75 years with confirmed T2D were assigned to group 1 if on empagliflozin (10 mg or 25 mg OD) for at least 3 months prior to enrollment, and group 2 if on standard diabetes therapies except any sodium glucose cotransporter 2 (SGLT2) inhibitor. Subjects were seen before and during Ramadan for body parameters and blood examinations.

RESULTS

There were 50 subjects recruited for each group. Group 1 had longer duration of diabetes and higher International Diabetes Federation - Diabetes and Ramadan score compared to group 2. Other baseline characteristics were similar. Weight and BMI reduction were higher in patients taking empagliflozin but this was not statistically significant. Waist circumference changes were higher in group 1 (-1.61 versus -0.46 cm, p=0.039). Subjects on empagliflozin had similar increments of urea and creatinine during fasting, with higher urea-creatinine ratio (UCR) at baseline. During Ramadan, UCR was reduced in group 1, compared to an increase in group 2. Haematocrit levels were similar in both groups.

CONCLUSION

During Ramadan, body weight reduction occurred due to reduction in caloric intake. Empagliflozin increased the magnitude of weight reduction compared to standard therapy. Volume depletion was not significantly increased among patients taking empagliflozin. The use of an SGLT-2 inhibitor in patients with T2D in Ramadan is safe without risk of dehydration.

OP-A-06

REAL-WORLD EXPERIENCE OF DULAGLUTIDE THERAPY IN A SINGLE TERTIARY CENTER

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INTRODUCTION

Glucagon-like peptide-1 receptor agonists such as dulaglutide are recommended in the overall management of type 2 diabetes (T2D). The clinical responses to dulaglutide as add-on therapy for patients with T2D are varied.

METHODOLOGY

The study objective was to observe the outcome of real-world practice using add-on dulaglutide to existing treatment for patients with uncontrolled T2D. We performed a retrospective analysis of all patients who received dulaglutide 1.5 mg weekly from 2018 to 2021 with at least four months of therapy. Only patients with metabolic parameters at baseline and at least on the second visit were included.

RESULTS

A total of 77 patients received dulaglutide therapy from 2018 to 2020; of these, only 68 had complete data for analysis. The median age was 48 years [interquartile range (IQR) 41, 57.8]. Forty-six (65.7%) were female. The median duration of therapy was 6.7 months (IQR 4, 8). There was a significant reduction of HbA1c by 1.6%, from 8.6% (IQR 7.45, 9.6) to 7.0% (IQR 6.2, 7.7) ($p<0.001$). There were significant changes in weight profiles: median weight reduction of 2.0 kg (IQR 0.2, 5.15), from 89.2 kg (74.2, 97.6%) to 88.3 kg (IQR 77.1, 95) ($p<0.001$); waist circumference (WC) reduction from 106 cm (IQR 100, 115) to 104.5 cm (IQR 95.5, 112.5) ($p=0.015$); and body mass index (BMI) reduction from 34.3 kg/m^2 (IQR 30, 37.3) to 33.9 kg/m^2 (IQR 29.5, 37.5) ($p=0.001$).

CONCLUSION

Treatment with dulaglutide as additional therapy for uncontrolled T2D reduced HbA1c, weight, WC and BMI as early as four months of therapy.

OP-A-07

THE VERY LOW CARBOHYDRATE DIET (VLCBD): SHORT-TERM METABOLIC EFFICACY IN DIABETIC KIDNEY DISEASE PATIENTS

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INTRODUCTION

Obesity is strongly linked to the development of diabetic kidney disease. While very low carbohydrate diet (VLCBD) was associated with weight reduction, its effects on patients with diabetic kidney disease (DKD) are not well known. The aim of the study was to determine the metabolic effects of VLCBD in DKD patients.

METHODOLOGY

30 patients with type 2 diabetes aged 40 to 75 years and HbA1c of 7 to 10.5% were randomly allocated to receive VLCBD (<20 g/day) versus standard low protein diet (LPD) (0.8 g/kg/day). The patients received consultations every two weeks for 12 weeks. Metabolic profiles, glycemic control, inflammatory markers and visceral adipose tissue mass were compared.

RESULTS

The VLCBD group demonstrated significant reductions in weight [-4.0 interquartile range (IQR) 3.9 versus 0.2 IQR 4.2 kg, p=<0.001] and body mass index (-1.5 IQR 1.18 versus 0.074 IQR 1.54 kg/m^2, p=<0.001) compared to the LPD group. Waist circumferences were reduced in both groups (-4.0 IQR 5.25, p=0.003 and -2.0 IQR 3.6 cm, p=0.009). Estimated visceral adipose tissue mass and volume were significantly reduced in the VLCBD group. There were no significant changes in liver ultrasonographic findings in both groups. Both groups also showed a reduction in HbA1c (-1.3 IQR 1.1 versus -0.7 IQR 1.25%, p=NS). There was a significant increment in LDL in the VLCBD. The VLCBD group showed a significant reduction in IL-6 levels (-1.53 IQR 3.35 versus 0.46 IQR 1.95 pg/mL, p=0.028). Patients in VLCBD appeared to have an improvement in physical activity score compared to the LPD group.

CONCLUSION

After short-term intensive VLCBD intervention in DKD patients, improvements were observed in metabolic markers, diabetes status and inflammatory markers, supported by improvement in physical activity.

OP-A-08

UTILISATION OF LIBRE FLASH GLUCOSE SENSING TECHNOLOGY COMPARED TO CONVENTIONAL BLOOD GLUCOSE MONITORING IN DIABETES PATIENTS DURING RAMADAN: A SINGLE CENTER EXPERIENCE

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INTRODUCTION
As patients with diabetes mellitus (DM) are prone to fasting-related complications, intensive glucose monitoring is essential during Ramadan. This study aimed to assess the utility and tolerability of flash glucose sensing technology compared to the conventional self-monitored blood glucose (SMBG) during Ramadan.

METHODOLOGY
This prospective randomized controlled study was conducted at Hospital Putrajaya during Ramadan in 2019. Forty adult Muslim patients with underlying diabetes, HbA1C ≤9.0% and on insulin therapy were randomly assigned to either flash glucometer or conventional glucometer arms. All patients were given a glucose diary to document the days of completed fasting, frequency of insulin dosage adjustment and complications related to fasting or glucometer use. Data from all glucometers were downloaded during Visit 2 and 3. The flash glucometer group answered a satisfaction survey upon study completion at Visit 3. One patient from the conventional glucometer group was excluded from the study analysis.

RESULTS
The patients in our study predominantly had type 2 DM (n=29, 74.4%). The mean duration of DM was 13 ± 6.7 years, with 74.4% known to have diabetes-related complications. Most patients were able to complete fasting without serious adverse events or complications. The patients in the flash glucometer group monitored blood glucose more frequently than the conventional glucometer group. The frequency of glucose readings within range (4.0 to 10.0 mmol/L) was higher in this group. There was no significant difference in the frequency of insulin dose adjustment between both groups. Majority of patients in the flash glucometer group were satisfied with the device.

CONCLUSION
Flash glucose sensing technology was well accepted by diabetes patients observed fasting during Ramadan. The frequencies of glucose monitoring and glucose readings within range were significantly higher in the flash glucometer group. There was no significant difference in the frequency of insulin dosage adjustment.

OP-A-09

HOSPITALISED GERIATRIC HYPONATREMIA: PREVALENCE, IN-HOSPITAL FALL AND BURDEN OF CONDITION

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INTRODUCTION

Hyponatremia is the most frequent electrolyte disorder among the elderly and is associated with cognitive decline, frailty, fall events and mortality. The study aimed to determine the prevalence of hyponatremia and in-hospital fall in elderly patients seen at the emergency department (ED), and the association between severity of hyponatremia with length of stay (LOS), rehospitalisation and mortality.

METHODOLOGY

This was a cross-sectional study of patients aged ≥65 years seen at the ED in 6 months with admission Na <135 mmol/L. Pseudohyponatremia from hyperglycemia was corrected for glucometer reading ≥15 mmol/L. Patients who went home against medical advice and with incomplete data were excluded. The calculated sample size was 194, but 163 were recruited and dichotomised into mild-moderate (n=92) and severe hyponatremia (n=71).

RESULTS

The prevalence of geriatric hyponatremia was 29.6%, with a male preponderance [52.1%, p=0.99, confidence interval (CI): -0.16 to 0.16] and mean age of 74.57 ± 6.25 years (p=0.02, CI: -3.21 to 0.69). Mean adjusted Charlson comorbidity index (ACCI) score and number of medications were 6.6 ± 0.20 (p=0.77) and 6.6 ± 0.20 (p=0.51), respectively. Chronic hyponatremia within 6 months was seen in 41%. Mean admission serum Na was 127.9 ± 0.18 and 117.76 ± 0.71 mmol/L in mild-moderate and severe hyponatremia, respectively (p<0.01). In-hospital fall prevalence was 1.2%. There were no significant associations between hyponatremia severity with LOS (p=0.08), inpatient mortality (p=0.61), readmission within 30 and 60 days (p=0.96 and p=0.37, respectively), and 30- and 60-day mortality (p=0.65 and p=0.53, respectively).

CONCLUSION

One-third of elderly patients at the ED had hyponatremia, with close to two -fifths found to have chronic hyponatremia. The burden of the condition was reflected in longer LOS and high rate of rehospitalisation and mortality.

OP-A-10

TYPE 2 DIABETES AND CANCER SCREENING: FINDINGS FROM THE MALAYSIAN COHORT STUDY

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INTRODUCTION

A link between type 2 diabetes and the predisposition to colon, breast, and pancreatic cancer has been established during the last decade. However, cancer screening uptake among patients with diabetes is understudied. The study aims to identify the cancer screening uptake rate among the Malaysian Cohort (TMC) participants with diabetes.

METHODOLOGY

A cross-sectional study was conducted from July 2017 to March 2020. There were 905 female participants with diabetes from the Malaysian Cohort, age 35 to 65 years.

RESULTS

Out of the 905 participants, cancer screening tests performed were Pap smear (63.5%), mammography (46.7%), clinical breast examination (CBE) (54.7%), breast-self-examination (BSE) (49.6%) and immunochemical fecal occult blood test (iFOBT) (26.3%). These uptakes were higher compared to the general population for the performance of Pap smear (22%), mammography (3.6 to 30.9%), CBE (53.3%) and BSE (47.2%). Only the iFOBT uptake rate for the general population (79.6%) was higher than in patients with diabetes. Among those who took the iFOBT test, 14.7% had a positive result, higher than in the general population (13.1%). Although a lower colonoscopy compliance rate (31.4%) was seen in patients with diabetes compared to the general population (52.7%), colorectal cancer detection rate was higher (9.1%) compared to the general population (0.27%).

CONCLUSION

These results emphasize the importance of cancer screening tests in patients with diabetes as recommended by the American Diabetes Association.

OP-A-11

EFFECT OF SILENCING ALDOSTERONE SYNTHASE ON CELL APOPTOSIS IN HAC15 HUMAN ADRENOCORTICAL CELLS

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INTRODUCTION

Aldosterone-producing adenomas (APA) are a surgically curable form of secondary hypertension caused by pathologic expression of aldosterone synthase, CYP11B2, in adrenal lesions. Overexpression of CYP11B2 leads to excessive synthesis of aldosterone, resulting in induction of hypertension. Somatic mutations in KCNJ5, ATP1A1, ATP2B3, CTNNB1 and CACNA1D have been identified in APA. Although the effect of the mutations on aldosterone production has been well-documented, the effect of modulating CYP11B2 on cell fate remains to be elucidated. We aimed to investigate the effect of silencing CYP11B2 on cell apoptosis in human adrenal cells.

METHODOLOGY

HAC15, a subclone of the H295R immortalized human adrenocortical cell line, was transfected with ONTARGET plus siRNA (Thermo Scientific) or relevant controls using the Neon™ Transfection System 100 μL Kit (MPK10096, Invitrogen) according to manufacturer's recommendations. Forty-eight hours after transfection, the apoptosis assay was performed using the Pacific Blue™ Annexin V/SYTOX™ AADvanced™ apoptosis kit (A35136, Invitrogen) on the BD FACSVerse™ system. The supernatants and cells were harvested for aldosterone (IS-3300, IDS-iSYS) and cortisol (06687733190, Roche Elecsys e100), and RNA isolation (12183018A, Invitrogen) for real-time PCR via Applied Biosystems ABI 7000. Experiments were repeated 3 times independently.

RESULTS

CYP11B2 silencing caused a reduction of aldosterone production (-69.4% ± 3.1) and CYP11B2 mRNA expression (-83.0% ± 12.7) compared to control ($p<0.05$), with no significant change in cortisol production. This suggested that silencing was specific to CYP11B2 despite the gene being highly homologous to CYP11B1. However, flow cytometric analysis of CYP11B2 silencing showed no significant difference on the percentage of apoptosis cells compared to control cells.

CONCLUSION

Our findings showed that silencing CYP11B2 decreases aldosterone synthesis but does not affect apoptosis rate in HAC15 cells. However, further investigation on cell proliferation is needed before ruling out that modulation of CYP11B2 can affect cell fate.

OP-A-12

PREVALENCE OF HYPOGONADISM AMONG MALE TYPE 2 DIABETES MELLITUS PATIENTS IN PUSAT PERUBATAN UNIVERSITI KEBANGSAAN MALAYSIA

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INTRODUCTION
Hypogonadism is prevalent among males with type 2 diabetes mellitus (T2DM). The prevalence is varied due to different diagnostic criteria. The study aimed to determine the prevalence of hypogonadism among male Malaysian patients with T2DM and its associated factors.

METHODOLOGY
There was a total of 360 participants who fulfilled the inclusion criteria. Clinical data, socio-demographic parameters and morning fasting serum total testosterone level were taken. Patients with total testosterone of 8 to 12 nmol/L underwent retesting and assessment of symptoms using the Aging Male Symptoms (AMS) scale. Hypogonadism was defined as total testosterone <12 nmol/L and calculated free testosterone <0.255 nmol/L, in addition to AMS score >26.

RESULTS
The prevalence of hypogonadism was 17.5% (n=63), of which 55.6% had hypogonadotropic hypogonadism. There were significant differences in mean weight (p=0.001), body mass index (BMI) (p<0.001), waist circumference (p<0.001), serum triglycerides (p=0.04), serum high density lipoprotein cholesterol (HDL-C) (p=0.009) and serum alanine aminotransferase (p=0.046) between hypogonadotropic hypogonadal and normogonadal males. Hypergonadotropic hypogonadal males were significantly older (p=0.034). Increasing age [adjusted odds ratio (OR) 1.043, 95% confidence interval (CI): 1.003 to1.085, p=0.035], higher BMI (adjusted OR 1.108, 95% CI: 1.045 to 1.174, p=0.001) and presence of coronary artery disease (adjusted OR 2.096, 95% CI 1.090 to 4.030, p=0.027) were associated with higher risk of developing clinical hypogonadism, while high HDL-C level was protective (adjusted OR 0.224, 95% CI 0.057 to 0.885, p<0.001).

CONCLUSION
The prevalence of hypogonadism in our cohort was 17.5%. Hypergonadotropic hypogonadism was seen in 44%, warranting further research. Older T2DM males with more severe metabolic syndrome (high BMI and low HDL-C level) with coronary artery disease have higher risk of developing hypogonadism, regardless of diabetes duration or glycaemic control.

OP-A-13

THE EFFECT OF LUSEOGLIFLOZIN ON CARDIOMETABOLIC MARKERS IN PATIENTS WITH PREDIABETES (IMPAIRED GLUCOSE TOLERANCE): A PILOT STUDY

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INTRODUCTION

Sodium glucose co-transporter inhibitors have been widely studied in type 2 diabetes mellitus and have proven to reduce cardiovascular risk and hospitalization for heart failure and promote weight loss. To date, there is no data on its use in prevention of cardiovascular events in prediabetes. We aimed to determine the effect of Luseoglifozin on cardiometabolic markers in patients with prediabetes (impaired glucose tolerance).

METHODOLOGY

We conducted an interventional study in the University Kebangsaan Malaysia Medical Center from May to March 2020.

RESULTS

A total of 29 patients with prediabetes were recruited. The mean age was 51.72 ± 9.29 years. There was a statistically significant difference in weight (81.96 ± 19.23 versus 78.07 ± 19.92 kg, p=0.000), ALT [26.00 (28.00) versus 19.00 (16.00) U/L, p=0.005], serum ferritin [149.4 (230.19) versus 109.25 (160.01) pmol/L, p=0.031] and plasma malondialdehyde (MDA) (8.94 ± 5.82 versus 6.11 ± 3.71 μmol/L, p=0.040). The sub-analysis of patients with elevated high-sensitivity C-reactive protein (hsCRP) (>3mg/L) showed a significant reduction of hsCRP post-treatment [6.40 (11.28) versus 3.42 (8.68) mg/L, p=0.007]. There was a significant association between changes in ferritin and hsCRP (r=0.905, p<0.001). There was an increase in trend in flow-mediated dilatation following treatment with Luseoglifozin, but this was not statistically significant.

CONCLUSION

In this study, Luseoglifozin was found to reduce serum ferritin, plasma MDA and body weight in patients with impaired glucose tolerance. hsCRP in the high-risk group was reduced after 16 weeks of treatment.

OP-A-14

ANALYSIS OF BLOOD LNCRNA EXPRESSION PROFILES IN TYPE 2 DIABETES INDIVIDUALS WITH DYSLIPIDEMIA

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INTRODUCTION
Long noncoding RNAs (lncRNAs) are large RNA transcripts present in the blood without protein-coding capacity, with specific expression profiles for type 2 diabetes (T2D) and other conditions such as dyslipidemia (DLP). The objective of this study was to identify blood lncRNAs associated with well- and poorly-controlled T2D with DLP.

METHODOLOGY
Previous data of the T2D studies (GSE156993 and GSE15932) were retrieved from the NCBI GEOdatasets website and re-analyzed for the differential lncRNA expression for these groups: (1) healthy controls (CON, n=14), (2) T2D well-controlled without DLP (T2D, n=8), (3) DLP without T2D (DLP, n=6), (4) T2D well-controlled with DLP (T2D-DLPW, n=6), and (5) T2D poorly-controlled with DLP (T2D-DLPP, n=6). MicroRNAs predicted to bind to the significant lncRNAs (miRNet) were determined and continued with biological pathway analyses (KEGG).

RESULTS
The first two comparisons (T2D/CON and DLP/CON) resulted in 33 dysregulated lncRNAs [-1.5<log2 Fold Change (log2FC) >1.5, adjusted p-value<0.05. Among these, seven lncRNAs were specific to T2D, and nine specific to DLP. Another three comparisons (T2D-DLPW/T2D, T2D-DLPP/T2D and T2D-DLPP/T2D-DLPW) resulted in 308 dysregulated lncRNAs. From these, 37 were specific to T2D-DLPP and 87 specific to T2D-DLPW. Two lncRNAs, XIST and LINC01857, were upregulated only in T2D-DLPP compared to T2D (log2FC=5.86, adjusted p-value=0.002 and log2FC=1.73, adjusted p-value<0.001, respectively) and T2D-DLPW (log2FC=3.71, adjusted p-value=0.037 and log2FC=2.50, adjusted p-value=0.022, respectively). The biological pathway analyses showed that lncRNA XIST and LINC01857 might be involved in insulin resistance, apoptosis and inflammation pathways. Both lncRNAs are predicted to interact with miR-146b-5p, found to be associated with HbA1C level.

CONCLUSION
Blood lncRNA XIST and LINC01857 may be involved in poor glucose control of T2D with DLP.

OP-A-15

EFFICACY OF ONCE DAILY HUMALOG MIX50 AT DINNER COMPARED TO ONCE DAILY NPH INSULIN: A CROSSOVER STUDY

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INTRODUCTION
Insulin therapy is often delayed because of fear of hypoglycaemia and multiple injections to achieve target blood glucose. The aim of this study was to compare the rate of hypoglycaemia and metabolic control achieved on once-daily Humalog Mix50 with daily NPH insulin.

METHODOLOGY
This was a single-center crossover open-label study involving 49 patients with uncontrolled type 2 diabetes. The patients were given either NPH insulin at bedtime or Humalog Mix50 at dinner, then switched at the end of three months with titration for two weeks to continue the regimen for the next three months. The insulin dose was titrated by flexible evidence-based guidelines upon the discretion of the treating physician.

RESULTS
The mean age was 60.4 ± 10.5 years with female predominance (55.1%). Mean baseline HbA1c was 9.24 ± 1.52%. Humalog Mix50 resulted in lower overall average self-monitored blood glucose (SMBG) (8.55 ± 0.51 mmol/L versus 9.01 ± 0.52 mmol/L, p=<0.001) and lower average last week SMBG (8.26 ± 0.98 versus 8.89 ± 1.13 mmol/L, p=0.006) compared to NPH insulin. When individual 7-point SMBG values were compared, the significance was seen in post-dinner, 0200H and pre-breakfast values. There was no significant difference in HbA1c at the end of 12 weeks (8.64 ± 1.46% versus 8.75 ± 1.33% p=0.626). There were no severe hypoglycaemic events with Mix50. Both Mix50 and NPH had similar proportions of patients with mild and moderate hypoglycaemic events. There was a significant but small weight gain with Mix50 compared to NPH (1.2 ± 5.71 kg vs 0.51 ± 1.2 kg, p=0.022). Mean stable insulin dose was similar with both treatments (22.2 ± 6.1 units Mix 50 versus 20.5 ± 6.4 units NPH, p=0.146).

CONCLUSION
Humalog Mix50 once daily at dinner lowers blood glucose better compared to NPH, with similar hypoglycaemic events.

OP-A-16

A SINGLE CENTRE EXPERIENCE: PRIMARY ALDOSTERONISM SURGICAL VERSUS MEDICAL THERAPY

https://doi.org/10.15605/jafes.036.S16

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INTRODUCTION
Primary aldosteronism (PA) is a common cause of secondary hypertension associated with cardiovascular and renal morbidities. This study sought to describe the demographic and clinical presentation of patients with PA and compare treatment outcomes with surgical versus medical therapy.

METHODOLOGY
This is a retrospective review of patients with PA from the Endocrine Unit of Selayang Hospital from 2011 to 2020. Outcome parameters reviewed include resolution of hypertension and hypokalemia.

RESULTS
A total of 53 patients were analyzed. Mean age at diagnosis was 44.0 ± 12.0 years. Mean duration of hypertension before diagnosis was 11.5 ± 8.0 years. Most patients (92%) were on two or more antihypertensive medications at presentation. Majority (70%) had hypokalemia; 20% had chronic kidney disease (CKD) stage >3 at presentation. Among the 40 patients who completed investigations, 65% underwent adrenalectomy, while 35% were treated medically with mineralocorticoid receptor antagonist. Most (64%) patients in the medical group had unilateral adrenal lesion but not offered surgery due to inconclusive adrenal vein sampling results or individual preference. All patients in the surgical group achieved biochemical cure after surgery, while 29% patients in the medical group still required potassium supplements. Patients in the surgical group were almost twice more likely to be normokalemic without any potassium supplement compared to the medical group. At discharge, all patients in the surgical group were normotensive without treatment, but 85% resumed antihypertensives on follow-up. After a median follow-up of 6 months, there was a significant reduction in the mean number of anti-hypertensives required in the surgical (1.0 ± 0.7) compared to the medical group (2.8 ± 1.0) ($p<0.001$).

CONCLUSION
Delayed diagnosis of PA was mostly due to lack of screening. Patients who underwent surgery achieved better biochemical and clinical outcomes compared to medical therapy. However, many remain hypertensive associated with significant burden of CKD.

OP-A-17

EFFECT OF INTERMITTENT FASTING IN OVERWEIGHT FEMALES ON WEIGHT LOSS AND METABOLIC BIOMARKERS

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INTRODUCTION
Intermittent fasting (IMF) is an emerging dietary intervention to lose weight. It involves restriction in total caloric intake in a given period. This study examined the effects of IMF on weight loss, metabolic markers, body composition and satiety score in nurses without diabetes in our centre.

METHODOLOGY
Thirty-seven overweight nurses without diabetes were randomly allocated to the experimental (IMF, n=18) or control group (CER, n=19) for 12 weeks. The IMF group was placed on a 5:2 diet (20 to 25% of energy needs on scheduled fasting days). The CER group was prescribed calorie restriction based on body mass index (BMI) and level of physical activity. Repeated-measure ANOVA was used to statistically analyse the data.

RESULTS
The mean age of subjects was 38.9 ± 5.9 years. There was a significant reduction in weight and BMI in the IMF group ($p<0.01$) at the end of 12 weeks. Subjects in the IMF had 5.9% weight loss compared to 2.3% in the CER group. The reduction in fasting insulin and HOMA-IR were greater in the IMF group ($p=0.012$ and 0.022, respectively). There was a modest reduction in fat mass and fat-free mass in the IMF group, but none in the CER. The satiety score was also significantly increased in the IMF group ($p=0.01$).

CONCLUSION
IMF was effective for weight loss and resulted in improvement in insulin resistance in overweight women. Further reduction in weight loss and its sustainability would require long-term follow up.

OP-A-18

PCOS IS NOT A RISK FACTOR FOR THE OCCURRENCE OF METABOLIC SYNDROME IN MALAY WOMEN

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INTRODUCTION
Polycystic ovary syndrome (PCOS) is a common heterogenous endocrine condition previously associated with an increased prevalence of the metabolic syndrome in different ethnic groups and populations. The identification of Malay women with PCOS as high risk for metabolic dysfunction may greatly aid in their management. The primary aim of this study was to compare the prevalences of metabolic syndrome in Malay women with and without PCOS.

METHODOLOGY
This research was part of a cross-sectional clinic-based study of Malay women between February 2013 and June 2018. Eligible women were diagnosed with PCOS using the Rotterdam criteria. The primary outcome was the prevalence of metabolic syndrome as defined by the Joint Interim Statement of the International Diabetes Federation (IDF). Anthropometric, metabolic and hormonal characteristics were also compared.

RESULTS
The study comprised 106 women with PCOS and 121 controls with a mean age of 31.0 ± 7.4 years. The prevalence of metabolic syndrome in the PCOS group (22.9%) and in the control group (33.6%) was not significantly different [$\chi 2$ (1)=2.093, p=0.148], even after adjustment for waist circumference (22.1 and 22.9%, respectively). PCOS subjects had higher FAI (median 3.0 versus 2.2, U=8539, p<0.001) and free testosterone (median 21.8 versus 19.1 pmol/L, U=7679, p=0.042) and lower SHBG (median 53.9 versus 73.6 nmol/L, U=4832, p<0.001) levels. All other parameters, including HOMA-IR, and were not significantly different. No relationship was found between insulin resistance and hyperandrogenism.

CONCLUSION
The prevalences of metabolic syndrome in Malay women with and without PCOS were found to be similar. Central obesity was seen to be a risk factor for metabolic syndrome in these women. The lower SHBG levels in PCOS women may be indicative of a role of insulin resistance in the pathogenesis of PCOS and metabolic syndrome.

OP-A-19

FLUORODEOXYGLUCOSE PET/CT SCAN ASSESSMENT IN DIFFERENTIATED THYROID CANCER FOLLOWING RADIOIODINE TREATMENT

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INTRODUCTION
Radioiodine is essential in post-operative differentiated thyroid cancer (DTC) management. A proportion of DTC may eventually become more aggressive and less sensitive or refractory towards radioiodine. Assessment using fluorodeoxyglucose positron emission tomography/computerised tomography (FDG PET/CT) is warranted in these patients. We aimed to evaluate the characteristics of DTC cases referred for FDG PET/CT and their association with positive findings.

METHODOLOGY
We performed a retrospective cross-sectional analysis and audit of DTC patients in our institution who were referred for FDG PET/CT between November 2017 and April 2019. Those who defaulted PET/CT appointment and clinic follow-up with incomplete documentation were excluded. A total of 113 cases were included. Clinical parameters, laboratory results and scan results were recorded and categorised accordingly.

