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The Free Communications of the Eighth Clinical Congress (Virtual) of the Gulf Chapter of the American Association of Clinical Endocrinologists; November 5–7, 2020

Guest Editors

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ABSTRACT

These are the advance abstracts of the eighth Clinical Congress (Virtual) of the Gulf Chapter of the American Association of Clinical Endocrinologists held on November 5–7, 2020. The declared educational objectives of the Congress were to give a "state of the art in endocrine practice." Plenary and symposia presentations were delivered on line by international and regional key opinion leaders. In addition, free communications on current research and clinical practice in the region and worldwide were presented online. We present here abstracts of the Congress as submitted by the authors of the free communications after minimal restyling and editing to suit the publication requirements of the journal. We hope that by publishing them in our open access journal, we extend the benefit to those who could not make it to the live presentations.

Keywords: Adrenal, diabetes, education, hypoglycemia, pituitary, reproductive, research, thyroid

Introduction

The Eighth Clinical Congress of the Gulf Chapter of the American Association of Clinical Endocrinologists was held online on November 5–7, 2020. Since its inception, the AACE Gulf Chapter clinical congress has been widely accepted as the endocrine event of the year in the region. Due to the COVID19 pandemic related world wide restrictions, this meeting The Congress maintained its standards and expanded its delegates over the years. The declared educational objectives of the Congress were to give a "state of the art in endocrine practice." It caters primarily for the professional development needs of endocrinologists and internal medicine with special interest in diabetes and endocrinology. However, many primary care physicians, doctors in training and specialist nurses and educators found many aspects of its contents particularly relevant. Several research and clinical practice-related presentations were delivered by international and regional key opinion leaders. In addition, free communications on current research and clinical practice in the region and worldwide were presented. The AACE Gulf Chapter sees this as a core role in its mission to improve care by education and research. We present here abstracts of the free abstracts as submitted by the authors of the free communications after minimal restyling and editing to suit the publication requirements of the journal.

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A-1108: Severe refractory hypocalcemia after administering zoledronic acid for osteoporotic fracture in primary hyperparathyroidism that is complicated into hungry bone syndrome: A case report

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Background: Zoledronic acid is a very effective (IV) amino bisphosphonate which is indicated in osteoporosis Unfortunately,

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there are side effects associated with zoledronic acid one of those are mild to moderate hypocalcemia. Although, side effects can be minimized with supplemental calcium and vitamin D which is supposed to be avoided. Hungry Bone Syndrome (HBS) is defined as severe drop in calcium levels less than 2.1 mmol/L and/or prolonged hypocalcemia for more than 4 days post parathyroidectomy. **Results:** The authors report a case of a 32 years old female known case of severe osteoporosis admitted as a case of pathological fracture. Initial lab investigation showed decreased calcium and PTH. Further investigation revealed primary hyperparathyroidism due to parathyroid adenoma which has been resected therefore developed hungry bone syndrome. In addition, the patient received a dose of zoledronic acid prior to hip fixation operation. Thus, severe hypocalcemia ensued which was refractory because of zoledronic acid and the nature of HBS disease, where the patient had to continue to receive IV calcium gluconate for one month before any significant improvement. **Conclusion(s):** The authors report a case of Hungry Bone Syndrome (HBS) that had refractory hypocalcemia, also, the patient had received zoledronic acid as treatment prior to surgery for osteoporosis. Severe hypocalcemia being a side effect of zoledronic acid on top off the hungry bone syndrome caused refractory status. In summary, awareness of side effects of therapeutic medication that in our case is zoledronic acid alongside expecting complications of primary hyperparathyroidism is essential to avoid life threatening situations.