RESULTS
Majority were females (71.7%), with mean values for age and cancer duration at 52.1 and 9.3 years, respectively. Papillary thyroid carcinoma was predominant (78.8%). Majority had stage I to II disease (77%) with ≤4 sessions of radioiodine treatment (70.8%). Only 31% demonstrated radioiodine-avid residual disease. Elevated serum thyroglobulin of 11 to 99 μg/L was noted in 43 (38.1%) and >100 μg/L in 34 patients (30.1%) prior to PET/CT scan. FDG-avid malignancy was observed in 64 patients (56.6%), whereby 30 (26.5%) were considered to have mixed radioiodine-avid and FDG-avid disease following PET/CT assessment. Baseline nodal involvement, distant metastases, stage III to IV disease, cumulative radioiodine doses of at least 600 mCi, markedly high thyroglobulin and residual disease on latest radioiodine scan were significantly associated with FDG-avid malignancy ($p<0.05$). The presence of baseline nodal involvement was the most significant parameter (OR=3.7).

CONCLUSION
FDG PET/CT plays important role in suspected radioiodine refractory DTC cases. Several clinical characteristics were associated with FDG-avid malignancy.

OP-A-20

A CROSS-SECTIONAL STUDY TO ASSESS BETA CELL FUNCTION IN YOUNG ONSET TYPE 2 DIABETES MELLITUS (T2DM)

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INTRODUCTION
Young-onset type 2 diabetes (T2D) is a heterogenous subset with variable clinical characteristics, disease progression, risk of complications and therapeutic response. This study aimed to examine beta cell function of these patients early in the disease using basal and stimulated C-peptide. We also looked at the association between metabolic parameters and diabetes complications with C-peptide levels.

METHODOLOGY
A dual center cross-sectional study was conducted in 113 young-onset T2D between 18 to 35 years of age, with a maximum disease duration of 5 years and negative diabetes autoantibodies. Plasma basal and stimulated C-peptide was measured before and 6 minutes after intravenous injection of 1 mg glucagon.

RESULTS
The median (interquartile range) of basal and stimulated C-peptide was 619.0 (655.0) pmol/L and 1231.0 (1024) pmol/L, respectively. Majority of our patients had adequate basal and stimulated beta cell function (85.8% basal and 77.9% stimulated). More than half of these patients were on insulin therapy. When the insulin-treated subgroup was analysed, 77.0% had adequate basal and 69.7% had adequate stimulated beta cell function. Multivariable linear regression analysis showed hypertension and obesity as independent predictors of high basal and stimulated C-peptide levels. There was also a significant independent association between the presence of nephropathy and higher basal C-peptide levels, but not stimulated C- peptide.

CONCLUSION
We have shown that most young-onset T2DM have adequate beta cell function during their early course of disease despite insulin therapy. A markedly elevated C-peptide level in those with a metabolic syndrome phenotype and nephropathy may suggest insulin resistance as the key driving factor during early disease. Further studies measuring insulin resistance in this population may help confirm this finding.

OP-A-21

RAMADAN FASTING AMONG PEOPLE WITH TYPE 2 DIABETES IN MALAYSIA IN THE DAR 2020 GLOBAL SURVEY

https://doi.org/10.15605/jafes.036.S21

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INTRODUCTION
The Diabetes and Ramadan (DAR) Global survey was conducted to determine the impact of Ramadan fasting among people with diabetes in different geographical regions in 2020. We describe the characteristics and care among participants with type 2 diabetes in Malaysia.

METHODOLOGY
In this observational study, participants attending community- and hospital-based diabetes clinics consented to answer a physician-administered questionnaire within 10 weeks following the completion of Ramadan. The survey characterised their intentions to fast and duration of fasting during and after Ramadan. Hypoglycaemia and hyperglycaemia events experienced were analysed along with diabetes-related medications and lifestyle adjustments. Specific analysis were performed comparing age categories below and above 65 years.

RESULTS
There were 748 survey participants with a mean age of 54.4 years. Of these, 23.2% were above 65 years, and 50% had diabetes more than 10 years. Mean HbA1c was 8.5%; 64% had HbA1c >7.5%. The most common treatments were metformin (83.6%), sulphonylureas (30.7%) and insulin (57.9%). Concern for COVID-19 affected the decision to fast in 3%. Of the 94.7% participants who intended to fast during Ramadan, 95.5% were able to fast for at least 15 days. Diabetes-related illness was the reason to break fasting in 16.3%. Hypoglycaemia and hyperglycaemia (>300mg/dL) occurred in 17.8% and 10.6% of participants, respectively, with 4.8% and 2.7% requiring hospital consult for the respective complications. A break in fasting was done by 68.5% of those with hypoglycaemia, compared to 14.9% with hyperglycaemia.

CONCLUSION
This survey highlights the high rates of Ramadan fasting among people with T2D in Malaysia during the COVID-19 pandemic. Glycaemic complications occurred frequently, indicating the need to enhance Ramadan-focused diabetes education and self- monitoring to reduce and prevent complications. Pre-Ramadan assessment is essential to identify those at increased risk who should be advised against fasting.

PAEDIATRIC

OP-P-01

VITAMIN D DEFICIENCY AMONG SURVIVORS OF CHILDHOOD ACUTE LYMPHOBLASTIC LEUKAEMIA: A SINGLE-CENTRE STUDY

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INTRODUCTION
Vitamin D plays a vital role in bone mineralization, and in reducing the risk of developing coronary heart disease, type 2 diabetes as well as cancer. As survivors of childhood acute lymphoblastic leukaemia (ALL) have a higher risk of developing chronic health problems, maintaining a normal vitamin D level is of utmost importance.

METHODOLOGY
This single-centre, cross-sectional study aimed to determine the prevalence of vitamin D deficiency among survivors of childhood ALL at a tertiary paediatric oncology centre and examine possible contributory risk factors. Ninety-eight survivors (44 males and 54 females) were recruited over a 19-month period. Validated questionnaires were used to determine sun exposure and physical activity level. Serum vitamin D level was measured, with 25(OH)D ≤50 nmol/L considered as vitamin D deficiency.

RESULTS
Median age at diagnosis was 4.96 years [interquartile range (IQR): 25th 2.89; 75th 6.53) while median age at study entry was 14.88 years (IQR: 25th 10.6; 75th 21.0). Majority of them were diagnosed with standard risk B-ALL. Fifty survivors (51%) had vitamin D deficiency. Using bivariate logistic regression, three factors were identified as a significant independent risk factor ($p<0.05$) for having vitamin D deficiency: female gender [odds ratio (OR) 7.059, 95% confidence interval (CI): 2.077 to 23.986), attained puberty (OR 5.561, 95% CI: 1.728 to 17.898) and wearing long sleeves (OR 4.194, 95% CI: 1.011 to 17.391). Treatment-related factors (corticosteroid use and radiotherapy) were not found to influence vitamin D status in this study.

CONCLUSION
Half of the survivors of childhood ALL in this study had vitamin D deficiency. Targeted screening and supplementation would be beneficial to ensure optimal vitamin D status and reduce their risk of long-term morbidities.

OP-P-02

AGE OF MENARCHE AMONG GIRLS OF DIFFERENT ETHNICITY IN KUALA LUMPUR

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INTRODUCTION

The age of menarche in girls is becoming younger over the years globally. Age of menarche is affected by many factors, including genetics, body mass index (BMI) and the environment. Certain ethnicities were found to start menstruating earlier.

This study was done to determine the age of menarche among different ethnicities in Kuala Lumpur (KL) and the factors associated with early menarche.

METHODOLOGY

A cross-sectional study was conducted in KL from June until Nov 2019. 893 students from 10 selected secondary schools were recruited. Age of menarche of three major ethnicities (Malay, Chinese and Indian) was analyzed. Factors affecting age of menarche and correlation of age of menarche with adult height were further analyzed.

RESULTS

Mean age of menarche of KL students was 12.19 ± 1.1 years, younger compared to their maternal age of menarche (12.6 years). There is no significant difference between mean age of menarche in different ethnicities (Malay, 12.20 ± 1.15; Chinese, 12.22 ± 1.07; and Indian, 12.19 ± 1.17 years; p-value=0.453). BMI and maternal age of menarche had a strong positive correlation with age of menarche. Family income and parental education did not affect the age of menarche. There was a weak positive correlation of age of menarche with adult height.

CONCLUSION

The age of menarche was found to be younger compared to the previous generation. There was no significant difference in age of menarche among different ethnicities in Kuala Lumpur. BMI and maternal age of menarche affects the onset time of menarche.

OP-P-03

OBESITY AND BODY COMPOSITION AFFECTING GLYCEMIC CONTROL IN PAEDIATRIC TYPE 1 DIABETES

https://doi.org/10.15605/jafes.036.S24

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INTRODUCTION
Temporal trends demonstrate a higher prevalence of overweight and obesity among children with type 1 diabetes (T1D). High body fat is believed to contribute to insulin resistance, yielding more complex metabolic outcomes and poor glycaemic control. We conducted a study to evaluate the incidence of obesity and high percentage body fat (PBF) and their effects on glycaemic control.

METHODOLOGY
We performed a cross-sectional study on T1DM children and adolescents at the paediatric endocrine clinic Hospital Putrajaya between November 2019 to August 2020. PBF and lean muscle mass (LMM) were measured using bioelectrical impedance analysis (InBody720). Overweight and obesity were defined according to the World Health Organization standards. Abdominal obesity was defined as ≥90th centile according to population-specific waist circumference (WC). PBF ≥90th centile according to the Hong Kong Chinese children reference was considered as excessive PBF, while LMM <-2SD was extremely low. HbA1c ≥8% was poorly controlled.

RESULTS
A total of 63 T1D patients were recruited with equal male-to-female ratio. Mean age was 12.42 ± 3.32 years and mean HbA1c was 9.79 ± 1.97%. The incidence of overweight/obesity and excessive PBF was 17.5%. Those with HbA1c <8% (15.8%) required less insulin and had non-obese BMI and PBF. Pubertal T1D adolescents had higher LMM (8.9 kg, p<0.001, 95% CI: 6.6 to 11.2) compared to prepubertal children. There was a significant linear relationship between WC, HbA1c and PBF (p=0.001). Hypertension and dyslipidemia did not correlate significantly with PBF or BMI. Those with extremely low LMM (55.6%) required higher insulin. This was strongly associated with stunted growth (height SD -1.12 ± 1.00, p=0.020).

CONCLUSION
Abdominal obesity was found to be associated with poorer glycemic control. Further studies are required to delineate the effect of visceral fat compared to PBF and LMM towards glycemic control and growth.

OP-P-04

OUTCOME OF CHILDREN WITH TURNER SYNDROME ON GH THERAPY; INSIGHTS FOR FUTURE DIRECTION

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INTRODUCTION
The use of growth hormone (GH) in children with Turner syndrome (TS) was approved in 1996. In UMMC, a small proportion of children with TS had completed GH therapy. We describe the outcome of these children at their last visit.

METHODOLOGY
This is a retrospective audit from 2000 to 2020. Data at diagnosis including anthropometric, karyotyping and GH doses were documented. Clinical parameters were collected at the last clinic visit or at 18 years old.

RESULTS
A total of 12 girls completed GH therapy since 2000. Ten (83%) were 45XO. Median age at GH initiation was 10.35 years (5.46 to 14.04). Standard deviation scores (SDS) at the start of GH therapy were: mean height -3.4 ± 1.2, TS SDS -0.7 ± 0.9, measured parental height (MPHSDS) -2.0 ± 1.2 and body mass index (BMISDS) 0.03 ± 1.5. The median age at stopping GH was 15.38 years (11.37 to 18.32). After treatment, the scores were: mean FHSDS -2.6 ± 1.3; TSSDS 0.8 ± 1.4, MPHSDS -1.5 ± 0.97 and BMISDS 0.1 ± 1.1. HTSDS significantly improved after GH treatment ($p<0.001$). Eight (66%) girls' FH were short (-1.5SDS to -2SDS) of their MPH target range. Only one child had -1.5 TS SDS post-GH treatment. GH doses were between 0.042 to 0.059 mg/kg/day (median 0.055 mg/kg/day). Although there were no significant differences between BMI before and after treatment, none were obese. One developed hypertension at last clinic visit, and none developed diabetes. Four had mild scoliosis during the GH treatment period.

CONCLUSION
GH use in TS improve FH outcome especially when referring to TS SDS. Only one in three TS girls grew to their MPHSDS target. GH use seems to reduce obesity and early metabolic complications. More samples needed to analyse factors determining outcome of GH use in TS.

COVID & ENDOCRINE DISEASES

OP-C-01

MENTAL WELL-BEING AMONG ADOLESCENTS WITH DIABETES DURING THE COVID-19 PANDEMIC

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INTRODUCTION
The COVID-19 pandemic has affected millions of lives worldwide causing great psychological stress. Adolescents with diabetes are particularly at risk of mental health issues during these unprecedented times.

METHODOLOGY
A cross-sectional study was conducted among adolescents with type 1 (T1DM) and type 2 diabetes mellitus (T2DM) age 10 to 18 years during the nationwide lockdown from June to December 2020 to assess the impact of COVID-19 on their mental health. We recruited and interviewed 87 participants regarding lifestyle changes, followed by the administration of Depression, Anxiety and Stress Scale (DASS-21).

RESULTS
There were 58 patients with T1DM (30 males, 51.7%) and 29 patients with T2DM (9 males, 31%) who participated in the study. Male gender, T2DM, puberty and presence of anxiety symptoms were associated with deterioration in glycaemic control post-lockdown. There was a deterioration in HbA1c among male and T2DM patients by 0.76% and 0.94% respectively (p=0.013 and 0.004, respectively). HbA1c increase pre- and post-lockdown was observed in patients with anxiety symptoms (9.39 ± 0.49 versus 10.16 ± 0.54%, p=0.028). Patients with stress symptoms showed improvement in their HbA1c (10.00 ± 0.57 versus 9.50 ± 0.063%, p=0.036). The incidence of depressive, anxiety and stress symptoms were detected in 34%, 41% and 26%, respectively in adolescents with no significant difference between T1DM and T2DM. Severe to extremely severe symptoms were seen for the subscale of depression (5.7%), anxiety (11.4%) and stress (6.9%). Lifestyle parameters (meal frequency, Physical Activity Questionnaire score, screen time and sleep duration) did not differ among the groups with or without the depressive, anxiety and stress symptoms.

CONCLUSION
There is a high prevalence of psychological disturbance among adolescents with diabetes during the pandemic. Anxiety was related to poor glycaemic control. Timely psychological assessment and support must be given to our young patients.

ADULT

PP-01

CLINICAL CHARACTERISTIC OF ADRENAL INCIDENTALOMA FROM 2010 TO 2020 IN HOSPITAL PUTRAJAYA

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INTRODUCTION
Adrenal incidentaloma are lesions found incidentally on imaging. With widespread use of imaging in clinical practice, the incidence has increased. We describe the clinical characteristics of adrenal incidentaloma in an endocrine referral hospital in Putrajaya, Malaysia.

METHODOLOGY
This was a retrospective study reviewing medical records for adrenal lesions discovered for non-adrenal imaging from January 2010 to January 2020. Data for demographic, radiological characteristics, hormonal functionality and histopathology data were collected and analysed.

RESULTS
There were 164 identified patients, of which 100 (61%) were female. Site involvement was most frequent on the left (51.2%), followed by the right (40.2%); a few had bilateral lesions (8.5%). It was mostly seen in Malays (59.8%). Non-functioning adenoma was the most common diagnosis (78.1%). Among functioning adenomas, phaeochromocytoma incidence was highest (5%). The incidences of primary aldosteronism and Cushing's syndrome were similar (1.3%). Adrenal cortical carcinoma (ACC), adrenal metastasis and lymphoma were seen in 8.1%. ACC tended to occur between ages 40 to 49 years, whereas adrenal metastases were seen in older age groups. Functioning adenomas were spread out between ages 40 to 69 years. ACC were typically more than 4 cm at detection. Functioning adenomas varied in sizes: 74.8% of non-functioning adenomas measured 1 to 3.9 cm, and 15.1% were more than 4 cm. Hounsfield units for all functioning adenomas and ACC were >20 and varied in non-functioning adenoma.

CONCLUSION
Adrenal incidentaloma requires further assessment as the incidence of functional tumour or malignancies were seen in up to 20%. Clinicians should have a high index of suspicion when encountering any suspected adrenal lesions. Early referral to centres that provide investigation and management of adrenal incidentaloma should be made.

PP-02

PITUITARY METASTASIS UNVEILED FOLLOWING CRANIAL DIABETES INSIPIDUS UNMASKED BY STEROID

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INTRODUCTION
Pituitary metastasis is uncommon and may occur via haematogenous or meningeal spread. The infundibulum or posterior lobe are commonly involved causing cranial diabetes insipidus (CDI). However, CDI may be masked in patients with glucocorticoid insufficiency due to concurrent hypopituitarism.

RESULTS
Case 1: A 54-year-old woman with stage 3 left breast invasive ductal carcinoma presented with blurring of vision and left 3rd nerve palsy. Brain CT reported left cavernous sinus mass. She was treated as cavernous sinus syndrome with oral prednisolone 30 mg BD. Shortly after, she complained of polydipsia and polyuria, with serum sodium of 154 mmol/L. Paired urine osmolality measurement was 190 mOsm/kg confirming diabetes insipidus. Her symptoms improved and serum sodium normalised after oral desmopressin. Brain MRI revealed thickened infundibulum and posterior pituitary leptomeningeal enhancement suggestive of metastasis. Hormonal workup revealed hypopituitarism. She received hormonal replacement and intrathecal chemotherapy.

Case 2: A 64-year-old man with stage 3 nasopharyngeal carcinoma (NPC) on palliative chemotherapy was admitted for meningoencephalitis. On admission, he was septic and hypotensive, requiring inotropic support and was started on intravenous hydrocortisone. As his blood pressure improved, he developed polyuria up to 6 L/day. Endocrine consult was sought when his serum sodium increased from 144 mmol/L to 173 mmol/L. Urine specific gravity was 1.005 (reference value 1.015 to 1.025). He was started on SC desmopressin and IV hydration, with resolution of polyuria and hypernatremia. Brain MRI reported advanced NPC with extensive local infiltration including bilateral cavernous sinus and pituitary sella. Hormonal workup showed panhypopituitarism requiring thyroxine and hydrocortisone replacement.

CONCLUSION
Although rare, symptoms of diabetes insipidus in patients with malignancy should alert the physician for the possibility of pituitary metastasis. Failure to consider this diagnosis can lead to delay in treatment and complications.

PP-03

DIABETES INSIPIDUS MASQUERADING PITUITARY ADENOMA

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INTRODUCTION
Central diabetes insipidus (CDI) is rare with a prevalence of 1 in 25000, most commonly due to pituitary surgery or trauma (50%) and hypophysitis (15%). We reported a rare case of CDI masquerading as a pituitary adenoma.

RESULTS
A 54-year-old woman with diabetes mellitus presented with generalised seizure. She had polyuria >3L/day and polydipsia for 6 months. She had no menses since age 45, and no history of postpartum complications. Galactorrhoea, increased weight/shoe size, changes in facial appearance, headache, blurring of vision, postural dizziness and hypothyroid symptoms were absent. She was obese (body mass index 49 kg/m$^{2)}$, with BP 124/62, HR 62, and no postural hypotension. There were no abdominal striae, proximal myopathy, frontal bossing, spade-like hands nor bitemporal hemianopia. She had hypernatraemia (152mmol/L), high serum osmolality (320 mOsm/kg) and low urine osmolality (80 mOsm/kg). Urine osmolality increased to 340 mOsm/kg after desmopressin. She had central hypocortisolism (cortisol 14 nmol/L, ACTH 22 pg/mL), central hypothyroidism (fT4 7.1 pmol/L, TSH 0.58 mIU/L), hyperprolactinaemia (3387 mIU/L, 3974 mIU/L post-dilution) and secondary hypogonadism (oestradiol 232 pmol/L, LH <0.1 IU/L, FSH 1.4 IU/L). Random morning GH was 0.1 ng/mL. IGF-1 was not sent as there was no clinical suspicion of acromegaly. Pituitary MRI showed a well-defined enhancing sellar mass with suprasellar extension measuring 1.3 cm x 1.4 cm x 1.6 cm, suggestive of a pituitary macroadenoma with central necrosis and loss of posterior pituitary brightness on plain T1 MRI. The adenoma was removed via transsphenoidal surgery, and histopathology showed pituitary adenoma which stained positive for GH and prolactin. There was no evidence of hypophysitis on histology.

CONCLUSION
Pituitary adenomas rarely present as CDI. In few reports, all had concurrent hypophysitis on histopathology (1-4). Our patient had biochemically confirmed CDI and radiologic findings suggestive of adenoma and hypophysitis. However, histopathology only showed pituitary adenoma with no evidence of hypophysitis.

PP-04

HYPOGLYCEMIA AWARENESS AND MANAGEMENT STUDY (HAMS) – A RETROSPECTIVE REVIEW OF HYPOGLYCEMIA KNOWLEDGE AMONG HEALTH CARE PROVIDERS IN A SINGLE CENTER

https://doi.org/10.15605/jafes.036.S30

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INTRODUCTION
Knowledge on management of hypoglycemia is essential for all healthcare providers (HCP). Poor management of hypoglycemia will lead to catastrophic consequences. The objective of this study is to evaluate the level of knowledge on hypoglycemia among HCP in Hospital Melaka.

METHODOLOGY
This was a retrospective review on level of hypoglycemia knowledge among HCP from various departments. All HCP who attended a Hypoglycemia Roadshow in Hospital Melaka in November 2019 were given an assessment which consisted of 10 questions to evaluate their knowledge on diagnosis, complications and management of hypoglycemia.

RESULTS
There were 422 participants consisting of 308 doctors and 114 non-doctors. The level of knowledge was divided into low (0-3 points), moderate (4-6) and high (7-10). High scores were seen in 56.16% (n= 237); the rest achieved moderate (35.31%, n=149) and low (8.53%, n=36) scores. We compared the level of knowledge between doctors and non-doctors: 41.94% of doctors achieved high scores as compared to 14.22% of non-doctors. However, this was not statistically significant (p=0.115). HCP from the medical department performed better with 28.67% achieving high scores compared to 27.49% in those from non-medical departments (p=0.00) Numerically, junior HCP (<5 years working experience) performed better with 40.76% obtaining high scores compared to their senior counterparts (≥5 years), with only 15.4% obtaining high scores. (p=0.331)

CONCLUSION
More than half of the participants had good knowledge on hypoglycemia. Continuing refresher education is important for HCP from all departments regardless of seniority.

PP-05

PEPTIDE RECEPTOR RADIONUCLIDE THERAPY INDUCED CARCINOID CRISIS: A CASE REPORT AND REVIEW OF LITERATURE

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INTRODUCTION
Peptide receptor radionuclide therapy (PRRT) is a therapeutic option in inoperable or metastatic neuroendocrine tumors (NET). PRRT is promising in prolonging survival and delaying disease progression in patients with advanced bronchopulmonary carcinoid. However, it may lead to worsening of carcinoid symptoms or even precipitate carcinoid crises.

RESULTS
A 62-year-old man with underlying advanced lung carcinoid tumor developed carcinoid crisis after receiving PRRT. The carcinoid crisis was successfully treated with intravenous octreotide infusion. Several prophylactic measures were taken to prevent PRRT- induced carcinoid crisis. Pre-medications included corticosteroid, a selective 5-HT3 receptor antagonist, parenteral ranitidine and chlorpheniramine for H1 and H2 antagonism, respectively, to prevent the release of the mediators from tumor tissue and/or blocking their effects on target organs. Octreotide infusion was given at 50 µg/hour. Despite measures, he developed carcinoid crisis manifesting as hypotension, tachycardia, multiple episodes of intense diarrhea and flushing at 10 hours post-PRRT. He was immediately resuscitated with crystalloid. Octreotide infusion was increased up to 125 µg/hour. Bridging therapy with long acting somatostatin analogue, lanreotide, was also started. The carcinoid crisis resolved with treatment. Octreotide infusion was tapered by 25 µg hourly and then stopped 24 hours after PRRT.

CONCLUSION
Carcinoid crisis usually occurs during the first PRRT cycle, either during the infusion or 12 to 48 hours after. Acute tumor lysis mediated by radiation cellular damage, resulting in sudden release of supraphysiologic amounts of hormonally active substances, leads to profound carcinoid symptoms. Emotional stress is also contributory. Lastly, administration of amino acids such as lysine and/or arginine as a renal protective measure may play a role in the pathophysiology of PRRT-induced carcinoid crisis, as these may be used as substrates for the synthesis of vasoactive hormones by the carcinoid cells.

PP-06

A CASE OF INSULIN-INDUCED PERIPHERAL NEUROPATHY

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INTRODUCTION
Insulin-induced peripheral neuropathy, known as treatment-induced diabetic neuropathy (TIDN), is an uncommon treatment-induced neuropathic pain and/or autonomic dysfunction that occurs in patients after a rapid improvement in glycaemic control.

RESULTS
We report a patient with underlying type 1 DM who developed TIDN after rapid improvement in glycaemic control following admission for diabetic ketoacidosis. He developed severe neuropathic pain and autonomic dysfunction manifesting as severe postural hypotension resulting in postural giddiness and unsteady gait. He was initially managed as diabetic neuropathic pain. Despite the high dosage of analgesics, pain did not improve, and postural giddiness also persisted. His HbA1C decreased from 17.5% to 7.4% in two months. The diagnosis of TIDN was made after considering the rapid reduction in HbA1c and his clinical presentation of pain and autonomic dysfunction that were not alleviated with the treatment plan for diabetic neuropathy. The patient's insulin dosage was reduced and glycaemic targets were relaxed. Two weeks after the adjustment of medications, his condition improved tremendously.

CONCLUSION
Insulin-induced peripheral neuropathy or TIDN is a rare condition. It is often misdiagnosed as other types of neuropathy, as TIDN presents similarly with diabetic peripheral neuropathy and many physicians may not be aware of this condition. The diagnosis of TIDN must be kept in mind when patients on high doses of antidiabetic agents present with severe neuropathic pain with or without autonomic dysfunction. This may be prevented by administering less aggressive therapy for sugar control.

PP-07

A TERTIARY CENTER EXPERIENCE IN USING THE 2021 IDF-DAR RISK CALCULATOR FOR PEOPLE WITH DIABETES BEFORE RAMADAN

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INTRODUCTION
Fasting during Ramadan carries considerable risks for patients with diabetes. Risk stratification identifies those at high risk for complications and guides our recommendations against fasting. Evolving from previous guidelines, the 2021 International Diabetes Federation - Diabetes and Ramadan (IDF-DAR) risk stratification system seeks to enable more personalized risk assessment by objectively evaluating 14 Ramadan-, disease- and patient-related risk variables.

METHODOLOGY
We used the new IDF-DAR risk calculator in Muslim patients with diabetes who attended usual follow-up at the diabetes clinic in Hospital Putrajaya starting five weeks prior to Ramadan 2021. Their intention to fast, baseline diabetes therapy and planned treatment adjustments for Ramadan were recorded. We also assessed the acceptance of this new tool among the attending doctors.

RESULTS
We assessed 210 patients (93.8% type 2 diabetes). Mean age was 54.6 years (range 16 to 82 years) and 59.5% were females. Majority had long-standing diabetes (69% ≥10 years), insulin-treated (69.5%) and had poor glycaemic control (57.6% with HbA1c ≥7.5%). Most were stratified into high (40.5%) and moderate risk (33.3%) categories which recommend against Ramadan fasting. Despite this, intention to fast was 98.6% and 81.2% in moderate and high risk patients, respectively. Of the 17 who opted not to fast, 94% (n=16) were assessed as high risk, 53% experienced hypoglycaemia and 35.2% had prior negative fasting experience. Attending doctors found the risk calculator to be simple and quick to administer.

CONCLUSION
The new IDF-DAR risk calculator is a comprehensive easy-to-use tool that considers numerous elements to provide a more complete and objective quantification of a patient's risk for complications during Ramadan. Intention to fast remains very high among those in high risk category. Attending doctors need to ensure appropriate recommendations against fasting are emphasized and practiced to reduce complications during Ramadan.

PP-08

SEX HORMONE DERANGEMENT IN POST-MENOPAUSAL CHRONIC LIVER DISEASE PATIENTS: A CASE SERIES

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INTRODUCTION
Healthy post-menopausal women will exhibit low estrogen, high follicle-stimulating hormone (FSH) and high luteinizing hormone (LH) levels. Abnormalities in these sex hormone levels will often trigger further investigations. Chronic liver disease is common in Malaysia, with chronic viral hepatitis as one of the most common causes. It is estimated that 1.17 percent of adult Malaysians have chronic hepatitis B (HBV) and 0.74% have chronic hepatitis C (HCV). High estrogen, low FSH and low LH are the common biochemical derangements among the patients with chronic liver disease.

RESULTS
The degree of post-menopausal sex hormone changes varied according to the degree of liver injury due to the underlying causes. In our case series, patients with higher Child-Pugh scoring and smaller liver size had higher estrogen and lower FSH and LH levels.

CONCLUSION
Sex hormone profiles for post-menopausal women with chronic liver disease show higher estrogen level with greater degree of liver cirrhosis. FSH and LH level then decrease as the degree of liver cirrhosis progresses.

PP-09

COMPLETE ANDROGEN INSENSITIVITY SYNDROME WITH MALIGNANT LEFT TESTICULAR SEMINOMA- A CASE REPORT

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INTRODUCTION
Complete androgen insensitivity syndrome (CAIS) is a rare X-linked recessive disorder resulting in failure of normal masculinization of the external genitalia in chromosomally male individuals. We present a rare case of CAIS with malignant left testicular seminoma.

RESULTS
A 37-year-old phenotypically female patient presented with primary amenorrhea at 15 years old and was diagnosed with CAIS based on chromosomal studies which revealed 46XY. However, she defaulted follow-up until she presented again with abdominal distension and breathlessness in April 2020. She is the 3rd of 4 siblings from a non-consanguineous marriage. Physical examination revealed a tall, normal built girl with no axillary and pubic hair, Tanner Stage 1 breast and normal female genitalia. CT of the thorax, abdomen and elvis revealed a large heterogeneous suprapubic mass (10.6 cm x 13.5 cm x 17.2 cm), moderate ascites, enlarged left paraaortic lymph node, massive right pleural effusion and a rudimentary uterus. Laparotomy and bilateral orchidectomy was performed which revealed left testicular seminoma and normal right testis on histopathologic examination. Tumor markers post-operatively revealed elevated serum LDH lactate dehydrogenase, and normal serum alpha feto protein and serum beta human chorionic gonadotrophin. She underwent 4 cycles of bleomycin, etoposide and platinum chemotherapy. Post-chemotherapy CT revealed no recurrence or distant metastasis with normalization of her tumour markers. Serum follicle-stimulating and serum luteinizing hormones were elevated; serum testosterone level was within normal. 25-hydroxyvitamin D level was insufficient. Dual energy x-ray absorptiometry scan revealed low bone mineral density. She was started on cholecalciferol 1000 IU daily and premarin 0.625 mg daily.

CONCLUSION
This case highlights the importance of proper follow up and management of CAIS to prevent complications, such as malignant germ cell tumor and osteoporosis.

PP-10

IMPACT OF DIABETES MELLITUS ON SEVERITY OF MELIOIDOSIS INFECTION IN TEMERLOH: A RETROSPECTIVE STUDY

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INTRODUCTION
Melioidosis is caused by the gram negative bacillus Burkholderia pseudomallei and it is known to be endemic in the state of Pahang. Diabetes has been recognized as the main predisposing condition associated with melioidosis, hence it is timely to re-examine this association with disease severity, clinical course and outcomes.

METHODOLOGY
This was a retrospective study conducted in Hospital Sultan Haji Ahmad Shah, Temerloh in the state of Pahang recruiting all culture- positive Burkholderia pseudomallei patients aged 12 years old and older from January to December 2018. Data collected included demographics, co-morbidities, disease presentation, diabetes status, culture findings, complications, Quick Sequential Organ Failure assessment score (qSOFA), antibiotic usage and disease outcomes. Data obtained were analysed using SPSS Version 26.

RESULTS
There were 39 patients were included in this study, with a mean age of 52.1 years (± 14.1). Pre-existing or newly-diagnosed diabetes was noted in 66.7% (n=26). Of these patients, 25% had systemic inflammatory response syndrome (SIRS) and 35.9% had severe sepsis or septic shock. High qSOFA score at presentation was seen in 17.9% of patients with diabetes. The diagnosis of melioidosis was based on positive blood cultures in 89%; almost 30% had pulmonary melioidosis. Majority (38.5%) received combination ceftazidime and sulfamethoxazole/ trimethoprim, while a third received Ceftazidime monotherapy presentation. Mortality rate in all patients with melioidosis treated in Temerloh was 30.8%; 80% of these patients had diabetes.

CONCLUSION
This study clearly demonstrated the impact of diabetes on severity of melioidosis infection and risk of mortality.

PP-11

ADIPSIC DIABETES INSIPIDUS IN LOCALLY ADVANCED NASOPHARYNGEAL CARCINOMA

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INTRODUCTION

Pituitary metastasis in nasopharyngeal carcinoma (NPC) is extremely rare with early detection and presentation of NPC. Up to 30% of patients present with diabetes insipidus (DI). The inability to sense thirst or adipsic DI may result in electrolyte imbalance and hypovolemia.

RESULTS

A 29-year-old woman presented with a short history of dysphagia and hoarseness of voice followed by a week of right eye and facial swelling. Further enquiry revealed a one-year history of unexplained epistaxis and loss of appetite, and weight loss of 5 kg in one month. Physical examination revealed right cranial nerve II to VI, VIII and bulbar palsies. Nasopharyngeal assessment showed a mass over the right posterior choana with right vocal cord palsy. She was admitted to the ENT ward for a suspicion of nasopharyngeal carcinoma with intracranial extension. Initial preoperative medical review revealed persistent tachycardia and significant polyuria. Subsequent diagnosis of central DI was confirmed with findings of high serum osmolality, low urine osmolality and hypernatremia. Tachycardia was attributed to hypovolemia and responded to fluid correction. Intermittent doses of desmopressin controlled urine output and improved hypernatremia. As the patient could not sense thirst, she was unable to actively consume fluids. There was extreme difficulty in normalising her sodium and maintaining hydration. Delicate balance of supervised fluid consumption with supportive intravenous fluids and desmopressin was required. Cranial MRI later confirmed a locally advanced nasopharyngeal tumour with pituitary gland and stalk metastasis and invasion into both cerebello-pontine angles and hypothalamus. Her initial anterior pituitary hormone function was intact.

CONCLUSION

DI in a locally advanced nasopharyngeal carcinoma is a poor prognostic indicator. The presence of adipsic diabetes insipidus further complicate the delicate management of hydration and sodium balance in such patient.

PP-12

NEPHROGENIC DIABETES INSIPIDUS AND RHABDOMYOLYSIS WITH SEVERE HYPERNATREMIA REQUIRING HEMODIALYSIS TREATMENT

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INTRODUCTION

Severe hypokalaemia may present with respiratory muscle paralyisis and respiratory failure. In rare instances, it results in rhabdomyolysis and nephrogenic diabetes insipidus (NDI). The management of NDI with severe hypernatraemia, metabolic acidosis and renal impairment is challenging and potentially complicated.

RESULTS

A 21-year-old male presented with acute shortness of breath, fever, cough and generalised body weakness. He had severe hypokalemia (potassium level of 2.0 mmol/L) and compensated metabolic acidosis. He rapidly deteriorated requiring ventilatory support and ICU admission. His hypokalaemia was resistant to correction and he required repeated bolus potassium chloride correction. His increasing serum sodium trend subsequent polyuria (urine output between 150 to 200 mL/hour prompted the suspicion of DI. Urine output was reduced only after high dose intravenous desmopressin 4 µg. Simultaneously, he required regular potassium supplementation via intravenous and nasogastric route. Peculiarly, the patient had dark-coloured urine, which increased in intensity after desmopressin. Elevated creatinine kinase and myoglobinuria indicated rhabdomyolysis. Serum sodium trend continued to increase to a peak of 179 mmol/L. Coupled with metabolic acidosis, haemodialysis was opted as a method to reduce the sodium level. Following haemodialysis, sodium level gradually decreased with normalisation of urine output and potassium level. He made a remarkable recovery and was discharged well. Three weeks after discharge, he was readmitted for symptomatic hypokalemia with normal anion gap metabolic acidosis. The final diagnosis of renal tubular acidosis (RTA) was ascertained.

CONCLUSION

Undiagnosed RTA resulted in severe hypokalemia that led to life threatening respiratory depression, rhabdomyolysis and NDI. Haemodialysis in specific situations can be used as treatment for severe hypernatraemia.

PP-13

ISOLATED ADRENOCORTICOTROPHIC HORMONE DEFICIENCY SECONDARY TO ANTI PROGRAMMED DEATH-1 IMMUNE CHECKPOINT INHIBITOR

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INTRODUCTION

Immune-checkpoint inhibitors (ICI) are a novel class of drugs for the treatment of many advanced solid tumor and hematological malignancies. They produce durable anti-tumor responses, but they are also associated with immune-related adverse events (irAE). Endocrinopathies are one of the most common irAE of ICI with a reported incidence ranging from 15 to 90% in late-phase clinical studies.

RESULTS

A 70-year-old female with advanced adenocarcinoma of the lung who received six cycles of Pembrolizumab was admitted with persistent nausea, dizziness and generalized weakness. There was no headache or disturbance in the visual field. There was no diarrhea, loss of weight, abdominal pain, or galactorrhea. Laboratory analyses showed low serum sodium. She improved on saline hydration, yet her sodium levels remained low in the outpatient visits. Hence, a thorough pituitary hormone panel then revealed low serum cortisol and adrenocorticotrophic hormone (ACTH) and raised serum prolactin. Thyroid function test, insulin-like growth factor-1, and sex hormones were within normal limits. Brain MRI showed a pituitary incidentaloma measuring 4 mm x 5 mm. The patient was diagnosed with isolated ACTH deficiency secondary to ICI therapy. She responded to oral hydrocortisone replacement with normalization of serum sodium level.

CONCLUSION

As ICI are now used to treat many cancers, clinicians should be aware of the potential risks of endocrine dysfunction. Single or multiple hormonal deficiencies may occur. Onset is usually after two to six months from initiation of ICI therapy. Patients may present with nonspecific symptoms such as dizziness and lethargy. Key concepts of management include high index of clinical suspicion, appropriate localization of endocrine dysfunction, replacement of hormones and close monitoring. Immune-related endocrine events are unique as the manifestations are often irreversible and management requires lifelong hormone replacement.

PP-14

PRIMARY ADRENAL LYMPHOMA AS AN AETIOLOGY OF FLUCTUATING BILATERAL ADRENAL MASSES

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INTRODUCTION

Primary adrenal lymphoma (PAL) is rare, with fewer than 200 reported cases. They usually present with bilateral adrenal masses affecting elderly males, with diffuse large B cell lymphoma as the most common subtype (78%).

RESULTS

We describe the case of a 60-year-old woman with severe right flank pain for three days. She denied any constitutional and B symptoms, and any tuberculosis contacts. There were no headaches, palpitations or hypertensive episodes. Ultrasound followed by computed tomography (CT) of the abdomen demonstrated a large right suprarenal (8 cm x 5.7 cm x 7.3 cm) and a small enhancing left adrenal mass (1.1 cm x 1.3 cm x 2.3 cm). Urine metanephrines, aldosterone:renin ratio, dehydroepiandrosterone and overnight dexamethasone suppression test were normal. A repeat CT three months later showed size reduction in the right suprarenal (3.4 cm x 3.2 cm x 3.4 cm) and increase in the left suprarenal mass (2.9 cm x 3.7 cm x 3.8 cm). Both were heterogeneously enhanced (39 and 36 HU, absolute contrast washout 39% and 31%, respectively). One month later, there was further decline in size of the right suprarenal (2.2 cm x 2.3 cm x 2.5 cm) and completely resolved left suprarenal mass on abdominal sonography. She denied taking any steroid-containing medication. Two months afterward, she presented with symptom recurrence. Repeat CT adrenal protocol showed large masses arising from both adrenal glands (8.5 cm x 5.9 cm x 7.6 cm and 5.0 cm x 3.2 cm x 3.8 cm, respectively). Endoscopic ultrasound-guided fine needle biopsy of the left adrenal revealed high-grade diffuse large B-cell lymphoma. She was referred to haematology for chemotherapy.

CONCLUSION

PAL must be considered as one of the differentials of bilateral adrenal masses. Size fluctuation and rapid progression were not associated with any systemic symptoms.

PP-15

CHARACTERISTICS AND EFFECTIVENESS OF DIABETES ONE STOP CLINIC FOLLOW-UP AMONG PATIENTS WITH TYPE 1 DIABETES MELLITUS IN TEMERLOH, PAHANG

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INTRODUCTION
Type 1 diabetes (T1D) is commonly diagnosed during childhood or early adulthood. Dealing with the diagnosis is an overwhelming experience. Apart from glycemic control and prevention of diabetic complications, there is an immense need to address emotional fluctuation, dealing with peer pressure, social acceptance and interpersonal relationship.

METHODOLOGY
This study aims to determine T1D patient characteristics and diabetes control, treatment and diabetes self-care practices after enrolling into a Diabetes One Stop Clinic (DOSC) in Hospital Sultan Haji Ahmad Shah, a tertiary hospital in Temerloh, Pahang. All T1D patients attending DOSC were recruited into the study. Electronic medical records were reviewed for data collection.

RESULTS
Seventeen (17) patients with T1D were recruited into the study, with mean age of 20.7 (SD 6.7) years old, mean age at diagnosis of 13.8 (SD 5.7) years old and mean duration of diagnosis of 7.1 (SD 4.7) years. There were almost equal number of male and female patients and majority were of Malay ethnicity. Thirteen (13) patients had positive autoantibodies while 4 patients had diabetes diagnosed during childhood with no autoantibody test record. At presentation to DOSC, mean HBA1c was 13.1%. 82.4% (n=14) of patients were on basal bolus regimen and 35.2% (n=6) of patients were on full analogue insulin regimen. At latest follow-up, mean HbA1c had improved to 10.5% with all patients on basal bolus regimen and in 94.1% (n=16) of patients on analogue insulin. Total dose of insulin did not increase significantly from DOSC entry till latest follow-up, but majority of the patients experienced improvement of glycemic control. 41.2% (n=7) had proteinuria or microalbuminuria, while 35.3% (n=6) had deranged liver enzymes. 76.5% (n=13) of patients had adjusted insulin doses according to meal intake and 52.9% (n=9) performed carbohydrate counting.

CONCLUSION
Provision of Type 1 diabetes care in Temerloh, Pahang is challenging and require a targeted and personalised approach with most patients. Improving glycemic control requires continuous patient engagement and reinforcement during each follow-up.

PP-16

INTRACTABLE HEADACHE DURING PREGNANCY IN A PATIENT WITH ACROMEGALY: A CASE REPORT

https://doi.org/10.15605/jafes.036.S42

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INTRODUCTION
Acromegaly is usually caused by a growth hormone-secreting pituitary adenoma, mainly macroadenoma. Pregnancies are relatively rare in patients with acromegaly due to high incidence of hypopituitarism. There is limited data on management of acromegaly in pregnancy and also insufficient data available about use of octreotide LAR in pregnant women with acromegaly. Clinical activity of acromegaly during pregnancy has been variably reported with some improving, some remaining stable and some worsening. Prevalence of headache in patients with acromegaly varies from 37 to 87%. In the American registry of pituitary tumors, headache was reported in 40% of patients with acromegaly. This form of acromegaly-associated headache may even worsen during pregnancy.

RESULTS
We describe a 34-year-old nurse with onset of hypertension at 19 years of age. 4 years later, she was diagnosed with acromegaly. Pituitary MRI showed a left pituitary macroadenoma measuring 1.5 x 1.5 x 0.8 cm with well-defined lobulated margin. She underwent endoscopic transsphenoidal surgery and was started on octreotide LAR due to persistent disease. Six years later, she conceived spontaneously and octreotide LAR was discontinued as the disease was controlled with normalization of IGF-1 level. Her pregnancy was uneventful during the first and second trimester. However, she developed severe headache associated with vomiting and high blood pressure at 32 weeks gestation. She was started on short acting octreotide 50 mcg three times per day for a week with concomitant octreotide LAR 30 mg. The headache improved and blood pressure was controlled subsequently. She safely delivered a healthy baby girl via caesarean section at 38th week of gestation.

CONCLUSION

Pregnancy in women with acromegaly is generally safe with tumoral and hormonal stability. Treatment interruption at pregnancy confirmation has proven to be safe. This case highlights the fact that medical therapy with octreotide LAR should be considered in a pregnant patient with significant headache. Short-acting somatostatin analogue can be initiated together with long-acting somatostatin analogue to get immediate effects.

PP-17

FUNCTIONING VAGAL PARAGANGLIOMA

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INTRODUCTION

Paragangliomas (PGLs) are rare neuroendocrine tumors arising from sympathetic or parasympathetic paraganglia, which can be sporadic or familial. Sympathetic PGLs are almost always functional (clinically active) while parasympathetic PGLs are usually not. Parasympathetic PGLs usually arise in four distinct areas: carotid body, vagus, middle ear, and larynx. Herein, we report a case of functional vagal paraganglioma and discuss its management.

RESULTS

A 49-year-old female presented with a painless neck swelling, which was gradually increasing in size over the past 4 years. She sought medical advice after experiencing episodic headache along with palpitation and 10kg weight loss over a 2-month period. She had a noticeable right sided neck swelling, and labile blood pressure. Further evaluation revealed elevated 24 hour urine noradrenaline and an metaiodobenzylguanidine (MIBG)-avid right neck mass. Following a diagnosis of functioning neck paraganglioma, phenoxybenzamine and carvedilol were initiated two weeks prior to surgery. She underwent embolization followed a day later by surgical excision of the tumor with vagus nerve reconstruction. Intraoperatively, a short period of sodium nitroprusside infusion was required during manipulation of the tumor. Postoperatively, a brief period of inotropic support was required. Histologic examination of the excised mass revealed a paraganglioma with a low proliferative index (Ki 67 <5%). She was well and normotensive upon discharge.

CONCLUSION

Paraganglioma is a rare and curable cause of hypertension. Preoperative preparation with alpha-blocking with or without beta-blocking agents together with volume expansion are crucial before surgical resection. This case highlighted the importance of a multidisciplinary team involvement in every aspect of the patient's care in order to have an adequate decision-making process.

PP-18

BIOENHANCED TOCOTRIENOL-RICH VITAMIN E (TOCOVID) IMPROVES NERVE CONDUCTION VELOCITY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS: PHASE II DOUBLE-BLIND, RANDOMIZED CONTROLLED CLINICAL TRIAL

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INTRODUCTION

This study aims to investigate the effects of bioenhanced tocotrienol-rich vitamin E (Tocovid SuprabioTM) on nerve conduction parameters and serum biomarkers among patients with type 2 diabetes mellitus.

METHODOLOGY

Eighty-eight patients were randomized to receive 200 mg of tocotrienol-rich vitamin E (Tocovid) twice daily or matching placebo for 12 months. Nerve conduction parameters, vitamin E levels and serum biomarkers were measured at 2, 6 and 12 months.

RESULTS

After 12 months, patients in the Tocovid group showed highly significant improvement in conduction velocity (CV) of both median and sural sensory nerves compared to placebo. The between intervention group differences (treatment effect) in CV were 1.60 m/s (95% CI: 0.70, 2.40, p=0.007) for median nerve and 1.97 m/s (95% CI: 1.10, 3.45, p=0.036) for sural nerve. Significant improvement in CV was only observed up to six months in tibial motor nerve CV, 1.30 m/s (95% CI: 0.60, 2.20, p<0.001). There were no significant changes in transforming growth factor beta-1 (TGFÎ²-1) and vascular endothelial growth factor A (VEGF-A). After six months of washout, there were no significant differences from baseline between groups in all nerve conduction parameters of all three nerves.

CONCLUSION
Tocovid at 200 mg twice a day significantly improved median and sural sensory nerve CV at 12 months but improvement in tibial motor nerve CV was only observed up to six months. All improvements diminished after six months of washout.

PP-19

ANDROGEN PRODUCING TUMOUR: UTILISING OVARIAN AND ADRENAL VENOUS SAMPLING

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INTRODUCTION
Androgen-secreting tumour (AST) is rare, with a prevalence of 0.2% among women with hirsutism. Ovarian and adrenal venous sampling (OAVS) is useful in localising the tumour but has low success rate. We reported a case of ovarian AST with successful cannulation of all 4 veins.

RESULTS
A 26-year-old woman presented with secondary amenorrhoea, hirsutism and voice deepening for 5 years. She did not have Cushing syndrome, or manifestations related to hyperprolactinemia or congenital adrenal hyperplasia. Her family history was unremarkable. On examination, blood pressure was 112/75 mmHg, heart rate 82/min, weight 73 kg, and BMI 25.8 kg/m^2. She has a feminine body habitus with Ferriman-Gallwey score of 17. She has no clitoromegaly. Serum testosterone was 14x the upper limit of normal at 28.87 nmol/L. The following serum hormonal tests were all within normal: TSH 1.194 mU/L, fT4 12.0 pmol/L (7-14.4), prolactin 310 µU/mL, LH 5.8 mU/mL, FSH 6.8 mU/mL, oestradiol 247 pmol/L, Dehydroepiandrostenedione-sulphate (DHEAS) 5.9 µmol/L. Free androgen index was 48 (4x ULN for female). AST of the ovary was suspected. MRI of the adrenal glands and pelvis revealed a heterogeneous enhancement of the left ovary, slightly larger than the right, and normal adrenal glands. All 4 veins were successfully cannulated during OAVS. The increased testosterone secretion was lateralised to the left ovary, consistent with the MRI, with lateralization ratio of 7.9 and 4.4.

DISCUSSION
A very high testosterone level should raise suspicion of AST. Testosterone >3 nmol/L has a sensitivity of 100% and specificity of 53% in detecting AST. Some reported values >5.2 nmol/L with convincing history. DHEAS level of >18.9 mmol/L strongly suggests adrenal origin. OAVS is useful in cases of small ovarian AST that could not be excluded from biochemical and imaging studies. However, it is a difficult and highly demanding procedure. A central-to-peripheral oestradiol ratio of >2 confirms successful ovarian vein catheterisation. An ovarian vein testosterone gradient of >1.44 confirms lateralization (1).

CONCLUSION
A very high serum testosterone should raise suspicion of AST. OAVS, although difficult, is useful in localising the tumour.

PP-20

PRIMARY HYPOPHYSITIS WITH HYPOPITUITARISM IMPROVING WITH HIGH DOSE STEROIDS

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INTRODUCTION
A 39-year-old female presented with an 8-month history of severe headaches, amenorrhea for 6 months, increased thirst and weight loss. She consulted a neurologist for migraine and was subsequently referred to an endocrinologist when her MRI showed a pituitary lesion. There was no visual impairment.

RESULTS
Investigations on admission:
Free T4 11.7 pmol/L (11.5-22.7)
TSH 0.11 mIU/L (0.55-4.78)
IGF-1 267 ng/ml (63.4-223)
ACTH <5 pg/ml
AM cortisol <14 nmol/L
LH <0.1IU/L(0.5-16.9)
FSH 2.8IU/L (1.5-9.1)
Estradiol 75 pmol/L (205-786)
Prolactin 511 mIU/L (59-619)

MRI of the pituitary gland showed a clearly thickened pituitary stalk abutting the optic chiasm with heterogeneous enhancement along the stalk and base of the hypothalamus and loss of posterior bright spot. The pituitary enhances peripherally with a slight hyperintensity on T1-weighted images, signifying proteinaceous or inflammatory changes. There was no dural tail sign. She was diagnosed with hypophysitis and was started on IV methylprednisolone 500 mg OD for 3 days. She developed overt polyuria after initiation of steroids and required regular desmopressin. As she is young with hypopituitarism and diabetes insipidus, she was given prednisolone 50 mg OD as per the protocol from Chiloco et al from Rome with a tapering dose planned over 13 months. In the study by Chiloco et al, this regime showed a 50-70% improvement in hormonal deficiencies compared to conservative treatment. This patient had resumption of her menses after 3 months despite still requiring regular desmopressin. There was improvement in her pituitary function with FT4 16.1 pmol/L, TSH 0.55mIU/L, LH 2IU/L, FSH 2.2IU/L and estradiol 193 pmol/L. Repeat MRI showed marked reduction in her stalk thickening.

CONCLUSION

High dose and prolonged steroids are an effective treatment to improve hormonal outcome in a patient with primary hypophysitis.

PP-21

RETROSPECTIVE ANALYSIS OF ADRENAL VEIN SAMPLING (AVS) SUCCESS: A STUDY OF A MALAYSIAN COHORT FROM A SINGLE TERTIARY CENTER

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INTRODUCTION

Adrenal venous sampling (AVS) is the current gold standard to properly lateralise primary aldosteronism (PA) caused by an adrenal lesion. A successful AVS can help to identify unilateral PA giving the option of an adrenalectomy of the affected adrenal as a one-off treatment instead of life-long medication. However, due to the invasive nature of the technique and the difficulty in identifying, cannulating, and withdrawing blood from the adrenal vein, AVS is not always successful. Herein, we aim to elucidate the clinical and laboratory characteristics associated with successful AVS in patients with PA.

METHODOLOGY

100 AVS procedures conducted at Hospital Universiti Kebangsaan Malaysia (HUKM), Kuala Lumpur, Malaysia between 2017 and 2020 were analysed retrospectively. Success of AVS, sociodemography, and blood results of the patients pre-adrenalectomy were collected and compared. The variables investigated were age, gender, race, duration of hypertension, body mass index, aldosterone, serum sodium, serum potassium, and hypokalemia.

RESULTS

Of the 100 AVS procedures studied, 54 were performed on men and 46 were on women. Malay patients presented the highest frequency of patients (n=53) followed by Chinese (n=47). AVS was most frequently performed in patients aged 36-45 years (n=38) followed by 26-35 years (n=20), 56-65 years (n=16), 46-55 years (n=15), 66-75 years (6 patients), 16-25 years (4 patients) and 76-85 years (1 patient). AVS was successful in sixty-three patients, but was unsuccessful in thirty seven patients. Variables significantly associated with successful AVS were Malay ethnicity (p=0.048) and high serum sodium levels (p=0.019).

CONCLUSION

Successful AVS in patients with PA was most significantly associated with Malay ethnicity and high serum sodium. There were no significant associations found for age, gender, duration of hypertension, body mass index, aldosterone, and potassium levels.

PP-22

LYMPHOCYTIC HYPOPHYSITIS MASQUERADING AS PITUITARY MACROADENOMA WITH SUPRASELLAR EXTENSION

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INTRODUCTION

Autoimmune hypophysitis mimics the more common non-secreting pituitary adenomas. The diagnosis can only be confirmed with certainty only through histology examination of the pituitary gland. Studies have shown up to 40% of patients with hypophysitis are misdiagnosed as having pituitary macroadenoma and undergo unnecessary surgery.

RESULTS

A man suffered from daily headache, nausea, lethargy, loss of weight and blurred vision for one year. He was thirsty all the time and drank eight liters of fluid in a day with bothersome nocturia. He was intolerant of cold weather and had constipation and noticed dry skin. His libido was low. His progressive reduction in effort tolerance resulted in him unable to continue working. On examination, he was of medium built with bradycardia and dry skin. Visual confrontation revealed bitemporal hemianopia. Laboratory investigations revealed central hypothyroidism, hypogonadotropic hypogonadism, central hypocortisolism and a compensated cranial diabetes insipidus. Imaging revealed a heterogeneously enhancing mass in the sella measuring 19 x 12 x 12 mm with suprasellar extension causing mass effect into the optic chiasm. The pituitary stalk was not visualized. Hormonal replacement was commenced. He underwent trans-sphenoidal surgery and histopathology showed chronic hypophysitis. He was then pulsed with steroid and had clinical improvement.

CONCLUSION

Differentiating autoimmune hypophysitis from non-secreting pituitary adenoma before surgery would greatly benefit the patient. It avoids the possible complications of surgery. Furthermore, autoimmune hypophysitis can be successfully treated with medications. Another important learning point from this case is to highly suspect hypophysitis in a patient who has cranial diabetes insipidus even before any pituitary surgery.