A-1091: One-year experience of burosumab treatment in pediatric X-linked hypophosphatemic patients in Saudi Arabia

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Background: X-linked hypophosphatemic rickets (XLH) is a rare genetic disorder with mutations in the phosphate regulating endopeptidase homolog, X-linked (PHEX) gene leading to the overexpression of fibroblast growth factor 23 (FGF23), characterized by hypophosphatemia, elevated alkaline phosphatase (ALP) and under mineralization of bone. Conventional therapy (combination of phosphate and active vitamin D) is associated with long-term adverse events and known to increase XLH complications. Burosumab is a recombinant human monoclonal anti-FGF23 antibody demonstrated to improve XLH symptoms in children. This study evaluates the effect of burosumab treatment in Saudi pediatric XLH patients previously on conventional therapy. **Methods:** This observational, retrospective study analyzed the data of 6 pediatric XLH patients collected from 3 centers from 2018-2019. Patients had a median duration of 2.2 years of conventional therapy and median age of 8.8 years at onset of burosumab therapy. Laboratory data including serum phosphate, ALP, parathyroid hormone (PTH) and tubular maximum re-absorption of phosphate to glomerular filtration rate (TmP/GFR) were collected at diagnosis; 6 months and 12 months into conventional therapy. Burosumab was administered at a starting dose of 0.8 mg/kg and the laboratory data were collected and analyzed every month until 3 months, and every 3 months until 12 months. Dosing was increased at 3 months to 1.14 mg/kg and 1.07 mg/kg in two patients and at 6 months to 1.03 mg/kg in one patient, otherwise patients received a 0.8 mg/kg maintenance dose. **Results:** All burosumab treated patients had increased serum phosphate, reduced ALP, and reduced PTH levels at 12 months that persisted throughout treatment. Burosumab also improved TmP/GFR values in 5 patients for which data was available. No clinically significant safety findings were observed with burosumab. **Conclusion(s):** Burosumab led to marked improvement in the biochemical parameters of pediatric XLH patients in Saudi Arabia.

A-1081: Novel method in performing parathyroid hormone washout for localizing parathyroid adenoma: Case report and an institute experience in Qatar

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Background: Primary hyperparathyroidism (PHPT) is a common cause of hypercalcemia and mostly caused by benign solitary benign adenoma (80 to 85 %). Definite treatment is the surgical removal. The most commonly used diagnostic modalities are Sestamibi scan and neck ultrasound (US) which can be inconclusive in some cases. Parathyroid hormone (PTH) washout obtained with ultrasound guided FNA may be useful to accurately localize the adenoma. In our study we describe a novel method for PTH washout. **Methods:** First, blood samples are drawn from the patient's peripheral vein and placed in two yellow top tubes (3 ml of blood in each tube). 1 ml of normal saline (NS) will be add to Tube # 1 (Control tube). The suspected parathyroid lesion aspirate is obtained via US guided FNA. It is washed in 1 ml of NS and added to tube #2 (PTH washout tube). Both tubes are sent to our local laboratory for PTH assay. The ratio of PTH in PTH washout tube to control tube (PTH W/C ratio) is calculated and considered positive if more than 2. **Results:** Total 16 patients (12 females and 4 males) underwent the PTH washout procedure. All patients had PHPT. Out of 16 patients, 13 had inconclusive Sestamibi scan while 3 patients didn't have the scan due to pregnancy. PTH W/C ratio was positive in 13 patients (ruled in) and negative (ruled out) in 3 patients. All patients underwent parathyroid surgery. The operative findings and pathology report were consistent with PTH W/C ratio findings. i.e. parathyroid hypercellularity was found in all the 13 patients ruled in by PTH W/C ratio. Post-surgery, biochemical parameters normalized in all. **Conclusion(s):** PTH washout is an important tool in localizing parathyroid lesion in PHPT when Sestamibi scan cannot be done or if it is inconclusive. PTH W/C ratio can be performed with our novel method to accurately localize the PTH lesion and improve surgical outcome.

A-1078: The prevalence of osteoporosis among adults Omani patients attending Sultan Qaboos University Hospital

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Background: Osteoporosis is defined as a disease characterized by low Bone Mineral Density (BMD) which increases the risk of bone fracture. Many risk factors are associated with the occurrence of osteoporotic bone disease such as, vitamin-D (vit-D) deficiency, low