PP-23

EMPTY SELLA SYNDROME WITH ECTOPIC GROWTH HORMONE SECRETION – AN UNUSUAL PRESENTATION OF ACROMEGALY

https://doi.org/10.15605/jafes.036.S49

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INTRODUCTION

Empty sella syndrome is a radiological diagnosis characterised either by primary of secondary causes. Individuals with empty sella syndrome do not have any associated symptoms, but some may exhibit features suggestive of hypopituitarism. We report a case of a female with symptoms of florid growth hormone excess with radiological evidence of empty sella syndrome.

RESULTS

A 59-year-old Malay female was initially referred for poorly controlled diabetes with HBA1c of 12.5% requiring very high doses of insulin. On further history, she claimed that her ring size increased from size 20 at the time she got married to size 25 along with increased shoe size from 7 to size 10 in a span of 6 years. On clinical examination, she had typical features of acromegaly. Formal Bjerrum testing showed normal visual fields. IGF-1 level was elevated at 655ug/L (97-292). Her other anterior pituitary hormonal tests were normal. Her growth hormone (GH) was not suppressed following an oral glucose load (OGTT). Brain MRI revealed non-visualisation of normal pituitary gland with CSF filled sella turcica suggestive of empty sella syndrome. A contrast-enhanced computed tomography revealed a soft tissue density seen at the right lateral aspect of the pituitary fossa which is most likely arising from the sella turcica. She was then referred to neurosurgery.

CONCLUSION

We described a patient with clinically and biochemically proven acromegaly with an empty sella syndrome on MRI. Early screening and detection would be imperative for earlier neurosurgical referral for better outcome.

PP-24

APOPLECTIC CORTICOTROPIN-PRODUCING MACROADENOMA: A RARE ENTITY

https://doi.org/10.15605/jafes.036.S50

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INTRODUCTION

Pituitary tumour apoplexy is defined as infarction, haemorrhage or combination of both occurring in a pituitary tumour as a result of expansion of the tumour causing altered sensorium, visual and ophthalmic disturbances and hormonal deficiencies. It is uncommon and mostly happens in macroadenomas. The prevalence of apoplexy is extremely rare in corticotropin-producing adenoma.

RESULTS

We present a 24-year-old female with persistent Cushing's disease since 2019 despite transsphenoidal surgery and treatment with high-dose cabergoline. She experienced new-onset left complete ptosis with right ophthalmoplegia few months after surgery. Pituitary MRI showed expansion of the sella toward the left cavernous sinus hence tumour debulking and decompression surgery was planned. However, her serial cortisol and ACTH rapidly declined and dropped to below the reference ranges a few days prior to the planned surgery. Repeat image-guide setting MRI of the pituitary showed features of apoplexy. She underwent successful pterional craniotomy & debulking of the tumour with steroid cover perioperatively. Her postoperative course was uneventful. She was discharged with hydrocortisone.

CONCLUSION

Corticotropin-producing pituitary macroadenoma is very uncommon and apoplexy following high dose of cabergoline may happen despite the rarity of its incidence.

PP-25

WHAT MATTERS MOST TO THE PATIENT BEFORE AND AFTER INITIATION OF TREATMENT FOR THYROID DYSFUNCTION?

https://doi.org/10.15605/jafes.036.S51

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INTRODUCTION

Thyroid dysfunction (TD) has a prevalence of 3.4% in Malaysia. Although there are significant disparities in the quality of life before and after treatment in many diseases, no study has been done to assess the impact of TD on patients before and after treatment. Thus, the objective of this analysis is to evaluate what matters most to patients before and after treatment of TD.

METHODOLOGY

This qualitative study utilised a Malay language version of the semi-structured interview guide in Malaysia. This is part of the larger research developed from interactive discussions with patients who have thyroid dysfunction. Data were collected using a dual--method approach, i.e., face-to-face in-depth interviews in the endocrine clinic and online survey using the same set of questionnaires. The responses were analyzed using Braun and Clark's thematic analysis framework guided by the question: What matters most to the patient before and after initiation of treatment for TD?

RESULTS

Before treatment, most patients diagnosed with TD were anxious, scared, sad, angry, and in disbelief. Other concerns include impairments in the activity of daily living, e.g. unable to cope with their jobs, a perceived burden to the family, and uncertainties. Only some were able to accept the diagnosis. Most patients feel relieved knowing there are available treatments and their conditions improved after treatment, while a minority of patients remained anxious with low mood, and in denial. Our findings suggested that patients with TD go through the five stages of emotional changes based on the Kubler-Ross model during the disease management process.

CONCLUSION

Our findings suggested that TD is a life event for most patients. The grief reaction towards their illness resolved with treatment and improved knowledge regarding their condition. Therefore, research that focuses on developing insight into patient issues is needed to develop appropriate management and support programs.

PP-26

WHAT MATTERS MOST TO PATIENTS BEFORE AND AFTER DIAGNOSIS OF THYROID DYSFUNCTION?

https://doi.org/10.15605/jafes.036.S52

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INTRODUCTION

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METHODOLOGY

This qualitative study utilised a Malay language version of the semi-structured interview guide in Malaysia. This is part of the larger research developed from interactive discussions with patients who have thyroid dysfunction. Data were collected using a dual-method approach, i.e.: face-to-face in-depth interviews in the endocrine clinic and online survey using the same set of questions in the interview guide. We analysed the responses guided by the question: What are the differences in patient experience and perspective before and after diagnosis of TD?

RESULTS

Responses from 96 patients were analysed. Most (>50%) patients had symptoms associated with TD, and a minority (15%) experienced neck swelling. These patients were unaware that their experience is related to TD. After being informed of the diagnosis of TD, 95% of patients are worried and burdened by the disease. Poor knowledge of the disease, treatment, and uncertainties of the progression of TD aggravated the emotion.

CONCLUSION

This analysis showed that the diagnosis of TD placed a significant burden on patients' lives. Our findings of the experience before and after diagnosis of TD provided a focus to address patient concerns. Thus, we need more research to provide insight into the patients' experiences and perspectives for developing management and support programmes in thyroid care.

PP-27

EFFICACY OF A WEIGHT MANAGEMENT PROGRAMME ON CLINICAL METABOLIC PARAMETERS – A SINGLE-CENTRE EXPERIENCE IN MALAYSIA

https://doi.org/10.15605/jafes.036.S53

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INTRODUCTION

Weight management clinics aim to reduce obesity-related effects particularly the metabolic complications. The UiTM weight management clinic comprises a 7-visit programme over a 1-year period involving various specialties such as primary care physicians, endocrinologist, nutritionist, psychologist, and rehabilitation medicine. Each provides different aspects of obesity management focusing predominantly on lifestyle modifications. The impact of this programme on clinical metabolic parameters such as weight, waist, hip, and neck circumferences were assessed.

METHODOLOGY

This is a retrospective analysis involving 59 patients who successfully completed the weight management programme in UiTM between June 2018 and December 2020. Completion of the programme was defined as attendance to all 7 visits. All data were acquired through patients' medical records. Changes in weight, waist circumference (WC), hip circumference (HC) and neck circumference (NC) at baseline, 6 months, and 12 months were analyzed. Paired t-test analysis was performed using SPSS version 22.

RESULTS

59 patients were evaluated. Baseline weight was 123.3 ± 26.0 kg. Weight change at 6 months was -3.74 ± 7.9 kg and at 12 months was -4.37 ± 11.7 kg. The mean difference in weight between 6 and 12 months was statistically significant with p=0.006. Significant differences were also seen in the other parameters as well. WC change at 6 months was -3.49 ± 7.8 cm and -4.26 ± 7.9 cm at 12 months (p<0.001). Change in HC was -2.46 ± 5.8 cm and -3.42 ± 7.7 cm at 6 months and 12 months respectively (p=0.001). Lastly, change in NC at 6 months was -0.75 ± 2.2 cm and -0.63 ± 2.1 cm (p=0.022).

CONCLUSION
There were significant changes in weight and other clinical metabolic parameters with personalised lifestyle changes given through a structured weight management programme. These changes can be seen as early as 6 months and extends to 12 months. This correlates with current evidence that lifestyle changes require a minimum of 6 months' duration to achieve meaningful metabolic results.

PP-28

THYROXINE ABSORPTION TEST: A CASE SERIES OF PATIENTS WITH PERSISTENT PRIMARY HYPOTHYROIDISM

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INTRODUCTION
Persistent primary hypothyroidism of any etiology despite high doses of levothyroxine replacement is a common encounter in our clinical practice. It is important to distinguish nonadherence (pseudo-malabsorption) from malabsorption. Thyroxine absorption test is required to make this distinction before further evaluations for malabsorption. We present our review on our institution's experience with thyroxine absorption test and evaluate its role and clinical impact on management of persistent primary hypothyroidism.

RESULTS
All 5 patients tolerated the absorption test well and showed >100% rise in Free T4 level at the fourth hour. During subsequent visits, 4 out of 5 patients were able to achieve normal thyroid function with the same, if not, a lower dose of levothyroxine. Two patients continued to show fluctuations in TSH trend during follow-ups. There were discrepancies in the test protocol on levothyroxine dosage and sampling time.

CONCLUSION
Thyroxine absorption test is a useful tool to distinguish between nonadherence and malabsorption. It negates unnecessary extensive search for causes of malabsorption. It provides objective information to guide discussions between clinicians and patients in addressing the issue of nonadherence.

PP-29

PRIMARY ALDOSTERONISM UNVEILED BY PREGNANCY

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INTRODUCTION
Primary aldosteronism (PA) with first presentation during pregnancy is rare. We hereby report 2 cases of PA which was unveiled by pregnancy.

RESULTS
Case 1: A 33-year-old female was diagnosed to have hypertension with hypokalaemia (lowest serum potassium of 2.3mmol/L) during early pregnancy. The pregnancy was complicated by intrauterine death at 29 weeks of gestation. Throughout pregnancy, her blood pressure (BP) and potassium levels were well-controlled with low-dose methyldopa` and potassium supplementation. Postpartum, she was normokalaemic without potassium supplementation and her BP was well-controlled with low-dose verapamil. She had a positive screening test for PA which was further confirmed with fludrocortisone suppression test (FST). Computed Tomography (CT) of the adrenal glands showed bulky appearance with no definite adenoma. Adrenal venous sampling (AVS) was suggestive of bilateral adrenal hyperplasia (BAH). Spironolactone was not started as she is planning for another pregnancy. To date, her BP was well-controlled with low-dose labetolol and she remained normokalaemic.

Case 2: A 40-year-old female was diagnosed to have hypertension at 18 weeks of gestation with concomitant hypokalaemia (lowest serum potassium of 3.3mmol/L). Throughout pregnancy (while not on any medications) her BP ranged between 130/90 to 150/90 and serum potassium levels between 3.5 to 3.8 mmol/L. She underwent emergency caesarean section for pre-eclampsia at 36 weeks of gestation. Postpartum ambulatory blood pressure monitoring revealed SBP of 111-158 mmHg, DBP of 64-102 mmHg. Her screening test for PA was positive and was further confirmed with fludrocortisone suppression test. CT adrenals showed bulky appearance with no definite adenoma. AVS was suggestive of BAH. Upon commencement of spironolactone 12.5 mg daily, her BP was maintained at 110/80-128/90 mmHg and serum potassium was 4.0mmol/L.

CONCLUSION
PA is associated with high rate of pregnancy-related complications. The course of PA during pregnancy is highly variable owing to the sequential changes in the renin-angiotensin-aldosterone system and plasma progesterone concentration.

PP-30

PROLONGED QT AND MONOMORPHIC VT: A RARE PRESENTATION OF PHEOCHROMOCYTOMA

https://doi.org/10.15605/jafes.036.S56

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INTRODUCTION

Pheochromocytomas classically present with the triad of headaches, palpitations and diaphoresis; and very rarely with isolated cardiac rhythm abnormality.

RESULTS

We report a 46-year-old female with pheochromocytoma presenting with prolonged QT interval and monomorphic ventricular tachycardia (VT). She has no known cardiovascular risk factors. She initially presented at the emergency room with chest tightness and palpitations. Her BP was 200/100 mmHg and she was tachycardic (110 beats/min). ECG showed widespread deep T wave inversion with significantly prolonged QTc, 580 milliseconds. Troponin I levels were elevated and she was treated for acute coronary syndrome. Within an hour of presentation, she developed multiple episodes of monomorphic VT requiring amiodarone infusion. Echocardiography revealed preserved left ventricular ejection fraction (55%) with hypokinetic apical, lateral and anterior left ventricular wall. Further history revealed loss of weight of 6kg and paroxysms of cold sweats over the past 3 months. The 24-hour urinary catecholamines and metanephrines were elevated more than 30x the upper limit of normal. Imaging showed a 4.8 x 4.5 x 5.5 cm mass in the right adrenal gland. A diagnosis of right adrenal pheochromocytoma was made. She was commenced on alpha-blockade with phenoxybenzamine, followed by cardio-selective beta-blockade with bisoprolol. After two weeks of adequate blockade and volume expansion, she underwent right adrenalectomy. Postoperatively, she required no anti-hypertensives and had no recurrence of VT. Her ECG showed resolution of T wave inversions and significantly improved QTc, at 495 milliseconds. Upon follow-up 2 months post-operatively, she remained normotensive with no arrhythmias and normalised urinary catecholamines and metanephrines.

CONCLUSION

The toxic effects of catecholamines include coronary vasospasms, cardiomyopathy and diverse electro-cardiographic abnormalities of rhythm, conduction and repolarization, which can manifest as acute coronary syndrome, heart failure or prolonged QT intervals and malignant arrhythmias. This case provides a vignette for this rare presentation and resolution of these cardiac abnormalities with treatment of pheochromocytoma.

PP-31

USER ACCEPTABILITY OF FREESTYLE (FS) LIBRE FLASH GLUCOSE MONITORING SYSTEM IN PATIENTS WITH DIABETES

https://doi.org/10.15605/jafes.036.S57

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INTRODUCTION

The use of Freestyle (FS) Libre flash glucose monitoring system (FGM) helps to overcome barriers with conventional glucometer. It allows continuous glucose reading without the need for finger prick user calibration. The aim of this survey was to assess the user acceptability of the device in patients with diabetes.

METHODOLOGY

This is a 12-week cross-sectional study performed among patients with diabetes who were put on intermittent use of the FS FGM system for 12 weeks. The patients' user acceptability was collected in a questionnaire using the 5-point Likert scale ('Strongly Disagree, Disagree, Indifferent, Agree, Strongly Agree') on a series of questions concerning (i) Ease of use and application of device (ii) Comfort and usage (iii) The operation of device (iv) Efficiency of device in disease management and compliance (v) Patient satisfaction.

RESULTS
The study included 100 patients with the following breakdown in DM types: T1DM (n=42), T2DM (n=47) and DM in pregnancy (n=11). The mean duration of diabetes was 13 years. About 98% of patients find that the instruction for FS Libre was easy to understand. More than 91% of patients felt that it was easy to use, makes life easier and has a small glucose sensor. Only 17.7% of patients experienced local discomfort while wearing the glucose sensor. About 86.5% of patients felt that the glucose sensor did not interfere with daily activities. Around 88.8% of patients felt that the FS Libre could replace the finger-prick SMBG as a monitoring device. More that 97% of patients agreed that this method is faster, simplified and assisted in the adjustment of insulin dose. Majority of patients (95.8%) preferred FS Libre compared to their previous SMBG system.

CONCLUSION
The user experience of FS libre based on ease of use, application, operation and comfort, efficiency in disease management and patient satisfaction were demonstrated in this study.

PP-32

GROWTH HORMONE TREATMENT RESPONSE FOR CHILDREN WITH GROWTH HORMONE DEFICIENCY AND TURNER SYNDROME (TS) IN A TERTIARY CARE CENTER

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INTRODUCTION
Recombinant growth-hormone (rhGH) has been widely used to treat a variety of growth disorders. Although responses are generally satisfactory, evidence is increasing for a high rate of poor or unsatisfactory response.

This study aimed to evaluate the growth response to rhGH therapy in the patients in our tertiary centre and identify the poor responders.

METHODOLOGY
This is a cross-sectional study based on medical records of the patients still on rhGH in year 2019-2020. The growth parameters and rhGH doses recorded throughout the treatment were retrieved.

Poor response was defined as first-year increment in height standard-deviation-score (SDS) <0.5 for patients with severe growth hormone deficiency (GHD) or <0.3 for other diagnoses.

RESULTS
Thirty-five patients were included in the study with 20 (57%) diagnosed with GHD and 15 (43%) with Turner syndrome (TS).

Majority of the patients with GHD had severe organic GHD with peak GH level <5 μg/ml (52.4%). Most presented with significant short stature with height SDS of -4.15 ± 1.32 on initiation of treatment. The first-year height velocity (HV) was 10.0 ± 3.1 cm/year (3.42 ± 2.66 SDS) with median height increment of 0.74 (-0.57-2.83 SDS). The subsequent years, HV remained steady with average of >6 cm/year (0.62-2.94 SDS).

The patient with Turner Syndrome had a starting height of -3.52 ± 1.05 SDS. The first year HV was 7.5 ± 1.4 cm/year (1.65 ± 1.95 SDS) with median height increment of 0.31 (-1.32-0.74 SDS). HV for the subsequent years was on average 4-5.5cm/year (-2.51-0.61 SDS).

The average rhGH doses was 0.033 ± 0.003 mg/kg/day for patients with GHD and 0.046 ± 0.004 mg/kg/day for patients with TS.

Poor responders comprised 19% of patients with GHD and 21.4% of patients with TS.

CONCLUSION
Patients with severe GHD generally responded better to rhGH therapy as compared to those with idiopathic GHD and TS.

Awareness, recognition, and management of poor response to growth-promoting therapy will lead to better patient care, greater cost-effectiveness and improved clinical benefit.

PP-33

INTRACRANIAL HYPERTENSION – A RARE BUT IMPORTANT CAUSE OF HEADACHE IN A YOUNG FEMALE WITH CUSHING'S DISEASE

https://doi.org/10.15605/jafes.036.S59

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INTRODUCTION

Intracranial hypertension during the course of diagnosis and treatment in Cushing's disease is rare. However, it carries significant morbidity. Headache and visual disturbance in patients with Cushing's disease should alarm the physician of the diagnosis. Treatment options include carbonic anhydrase, loop diuretics and serial lumbar puncture as temporary measures for alleviating symptoms and preserve vision.

RESULTS

A 21-year-old female presented with symptoms of weight gain, intermittent headache, blurring of vision, and bilateral leg swelling. Her blood pressure was 140/88 mmHg, BMI was 34.5 kg/m^2. She had abdominal striae. There was no proximal myopathy. Visual confrontation and acuity were normal. Diagnosis of Cushing's disease was confirmed with unsuppressed cortisol [426 nmol/L] post low-dose dexamethasone suppression test and elevated serum ACTH [14.7 pmol/L]. Pituitary MRI showed a 0.7 x 0.9 x 0.6 cm left pituitary microadenoma without evidence of optic chiasm compression or hydrocephalus. Baseline visual acuity and Humphrey visual field assessment were normal. At three months after initiation of oral ketoconazole 200 mg twice daily, she complained of worsening headache and blurring of vision. Funduscopy showed bilateral papilledema. Bjerrum's chart examination showed bilateral enlargement of physiologic blind spots. Repeat pituitary MRI did not show any new significant findings. Lumbar puncture demonstrated marked increase in the opening pressure above 50 cmH_20. Examination of the cerebrospinal fluid was normal. Oral acetazolamide 500 mg twice daily was commenced, however, this was complicated by hypotension and metabolic acidosis. Ketoconazole was re-introduced with careful titration and symptoms of worsening headache and vision were no longer observed. The patient subsequently underwent trans-sphenoidal surgery and is currently in remission.

CONCLUSION

Symptoms of headache and visual disturbance should prompt the physician to exclude intracranial hypertension in patients with Cushing's disease in order to institute correct treatment and preserve vision.

PP-34

GLYCEMIC CONTROL AND BODY WEIGHT EFFECTS OF 25 MG FULL TABLET VERSUS 12.5 MG HALF TABLET EMPAGLIFLOZIN IN THE TREATMENT OF TYPE 2 DIABETES (T2D): A SINGLE CENTRE EXPERIENCE

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INTRODUCTION

Empagliflozin is the most commonly available sodium-glucose co-transporter-2 (SGLT2) inhibitor in government hospitals. Benefits of empagliflozin has been proven in randomized controlled trials and adopted into international and local T2D practice guidelines. However, prescription of empagliflozin is still limited by cost. Although halving the tablet of empagliflozin is not recommended, there is no clear evidence against this practice. We aimed to compare the effect of full-tablet empagliflozin (25 mg) and half-tablet empagliflozin (12.5 mg) in the treatment of patients with T2D.

METHODOLOGY

This is a cross-sectional study conducted in Hospital Sultan Haji Ahmad Shah (HoSHAS). Prior to 2019, patients with T2D in HoSHAS have been prescribed with full-tablet empagliflozin (25 mg) while after 2019, new patients have been initiated with half-tablet empagliflozin (12.5 mg) due to limited resources. All actively treated patients were included in the study. Electronic medical records were reviewed for patient demographic and clinical parameters such as HbA1c, body weight and insulin treatment at treatment initiation and latest follow-up.

RESULTS

66 patients were on active empagliflozin treatment, with mean age of 50.36 years old and diabetes duration of 10.8 years. Almost two-thirds of the patients were male and treated with half-tablet empagliflozin (12.5 mg). The mean duration of SGLT2 treatment was 10.9 months. Full-tablet (25 mg) vs. half-tablet (12.5 mg) empagliflozin treatment did not show any significant difference in HbA1c reduction (1.10% vs 0.91%, p=0.724) and weight reduction (3.38 kg vs 2.27 kg, p=0.595). 43.7% of patients were on concomitant insulin treatment. 15.2% of patients had reduction in total insulin daily dose. 4.5% of patients were able to discontinue insulin. Full-tablet and half-tablet empagliflozin had comparable effects on insulin dose reductions.

CONCLUSION

This study suggested that the unconventional practice of using half tablet of empagliflozin had comparable results to full-tablet treatment and can be an option in management of T2D where there are limited resources.

PP-35

CASE SERIES OF 7 ADRENOCORTICAL ONCOCYTIC NEOPLASMS, A SINGLE CENTRE EXPERIENCE

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INTRODUCTION
Adrenocortical oncocytic neoplasm is an extremely rare disease, it is usually detected incidentally, and majority are benign and non-functioning.

METHODOLOGY
The demographic and clinical data of 7 patients with adrenocortical oncocytic neoplasm diagnosed and surgically treated at the department of endocrinology in Putrajaya Hospital, between January 2010 and March 2021, were retrospectively analyzed. The clinical manifestations, imaging examination, endocrine examination, types of surgery, pathological results and patient outcomes were analyzed.

RESULTS
The mean age at diagnosis was 41(18-68) years old, with female predominance (4:3), and left side dominance (6:1). In one patient, the tumour was incidentally found during staging for breast cancer. Three patients presented with flank pain. Three patients were diagnosed during evaluation for Cushing's syndrome. The cortisol and catecholamine metabolites were normal except for 3 patients with Cushing's syndrome. Four patients underwent laparoscopic resection of the tumour while the other 3 had open surgery. All surgeries were successfully performed with no complications. The median tumour size is 70 mm (30-180 mm) and the median weight of the tumour is 155.2 g (12.5-1914.3 g). The tumours exhibited the following immunohistochemical profiles: positive for vimentin n=6 (100%), synaptophysin n=5 (100%), neuron-specific enolase n=5 (100%), S-100 n=5 (60%); negative for cytokeratin n=6(83%) and chromogranin n=6 (66%). All the patients were regularly followed up. The follow-up period ranged from 3 to 136 months. The 3 patients with Cushing's syndrome had clinical and biochemical resolution during follow-up. However, 1 case had recurrent Cushing's syndrome with local and distant metastases.

CONCLUSION
The adrenocortical oncocytic neoplasms are rare and mostly benign tumours. Surgical resection is the main treatment method. Careful pathological examination and close follow-up are needed to confirm the prognosis.

PP-36

SIMILAR BUT DIFFERENT: A TALE OF 2 CASES OF EUGLYCEMIC DIABETIC KETOACIDOSIS

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INTRODUCTION
Euglycemic diabetic ketoacidosis (euDKA) is a subset of diabetic ketoacidosis (DKA) with increased anion gap metabolic acidosis and ketosis but normal or minimally elevated blood glucose. Notorious in the recent years due to its association with the increasingly popular sodium-glucose cotransporter 2 (SGLT2) inhibitors, euDKA may also be caused by other conditions. Here, we describe 2 cases of euDKA of different etiologies.

RESULTS
The first case is a 41-year-old female with poorly controlled type 2 diabetes mellitus (HbA1c 12.5%) who was on metformin and empagliflozin. She had discontinued her insulin glargine/lixisenatide injections after missing her follow-up in April 2020 due to the COVID-19 pandemic. In September 2020, she presented with 4 days of abdominal pain and persistent vomiting. She had severe metabolic acidosis (pH 6.9 and HCO3 1.4 mEq/L) with a random capillary blood glucose of 9 mmol/L. Despite fluid resuscitation, sodium bicarbonate infusion and continuous veno-venous hemofiltration (CVVH), her metabolic acidosis persisted for the next 4 days. Her serum ketone was then noted to be elevated (6.4 mmol/L). She was diagnosed with euDKA and after treatment with intravenous insulin and dextrose, it resolved. The second case is a 33-year-old female with type 1 diabetes mellitus who has had 4 prior episodes of DKA since her diagnosis in 2013. She was pregnant at 31 weeks when she presented with 2 days of poor oral intake, epigastric discomfort and vomiting. Her capillary blood glucose was 9.2 mmol/L with severe metabolic acidosis (pH 7.1 and HCO3 5.7 mEq/L) and ketosis (serum ketone was 5.1 mmol). She was diagnosed with euDKA which resolved after 16 hours of intravenous insulin and dextrose.

CONCLUSION
Aside from SGLT2 inhibitors, euDKA is also associated with other conditions such as pregnancy. High index of suspicion in normoglycemic patients is required to avoid delay in diagnosis and management.

PP-37

RECURRENT CEREBROVASCULAR EVENTS FOLLOWING EPISODES OF GRAVES' THYROTOXICOSIS IN A PATIENT WITH MOYAMOYA DISEASE

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INTRODUCTION
Moyamoya disease is a cerebrovascular disease characterised by progressive stenosis of the intracranial internal carotid arteries and their proximal branches that predisposes patients to cerebrovascular accidents. To date, at least 20 cases of Moyamoya disease have been reported in patients with Graves' disease (GD). As a result, episodes of thyrotoxicosis have been known to trigger cerebrovascular events [2]. Therefore, prompt control of thyrotoxicosis is of paramount importance as it reduces the incidence of cerebrovascular accidents (CVA) and transient ischaemic attacks (TIA) while waiting for definitive surgery for Moyamoya disease. We hereby report a case of recurrent cerebrovascular events in a patient with Moyamoya disease that coincided with episodes of thyrotoxicosis following the diagnosis of GD.

RESULTS
A 25-year-old woman diagnosed with Graves' disease presented with recurrent episodes of transient ischemic attacks (TIA) and cerebrovascular accidents (CVA) over the course of 3 years. Each episode was precipitated by relapsed thyrotoxicosis following non-compliance to antithyroid therapy. The patient complained of thyrotoxic symptoms during each TIA and CVA presentations. Repeated CT scans of the brain revealed multiple cerebral infarctions in the right frontal and parietal lobes. Both cerebral magnetic resonance angiography and angiogram revealed small calibre intracranial internal carotid arteries, middle cerebral arteries and external carotid arteries with stenosis of bilateral internal carotid arteries. These findings were consistent with Moyamoya vasculopathy. Finally, when the thyrotoxicosis was brought under control, she underwent a successful superficial temporal artery to middle cerebral artery (STA-MCA) bypass procedure. This highlights the importance of prompt control of thyrotoxicosis in preventing repeated cerebrovascular events.

CONCLUSION
Prompt control of thyrotoxicosis with the immediate administration of radioiodine or by undergoing total thyroidectomy is essential as relapses of thyrotoxicosis often trigger repeated cerebrovascular accidents and transient ischaemic attacks.

PP-38

A SINGLE CENTRE 20 YEARS' EXPERIENCE AND OUTCOME OF BILATERAL ADRENALECTOMY

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INTRODUCTION
Bilateral adrenalectomy is an extremely rare operation performed due to its limited indications. Only 1-6% of patients undergoing adrenal surgery needed a bilateral procedure.

METHODOLOGY
This is a retrospective medical records review of all patients who underwent bilateral adrenalectomy from 2000 to 2020.

RESULTS
Between 2000-2020, a total of 22 patients (5 male, 17 female) underwent bilateral adrenalectomy, simultaneous procedure was performed for sixteen patients while the remaining had sequential adrenalectomy at an interval of 7 months-12 years from the first surgery. Mean age was 38.2 years (range 21-72), mean duration of follow-up was 66 months (range 1-252 months). Two patients died at 3 and 10 months post-surgery due to sepsis. The indications for surgery were bilateral pheochromocytoma in 59% (n=13) of which six patients were MEN2A-associated, and one with SDHD-related disease. Eight patients (36%) had Cushing's syndrome (CS) of which half were ectopic CS (ECS) (3 malignant mediastinal NET, one unlocalised ECS), one patient with refractory Cushing's Disease and three with CS due to bilateral adrenal pathology which comprised of two patients with primary pigmented nodular adrenocortical disease (PPNAD) as part of Carney Complex, and one patient with ACTH-independent macronodular adrenocortical hyperplasia (AIMAH). There was a single case of primary aldosteronism due to bilateral adrenal hyperplasia with refractory hypertension. This patient underwent sequential adrenalectomy. Five patients (22.7%) underwent adrenal sparing surgery but adrenocortical function was preserved in only two patients. 91% were maintained on physiological replacement doses of hydrocortisone 15–20 mg in two to three divided doses and seven (32%) patients required concomitant fludrocortisone replacement at a dose of 0.05–0.1 mg daily.

CONCLUSION
Bilateral adrenalectomy is advocated in a small population of patients, and adrenal sparing surgery may be considered in a subgroup of patients with familial pheochromocytoma. Extra caution should be anticipated and exercised in patients with pre-existing severe uncontrolled hypercortisolaemic state.

PP-39

A RARE DIAGNOSIS IN 3RD TRIMESTER PREGNANCY OF FUNCTIONING LEFT PHAEOCHROMOCYTOMA AND PARAGANGLIOMA: A CASE REPORT

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INTRODUCTION
Phaeochromocytoma or paraganglioma in pregnancy is extremely rare, with a frequency of 0.007% of all pregnancies. If unrecognized, it has high maternal and fetal mortality risk.

RESULTS
A 34-year-old G2P1 female at 34 weeks gestation with GDM on insulin was referred for further workup. She had previously been detected to have a left suprarenal mass (8.5 x 5.2 x 5.8 cm) by ultrasound during her first pregnancy, and underwent caesarean section (CS) at 36 weeks for severe pre-eclampsia with impending eclampsia. Postpartum, her anti-hypertensives were discontinued within 2 weeks. She subsequently defaulted further follow-up. She had paroxysmal symptoms of headache and palpitation once to twice a week during the current pregnancy. Blood pressure in the ward was <140/90. KUB ultrasound showed a heterogeneous mass with cystic component arising from the left suprarenal region (9.6cm x 7.7cm x9.6cm), with another smaller mass (6.0cm x 5.6cm) lateral to this. 24-hour urine catecholamines revealed elevated epinephrine 7.55 times above the upper limit of normal (ULN) at 151.0 mcg/day (Normal: 0.5 –20.0) while norepinephrine and dopamine were raised 1.98 and 1.91 times above ULN respectively. The patient was then referred to an endocrine tertiary centre for expert multidisciplinary care. She was started on prazosin and underwent elective CS 1 week later at 36 weeks gestation, delivering a 2.7kg baby. An adrenal CT scan 3 weeks postpartum showed left suprarenal masses of mixed density and heterogeneous enhancement (9.4cm x 9.2cm x 8.3cm and 5.7cm x 6.4cm x 6.6cm). Her alpha-blocker was changed to Phenoxybenzamine 2 weeks prior to surgery. She underwent open adrenalectomy 3 months postpartum with excision of left paraganglioma (7 x 7 cm) and left phaeochromocytoma (10 x 10 cm) together with the normal-looking left adrenal gland.

CONCLUSION
In phaeochromocytoma and paraganglioma (PPGL) in pregnancy, multidisciplinary coordination is essential for effective management in terms of appropriate mode of delivery, timing of surgery, anaesthesia as well as adequate pre-operative medical preparation.

PP-40

DROPOUT RATES AND RETENTION FACTORS OF A SINGLE-CENTRE WEIGHT MANAGEMENT CLINIC IN A TERTIARY HOSPITAL

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INTRODUCTION
Weight management clinics are the mainstay of obesity care in Malaysia. The UiTM weight management clinic comprises a 7-visit programme over a 1-year period involving various specialties such as primary care physicians, endocrinologist, nutritionist, psychologist, and rehabilitation medicine. Each provides different aspects of obesity management. There is a high dropout rate for this clinic, thus, it is essential to recognize those who will benefit from it.

METHODOLOGY
This is a retrospective analysis of 145 patients attending the weight management clinic in UiTM from June 2018 to December 2020. All data were acquired through patients' medical records. Dropout rate is defined as the absence from 1 or more clinic visits at three monthly timepoints. Logistic regression analysis with SPSS version 22 was performed to identify factors predicting patients' retention to the programme.

RESULTS
A total of 145 patients attended the clinic. Dropout rate at 3 months was 37% (n=53), cumulative rate at 6 months was 48% (n=70) and 59% (n=86) at 12 months. 59 patients (41%) completed the programme. Mean age was 39.1 ± 13.3 years and mean BMI 44.9 ± 10.2 kg/m^2. Patients with dyslipidemia comprised 75% of the cohort (n=109). Patients with a baseline body mass index (BMI) of >40 kg/m^2 and known dyslipidemia showed higher retention in the programme. Those with dyslipidaemia had a 4-fold increase in retention (OR 4.81 (CI 1.02,22.69)), p= 0.048) while those with baseline BMI of >40 kg/m^2 had a 5-fold higher retention (OR 5.53 (CI 1.37, 22.27) p=0.016).

CONCLUSION

There is a high dropout rate (59%) with only 41% retention in our weight management programme. There may be multiple factors associated with this occurrence. Our study showed that those with known dyslipidemia and those with baseline BMI of more than 40 kg/m^2 were more likely to complete the programme and benefit from it.

PP-41

SEMINOMA ARISING FROM TESTICULAR AND OVARIAN REMNANTS HERALDS THE EMERGENCE OF A RARE MALE OVOTESTICULAR DISORDER OF SEXUAL DEVELOPMENT

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INTRODUCTION

Ovotesticular Disorder of Sex Development (OT DSD) or true hermaphroditism is a very rare subset of DSD and accounts for only 5% of cases. It has great phenotypic variability and poses diagnostic challenge to clinicians. It usually presents in childhood with ambiguous genitalia, characterized by histologic demonstration of ovarian and testicular tissues within the same individual.

RESULTS

We describe a 22-year-old man with OT DSD complicated by seminoma. He was delivered preterm with ambiguous genitalia and was lost to follow-up. He was raised as a female, at 14 years old, his teachers referred him due to concerns of male phenotype while participating in competitive sports. Phenotypically, he was a developed male with a micropenis, hypospadia, left scrotal cystic structure and empty right scrotum. Chromosomal analysis revealed 46XY and presence of SRY gene. Radiological imaging at age 16 showed fully developed Mullerian structures, with a single cervix and incomplete septate uterus, and an oval structure suggestive of testes at the left hemipelvis. Cysto-genitoscopy demonstrated normal urethra without prostatic urethra, opening at postero-distal bladder neck with blood clots likely representing the vagina. Laparoscopy identified tubulo-nodular structure inside the pelvis suggestive of vas deferens with suspicious early malignant changes. Wolffian remnant and bicornuate uterus were present with a right Fallopian tube with suspicious hydro-corpus. He was advised surgery, however, he defaulted again. He consulted again at age 22 due to pyuria, suprapubic pain and painless cyclical haematuria. Imaging studies demonstrated pyometra, bulky left ovary and bilateral undescended testes suspicious of malignant transformation. Exploratory laparotomy, gonadectomy, subtotal hysterectomy and left orchidectomy were performed. Histopathological examination revealed seminomas arising from testicular and ovarian remnants with suppurative inflammation in the uterus. He was provided testosterone replacement post operatively, and received chemotherapy (etoposide, bleomycin and platinum).

CONCLUSION

The complexity of the case exemplified the pivotal role of multidisciplinary input from various specialties.

PP-42

HYPOGONADAL SYMPTOMS AND SEXUAL DYSFUNCTION AMONG MALES WITH T2DM

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INTRODUCTION

Previous literature has reported hypogonadism and erectile dysfunction to be prevalent among males with type 2 diabetes mellitus (T2DM). The hypogonadism can be attributed to obesity and insulin resistance, while erectile dysfunction can be due to low testosterone levels as well as endothelial dysfunction in the microvasculature. There is paucity of data on the common hypogonadal symptoms as well as sexual function among Malaysian males with T2DM.

METHODOLOGY

We analysed the hypogonadal symptoms and sexual function of 63 males with T2DM and hypogonadism (defined as total testosterone <12 nmol/L and repeated free testosterone <0.255 nmol/L with Aging Male Symptoms (AMS) score ≥27) and 58 weight- and HbA1c-matched males with T2DM with normal testosterone levels. Two validated questionnaires were utilised: the AMS questionnaire for hypogonadal symptoms, and the International Index of Erectile Function-5 (IIEF-5) questionnaires for sexual function. The AMS questionnaire assesses 3 components, namely somato-vegetative, psychological symptoms and sexual symptoms.

RESULTS

Sexual symptoms were more common than somato-vegetative or psychological symptoms, with 76.2% of hypogonadal males having severe sexual symptoms. 82.5% of hypogonadal males had reduced sexual ability, 68.3% had reduced morning erections and 25.4% had reduced libido. Among the 47.6% sexually active hypogonadal males, 37.9% had moderate to severe ED symptoms. 57.1% had severe to extremely severe decreased beard growth, 50.8% had felt burnt out while 17.5% complained of severe to extremely severe anxiety and 23.8% had irritability symptoms.

CONCLUSION

Sexual complaints, predominantly reduced sexual ability are more prevalent among males with T2DM and hypogonadism. Despite the low testosterone levels, most still have intact libido. Hence, males with T2DM should be actively screened for sexual symptoms and treated accordingly for better sexual quality of life. Somato-vegetative and psychological symptoms are not useful indicators for hypogonadism among males with T2DM.

PP-43

AWAKENING OF A SLEEPING CRANIAL DIABETES INSIPIDUS IN COVID-19 INFECTION

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INTRODUCTION

Steroids, primarily dexamethasone is currently the mainstay of treatment for COVID-19 patients with respiratory distress and organising pneumonia. Its role here is mainly as an anti-inflammatory. However, it is also responsible to unmask hormonal deficiencies such as Cranial Diabetes Insipidus.

RESULTS

A 43-year-old female was admitted for category 2 COVID-19 infection. She has been unwell prior to this with intermittent headaches, abdominal pain and vomiting. During one of her admissions, brain MRI revealed she has a partial empty sella, however no hormonal work up was done. She has no history of postpartum haemorrhage. In this current admission, she required IV hydration for poor oral intake. She had no documented episodes of hypotension or hypoglycaemia. Due to progression to category 4 COVID-19, she was started on IV hydrocortisone 100 mg TDS which was subsequently switched to IV dexamethasone 6 mg OD. During her hospital stay, she developed severe hypernatremia with a highest sodium concentration of 165 mmol/L. Intake and output charting exhibited polyuria with urine output up to 3 L/day, serum osmolarity of 346 mOsm/kg and urine osmolarity of 86 mOsm/kg. She responded well to subcutaneous desmopressin with a reduction of sodium to 157mmol/L over 24 hours and an ability to concentrate her urine. In patients with pituitary dysfunction, with reduced glucocorticoid production, there is reduction in AVP dependent water diuresis; with steroid replacement, there may be an exaggerated response to AVP and hence, severe polyuria. Due to the lung involvement, patients with COVID-19 infection are usually maintained at an equal or slightly negative fluid balance which could have caused the acute worsening of hypernatremia.

CONCLUSION

We need to be attuned to fluid and electrolyte imbalance in patients with COVID-19 infection especially in those with pituitary dysfunction.

PP-44

A RARE CASE OF HYPOGONADOTROPHIC HYPOGONADISM IN AN ADOLESCENT FEMALE

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INTRODUCTION
Hypogonadotrophic hypogonadism refers to hypogonadism due to deficiency in gonadotrophins. Reduced levels of gonadotrophins [luteinizing hormone (LH) and follicle-stimulating hormone (FSH)] results in lack of stimulation for estradiol production leading to amenorrhea, absent breast and uterine development in females. The underlying gonadotrophin deficiency is commonly due to lesions in the pituitary or hypothalamus but can be due to rare genetic causes.

RESULTS
We present a case of a 16-year-old girl who presented with primary amenorrhea and lack of secondary sexual characteristics. She had no underlying medical conditions and denied any other symptoms. There were no excessive stress or weight changes noted. Both her sister and mother attained menarche at 14 years old. On examination, her BMI was 25 kg/m^2 and height was 151 cm (mid-parental height was 155 cm). There were no syndromic features, no hirsutism, and no features suggestive of virilization. External genitalia examination revealed an infantile labia with intact introitus. Tanner staging for breast was 2/5 and for pubic hair 1/5. Her hormonal profile showed hypogonadotrophic hypogonadism. Her estradiol levels were undetectable at <36.7 pmol/L. LH was 1.14 IU/L (NR 2.4–12.6) and FSH was 2.61 IU/L (NR 3.5–12.5). Testosterone level was also low at 0.1 nmol/L (NR 0.3–2.4). Other anterior pituitary hormones were normal. Her bone age was delayed at 14 years compared to her chronological age of 16 years. Karyotyping showed female genotype of 46XX. Pelvic MRI showed hypoplastic uterus with normal vagina and ovaries. Pituitary MRI revealed normal pituitary gland. There were no obvious causes for her condition.

CONCLUSION
The diagnosis for this case is Idiopathic Hypogonadotrophic Hypogonadism (IHH). This is a diagnosis of exclusion. There may be rare genetic defects affecting neurons in the hypothalamus and/or pituitary responsible for this presentation and genetic testing can be helpful.

PP-45

QUALITY OF LIFE AND ITS ASSOCIATION WITH BONE TURNOVER MARKERS IN PATIENTS WITH THALASSEMIA

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INTRODUCTION
As a result of improved treatment and longer life expectancy, thalassemia is now extending into adulthood. Although morbidity and mortality of patients have been reduced significantly, some aspects of the disease impact patients' lives. This study investigated the quality of life of patients with transfusion dependent thalassemia and its association with bone turnover markers (BTM).

METHODOLOGY
This cross-sectional study recruited patients with transfusion-dependent thalassemia (n=40) from an adult haematology clinic. Patients younger than 18 years, with liver disease, on anti-resorptive therapy or corticosteroids were excluded. Participants underwent anthropometric measurements, pubertal assessment, biochemical profiles-ferritin, calcium, phosphate, 25-hydroxyvitamin D, bone turnover markers (s-CTX and s-P1NP), anterior pituitary hormone levels and glucagon stimulation testing. A self-administered 36-item Short Form (SF-36) health survey questionnaire was used to measure the patients' quality of life (QOL) in the form of scores ranging from 0 (worst health) to 100 (best possible health).

RESULTS
A total of 40 patients were included. 47.5% were female and 52.5% were male, with mean age of 27.5 ± 5.2years and mean body mass index of 19.4 ± 2.45 kg/m^2. Hypovitaminosis D (<50 nmol/l), elevated serum ferritin (>500 ug/l) and endocrinopathies were found in 90% of patients while 27.5% had abnormal BTM, with significant negative correlation between vitamin D and bone formation marker, P1NP (r=-0.364, p=0.024). Majority of the patients had a physical and mental component summary score >50 (87.5% and 90% of patients respectively). Among the eight SF-36 domains, vitality showed the highest percentage of patients (40%) with score below 50, followed by general health and role physical (37.5% each). Bodily pain domain had significant correlation with P1NP (r=-0.311, p=0.05), whereas other components of patients' physical or mental health were not affected by the abnormal bone turnover markers or hypovitaminosis D (p>0.05).

CONCLUSION
Bodily pain, a component of physical health and hypovitaminosis D had negative impact on bone-turnover. Overall, majority of participants had SF-36 health survey scores that trended towards good physical and mental health signaling satisfactory QOL despite being largely affected by comorbidities associated with transfusion-dependent thalassemia.

PP-46

A CASE OF SEVERE PROXIMAL MYOPATHY IN A PATIENT WITH ATYPICAL PARATHYROID ADENOMA

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INTRODUCTION
Parathyroid-induced myopathy is a rare neuromuscular manifestation of primary hyperparathyroidism leading to progressive proximal muscle weakness, pain and atrophy. Severity of the weakness varies in relation to the duration and degree of hyperparathyroidism.

RESULTS
We describe a 30-year-old male who presented with progressive debilitating muscle weakness, severe muscle wasting and recurrent muscle spasms over 1 year. He also experienced bone pain, anorexia and weight loss. He had a symmetrical proximal myopathy and muscle wasting of both upper and lower limbs with MRC grade 3/5 on shoulder abduction, adduction, hip extension and flexion. Corrected calcium 4.08 mmol/L (2.10-2.55), phosphate 1.22 mmol/L (0.72-1.52), iPTH >3000.0 pg/ml (15.0-68.3) were suggestive of primary hyperparathyroidism. Parathyroid ultrasound and SESTAMIBI scan localised a hyperfunctioning left superior parathyroid adenoma. His 25 OH-Vitamin D was 39.7 nmol/L suggestive of Vitamin D insufficiency. An elevated alkaline phosphatase at 1807 U/L (40-150), skeletal survey with cortical thinning and generalise low bone density along with bilateral nephrocalcinosis and nephrolithiasis reflected skeletal and renal involvement, common complications of primary hyperparathyroidism. However, an elevated creatine kinase (CK) of 861 U/L (30-200) despite a normal nerve conduction study and electromyography was indicative of a rare myopathic involvement. He underwent successful parathyroidectomy following treatment with hyperhydration, intravenous pamidronate and denosumab. There was resolution of severe muscular spasms, improvement in muscle strength, weight gain and normalisation of his CK, calcium, PTH and vitamin D levels. The histopathological examination confirmed an atypical parathyroid adenoma.

CONCLUSION
Severe proximal myopathy is a rare complication of primary hyperparathyroidism. Cases of atypical parathyroid adenoma, a rare intermediate neoplasm of uncertain malignant potential may present with a more severe clinical and biochemical profile. Prompt diagnosis and parathyroidectomy can prevent complications and improve clinical outcomes.

PP-47

PRIMARY HYPERPARATHYROIDISM DURING PREGNANCY: A CASE REPORT

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INTRODUCTION
Primary hyperparathyroidism (PHPT) is a bone and mineral metabolism disorder caused by autonomous secretion of parathyroid hormone (PTH). PHPT is rare in pregnancy with a quoted incidence of 1%. PHPT during pregnancy is challenging to diagnose and difficult to manage. This is due to limited diagnostic and therapeutic options available during pregnancy and the lack of clinical guidelines. PHPT poses serious maternal and foetal complications such as hyperemesis gravidarum, hypercalcaemic crises in the mother, preterm delivery or miscarriage, and neonatal hypocalcaemia. The definitive treatment for PHPT in pregnancy is parathyroidectomy.

We report a case of PHPT diagnosed and managed during pregnancy.

RESULTS
A 35-year-old female who was 27 weeks pregnant, G3P2, presented with prolonged nausea and vomiting up to her second trimester of pregnancy. Blood results showed serum corrected calcium of 3.17 mmol/L (reference range 2.20-2.65), serum phosphate level of 0.56 mmol/L (reference range 0.81-1.45), alkaline phosphatase of 601U/L (reference range 30-120), intact PTH of 346 pmol/L (reference range 14.9-56.9) and normal renal function. Her calcium clearance to creatinine clearance ratio was 0.016. Ultrasound of the neck showed an enlarged left superior parathyroid gland. She was admitted to the ward for intravenous rehydration with forced diuresis. After 1 week trial of outpatient oral rehydration, repeated serum corrected calcium was 2.77 mmol/L. After multi-disciplinary discussion and family conference, a decision was reached to perform parathyroidectomy. Following left superior parathyroidectomy, her serum calcium returned to normal, and symptoms of nausea as well as vomiting has resolved.

CONCLUSION

Clinicians should have a high index of suspicion for PHPT in pregnancy and manage the condition with a multidisciplinary team (consisting of endocrinologist, endocrine surgeon, obstetrician, paediatrician and anaesthesiologist) due to its potential serious maternal and foetal adverse outcomes if left untreated.

PP-48

A CHALLENGING CASE OF PARATHYROID CARCINOMA WITH SEVERE HYPERCALCEMIA

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INTRODUCTION

Parathyroid carcinoma is a rare condition and it accounts for < 1% of cases of sporadic primary hyperparathyroidism (PHPT). Parathyroid carcinoma is commonly associated with severe and refractory hypercalcemia. We described a patient with parathyroid carcinoma who presented with multiple pathological fractures.

RESULTS

A young female presented with closed fractures of the right proximal humerus and bilateral femoral necks after a trivial fall. Her initial serum calcium was 3.18 mmol/L, serum phosphate was 0.56 mmol/L. The diagnosis of primary hyperparathyroidism was confirmed with high serum parathyroid hormone (iPTH) level of 1187.2 pg/mL (14.9-56.9). Neck ultrasound showed a right parathyroid lobulated lesion measuring 1.6 x 2.3 x 3.3 cm. The challenge in management was the refractory severe hypercalcemia despite standard treatment of hydration, bisphosphonate and calcitonin. Her serum calcium still ranged between 3.6-4.5 mmol/L despite the above therapy. She developed ECG changes typical for hypercalcemia (short QT interval). The surgery cannot proceed due to severe hypercalcemia. Hence, the decision for hemodialysis was made. She underwent 2 sessions of hemodialysis with low calcium dialysate and proceeded with emergency right inferior parathyroidectomy and right hemithyroidectomy. Postoperatively, she was put on calcium gluconate infusion for a few days on top of oral calcium supplement and oral vitamin D, in anticipation of hungry bone syndrome. Histopathological examination confirmed a right parathyroid carcinoma with infiltration to adjacent thyroid tissue. She was discharged well with oral calcium and oral vitamin D supplement. As for her multiple pathological fractures, they were treated conservatively.

CONCLUSION

Hypercalcemia in parathyroid carcinoma is very challenging to manage because it tends to be severe and refractory. Hemodialysis for treatment of severe hypercalcemia was shown to be effective for reduction of hypercalcemia while the patient prepare for parathyroidectomy.

PP-49

CURING HYPERTENSION: SUCCESFUL ADRENALECTOMY FOR PRIMARY ALDOSTERONISM USING CONTRALATERAL SUPPRESSION INDEX

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INTRODUCTION

The diagnosis of Primary Aldosteronism can be challenging especially when it comes to localising an adenoma in patients who fail adrenal venous sampling. Even in expert hands, the right adrenal vein has been known to be difficult to cannulate during AVS. We present a case of a hypertensive woman with metabolic alkalosis and hypokalemia who was evaluated for primary hyperaldosteronism.

RESULTS

A 57-year-old Chinese female with a history of mini-gastric bypass with resultant resolved DM, attended clinic for poorly-controlled hypertension on 2 anti- hypertensives. She also had persistent hypokalemia (2.9-3.5 mmol/l) with metabolic alkalosis. She denied paroxysms or abnormal weight gain suggestive of phaeochromocytoma or Cushing's syndrome. Physical examination was unremarkable. Her aldosterone-renin-ratio (ARR) was raised (>91) with a serum aldosterone of 747 pmol/L and renin of <1.8mU/L. A saline suppression test showed a non-suppressed aldosterone (767pmol/L). A CT-adrenal 3-phase confirmed a subcentimeter benign right adrenal gland nodule with an absolute washout of 92%, suggestive of Conn's adenoma. 24-hour urine catecholamines/metanephrines and 24-hour urinary cortisol were negative. She underwent adrenal-vein-sampling (AVS) with cosyntropin stimulation to localise the source of excess aldosterone secretion. Three series of cortisol samples demonstrated selectivity indices between 0.9-1 for the right and 6.4-24.4 for the left adrenal veins, reflecting failed right adrenal vein cannulation. Contralateral suppression index (CSI) was <1 for all 3 samples from the left adrenal vein. She was referred to the surgeons for right retroperitoneal adrenalectomy. Histopathology confirmed a 1 x 1 cm adrenal cortical adenoma. She was able to cease all anti-hypertensives and potassium supplementation immediately after the surgery.

CONCLUSION

Studies have shown that CSI has a positive predictive value up to 88.9%. Use of CSI in this patient was helpful in demonstrating absolute suppression of the contralateral zona glomerulosa of a normal adrenal gland, thus lateralising the culprit adenoma and curing a patient of hypertension.

PP-50

HYPOPHYSITIS COMPLICATED BY PANHYPOPITUITARISM AND CRANIAL DIABETES INSIPIDUS: A CASE SERIES

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INTRODUCTION

Hypophysitis is gaining greater clinical recognition over the years while continuing to be a diagnostic and therapeutic challenge. Hypophysitis is the collective term for conditions presenting with inflammation of the pituitary gland and infundibulum. It can occur as a primary entity or secondary to systemic conditions. Pituitary inflammation usually results in pituitary hormone deficiency and enlargement of the gland. Inflammatory expansion of the gland can result in compression of the optic apparatus with resulting neuro-ophthalmic consequences. We described two cases of hypophysitis complicated by panhypopituitarism and cranial diabetes insipidus (DI).

RESULTS

Case 1 is a 37-year-old man with severe intractable headache complicated by bilateral 3rd, 4th, 6th nerve palsies and left partial 5th nerve palsy. Pituitary MRI demonstrated diffusely thickened pituitary stalk with absence of posterior pituitary bright spot on T1WI. Hormonal profiles revealed panhypopituitarism with morning cortisol <11 nmol/L (185-624), ACTH <1.1 pmol/L, TSH 0.267 mIU/L (0.38-5.33), fT4 5.38 pmol/L (7.86-14.41), fasting testosterone <0.35 nmol/L (5.72-26.14), FSH 1.23 mIU/mL (1.27-19.26) and LH 0.32 mIU/mL(1.24-8.62). Connective tissue screening and tumour markers were unremarkable. Multiple analgesia failed to alleviate his headache and he was subsequently given IV methylprednisolone followed by tapering dose of prednisolone. Subsequently, his biochemical profiles demonstrated evidence of cranial DI. Case 2 is a 35-year-old woman with forgetfulness and profound lethargy. Pituitary MRI demonstrated empty sella with hypothalamic retrochiasmatic lesion with mammillary body involvement. Hormonal profiles revealed panhypopituitarism with morning cortisol 45 nmol/L, FSH 1.4 mIU/mL, LH 0.3 mIU/mL, oestradiol <18.4 nmol/L, TSH 1.03 mIU/L, fT4 below detection. Lumbar puncture cerebrospinal fluid analysis was normal. Serum angiotensin converting enzyme (ACE) was 44 U/L (16-85) and IgG-4 was 44.9 mg/dL (2.4-121). Connective tissue screening and tumour markers were unremarkable. She was replaced with hydrocortisone and thyroxine. Following glucocorticoid replacement, she demonstrated polyuria and biochemically confirmed cranial DI.

CONCLUSION

Evaluation of patients with suspected hypophysitis involves a thorough clinical and laboratory armamentaria to decide on the optimal management strategies.

PP-51

ALCOHOLIC LIVER CIRRHOSIS AND WEAK BONES: A FORGOTTEN CAUSE OF FRAGILITY FRACTURE

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INTRODUCTION
There is little awareness on the effects of chronic alcoholism and liver cirrhosis on skeletal health. We present a case of fragility fracture and reduced bone density in a man with chronic alcoholic liver cirrhosis.