estrogen, low growth hormone (GH), low calcium (Ca+2), aging, postmenopausal women, etc. For the diagnosis of osteoporosis, results were calculated by BMD as T-score or Z-score. This study aims to determine the prevalence and the risk factors of osteoporosis among adult Omani patients seen at the Sultan Qaboos University (SQUH). **Methods:** This is a retrospective, cross-sectional study of 410 patients admitted to SQUH. All the samples were had low BMD. Patient's data were collected from the PHILIPS machine program on the Nuclear Medicine department of SQUH. Data analysis conducted using SPSS, the descriptive variables described as mean, standard deviation and percentage. The association studied by the Chi-square test. **Results:** The prevalence of osteoporosis among Omani adults attended to SQUH was equal to 38.0% with a confidence interval of 95% by (33.3 - 42.7%). There is a significant association between osteoporosis and age as well as post-menopause. On the other hand, there is no significant association with other risk factors. **Conclusion(s):** This study provides many important information about the prevalence of osteoporosis and the related risk factors in Oman. Also, it reflects the dangers of this condition in the country. Moreover, it will help the physician to know the most risk factors that may lead to osteoporosis. Unfortunately, the study showed a high prevalence of osteoporosis which is similar to other studies conducted on other countries.

A-1075: Adult lactose intolerance, calcium and bone health

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Background: Bone health is a complex issue affected by multiple hormones and minerals. Findings show that 1 out of 3 women and 1 out of 5 men are suffering from osteoporosis. Some of the adults group are suffering from Adult Lactose Intolerance (ALI). Those cases prefer not consume dairy products since they feel uncomfortable after eating cheese or drinking milk knowing that they are not lactose-free food. Now, we investigate the influence of (ALI) on Calcium intake, absorption and osteoporosis. **Methods:** Investigated calcium intake single nucleotide polymorphism of LCT, markers of bone metabolism and BMD in 183 Turkish immigrates. **Results:** 154 out of 183 was (ALI) diagnosed. Osteopenia was diagnosed in 59 out of 183 (32%) and osteoporosis in 15 out of 183 (8%). Probands had a decreased calcium intake and probands with reduced bone mass density (BMD) had (ALI) in 86%. There was no significant association between (ALI), Calcium intake, BMD or markers of bone metabolism. **Conclusion(s):** Turkish immigrates who suffer from (ALI) don't consume dairy products and this means low calcium intake compared to other people who normally eat dairy products. However, (ALI) didn't significantly influence calcium intake. Therefore, (ALI) doesn't seem to be a risk factor for osteoporosis or affect directly the bone health.

A-1070: Evaluating of effect of wearing Niqab and Hijab dress style on Vitamin D metabolic profile in premenopausal women in the Sunny Basrah

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Background: Conservative clothing like niqab and hijab dress style may affect the vitamin D metabolic parameters even in the predominantly sunny areas of the world, with adequate sunlight exposure throughout the year. The objective is to evaluate the effect of wearing the niqab or hijab style on different vitamin D3 metabolic parameters in a sample of premenopausal women from Basrah. **Methods:** This is a cross-sectional observational study on premenopausal women who wear a niqab (n=64), with a comparable age-matched group of women who wear the hijab dress style (n=60). Biochemical evaluation of the vitamin D3 metabolic profile involved 25-hydroxycholecalciferol, corrected serum calcium, parathyroid hormone, phosphorus, and alkaline phosphatase estimation. Statistical comparison of these parameters was made using the independent sample t-test and Mann-Whitney-U test. **Results:** The two groups of women were age- and weight-matched, with a median age is 39 years, and median body mass index (BMI) of 31.8 kg/m2. Overall, age, marital status, and BMI of women in both groups had no significant relationship to the vitamin D3 metabolic parameters (low 25-OH-D3, low corrected calcium, and high parathyroid hormone). The subgroup analysis for women with the niqab showed the same results. **Conclusion(s):** Wearing niqab or hijab dress style by the premenopausal women was not associated with any significant statistical relationship or difference in vitamin D3 metabolism parameters.