RESULTS
A 50-year-old male with Child-Pugh B liver cirrhosis due to alcoholic liver disease sustained a fragility fracture of the tibia after slipping and falling at home. He reported alcohol intake of more than 5 units/ day for 20 years. On presentation, he had been on spironolactone, propranolol and thiamine for a year. He had no history of glucocorticoid intake or family history of fractures. He had a BMI of 29.7 kg/m^2, with sparse axillary and pubic hair. His testes were 20 ml bilaterally and soft. He had normal serum corrected calcium (2.56 mmol/L), phosphate (1.3 mmol/L) and ALP (98 U/L) with vitamin D deficiency (34 nmol/L). Ultrasound established cirrhosis of the liver. Labs confirmed primary hypogonadism (AM testosterone- 0.7 nmol/L; LH -7.3 IU/L; FSH -18.3 IU/L). His bone density showed a T-score of -2.8 at the femoral neck and -2.0 at the spine. His vitamin D deficiency was corrected and he was commenced on intravenous zoledronic acid with vitamin D and calcium supplementation. Bone health is significantly compromised in liver cirrhosis due to impaired absorption and hydroxylation of vitamin D and vitamin K leading to increased bone resorption. Ethanol has a dose-dependent direct toxic effect on bone via increased cytokines IL-1, IL-6 and TNF-α leading to activation of RANKL and increased osteoclastic activity. Hormonal dysregulation with low IGF-1 and hypogonadism further augments bone loss in alcoholic liver cirrhosis.

CONCLUSION
This case illustrates the importance of screening for and treating osteoporosis in individuals with chronic alcoholism and liver cirrhosis in order to prevent detrimental effects of fragility fractures which contribute to morbidity and mortality.

PP-52

MC-CUNE ALBRIGHT SYNDROME AND PRE-PUBERTAL SPONTANEOUS IMPROVEMENT IN FRACTURE RISK: A CASE REPORT

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INTRODUCTION
Mc-Cune Albright Syndrome (MAS) is a rare disorder characterized by skeletal lesions, skin hyperpigmentation and hyperfunctioning endocrinopathies. We report a case of MAS with polyostotic fibrous dysplasia (FD) and highlight the natural history where the incidence of fracture starts to dwindle down once they reach adolescence.

RESULTS
A 34 year-old male presented with multiple spontaneous long limb fractures since the age of 2 years old. In addition, he has multiple café au lait spots and endocrinopathies namely, hyperthyroidism and normocalcemic hyperparathyroidism which was complicated by bilateral nephrolithiasis. The hyperthyroidism was treated with radioiodine which rendered him hypothyroid requiring thyroxine replacement. For his hyperparathyroidism, he refused any surgical intervention. With regard to his polyostotic FD, he had a total of 19 fractures over a 9-year period from the age of 2 to 11 years old. Subsequently, his fracture rate reduced markedly occurring 1to 2 times every 6 years. At the age of 15 to 17 years, he received multiple cycles of IV bisphosphonate. Thereafter, he only required intermittent IV bisphosphonates. His last fracture was at the age of 24 years old. At present, he is on a yearly IV zoledronic acid therapy. As he refuses parathyroid surgery, the plan is to give him cinacalcet in order to control his hyperparathyroidism.

CONCLUSION
This case illustrates vividly how the risk of fracture in MAS starts to improve markedly once affected individuals enter the second decade of life. However, the endocrinopathies associated with MAS tend to continue with the risk of new endocrinopathy occurring as they grow older.

PP-53

A FAMILY WITH HEREDITARY PARAGANGLIOMA SECONDARY TO SDHD MUTATION

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INTRODUCTION

A third of pheochromocytoma and paraganglioma (PPGL) tumours are part of a hereditary syndrome. Hereditary PPGL shows autosomal dominant inheritance with variable penetrance. Genetic testing is recommended in all patients diagnosed with PPGL regardless of age at presentation and family history. SDHD is the most frequently mutated gene in head and neck PGLs and associated tumours have low malignancy rate. This gene is maternally imprinted with silencing of the maternal allele, thus, the risk of developing paragangliomas is limited to offsprings who inherit the pathogenic variant from their father. Paternally inherited pathogenic variants are highly penetrant by age 50. We describe a family with hereditary paraganglioma due to mutation in the SDHD gene.

RESULTS

The index patient is a 23 year-old female who was diagnosed to have bilateral adrenal pheochromocytoma with carotid and cardiac paragangliomas. Genetic screening revealed that she has SDHD mutation. Further family history revealed that 2 out of 3 paternal aunts have carotid paragangliomas. Her father, youngest of 5 siblings, paternal uncle and grandfather passed away at age 42, 40, 39 years old, respectively, due to severe headache and possible haemorrhagic stroke. Six other family members underwent genetic screening as well. Five family members were positive for SDHD mutation. These include the index patient's elder sister, 3 paternal aunts (2 with carotid paragangliomas) and one male cousin.

CONCLUSION

Genetic testing for family members of patients with hereditary paragangliomas is recommended after thorough genetic counselling. Genetic testing for first- and second-degree relatives is recommended for SDHD-related paraganglioma. Healthy asymptomatic carriers for the gene mutation should undergo clinical assessment, plasma and/or urine metanephrines and normetanephrines and a combination of whole-body MRI (head and neck, abdominal and pelvic) and PET-CT imaging at initial screening. Thereafter, recommendations for long-term surveillance include annual clinical and biochemical evaluation along with whole body MRI repeated every 2-3 years.

PP-54

SERUM ADIPONECTIN AND OTHER PREDICTORS OF NEED FOR INSULIN THERAPY IN GESTATIONAL DIABETES MELLITUS: A PILOT STUDY

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INTRODUCTION

The prevalence of gestational diabetes mellitus (GDM) is increasing in Malaysia. Adiponectin is an adipokine that is expressed in adipose tissues and placenta. Plasma adiponectin levels are decreased in several metabolic disorders, including obesity, inflammatory states, insulin resistance, and type 2 diabetes. To our knowledge, there are no published reports on the association between plasma adiponectin levels and need for insulin therapy in GDM. The aim of this study was to assess the association of 1) adiponectin and 2) other predictors such as BMI and HbA1c; with the need for insulin therapy in GDM.

METHODOLOGY

In this prospective pilot study, we recruited women with GDM from combined antenatal clinic. Demographic, anthropometric and clinical data were obtained during the interview. Blood was drawn for insulin, c-peptide, adiponectin and triglyceride at recruitment.

RESULTS

Of the 142 women included in this study, 16.2% required insulin therapy and 83.8% of patients were able to maintain adequate glycaemic control with diet. We did not find adiponectin at GDM diagnosis to be a significant predictor of need for insulin therapy in both univariate and multivariate analyses. The most robust significant correlation of adiponectin in mothers with GDM ($r > 0.5$) was an inverse association with HOMA IR and fasting insulin which is reflective of insulin resistance. Significant associations of insulin requirement in univariate analysis included history of GDM, history of insulin-requiring GDM and glycaemic variables at diagnosis (higher fasting, 2-hour glucose, AUC glucose). Upon multivariate analysis after adjusting for pre-pregnancy BMI and maternal insulin resistance, only Chinese ethnicity (OR= 4.17, CI 1.32-13.16), history of GDM requiring insulin therapy (OR 10.67, CI 1.78-63.90), and AUC glucose (OR=2.14, CI 1.32-3.45) were significantly associated with increased need for insulin therapy.

CONCLUSION
Women with GDM who have an elevated AUC glucose, previous insulin-requiring GDM and are of Chinese ethnicity are at higher risk of requiring insulin therapy.

PP-55

OSTEOPOROTIC FRACTURE IN ADRENAL CUSHING'S: IS IT UNCOMMON?

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INTRODUCTION
Osteoporosis is a known complication of Cushing's syndrome (CS). The prevalence of osteoporosis due to endogenous CS has been reported to be 50–59% and about one-third to half of patients with hypercortisolemia-induced osteoporosis experience fragility fracture. We described a case of CS due to Left Adrenal Adenoma complicated with T12 Fracture.

RESULTS
A 25 year- old Malay female presented with 7 months history of amenorrhea. Clinical examination revealed significant hirsutism, acne, purple striae over abdomen and marked proximal myopathy. Her fasting blood sugar was 8.2 mmol/L. She was treated as Polycystic Ovarian Syndrome (PCOS) by gynaecologist and started on oral contraceptive pill (OCP). She was referred to us for further work up of CS, but it was planned after we wash out the OCP.

She was admitted for severe lower back pain with bilateral sciatica. Further history revealed that she had history of fall 3 months earlier but was asymptomatic. Clinical assessment with imaging confirmed T12 fracture with compressive myelopathy involving the nerve roots. Adrenal and spine MRI was done in view of clinical suspicion of CS, which showed that the left adrenal is homogenously enlarged with lobulated margin measuring 2.6 cm x 2.8 cm x 3.0 cm. Her CS was confirmed biochemically with a raised 24-hour Urinary Cortisol at 1345nmol level. Her morning cortisol was 738.2 nmol/L which is elevated while her serum Adrenocorticotrophic hormone was suppressed at <1.10 pmol/L. She proceeded with pedicle screw fixation of her T12 spinal fracture at first and later underwent left adrenalectomy with HPE report of Adrenal Cortical Adenoma with ganglioneuromas.

CONCLUSION
Literature have shown that osteoporosis is more prevalent in adrenal than pituitary CS. A retrospective analysis has shown that age, body mass index, duration of amenorrhea, extent of hypercortisolism do not significantly affect the prevalence of osteoporosis in CS.

PP-56

TWO CASES OF IMMUNE CHECKPOINT INHIBITOR INDUCED THYROIDITIS FROM UNIVERSITY MALAYA MEDICAL CENTRE

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INTRODUCTION
Immune checkpoint inhibitor (ICPi) is a known but rare cause of thyroiditis. However, there is a lack of local evidence due to scarce availability of ICPi as a novel treatment for oncology patients. We presented two cases of thyroiditis following treatment with PD-1 checkpoint inhibitors (anti-PD-1) namely pembrolizumab and cemiplimab.

RESULTS
Case A was a 49-year-old female who received pembrolizumab for recurrent metastatic HER2-negative breast cancer after mastectomy, radiotherapy and chemotherapy. Her thyroid function test at baseline was free T4 17.2pmol/L (normal range: 11.5-22.7) and TSH 0.63 mIU/L. After 3 weeks of pembrolizumab, she had biochemical hyperthyroidism (free T4 45.5 pmol/L; TSH <0.01 mIU/L), mildly raised thyroid stimulating immunoglobulins (0.94 IU/L; normal range: <0.55) and a normal thyroid ultrasound. She was treated with tapering dose of carbimazole 20mg daily but developed hypothyroidism (free T4 4.2 pmol/L; TSH 61.55 mIU/L) 5 weeks later while on carbimazole 5mg daily. She remained clinically and biochemically euthyroid with levothyroxine 100 mcg daily. Case B was a 63 year-old male who received cemiplimab for non-small-cell lung cancer with brain metastases after stereotactic brain surgery. He was euthyroid at baseline (free T4 -NA; TSH 0.55 mIU/L). After 3 months of cemiplimab, he had deranged thyroid function test (free T4 23.9 pmol/L; TSH 0.03 mIU/L), which progressed to biochemical hypothyroidism (free T4 7.5 pmol/L; TSH 49.61 mIU/L) 10 months later. He was treated with levothyroxine 25 mcg daily with latest free T4 15.4pmol/L and TSH 18.12 mIU/L

CONCLUSION
Thyroid function test screening is required for all patients undergoing treatment with ICPi. Clinicians need to have a high index of suspicion for ICPi-associated thyroid dysfunction which can be appropriately treated with medical therapy.

PP-57

RARE FINDINGS OF MULTINODULAR GOITRE ON LUNG PERFUSION SCINTIGRAPHY OF A PATIENT WITH MALIGNANT MESOTHELIOMA

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INTRODUCTION

Malignant mesothelioma is an aggressive cancer of thoracic pleural lining that often requires urgent attention and management. Any other underlying diseases or comorbidities such as thyroid disorder could influence overall patient care and outcome. Lung perfusion scintigraphy performed using radionuclide-labelled tiny particles of macroaggregated albumin (5-100 microns) may facilitate pre-operative differential lung function evaluation. We report and illustrate incidental findings of increased tracer uptake by multinodular goitre (MNG) on lung perfusion scintigraphy in a malignant mesothelioma patient.

RESULTS

63-year-old male, a chronic heavy smoker with underlying diabetes mellitus and hypertension presented with left pleural effusion. He was further managed and investigated. HPE of pleural biopsy (February 2019) confirmed features of malignant mesothelioma. As the pre-operative pulmonary spirometry test showed restrictive pattern, he was then referred for lung perfusion scintigraphy (April 2019) to determine differential function of right and left lung respectively which demonstrated severely reduced perfusion of the entire left lung. Incidental findings of increased tracer uptake also seen in the neck corresponding to an enlarged left thyroid lobe and multiple hypodense thyroid nodules; no gastric uptake visualised to indicate free pertechnetate and no renal activities noted to suggest right to left heart shunting. Quality control records showed good radiopharmaceutical labelling. Possible explanations include higher circulating tracer in view of the severely reduced left lung function and subclinical hyperthyroidism state. Upon further enquiry, we noticed that his prior imaging studies including the contrasted CT scan (January 2019) and fluorodeoxyglucose positron emission tomography scan (March 2019) had revealed features of MNG with retrosternal extension of the left lobe.

CONCLUSION

To our best knowledge, this is the first reported case of radionuclide-labelled macroaggregated albumin uptake by MNG in a patient with malignant mesothelioma. Biochemical correlation was suggested as this may help to ascertain possible additional comorbidity.

PP-58

WHOLE-BODY SESTAMIBI SCAN USEFULNESS AND DETECTION OF MULTIPLE BROWN TUMOURS

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INTRODUCTION

Radionuclide sestamibi scan with standard neck and mediastinum acquisition is an important modality to localise parathyroid lesion. Hyperparathyroidism can be associated with brown tumour or lytic bone lesion arising from excess osteoclast activity. Although bone scan is commonly used to evaluate brown tumour, parathyroid scan with whole-body image acquisition may also be deployed. We present a rare case of primary hyperparathyroidism in young adult complicated with brown tumour to highlight the usefulness of whole-body sestamibi scan.

RESULTS

30-year-old male with no prior comorbidity or family history of endocrine disorders had presented with non-traumatic right forearm and right mid shin swellings for two months in late 2020. These swellings caused some degree of discomfort, but he was otherwise asymptomatic. Radiographs revealed lucent bone lesions. He was then further investigated and found to have raised serum alkaline phosphatase (674 U/L), calcium (2.95 mmol/L) and parathyroid hormone levels (50.4 pmol/L). His renal profile and remaining routine blood investigations were unremarkable. Diagnosis of primary hyperparathyroidism was made, and he was referred for scintigraphy localisation of hyperfunctioning parathyroid gland. Single tracer sestamibi scan (9.3.2021) was performed using standard acquisition followed by planar whole-body imaging at delayed phase. Supplementary thorax and lower limb single photon emission computed tomography/computerised tomography (SPECT/CT) was also done. A parathyroid adenoma is seen at inferior pole of right thyroid lobe associated with multiple sestamibi-avid lytic lesions suggestive of brown tumours involving proximal right radius, right anterolateral 8th rib, distal third of left femur, proximal and distal end of left tibia, and mid shaft of right tibia.

CONCLUSION

Whole-body sestamibi scan appears not only useful to identify hyperfunctioning parathyroid lesion, but concurrently evaluate multiple brown tumours in a young adult with primary hyperparathyroidism. Information obtained may facilitate overall management including treatment of potential brown tumour related morbidities.

PP-59

WOULD SOMATOSTATIN ANALOGUE OBVIATES THE NEED OF RADICAL SURGERY IN MIDDLE EAR NET?

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INTRODUCTION

Neuroendocrine tumour (NET) involving the middle ear as a primary site is exceptionally rare. To date there have been 54 reported cases in the literature. Surgical removal continues to be the mainstay of treatment however it carries with it considerable risk of complications.

RESULTS

We describe a 25-year-old man who presented with recurrent acute otitis media with mastoiditis of the right ear which was associated with a year history of otalgia, hearing loss and aural fullness. Otoscopic examination revealed inflamed and swollen tympanic membrane. Pure tone audiometry showed mild conductive hearing loss on the right ear while high resolution computed tomography of the temporal bone showed soft tissue opacification of middle ear and mastoid air cells without erosions of ossicles. He underwent right cortical mastoidectomy due to persistent symptoms. Intraoperatively there was granulation tissue within the right mastoid and middle ear cavity. Histopathological examination showed features consistent with a Grade 1 trabecular carcinoid tumour and absence of malignant features. It stained positive for synaptophysin and CD56 but were negative for S-100 and Chromogranin A. Ki-67 proliferation index was low (2-3%). Patient did not have symptoms of carcinoid syndrome and both the 24 hour urinary 5-hydroxylindoleacetic acid and Chromogranin A were within normal range. FDG-Positron Emission Tomography and Galium-68 DOTATE scan showed high uptake at the right mastoid and middle ear with minimal uptake in the mediastinal and paratracheal nodes. In view of the low-grade nature of the NET, monthly 20 mg Octreotide LAR was chosen as a form of treatment over that of radical surgery. Following 6 months of therapy with Octreotide LAR, the patient will be subjected to a repeat Galium-68 DOTATE scan.

CONCLUSION

In cases of low to intermediate grade NET involving the middle ear a combination of limited surgery and somatostatin analogue would be the treatment of choice.

PP-60

RADIOFREQUENCY ABLATION (RFA) AS AN EFFECTIVE TREATMENT MODALITY FOR INSULINOMA

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INTRODUCTION

Insulinoma is the commonest type of functional neuroendocrine tumour involving the pancreas. Complete surgical removal has been the primary form of treatment, however, of late newer forms of treatment modalities are being utilised in place of surgery. We describe a case of insulinoma who was successfully treated with radiofrequency ablation (RFA).

RESULTS

A 53-year-old lady presented with recurrent hypoglycaemic symptoms over a 2-month period with blood glucose readings ranging from 2.6-3.9mmol/L. Her symptoms occurred following prolonged fast which were immediately relieved by food intake, fulfilling the criteria of Whipple's triad. During her hospital stay, she had symptomatic fasting hypoglycaemia with a blood glucose of 2.1mmol/L associated with elevated C-peptide and insulin levels together with the absence of blood ketones. In addition she had normal IGF-1 and cortisol levels. Computed Tomography (CT) of the abdomen showed a small enhancing lesion at body of the pancreas measuring 1.6x1.4 cm which was confirmed by a subsequent Endoscopic ultrasound (EUS) revealing a 1 x 0.3 x 0.8 cm pancreatic lesion. Endoscopic fine needle aspiration revealed a pancreatic neuroendocrine tumour which stains for Synaptophysin and Chromogranin. However, both the Chromogranin A and 24-hour urine 5-Hydroxyindoleacetic Acid (HIAA) were within normal range. Subsequently she underwent RFA under EUS guidance. Following the procedure her blood glucose normalised ranging between 5.3-5.7 mmol/L. She was able to wean off the diaxozide that was used to treat the hypoglycaemia prior to procedure. Surveillance CT scan of the abdomen performed a month later showed a mild regression of the tumour size (1.4 x 1.4 cm).

CONCLUSION

We believe this is the first reported use of RFA under EUS guidance in the treatment of insulinoma in this country. The use of this less invasive treatment modality heralds a new dimension in the management of pancreatic tumours.

PP-61

BALANCING THE SODIUM IN CRANIAL DIABETES INSIPIDUS AND RENAL SALT WASTING

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INTRODUCTION
Disorder of water and sodium homeostasis can occur with sellar and suprasellar lesion. Cranial diabetes insipidus (CDI) is a common complication, characterized by polyuria, dehydration and hypernatremia. The use of cisplatin for intracranial malignancy can cause renal tubular dysfunction resulting in renal salt wasting (RSW), presenting similarly as polyuria, hypovolaemia, but with hyponatremia instead. The diagnosis and management of co-existing CDI and RSW can be challenging. We report a case of pineal germinoma with CDI and concurrent cisplatin-induced RSW.

RESULTS
A 17-year-old male was admitted for recurrent seizure episodes and headache. His vital signs and electrolytes were normal. He has under-developed secondary sexual characteristics. Hormonal workup confirmed panhypopituitarism, and he received levothyroxine and hydrocortisone replacement. Pituitary MRI revealed pineal lesion with sellar and suprasellar extension. Endoscopic ventriculostomy and biopsy reported as germinoma. Postoperatively, he developed polyuria with hypernatremia of 167 mmol/L. A diagnosis of CDI was made and he responded well to desmopressin and required maintenance dose at 0.1 mg TDS. Subsequently, he received cisplatin-based chemotherapy. While on chemotherapy, despite usual replacement dose for desmopressin, levothyroxine and hydrocortisone, he developed polyuria (up to 5L/day), hypotension (BP 98/50 mmHg) and tachycardia (pulse 104 beats/minute). Laboratory results showed hyponatremia of 130 mmol/L, raised urine sodium (125 mmol/L) and urine osmolality (397 mOsmol/kg). Diagnosis of cisplatin-induced RSW was made. His desmopressin dose was maintained but intravenous isotonic saline and regular oral nutritional supplements was initiated to replace sodium and fluid loss. Post-chemotherapy, his serum sodium normalised with resolved polyuria.

CONCLUSION
Misinterpretation of recurring polyuria or hyponatremia in patient with CDI as under or over replacement with desmopressin can cause morbidity as treatment for CDI and RSW differs. Adequate fluid and salt replacement is the main treatment in RSW. Hydration status, laboratory investigations, especially urine osmolality and urine sodium, and regular serum sodium monitoring, can guide in early diagnosis and proper therapy.

PP-62

RELAPSE OF GRAVES' DISEASE FOLLOWING A PREGNANCY: A SINGLE CENTRE PROSPECTIVE OBSERVATIONAL STUDY

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INTRODUCTION
Relapse of Graves' disease (GD) is common in the postpartum period. One study showed that the overall relapse rate of GD following a pregnancy was 84%, as compared to that of 56% in women who did not become pregnant. We aim to determine the prevalence of relapsed GD during postpartum period in our centre.

METHODOLOGY
All pregnant women who were diagnosed with Graves' disease either before or during index pregnancy in endocrine clinic from October 2016 to May 2018 were followed up monthly throughout their gestation and 3- monthly after delivery till one year postpartum. All were managed according to standard care. Relevant demographic and clinical data were collected during outpatient visits.

RESULTS
Thirty-six patients (50% Malay, 33.3% Chinese, 2.8% Indian and 13.9% others) fulfilled the inclusion criteria. Median [interquartile range (IQR)] age and period of gestation at recruitment were 29 years old (25, 32.75) and 17.5 weeks (12, 23.5) respectively. Nearly half (47.2%) were diagnosed with GD within one to five years prior while only 8 (22.2%) had the diagnosis made during index pregnancy. Median (IQR) free thyroxine (T4) during the first trimester was 34.77 pmol/L (18.39, 77.46). Out of 16 patients in whom one-year postpartum data were available, half received antithyroid treatment throughout pregnancy and postpartum period while the other half had antithyroid medications withheld during gestation. Six (75% of eight patients) experienced relapse of GD after delivery. Median (IQR) time between delivery and relapse was 4.5 months (1.75, 6.50). Maternal age, duration of GD, timing of GD diagnosis in relation to index pregnancy and antenatal antithyroid treatment did not influence postpartum relapse of GD.

CONCLUSION
Three quarter of our pregnant women who had GD experienced relapse at approximately 4.5 months after delivery. Close monitoring of postpartum thyroid function is pertinent to avoid adverse complications.

PP-63

THYROIDITIS DUE TO INFILTRATION OF ANTERIOR MEDIASTINAL HODGKIN'S LYMPHOMA – A CASE REPORT

https://doi.org/10.15605/jafes.036.S89

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INTRODUCTION

Hodgkin's lymphoma is the most common type of lymphoma arising from the anterior mediastinum that may extend to the pre-tracheal region. Infiltration of non-thyroid malignancies (including hematological) into the thyroid gland is not common but has been described and may result in thyroid dysfunction.

RESULTS

We present a case of a 28-year-old woman with no prior medical illness who presented with a 2-month history of chest discomfort and shortness of breath associated with new onset anterior neck swelling. She had occasional palpitations but did not have other symptoms of hyperthyroidism. There was no family history of thyroid disease. On examination, she was tachypnoiec with an audible stridor at rest and a heart rate of 142 bpm.There were no tremors, proximal myopathy, hyperreflexia or exophthalmos. She had a large non-tender asymmetrical anterior neck mass, which was hard, matted and did not move with swallowing. Thyroid function tests showed freeT4: 26.7 pmol/L[11.5-22.7], T3: 6.12 pmol/L [3.93-7.2] and TSH:0.04 mIU/L [0.550- 4.78]. Anti-TG, Anti-TPO, thyroid-stimulating immunoglobulin (TSI) levels were normal. ECG showed sinus tachycardia. CT thorax/abdomen/pelvis revealed bilateral supraclavicular lymph nodes and large matted masses in the anterior mediastinum invading the lower lobes of the thyroid, with the gland itself being normal. Her heart rate normalized with hydration and propranolol. She was also treated with high dose IV dexamethasone for the upper airway obstruction. The neck mass decreased in size with dexamethasone and her thyroid function tests normalized within a month without antithyroid medications. Histopathological examination confirmed Hodgkin's lymphoma and she was commenced on chemotherapy.

CONCLUSION

Anterior mediastinal Hodgkin's lymphoma may infiltrate into the thyroid gland causing thyroiditis. Treatment of the underlying malignancy may result in complete recovery of the thyroid in some cases. Hyperthyroid symptoms may be treated with betablockers alone, and anti-thyroid drugs are usually not warranted.

PP-64

CARDIAC PARAGANGLIOMAS: TWO PATIENTS WITH DIFFERENT GERMLINE MUTATIONS

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INTRODUCTION

Cardiac paragangliomas (CPGLs) are rare, accounting for 2% of all PGLs and 1–3% of all primary cardiac tumours. Following biochemical evaluation, anatomical and functional imaging are necessary. Definitive treatment is determined by tumour resectability, presence of multiple PGL with/without metastases. We report two cases, both associated with genetic mutations.

RESULTS

Patient 1, diagnosed with bilateral CPGLs at age 38 and underwent bilateral neck resection. Tumour histopathology were consistent with PGLs. At age 45, he presented with severe hypertension, elevated urinary noradrenaline >20 times and a mass adjacent to main pulmonary artery (PA) on CT imaging which was deemed inoperable. Coronary angiogram revealed a vascular cardiac mass adjacent to PA and proceeded with tumour embolization with helical coil placement in main feeder artery and alcohol ablation. This resulted in tumour size reduction, resolution of hormonal excess and hypertension. He later developed disease progression with recurrence in right carotid and metastases to aortocaval nodes and spine. Following 4 cycles of PRRT, there was clinical, biochemical and radiological improvement. Genetic testing showed KIF1B mutation. His younger sibling had bilateral carotid and abdominal PGLs. Patient 2 is 23-years-old, presented with hypertensive emergency and had elevated urinary normetanephrines >10 times. CT abdomen showed bilateral adrenal masses and left renal mass. Ga-68-DOTATATE-PETCT revealed disease at left carotid, cardiac and bilateral adrenal glands. She underwent bilateral adrenalectomy with left cortical sparing and left nephrectomy. Histopathology confirmed bilateral pheochromocytomas and left kidney leiomyoma. Postoperatively, hypertension persisted with better control. MRI imaging confirmed PGLs at left carotid, vagal and atrioventricular groove (cardiac). She is currently being monitored with future consideration for tumour resection. Genetic testing showed SDHD mutation with a family history of carotid PGLs in her paternal relatives.

CONCLUSION

These two cases highlight the importance of multi-disciplinary approach in the management of CPGLs, as part of a hereditary paraganglioma–pheochromocytoma syndrome.

PP-65

MACROPROLACTINEMIA IN A PATIENT WITH MICROPROLACTINOMA – A CASE REPORT

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INTRODUCTION

Macroprolactin is a prolactin-IgG complex that maybe be found in up to 15% of hyperprolactinemic sera, resulting in falsely elevated prolactin levels. Although macroprolactin usually has insignificant bioactivity, some patients report symptoms of hyperprolactinemia. Those with microprolactinomas could also have concurrent macroprolactin hence resulting in diagnostic dilemmas.

RESULTS

We report a 27-year-old nulliparous woman who presented with secondary amenorrhea for 8 months following a period of irregular menses for 2 years. She did not have headache or galactorrhea. She was within normal BMI and did not have features of Cushing's, PCOS or hypopituitarism. Visual field assessment was normal. Investigations revealed high prolactin-3797 mIU/L(59-619 mIU/L) with LH-10.8 IU/L (1.0-15.0 IU/L), FSH-6.5 IU/L (2.0-10.0 IU/L), oestradiol-0.08 nmol/L(0.08 -0.53 nmol/L). Other pituitary hormones were normal and other causes of hyperprolactinemia were ruled out. Pituitary MRI revealed a microadenoma, 2.6 mm X 4.2 mm. A diagnosis of microprolactinoma was made and cabergoline 0.25 mg biweekly was commenced. She regained her menses and prolactin dropped to 334 mIU/L at 4 months post-cabergoline. Despite good compliance, prolactin increased again, reaching a peak of 2011 mIU/L. Cabergoline dose was increased gradually to 0.5mcg thrice weekly, however prolactin remained >1000 mIU/L despite a significant period of treatment. Her menses remained normal throughout. Repeated MRI pituitary showed no change in size of microadenoma. She was then tested for macroprolactin with Polyethylene glycol (PEG) precipitation, which showed a PEG recovery of 37% in keeping with macroprolactinemia. Cabergoline was tapered off and she currently remains asymptomatic with normal menses.

CONCLUSION

The initial response to cabergoline suggests that this patient had concurrent microprolactinoma with macro-prolactinemia. As macroprolactin may cause symptoms or occur with an underlying prolactinoma, there has been suggestion that all patients with hyperprolactinemia be screened for presence of macroprolactin. This could avoid unnecessary or prolonged treatment with dopamine agonists and reduce unnecessary investigations.

PP-66

A COMPARATIVE STUDY OF AWARENESS AMONG THIRD YEAR FEMALE UNDERGRADUATES FROM THE MEDICAL TECHNOLOGY AND PHARMACY DEGREE PROGRAMS IN THE UNIVERSITY OF SANTO TOMAS ON COMORBIDITIES OF POLYCYSTIC OVARIAN SYNDROME (PCOS)

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INTRODUCTION

Polycystic Ovarian Syndrome (PCOS) is a female reproductive disorder characterized by hormonal imbalances, which can result in a variety of comorbidities. In the Philippine setting, there is an evident lack of literature regarding PCOS, which necessitates a study that explores the present status of the aforementioned aspect. Due to this, the aim of the study is to establish a statistical significance on the comparison between the awareness on PCOS comorbidities of two health allied student groups: female students of the Medical Technology and Pharmacy programs and to contribute to lack of local PCOS studies.

METHODOLOGY

The research employed an online dissemination of the designed 5-point Likert scale questionnaire to gauge the awareness of the intended respondents. The statistical analysis utilized an F-test followed by a two sample T-test assuming equal variances.

RESULTS

The main findings of the study are as follows: both student groups were generally aware of PCOS comorbidities, however, a low level of awareness on cardiovascular diseases and Insulin Resistance was observed. In contrast the population had a high level of awareness regarding reproductive disorders.

CONCLUSION

In conclusion, there is no significant difference between the level of awareness of PCOS among reproductive-aged female students from the Medical Technology degree program to the female students from the Pharmacy degree program.

PP-67

THE EFFECTS VERY LOW CARBOHYDRATE DIET (VLCBD) ON RENAL OUTCOMES IN DIABETIC KIDNEY DISEASE PATIENTS: A 12-WEEK RANDOMIZED CONTROLLED TRIAL

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INTRODUCTION

Dietary modality such as very low carbohydrate diets (VLCBD) is an effective means to reduce weight and blood pressure, with subsequently improved glycaemic control and reduced hyperfiltration in DKD. The objectives of the randomized controlled trial study are to assess the improvement of VLCBD in addition to a low protein diet (LPD) on renal outcomes and metabolic parameters in DKD patients.

METHODOLOGY

This was an investigator-initiated, single-center, randomized, controlled, open-labeled, clinical trial in T2DM patients with DKD, comparing 12-weeks of low carbohydrate diet (<20g daily intake) versus standard low protein (0.8g/kg/day) and low salt diet. Patients with type 2 diabetes aged 40-75 years and an HbA1c 7-10.5% were randomized. The main outcomes were changes in proteinuria assessed by UPCR and urine microalbumin and a rise in serum creatine with reduction in eGFR.

RESULTS

A total of 30 participants were enrolled (median (IQR) age 57 (11), BMI 30.68 (8.38), and HbA1c 8.8 (1.7)). VLCBD groups achieved significant lower total carbohydrate intake at week 12 in comparison to LPD group (27(25) g vs 89.33(77.4)g, p= < 0.01). No difference between the groups were found in change in UPCR, urine microalbumin, creatinine, eGFR and blood pressure. The VLCBD group demonstrated significant reductions in weight (-4.0 IQR 3.9 vs 0.2 IQR4.2 kg, p=<0.001) and BMI (-1.5 IQR 1.18 vs 0.074 IQR 1.54) which were not seen within the LPD group. There was reduction in HbA1c (1.3 IQR1.1 % vs 0.7 IQR1.25 %, respectively, p=NS) and fasting blood glucose in both groups. Both dietary interventions were well received with no reported adverse events.

CONCLUSION

The result suggests that the intervention of very low carbohydrate diet, in patients with underlying diabetic kidney disease was safe in preserving renal functions with improvement in weight and glycaemic control within 12 weeks of interventions.

PAEDIATRIC

PE-01

GRAVES DISEASE IN CHILDREN AND ADOLESCENTS: PROGRESSION FROM HYPERTHYROIDISM TO SPONTANEOUS HYPOTHYROIDISM

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INTRODUCTION
Graves' disease (GD) is an autoimmune disorder characterized by hyperthyroidism caused by the presence of thyroid stimulating-antibody. In adult patients with GD, approximately 5-20% of patients eventually progress to hypothyroidism after a period of remission of more than 10 years. Possible mechanisms for the development of spontaneous hypothyroidism are the development of TSH-blocking antibodies or a chronic autoimmune process similar to Hashimoto thyroiditis. In children, whether a subset of patients' progress to hypothyroidism is unclear.

RESULTS
We present three cases of pediatrics GD who progress from hyperthyroidism to hypothyroidism.

Case 1: 17-year-old girl. Treated with carbimazole for 6 years. Defaulted follow up for 1 year, self-prescribed carbimazole. Severely hypothyroidism when re-presented (FT4 3.7 pmol/, TSH 179.9 mIU/L). Currently on L-thyroxine 100 mcg daily past 1 year. At presentation TRAb 28.1 U/L (<1), Anti-TG >4000 U/ml (<1), Anti-TPO >929 U/ml (<1). At remission TSI 120 IU/L (<0.55), anti-TG 1313 U/ml(<1), anti-TPO >972 U/ml(<1)

Case 2: 11-year-old girl. Treated with carbimazole 3 years. Developed subclinical hypothyroidism (FT4 8.4 pmol/L and TSH 7.455 mIU/mL) after 1 year of remission. Spontaneous normalization of TFT after 2 months currently euthyroid. At presentation TRAb 20 U/L (<1), Anti-TG 1425 U/ml, Anti-TPO >986 U/ml.At remission:TRAb 0.46IU/L(<1)

Case 3: 10-year-old girl presented at age of 8 years with weight loss over 4 months. Treated with carbimazole for 1 year. Developed hypothyroidism (FT4 8.9 pmol/L, TSH 13.45 mIU/mL) after 8 months of remission. Currently on L-thyroxine 25 mcg for duration of 3 months. At presentation TRAb 151 IU/L (N<0.55), Anti-TG 408.9U/ml (n<1), Anti-TPO>988 U/ml (N <1). At remission,TRAb 24.2 IU/L(<1),Anti-TG:507 U/ml,Anti-TPO: >986 U/ml.

CONCLUSION
Our cases demonstrate that there are a proportion of children with GD in remission that develop spontaneous hypothyroidism. Highly elevated levels of anti-TPO could be a predictive risk factor for this.

PE-02

RECOMBINANT IGF-1 USE IN SIBLINGS WITH LARON SYNDROME: FIRST 2 CASES TREATED IN MALAYSIA

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INTRODUCTION
Laron Syndrome (LS) is a rare cause of extreme poor growth in children due to the mutation of GHR gene. It is characterised by postnatal growth failure, with midface hypoplasia and obesity. Growth hormone level is normal or elevated with low IGF 1 value. Severe short stature is the major disability in untreated adults. Recombinant IGF 1 hormone (rIGF1) is the only approved treatment since 2007.

RESULTS
We present the case of 2 siblings, whom parents are consanguineous. H presented at 11.5 years old with short stature and being obese; height 121 cm (-3.39 SDS), weight 41.8kg (+0.8 SDS) and BMI 28.55kg/m2 (+2.91 SDS). His birth weight and length were 3kg and 50 cm (-0.5 SDS and +0.3 SDS). Genetic test confirmed homozygous mutation at the GHR gene and presence of heterozygous gene mutation in both parents. The youngest sibling, K was born with birth weight of 3.2kg (+0.98 SDS). At 2.9 years old, K was severely stunted. His height and weight were 64.6cm (-7.67 SDS) and 6.18kg (-8.95 SDS). Both patients scored 4 out of 5 on Savage Scoring System. Recombinant IGF1 (mecasermin) was initiated at the age of 12.7 years and 4.1 years, respectively. At 10 months post rGH1, all growth parameters improved remarkably. Pre- and post-treatment height velocity and serum IGF 1 for H and K

were (4.2cm vs 14.8cm)/year and (4cm vs 17.6cm)/year, (47 vs 329) Âµmol/L and (<15 vs 205) Âµmol/L, respectively. Hypoglycaemia, a common side effect of treatment was not reported. H's percentage body fat and muscle mass improved from 54.1% to 52% and 10.8kg to 12.4kg. One year treatment for both siblings' costs RM751,500 (USD 182,624.57).

CONCLUSION

LS is rare, yet a treatable cause for severe short stature. Albeit the exorbitant cost, treatment offers positive outlook.

PE-03

VITAMIN D DEFICIENCY RICKETS – A CASE SERIES: 'A TIP OF THE ICEBERG'

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INTRODUCTION

Vitamin D deficiency is the most common cause of rickets worldwide. In Malaysia, owing to the abundant sunlight exposure, it is believed to be uncommon, however it is likely to be under-reported. In addition, dietary calcium deficiency is an important cause of nutritional rickets in children above 1 year old in developing countries.

RESULTS

We report a case-series of 4 unrelated Malaysian children (aged between 1 to 3) born in Istanbul, Turkey presented with the classical clinical features and biochemical changes of rickets. They were all exclusively breast-fed during infancy with poor dietary calcium intake. Their workup showed normal Calcium, high Alkaline Phosphatase, low Vitamin D and high Parathyroid hormone levels, with radiographic changes of fraying and spraying of the wrist, consistent with Vitamin D Deficiency Rickets. Bowing of legs and widening of wrists joints also seen. Low maternal Vitamin D levels also support the diagnosis. All four children were treated with cholecalciferol (vitamin D3) and short-term calcium supplements. The children showed improvements in growth and normalization of biochemical parameters on follow-ups.

CONCLUSION

Meta-analysis in Turkish populations have shown high prevalence of Vitamin D deficiency leading to their national policy of vitamin D supplementation for infants. Our patients in this case series were neither immunized nor received the appropriate supplements during their stay in Istanbul, Turkey. Maternal vitamin D deficiency, restricted sunlight exposure due to clothing style and seasonal variations, poor dietary calcium intake were all the contributing factors to the nutritional rickets in our patients. Maternal Vitamin D levels could serve as an early indicator of possible deficiency if detected early. Awareness amongst our population was scarce, leading to a delay in seeking treatment/intervention. This case series aims to highlight the importance of vitamin D supplementation as well as ensuring adequate dietary calcium in prevention of nutritional rickets.

PE-04

A CLINICAL PROFILE OF MALAYSIAN PRE-SCHOOL CHILDREN WITH TYPE 1 DIABETES: OBSERVATIONS FROM A SINGLE CENTRE

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INTRODUCTION

Type 1 diabetes (T1DM) is the most common form of childhood diabetes in Malaysian children, the median age being 7.6 years. Worldwide, younger children are increasingly being diagnosed with T1DM, especially in the under 5's age group. Vague clinical symptoms may lead to a protracted presentation and increase the risk of severe complications. This study aims to report the clinical characteristics of Malaysian pre-school (<7 years) children with T1DM .

METHODOLOGY

A retrospective review of the demographic and clinical data on children < 7 years of age diagnosed with T1DM at the University of Malaya Medical Centre between January 1st 2010-Dec 31st 2019 was conducted.

RESULTS

There were 119 diagnoses of TIDM during the study period. Forty-percent (n=47) were pre-schoolers, mean age being 4.16 ± 1.85 years. Boys comprised 60% (n=28) and the Chinese ethnicity was predominant, 32% (n=15). DKA occurred in 79% (n=37) at presentation, of these 73% (n=27) were moderate-severe DKA. The mean Hba1c was 11.98 ± 1.95% and 80% (n=38) were positive for atleast 1 pancreatic antibody, GAD-65 70% (n=33) being the most frequent. PICU admission occurred in 47% (n=22) cases and the mean length of stay was 7.8 ± 2.7 days. The lowest rate of pre-school T1DM was seen in 2011, 20% (1/5 cases), and the highest in 2017, 63% (12/19 cases). Within the pre-schooler group, 43% (n=20) were misdiagnosed, respiratory infections being the most common 60% (n=12) misdiagnosis. Furthermore, 90% (n=18) in the misdiagnosed group presented in DKA, of which 35% (n=12) were severe.

CONCLUSION

T1DM is the most common form of childhood diabetes in Malaysia. Pre-school children <7 years of age with T1DM are often misdiagnosed, present in moderate-severe DKA and require PICU admission. Future multi-centre studies need to evaluate the risk factors contributing to these findings and the long-term outcomes in pre-schoolers with T1DM.

PE-05

GENDER REASSIGNMENT FOR LATE PRESENTATION OF 5-ALPHA-REDUCTASE DEFICIENCY: A CASE SERIES

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INTRODUCTION

Failure to convert testosterone into a more potent androgen-dihydrotestosterone(DHT) due to 5-Î ± -reductase (5Î ± R) deficiency results in incomplete masculinization of external genitalia in newborns with 46XY karyotype. The clinical spectrum can range from complete female appearance to nearly complete male phenotype. Affected individuals with female genital phenotype may present at puberty with virilization. It is a rare disorder, caused by an autosomal recessive inheritance.

RESULTS

We report 3 adolescents with severe 5Î ± R deficiency who were brought up as girls due to female genital phenotype at birth. No consanguinity reported. One had bilateral inguinal swelling with hernia repaired at infancy. They presented at post-pubertal age (17- to 21-year-old) with primary amenorrhea and virilization during puberty. Physical examination showed tall stature with obvious laryngeal prominence and absence of breast development. They had enlarged phallus with fused labioscrotal folds, hypospadias, and enlarged testis at the inguinal/scrotal region. They had male hair distribution. All 3 had been excellent in female sports and displayed incongruence in gender identities. Chromosomal analysis showed 46XY with SRY positive. The diagnosis of 5Î ± R deficiency was suspected based on adequate serum testosterone level at baseline and markedly elevated following human chorionic gonadotrophin(hCG) stimulation test with testosterone/DHT ratio >30. 17Î²-HSD was excluded due to the normal response of androstenedione. Molecular studies showed the genetic mutation in SRD5A2 which confirmed the diagnosis of 5Î ± R deficiency. Their gender role and gender identity were carefully evaluated. Gender was reassigned to male after seeking legal approval from local Islamic religious and federal authorities. The family and the affected adolescents were given psychosocial support. Multi-stages corrective surgery was performed by the urologist.

CONCLUSION

A careful neonatal assessment followed by adequate endocrine evaluation may reduce missed 5Î ± R deficiency during the neonatal period. Most importantly, improved public awareness of inconsistent secondary sexual characteristics from assigned gender could lead to early medical referral.

PE-06

THE JOURNEY OF HYPOPHOSPHATEMIC RICKETS (HR) CHILDREN IN A MALAYSIA PAEDIATRIC ENDOCRINOLOGY CENTRE: A CASE SERIES

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INTRODUCTION
Rickets caused by chronic hypophosphatemia are categorized to those that are FGF23-excess and those from other causes. The most prevalent genetic form of FGF23-related HR is X-linked hypophosphatemic rickets (XLH) secondary to inactivating mutations in the PHEX gene. Treatment options for XLH consist of coventional treatment with phosphate supplement and active vitamin D or Burosumab. Burosumab (currently not available in Malaysia), a FGF23-neutralising antibody has been shown to be clinically superior to conventional therapy.

METHODOLOGY
We describe 7(2 boys) children with HR on conventional treatment under follow-up in our centre.

RESULTS
All presented with bowing of legs between the age of 12-18 months except for a girl who was diagnosed at 6 years old. Diagnosis was made based on clinical, radiological and biochemical findings. At presentation, all had hypophosphatemia, elevated ALP, reduce tubular-reabsoprtion of phosphate and normal levels of vitamin D, calcium, PTH, blood gas and urinary calcium/creatinine. 57% (n=4) have a maternal family history of rickets. FGF23 levels and genetic tests were not done, as it is not available. All children were treated with oral phosphate (mean dose 39 mg/kg/day) divided 4-5x per-day and active vitamin D (calcitriol or alfacalcidol). On follow-up, 3 (42%) had no improvement in genu varus, 4(57%) had persistent elevation of ALP, 5 (70%) poor growth and 5 (70%) mild elevation of PTH (mean-11.44 pmol/L, normal range 1.3-9.3 pmol/L). Two underwent surgical intervention to correct the lower limb deformity. Five (71%) are overweight, which may lead to worsening of their lower limb deformity. Non-compliance to medications is reported in all children, which likely contributed to the poor outcome. None had dental complications, persistent bone pain, hearing impairment, hypercalciuria or nephrocalcinosis.

CONCLUSION
Conventional treatment with phosphate supplements and active vitamin D is unsuccessful in a proportion of patients or/and associated with adverse effects of treatment. Compliance is also a major issue in all our patients.

PE-07

HYPOTHYROIDISM IN INFANTS OF MOTHERS WITH GRAVES' DISEASE: A CASE SERIES

https://doi.org/10.15605/jafes.036.S100

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INTRODUCTION
Maternal hyperthyroidism may cause a wide spectrum of infantile thyroid abnormalities. The maternal thyroid status, presence of antithyroid antibodies and dose of antithyroid drugs(ATD) can affect thyroid alterations of the fetus and neonate. While hyperthyroidism in neonates of maternal Graves' disease (GD) are well-described, hypothyroidism is less commonly reported.

RESULTS
We describe five infants with hypothyroidism born to mothers with GD. In our case series, three mothers were diagnosed with Grave's Disease prior to pregnancy, one during pregnancy and one postnatally. Two mothers had elevated TSH-receptor antibodies (TRAb), the remainder did not have any levels checked. Four were treated with Carbimazole ranging 10-30 mg once daily (OD) and one was treated with Propylthiouracil 50 mg OD. All mothers had poorly controlled hyperthyroidism. Three infants developed central hypothyroidism from Day 9 to 2 months of life. They had low free-thyroxine (FT4) ranging between <3.2 to 7.5 pmol/L with inappropriately low-normal Thyroid Stimulating Hormone(TSH) levels of 0.018 to 3.385 mU/L. One infant had an initial hyperthyroid phase that was treated with Carbimazole prior to converting to hypothyroidism. Two infants developed primary hypothyroidism at Day 4 to 18 of life. Their TSH readings were high between 96.55 to 105 .29 mU/L with fT4 between 6.3 and 18.2 pmol/L. All five patients were started on L —Thyroxine.

CONCLUSION

Maternal gestational hyperthyroidism causes a hyperthyroid fetal environment due to increased thyroxine transfer which leads to suppression of the fetal hypothalamic-pituitary-thyroid axis and central hypothyroidism of the newborn. Primary hypothyroidism could be a result of transplacental passage of antithyroid drugs(ATD) during pregnancy or transplacental passage of maternal blocking antibodies. Early diagnosis and adequate treatment of mothers with GD is imperative to prevent the deleterious consequences of thyroid impairment during the neonatal period. Infants of maternal GD should be monitored for both hyperthyroidism and hypothyroidism.

PE-08

CASE SERIES OF NEONATAL DIABETES WITH KCNJ11 MUTATION_ TRANSFER FROM INSULIN TO SULPHONYLUREA

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INTRODUCTION

Permanent neonatal diabetes, presenting before 6 months old, signifies a monogenic cause. Mostly, it involves mutation of KCNJ11 gene that encodes the Kir6.2 subunit of the ATP-sensitive potassium channel (KATP). The landmark findings by Gloyn et al (NEJM 2004) on oral sulphonylurea (SU) binding to KATP and closing it by a non-ATP dependent route has markedly changed the landscape of management.

METHODOLOGY

Cross-sectional review of medical records.

RESULTS

3 patients (A, B, C) included. (A) presented at day 14, while (B&C) both at 2-month-old. (A) had hyperglycemia without ketosis while (B&C) had severe DKA. (B) also had seizures with delayed motor development (possibly intermediate DEND). All were initiated with subcutaneous insulin at diagnosis. Genetic tests were performed at 8-year-old, 1-year-old, and 5-month-old, respectively. Both (B&C) were similarly heterozygous for a pathogenic KCNJ11 missense variant with p.(Arg201Cys). Transfer to SU was performed based on the published protocol by Prof Andrew Hattersley from the University of Exeter. Time to SU varied with the slowest transfer at 8-year-9-month-old and quickest at 1-year-7-month-old. All transfers were successful with insulin weaned off. Noticeable improvement of HbA1c and C-peptide were demonstrated after 12 weeks. HbA1c decreased from 8% to 5.7%, 8.9% to 6.2%, and 9.6% to 5.8%; C-peptide improved from undetected (<33 pmol/L) to 185 pmol/L, 861 pmol/L, 73 pmol/L, respectively. (B) showed minimal response initially to gliclazide but an excellent response to glibenclamide. Initial glibenclamide dose varied from 0.8 mg/kg/day to 1.6 mg/kg/day. No hypoglycemia or GI complications. (A) needed to restart insulin at 13-year-8-month-old, 5 years after the transfer. (A) was the last to transfer to SU and required a higher initial dose.

CONCLUSION

Neonatal diabetes warrants rapid and focused genetic analysis to identify the genotypes with modifiable outcomes. Early genetic confirmation facilitates the transfer to oral SU for better glycaemic and neurodevelopmental outcomes and potentially improves the durability of the treatment.

PE-09

NEWLY DIAGNOSED T1DM PATIENTS - A DESCRIPTIVE STUDY IN A CHILDREN'S HOSPITAL

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INTRODUCTION

Type-1-diabetes mellitus (T1DM) is the most commonly diagnosed type of DM in children and adolescents. Typically, the presentation of T1DM is either as classic new onset DM, silent DM, or diabetic ketoacidosis (DKA). We aim to describe the epidemiological profile, clinical presentation, and factors related to delayed diagnosis in our patients.

METHODOLOGY

We retrospectively evaluated all newly diagnosed T1DM patients that presented to our centre from January 2015 till May 2021. Diagnosis of T1DM is based on clinical phenotype, with or without antibody confirmation.

RESULTS

A total of 22 patients were identified. From 2015 to 2020, with an average of 2.3 cases per year. In the first 5 months of 2021 alone, there is a total of 8 new cases. Majority of the patients fell in the 5-9 years age group and were of Kadazan-Dusun ethnicity. One patient was noted to be obese at time of diagnosis. 77.3 % of all the cases presented with DKA and of this, 64.7% were severe DKA. Median length of hospital stay was 7 days for children with DKA versus 3 days for those without DKA. 76% of children with DKA required ICU care. 50% of all patients had the classical triad of symptoms of polyuria, polydipsia and weight loss. Other symptoms included visual blurring, penile discharge, dysuria and light-headedness. One patient had concurrent nephritis and one had COVID-19 co-infection. One death was reported with case fatality ratio at 4.5%. Four patients were misdiagnosed at presentation. Among the cited reasons for delayed diagnosis was failure to recognise symptoms of T1DM.

CONCLUSION

Majority of the newly diagnosed T1DM presented with DKA with high proportion of severe disease. More health awareness is needed in our community.

PE-10

THE IMPACT OF PRE-RAMADHAN WEBINAR ON FASTING IN ADOLESCENTS WITH TYPE 1 DIABETES MELLITUS – A PILOT STUDY

https://doi.org/10.15605/jafes.036.S103

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INTRODUCTION

Tele-education is the new form of education delivery during the COVID-19 pandemic. Patients with Type 1 diabetes are required to attend pre-Ramadhan fasting education sessions in accordance with the latest ISPAD guideline. This study aims to assess the outcome of a structured pre-Ramadhan webinar on diabetes self-care and knowledge during fasting in Type 1 diabetes adolescents.

METHODOLOGY

A pilot study on adolescents with T1DM attending University Malaya Medical Centre (UMMC) or Universiti Teknologi MARA (UiTM) clinics who wished to fast in Ramadhan, was conducted. Participants and parents were invited to attend the pre-Ramadhan online education session 1-4 weeks before Ramadhan. Teaching on Ramadhan Fasting (RF) regulations, the pre-requisites for RF, insulin injections and adjustment, self-monitoring blood glucose (SMBG) and the ideal Ramadhan diet were covered. The post-webinar survey was sent to all participants 3 weeks after Ramadhan.

RESULTS

Fifteen adolescents attended the teaching. Majority (80%) was 10-15 years old. Sixty percent were female. Eight parents (62%) responded to the post-webinar survey. Nine in ten patients/parents were unaware on the prior regulations of RF for T1DM. Despite this, 85% were encouraged to perform RF, and 77% have performed RF previously. During previous years, 82% had difficulties with BG stabilization, 55% had hypoglycemia and 9% had experienced diabetic ketoacidosis (DKA). For RF this year, several improvements were identified post-webinar: 69% had fewer complications (hypoglycaemia and DKA), 69% were more compliant with insulin injections, 85% were more confident with insulin adjustments and 38.5% made improvements with dietary modification during RF. SMBG (more than 3 times per day) improved from 81.8% to 84.6%.

CONCLUSION

This pilot study demonstrates that a pre-Ramadhan webinar during the Covid19 pandemic can improve knowledge and diabetes self-care amongst T1DM adolescents. Education via online platform is indeed a valuable alternative medium to reach out to fasting T1DM patients during Ramadhan.

PE-11

USE OF SUBCUTANEOUS LONG-ACTING SOMATOSTATIN ANALOGUE OCTREOTIDE LAR IN A CHILD WITH CONGENITAL HYPERINSULINISM

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INTRODUCTION

Congenital hyperinsulinism (CHI) is characterised by inappropriate insulin secretion and severe hypoglycaemia in infancy. Subcutaneous (SC) short-acting somatostatin analogue is used as second line therapy in diazoxide-unresponsive patients, either as multiple daily injections or via a continuous infusion. Long-acting somatostatin analogues such as octreotide-LAR or lanreotide can be considered after a trial of successful use of short-acting octreotide. Due to the rarity of cases, experiences of its usage in infants and children are mostly limited to small case series. We describe a 7.5 year old child with CHI who was successfully converted from continuous subcutaneous octreotide infusion to intramuscular (IM) octreotide LAR 4-weekly.

RESULTS

Our patient first presented with hypoglycaemia at 2-hour-of-life. He was diazoxide-unresponsive and needed continuous SC octreotide infusion via a pump to maintain normoglycaemia. Genetic testing revealed paternally derived heterozygous ABBC8 non-sense mutation, which suggests a focal form of hyperinsulinism. The family opted to continue medical treatment. In addition, the appropriate imaging (18-F DOPA PET/CT) was not available in the local setting. He had a normal growth rate and neurodevelopment. To improve his quality of life, transition from a continuous subcutaneous infusion of short-acting octreotide (7 mcg/kg/day) to IM octreotide LAR 10 mg every 4 weeks was made at the age of 6 years 11 months. Octreotide infusion was gradually weaned off over 3 weeks with no hypoglycaemia. Frequent home blood glucose pre-meals 4-6 times per day and overnight were in the range of 4-6 mmol/L. The injections were tolerated well with no adverse effects over 6 months. Potential side effects were monitored regularly, which included liver function, thyroid function, IGF-1 and ultrasound abdomen.

CONCLUSION

Long-acting somatostatin analogue should be considered in children with CHI who are diazoxide-unresponsive after a trial of short-acting octreotide. Long term follow-up and monitoring of side-effects are required.

PE-12

CASE REPORT: OVOTESTICULAR DISORDER OF SEXUAL DEVELOPMENT UNMASKED BY ANTIMÜLLERIAN HORMONE

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INTRODUCTION

Disorders of sex development (DSDs) including ovotesticular DSD is a group of rare disorders characterized by abnormalities of chromosomal or discordant gonadal phenotype of internal/external genitalia sexes. Anti-Müllerian hormone (AMH) which is produced exclusively by the prepubertal immature Sertoli cells can be a useful marker for assessment of testicular function in male sex differentiation.

RESULTS

We describe a 1 year 7 month child who presented with atypical genitalia noticed since birth and was investigated for adrenal disorders. The child had neither salt losing crisis nor hypoglycaemia symptoms. The term child was the firstborn of non-consanguineous healthy parents. There was no sexual ambiguity, early neonatal deaths or infertility in the extended family. Physical examination revealed healthy and non-dysmorphic child. The child was normotensive with normal growth and neurodevelopment. External genitalia examination revealed a phallus like structure with a single opening at perineum (Prader stage 4). Only the right gonad was descended. The hCG stimulation test showed partial testosterone response. Serum AMH was above the normal age specific female range indicating the existence of testicular tissue. The karyotype cytogenetic analysis showed the genotype of 46 XX with SRY negative. Ultrasound of gonado-pelvis showed presence of uterus and left inguinal hernia containing left ovary and right inguinal gonad resembling testis. The child was provisionally diagnosed as 46XX ovotesticular DSD.

CONCLUSION

This case revealed the importance of serum AMH as a marker in the evaluation of ovotesticular DSD. The utilization of basal testosterone and gonadotropin stimulation have limited use in the assessment of prepubertal DSD. Serum AMH may provide earlier information in the differential diagnosis of DSDs. Continuous high secretion of AMH by Sertoli cells in a sexually dimorphic pattern during infancy and childhood with high levels in boys and low levels in girls makes AMH such an appealing biomarker of testicular function, henceforth a prior gonadotropin stimulation may not be required in the assessment of DSD cases.

PE-13

INS GENE MUTATION IN NEONATAL DIABETES MELLITUS

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INTRODUCTION

Neonatal diabetes mellitus (NDM) is a rare disorder with estimated prevalence of 1:90000 to 1:160000 live births. They usually present with persistent hyperglycemia within the first 6 months of life and some may persist up to 12 months of life. Approximately 80% of NDM patients have genetic mutation and more than 20 genes have been identified. Amongst these, KCNJ11 and ABCC8 genotype have been the most common cause of NDM accounting for 38.2%. INS gene mutation is also a known cause of NDM manifesting as damage to the pancreatic beta cells. Studies have shown that heterozygous autosomal dominant mutation is the 2nd most common cause of NDM. The average age for diagnosis in INS gene mutation NDM patients are 10 weeks old and 30% of them presented with DKA. INS gene mutation causes misfolding of the insulin protein which leads to the damage of the beta cells therefore the treatment of choice is insulin therapy. They usually present with low birth weight resulting from IUGR. INS gene mutation is known to cause both Transient Neonatal Diabetes Mellitus (TNDM) and Permanent Neonatal Diabetes Mellitus (PNDM) of which PNDM is more common and accounts for 20% of NDM. Here we present 2 different patients with homozygous mutations of INS gene; for which we want to emphasize the importance of genetic testing in diagnosing different types of NDM and its role in management.

PE-14

CONGENITAL HYPOPITUITARISM PRESENTING DURING THE NEONATAL PERIOD: A CASE REPORT

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INTRODUCTION

Congenital hypopituitarism may present as isolated or combined pituitary hormone deficiencies. The incidence reported is in between 1 in 4000 to 1 in 10,000. It may occur due to developmental defects of the pituitary gland or genetic mutations. Prompt recognition during infancy and appropriate replacements of hormone deficiencies are essential. However, the diagnosis can be challenging due to its variable presentation and non-specific symptoms.

RESULTS

The index case is a 2-year-old girl who presented with recurrent hypoglycemia and salt-losing crisis during the neonatal period. On examination, she has soft dysmorphism (widened sagittal sutures, down-slating palpebral fissure, high arch palate, flat nasal bridge). Critical sampling taken during the hypoglycemia episode (blood glucose 1.5 mmol/L) revealed extremely low serum cortisol (3.8 nmol/L) and growth hormone (0.02 mcg/L) levels. She also had central hypothyroidism characterized by a low free-thyroxine but inappropriately normal TSH (TSH 5.68 miU/L, FT4 7.12 pmol/L). She was started on hydrocortisone, L-thyroxine and daily subcutaneous recombinant growth hormone (GH) therapy. GH was started early for the hypoglycaemia. There was no clinical or biochemical picture of diabetes insipidus. Magnetic resonance imaging (MRI) of pituitary done at 10 months of age shows a hypoplastic pituitary gland with a normal infundibulum and absence of high signal changes in the posterior lobe of the gland.

CONCLUSION

Congenital hypopituitarism can be a life-threatening condition manifesting during the neonatal period with hypoglycaemia and salt-wasting crisis. Early diagnosis and treatment are essential.

PE-15

UNEXPECTED ISOLATED HYPOPHOSPHATEMIC RICKETS ASSOCIATED WITH ELEMENTAL FORMULA FEEDING

https://doi.org/10.15605/jafes.036.S108

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INTRODUCTION
Phosphate deficiency is common in rickets but is accompanied by calcium or vitamin D deficiency (also named nutritional rickets). Isolated hypophosphatemic rickets (HR) without hypovitaminosis or defective renal phosphate handling is uncommon. Phosphate is abundant in diet and its GI absorption even though primarily mediated by vitamin D, is less tightly regulated with about 30% being passive. Recently, there has been an increase in such HR cases reported associated with the use of elemental formula (EF).

RESULTS
The patient was born prematurely at 31 weeks and diagnosed having Tetralogy-of-Fallot (TOF) with severe pulmonary stenosis requiring Blalock-Taussig (BT) shunt at 3-month-old. Postoperatively, he had heart failure and gastroesophageal-reflux-disease (GERD), for which he was treated with heart failure drugs (furosemide, spironolactone, captopril) and antireflux (omeprazole, domperidone), respectively. At 2-months-old, he was diagnosed with Cow's Milk Protein Allergy (CMPA) and EF was commenced. Both Neocate® and Comidagen® were used interchangeably. He developed rickets at 8-month-old with initial serum phosphate 0.5mmol/L, calcium 2.46mmol/L, ALP 1432 IU/L, and 25(OH)-Vitamin D 80 nmol/L (sufficient). His urine TRP was normal and radiological findings were consistent with rickets. Notably, he developed acute severe hypocalcemia with hyperphosphatemia, immediately following oral Sandoz phosphate, despite calcium supplementation. His subsequent response, however, was partial and the hypophosphatemia persisted. He was switched to soy-based formula at 10-months-old, with ensuing improvement in serum phosphate. He achieved biochemical and radiological healing of rickets within 3 months of follow-up.

CONCLUSION
HR in certain infants relating to the prolonged and sole use of EF had been reported elsewhere with its etiology not fully understood but could relate to the reduced bioavailability of phosphate in EF. Replacement with an alternative phosphate form could cause transient acute severe hypocalcemia and hyperphosphatemia possibly due to sudden upregulation of Na-Pi2b cotransporter in the gut after phosphate starvation. The cessation of EF reverses the pathology.

PE-16

PARTIAL ECTOPIC POSTERIOR PITUITARY GLAND IN A CHILD: A VARIANT OF AN ECTOPIC NEUROPHYPOPHYSIS SYNDROME

https://doi.org/10.15605/jafes.036.S109

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INTRODUCTION
Developmental abnormalitiy of the posterior pituitary can lead to an ectopic posterior pituitary at the median eminence or along the pituitary stalk with partial or complete pituitary stalk agenesis. An ectopic posterior pituitary gland is associated with isolated growth hormone or multiple anterior pituitary deficiencies but with normal posterior pituitary function. A partial ectopic pituitary gland is a less common entity described whereby there is presence of both an orthotopic (normally located) and ectopic neurohypophysis.

RESULTS
The patient first presented at 2 months old with prolonged jaundice. Thyroid function screening showed central hypothyroidism and she was started on L-thyroxine. She presented again at 2 years 10 months old with a hypoglycaemic seizure. Subsequently she was referred for further paediatric endocrine evaluation. Her IGF-1 was < 20mcg/L and glucagon stimulation test confirmed severe GH deficiency (peak GH 0.54ug/L) with an optimal cortisol peak of 698 nmol/L. Pituitary/brain MRI shows a hypoplastic pituitary gland and absence of pituitary stalk. There was a bright spot at the normal expected site of the neurohypophysis in the posterior sella with an additional ectopic focus of high signal intensity on T1-weighted imaging at the infundibulum measuring 3mm x 3mm which was most likely an additional and ectopic focus of the posterior pituitary gland. The pituitary stalk was not visualized. She was started on recombinant GH therapy and remains on L-thyroxine. Regular monitoring of her 8 am cortisol remains normal and she did not have symptoms or biochemistry suggestive of diabetes insipidus on follow-up.

CONCLUSION
Partial ectopic posterior pituitary gland is a variant of ectopic posterior pituitary that is a rarely described imaging entity. Although there is a wide differential diagnosis for T1-hyperintensities (e.g., lipid-containing lesions, protein, metallic substances, methemoglobin and calcifications) on MRI, the diagnosis can be narrowed with the aid of additional MRI sequences and clinical manifestations.

PE-17

HYPOTHYROIDISM IN DOWN SYNDROME (DS) CHILDREN WITH CONGENITAL HEART DISEASE (CHD)

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INTRODUCTION
Down syndrome is the most common chromosomal disorder in liveborn infants, and is associated with thyroid dysfunction, estimated to occur in 4-8% of children. The reported incidence of congenital hypothyroidism (CHT) in children with Down syndrome is estimated 20 - 30 times higher than the incidence of CHT in the general population. We aim to investigate the prevalence of CHT in Down syndrome children with congenital heart disease (CHD) seen in our centre, as well as the aetiology of hypothyroidism in this group of paediatric patients.

METHODOLOGY
We performed a retrospective analysis of paediatric Down syndrome patients born between 1 January 1990 and 31 December 2020 who attended the paediatric cardiology clinic for routine review in the 3.25-year period between 1 September 2017 and 31 December 2020.

RESULTS
Children with DS accounted for 12.9% (n=62) of patients attending the paediatric cardiology clinic, with cyanotic CHD (cCHD) diagnosed in 29% (n=18) and acyanotic CHD (aCHD) in 71% (n=44).

The prevalence of hypothyroidism in our population of DS children with all types of CHD was 19.4% (n=12). However, among DS children with cCHD, the prevalence of hypothyroidism was 22.2% (n=4/18), which was higher than the prevalence of hypothyroidism in aCHD, 18.2% (n=8/44).

The mean age at presentation was 11.8 weeks (2 weeks – 32 weeks), and the mean TSH at presentation was 15.6 mIU/L (7.63 – 27.51 mIU/L).

All patients with suspected CHT (n=12) underwent thyroid scintigraphy at age 3. Six patients (50%) were confirmed to have permanent CHT: 42% (n=5) had thyroid dyshormonogenesis, and 8% (n=1) had thyroid dysgenesis. None had ectopic thyroid. Autoimmune hypothyroidism occurred in 8% (n=1). Subclinical hypothyroidism occurred in 42% (n=5).

CONCLUSION
The prevalence of CHT in DS children with CHD is 50% in this studied population. Children with DS tend to present later with subclinical hypothyroidism rather than high cord TSH. Routine screening in the first year of life is mandatory to detect thyroid abnormalities.

PE-18

CASE REPORT OF COMPLETE ANDROGEN INSENSITIVITY SYNDROME

https://doi.org/10.15605/jafes.036.S111

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INTRODUCTION
Androgen insensitivity syndrome (AIS), also known as testicular feminization, encompasses a wide range of phenotypes that are caused by numerous different mutations in the androgen receptor gene. AIS is an X-linked recessive disorder that is classified as complete, partial, or mild based on the phenotypic presentation.

RESULTS
A 2 year and 10-month-old child, presented to private practice for inguinal hernia at 15 months age. Herniotomy was performed at 20 months age and there was intra operative finding of gonad in the inguinal canal. Histology confirmed male gonad. This child was raised as girl as external genitalia was phenotypically female, no clitoromegaly with 2 perineal opening. Karyotyping confirmed 46 XY with variant in AR gene:c.5A>G(p. Glu2GIy). Pelvic UTS showed presence of vagina, no uterus and ovaries visualised .FSH was 4.1 mU/mL, LH was 2.7 mU/mL, testerone was normal with value of <0.35, Antimüllerian hormone was elevated 164.2 pmol/L.

CONCLUSION

CAIS is a genetic condition in which a child is genetically male but develops female sex characteristics. CAIS occurs when there is problem with one of the genes on the X chromosome at Xq11-12and code for protein with a molecular mass approximately 110kDa (androgen receptor gene). It governs how a developing fetus responds to androgen-hormones that bring about male characteristics. A child with CAIS has a genetic makeup of XY. Because the Y chromosome is present, the child is born with testis,, although the testes are undescended; but because of the defective gene on the X chromosome, other male characteristics don't develop, so the child resembles a female l**.** Most children with CAI are raised as female.

PE-19

SYMPTOMATIC HYPERCALCEMIA IN WILLIAMS SYNDROME

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INTRODUCTION

Williams syndrome is a multisystem contiguous gene deletion syndrome that presents with distinctive facial features, congenital heart disease, neurodevelopmental and behavioral deficits. Endocrine abnormalities such as diabetes and hypothyroidism are described in adults while hypercalcemia is mostly reported in infants and young children during first 2 years of life. Hypercalcemia in Williams syndrome is usually mild and asymptomatic resolving by the age of two years. It may be associated with hypercalciuria and to a lesser extent nephrocalcinosis, occurring in less than 5% of WS patients. Traditional treatment of hypercalcemia in children with William Syndrome consists of intravenous hydration, dietary restriction of calcium and vitamin D and in unresponsive cases, intravenous biphosphonate may be considered as second line treatment.

RESULTS

We report 2 children with Williams syndrome who presented with symptomatic hypercalcemia associated with nephrocalcinosis. Both these patients required hospital admission around the age of 2 years old and responded to intravenous hydration. We intend to highlight that symptomatic hypercalcemia in children with Williams syndrome is not uncommon and that their elevated serum calcium levels can respond to increased hydration via enteral and parenteral route in parallel with dietary restrictions.

CONCLUSION

In conclusion, close monitoring of serum calcium levels as well as parental education on symptoms of hypercalcemia and dietary advice is crucial in management of children with hypercalcemia in Williams syndrome.

PE-20

PAX 4 GENE MUTATION IN A 9-YEAR-OLD CHINESE BOY PRESENTING WITH DIABETIC KETOSIS

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INTRODUCTION

A 9-year-old Chinese boy presented with diabetic ketosis following one month history of polyuria, polydipsia and nocturnal enuresis. A strong family history of diabetes was present within his family pedigree whereby both his mother and maternal grandmother were diagnosed with type 2 diabetes at 15 years and 28 years old respectively. His 10-year old sister was also recently diagnosed with impaired glucose tolerance. The patient's body mass index (BMI) was normal at the 75th centile and there was absence of acanthosis nigricans. Anti-glutamic acid decarboxylase (GAD) and anti-islet tyrosine phosphatase 2 (IA2) were negative but anti-islet cell (ICA) was weakly positive. The patient was treated as type 1 diabetes with subcutaneous insulin therapy. Insulin treatment was withheld 1 month post diagnosis due to frequent hypoglycemia but subsequently restarted after 5 months post diagnosis, with gradual dose increment. The patient was able to maintain good glycemic control with insulin total daily dose of less than 0.5U/kg/day, alluding to the diagnosis of honeymoon period. The patient underwent genetic testing for MODY and was found to carry a heterozygous mutation of PAX4 gene, Exon 9, c.890G>A (p.Gly297Asp) of uncertain significance.

CONCLUSION

PAX4 mutation is a rare cause of MODY, initially reported in Thai patients. PAX4 mutations are associated with younger onset of type 2 diabetes, particularly in East Asians/Chinese. It is unclear if this child has type 1 DM or MODY due to PAX4 mutation. Further genetic testing of his family members is needed to determine the significance of this PAX4 variant and association with young onset diabetes. A more protracted follow up is needed to unveil this patient's diabetes progression and phenotype.

PE-21

VITAMIN C DEFICIENCY IN CHILDREN WITH AUTISM SPECTRUM DISORDER

https://doi.org/10.15605/jafes.036.S114

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INTRODUCTION
Avoidant/restrictive food intake disorder (ARFID) is common in individuals with autism. Micronutrients deficiencies should be considered in any physical illness.

RESULTS
We are reporting 2 patients with autism with Vitamin C deficiency. Case A, 9 years old boy, born prematurely 34 weeks with underlying autistic spectrum disorder at 4 years old. He presented with bilateral left lower limb pain since mid June 2020, at 8 years old associated with fever, anorexia and weight loss. Mother reported child is having difficulty with mobilization, refused to walk and required wheelchair. Parents assumed child has pain over his hip and knee due to limitation of his language. Initial diagnosis of Juvenile Rheumatoid arthritis was made and patient was referred to Rheumatologist Hospital Selayang. Vitamin C deficiency was suspected due to corkscrew hair. He has subperiosteal hemorrhage with bilateral knee fixed flexion deformity. He was treated with prednisolone tapering dose over 2 months, Ibuprofen, Multivitamin, Vitamin C and syrup FAC and knee splint. He started walking again after one month of treatment with full recovery after 3 months. Case B, 8 years old boy with underlying autistic spectrum disorder since 5 years old. He presented with bilateral thigh pain since April 2021 associated with difficulties in mobilization. He was treated for reactive arthritis and completed IV cloxacillin for 5 days with regular analgesic and physiotherapy. Vitamin C deficiency was suspected and treated with oral vitamin C. Initial Vitamin C level was low, <5 (normal 28-120). He started walking again after 3 weeks of treatment in June 2021.

CONCLUSION
Micro nutrient deficiencies such as Vitamin C should be considered in Autistic Spectrum Disorder children presenting with musculoskeletal pain.

PE-22

NEONATAL SEIZURE IN ASYMPTOMATIC MATERNAL HYPERPARATHYROIDISM

https://doi.org/10.15605/jafes.036.S115

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INTRODUCTION
Primary maternal hyperparathyroidism is a known aetiology causing neonatal hypocalcemia, which usually presents in the first 2 weeks of life. Fetal parathyroid activity will be supressed by maternal hypercalcemia resulting in impaired parathyroid responsiveness to hypocalcemia after birth. Prolonged and severe hypocalcemia may lead to convulsions.

RESULTS
A 10-day-old male infant was admitted to our Neonatal Intensive Care Unit (NICU) due to recurrent episodes of unprovoked generalized clonic seizure for two days. Clinically, his anthropometric measurements were normal. He is not dysmorphic and neurological examination was normal. Laboratory analysis showed hypocalcemia and hyperphosphatemia. The rest of his metabolic panel, liver function studies, CBC, CRP, chest x-ray, and CT scan of the brain were all normal. He had inappropriately low parathyroid hormone (PTH) level for concurrent degree of hypocalcemia and low 25-OH vitamin D. Work up performed on the mother revealed hypercalcemia 3.26 mmo/L, phosphorus 0.85 and PTH 29.6. Mother was seen by endocrinologist for possibility of parathyroid adenoma. The baby was treated with calcium gluconate infusion, oral calcium supplement and vitamin D.

DISCUSSION
Maternal hypercalcemia or hyperparathyroidism leading to suppression of fetal parathyroid gland often causes transient neonatal hypocalcemia. Low level of vitamin D of the patient might have exacerbated hypocalcemia, which may lead to convulsions.

CONCLUSION
Undiagnosed maternal hyperparathyroidism causes severe hypocalcemia in newborn. Therefore, appropriate investigations should be carried out when a newborn presents with hypocalcemic seizure to exclude maternal hyperparathyroidism even if the mother is asymptomatic.

PE-23

VIRILISATION VS NON VIRILISATION: MULTIFACES OF CHILDHOOD ADRENOCORTICAL CARCINOMA (ACC)

https://doi.org/10.15605/jafes.036.S116

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INTRODUCTION

Adrenocortical carcinoma (ACC) is a rare tumour in children. Unlike adults where ACC are non-functional (40%), the majority of tumours in children (94%) are functional. Their presentation varies from virilisation to Cushing syndrome. Early recognition is imperative in their management.

We describe 2 children with ACC with different clinical presentations.

Case 1: A 2-year-old girl presented with signs of progressive virilisation and abdominal distension for 5 months. Serial growth parameters showed rapid weight gain (crossed from the 3rd to 25th centile) although her height remained at 3rd percentile. She was normotensive. There were deepening of voice, hirsutism, clitoromegaly and pubic hair. There was an irregular hard mass at the left hypochondrium. Blood test showed hyperandrogenism and hypercortisolism. CT scan showed a left adrenal mass with bilateral lung metastases. She underwent resection of the adrenal mass followed by bilateral lung nodulectomies. Histopathological examination confirmed ACC with lung metastases. She had completed concurrent mitotane and chemotherapy.

Case 2: A 6-year-old boy presented with hypertensive encephalopathy preceded by rapid weight gain. There were hirsutism and acanthosis nigricans. Ultrasound imaging showed a left adrenal mass, confirmed by CT scan. There was no metastatic disease. Blood test showed hypercortisolism. Complete tumour resection was achieved. Histopathological examination confirmed ACC.

CONCLUSION

ACC is potentially fatal. Since ACC in children is functional, it is hoped that increased familiarity with its presentation will result in earlier diagnosis, intervention and improvement in their overall survival.

PE-24

HYPERINSULINAEMIC HYPOGLYCAEMIA (HH) IN A MOSAIC TURNER SYNDROME TODDLER

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INTRODUCTION

Hyperinsulinaemic hypoglycaemia(HH) is a rare but important cause of hypoglycaemia, especially in the newborn. Early identification and diligent management of these patients is vital to prevent neurological insult. We report an interesting case of a toddler with mosaic Turner Syndrome(TS) with HH, responsive to diazoxide treatment.

RESULTS

A 25-month-old girl was born term via Emergency Lower Segment Caesarean Section(EMLSCS) for fetal distress with a birth weight 2.75 kg. No significant antenatal issue noted. Her Apgar score were 9 and 10 at 1 and 5 minutes of life. However, she was admitted to Neonatal Intensive Care Unit(NICU) at 7 hours of life, following symptomatic hypoglycaemia, whereby her capillary blood glucose recorded was 0.9 mmol/L. She required initial D10% bolus 3 mls/kg and subsequently required maintenance dextrose intravenous infusion with highest Glucose Delivery Rate of 14.4mg/kg/hour to maintain normoglycaemia. Despite that, there were recurrent episodes of hypoglycaemia. She was started on IVI Glucagon on day 9 of life, with highest concentration of 20 mcg/kg/hour. Oral Diazoxide was started at day 17 of life following measurable insulin level during critical sampling when the child developed significant hypoglycaemia. Currently, she is still on oral Diazoxide 2.6 mg/kg/day with no hypoglycaemic episodes. Karyotype was sent in view of subtle features of TS which includes high arch palate and hypertelorism and revealed Mosaic TS with 46X, +mar (18)/45,X(12).

CONCLUSION

In summary, we report an interesting association of mosaic Turner Syndrome with Hyperinsulinaemic Hypoglycaemia. The recognition of hypoglycaemia in this group of patients is vital, as untreated hypoglycaemia may lead to irreversible brain damage. The mechanism leading to hyperinsulinism in this condition is not well established to the best of our knowledge and warrants further research.

PE-25

FULL BLOWN HYPERFUNCTIONING ENDOCRINOPATHIES IN MCCUNE ALBRIGHT SYNDROME: CHALLENGES IN MANAGEMENT

https://doi.org/10.15605/jafes.036.S118

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INTRODUCTION

McCune Albright syndrome is a rare, wide spectrum of disease caused by post zygomatic GNAS mutation leading to activation of functions. It is characterized by typical skin hyperpigmentation and distribution, skeletal dysplasia and hyperfunctioning endocrinopathies.

RESULTS

NS, a 6-year-old Malay girl, presented at 5 months old with PV bleed. She was referred to us at 13 months old. She has extensive hyperpigmented lesions following line of Blaschko on nape, trunk and limbs with rickets changes. LH:0.1 mU/L, FSH:0.1 mU/L, Estradiol: 190 pmol/L. ALP:768 IU/L, Ca:2.68 mmol/L, PO4:1.28 mmol/L, TRP:86%, Mg:0.9 mmol/L, Vitamin D: 68 nmol/L. NS was started on oral cholecalciferol, calcitriol and Sandoz phosphate. At 3 years old, she was symptomatic for hyperthyroidism, TSH:<0.02, fT4:33 pmol/L needing carbimazole. Subsequently she continues to develop multiple long bone fractures associated with trivial falls. Intravenous Pamidronate was started for worsening bone pain. At 4 years 6 months, her PV bleed recurred every 2-3 monthly. LH: <0.2 mU/L, FSH: <0.2 mU/L, Estradiol:107 pmol/L. Pelvic ultrasound – showed bilateral ovarian follicular cyst . Bone age was advanced. Unfortunately she was unable to tolerate aromatase inhibitor (Letrozole). Simultaneously, she has height acceleration with frontal bossing. IGF-1: 168-249 ug/L (22-200), random GH: 4-12 ug/L (0.077-5.00). Her prolonged OGTT was not supressed. MRI brain and pituitary was normal. Long acting octreotide was started for GH excess. NS is currently under close surveillance of her endocrinopathies which has affected her mobility making her- dependent on parents for ADL. Otherwise she is asymptomatic.

CONCLUSION

This case illustrates the severe spectrum of McCune Albright syndrome. NS manifested with full blown hyperfunctioning endocrinopathies which proved to be challenging in management. She has gonadotropin-independent estrogen production, hyperthyroidism and GH excess. Her FGF-23 induced renal phosphate wasting is an important evidence of her fracture risk and complications.

PE-26

PSEUDOHYPOALDOSTERONISM — A CASE REPORT

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INTRODUCTION

Pseudohypoaldosteronism is a heterogeneous group of disorders manifested by end-organ resistance to mineralocorticoids. We describe a case of recurrent salt wasting, hyperkalaemia and metabolic acidosis from this condition.

RESULTS

A 2.5-year-old girl was first presented to us at day 8 of life with poor feeding, lethargy and in circulatory collapse requiring cardiopulmonary resuscitation. She was not dysmorphic, had unremarkable systemic findings with normal female genitalia. Laboratory parameters showed persistent hyponatraemia, hyperkalaemia and hyperchloraemic metabolic acidosis. She was initially treated with steroid therapy, but had shown no clinical improvement. The only significant hormonal work-ups were significantly elevated Renin and Aldosterone levels. Genetic confirmation test unfortunately was not available. Other secondary causes of adrenal resistance were also excluded. She subsequently had a few more episodes of salt-losing crisis, with improvement in terms of severity and the frequency of the event. These episodes were successfully treated with high dose sodium supplements and potassium-binding resin. She is now growing along a low growth percentile curve with reasonable age-corresponding developmental milestones.

CONCLUSION

Salt wasting crisis carries significant mortality and morbidity in children. Despite being rare, condition such as mineralocorticoid disorder must be considered when response to treatment does not follow common pattern.

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