A-1051: SGLT2 inhibitors induced hypercalcemia

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Background: SGLT2 inhibitors are the newest class of oral anti-hyperglycemic agents that have been approved for the treatment of type 2 diabetes (T2DM). For many years, there have been significant developments in both the safety and efficacy of this class of medications. To our knowledge, hypercalcemia has not been labeled as a side effect of this class, nevertheless 2 cases have been reported over the last few years after getting started using this class of medication. **Result(s):** We present a case series of 3 patients with T2DM who developed hypercalcemia when started on Canagliflozin and Dapagliflozin. Case 1 and 2, with known history of T2DM, developed hypercalcemia shortly after increasing Canagliflozin dose to 300 mg/day. With serum calcium level 12.2 mg/dl and 10.8 mg/dl respectively (reference range: 8.3-10.2 mg/dl). In both cases, calcium level was corrected back to the normal range one week after Canagliflozin discontinuation. In Case 3 laboratory workup disclosed an elevation in serum calcium level to 10.6 mg/dl (reference range: 8.3-10.2 mg/dl) shortly after switching therapy to Dapagliflozin. **Conclusion(s):** This is the first case series of hypercalcemia associated with SGLT2 inhibitors. Although the exact mechanisms remain uncertain, these drugs may predispose to hypercalcemia. In view of the data published in the literature, this should be a rare side effect that clinicians should be aware of when used in patient at risk. Monitoring for signs and symptoms of hypercalcemia or better switching to more selective SGLT2 inhibitors in at risk patients, could potentially prevent this complication.

A-1050: Management of hypocalcaemia in care of the elderly

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Background: Normal level of Calcium is required for optimum function of human body. The aim of the project was to find out if elderly patients with hypocalcaemia as defined by values below 2.20 mmol/l were investigated (eGFR ,PTH, Vitamin D3, Mg++) and treated appropriately. **Methods:** Discharged patients form Care of the Elderly wards with Hypocalcaemia in December 2019 and January 2020 were studied using the electronic biochemistry lab data and case notes. **Results:** Total of 471 discharges. 53 patients had hypocalcaemia (11.25%). 29 female and 24 male. Age ranging from 78 to 99 years . eGFR was checked in all patients. Mg++ was checked in 49% of the patients. Both PTH and Vitamin D3 was checked in only 5.6% whereas PTH alone in 5.6% and Vitamin D3 alone in 1.8% of patients. Among the 53 patients 21 patients had some form of treatment (39.6%) . However Only 3 out of 21 patients were given appropriate treatment (Vitamin D3 for low VitaminD3 and high PTH) . The rest were given variety of treatments (Adcal D3, Sandocal, Theacal D3, Alfacalcidol, Calcium Acetate and Colecalciferol) without any biochemical tests support. **Conclusion(s):** We found that 94.34% of the patients with Hypocalcaemia who were discharged from Care of The Elderly wards in December 2019 and January 2020 were not adequately investigated and treated. To improve management of hypocalcaemia we recommend departmental presentation of this work highlighting appropriate management of hypocalcaemia to our work force as well as introducing automated reflex testing for hypocalcaemia (Mg++, PTH and VItD3) to be originated by biochemistry department for the organisation. We are planning to repeat the study after introducing the above changes to see the impact.

A-1024: High prevalence of Vitamin D deficiency among Yemeni pregnant women in Mukalla, Yemen

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Background: Vitamin D deficiency has been observed worldwide in pregnant women, and it has been linked with various complications during pregnancy and delivery However, this link between vitamin D deficiency and associated risk factors is still unknown. this study was aimed to investigate the prevalence of vitamin D deficiency among pregnant women and its associated risk factors. **Methods:** A total of 113 Yemeni pregnant women who received a perinatal care at maternity and child hospital in Mukalla, Yemen during the period from 1st January to 30th March, 2020 were recruited into a cross-sectional study. Serum 25(OH) vitamin D level was measured using Roche Cobas e411 analyzer. Questionnaire was focused on sociodemographic, anthropometric data, related risk factors, sun exposure average and vitamin D supplement with calcium intake. **Results:** Vitamin D deficiency was reported in more than 90% of pregnant women. Second trimester (38) had a significantly lower serum 25(OH)D level compared with first and third trimester (12.01±5.58vs.8.11±4.83; 11.85±7.11vs.8.11±4.83; P= 0.005) respectively. Additionally, 94.7% of second trimester had vitamin D deficiency following third (89.5%) and first trimesters (86.5%). Individuals with vitamin D deficiency was positively associated with lower milk intake (X2= 16.86, P= 0.032). **Conclusion(s):** Overall, vitamin D deficiency was common among pregnant women in Mukalla. Therefore, screening and vitamin D supplement with calcium intake are needed during early stage of pregnancy to avoid its related risk factors.

A-1125: Trends of below knee amputation and evaluation of risk factors: Three year study in type 2 diabetes mellitus

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Background: The rising prevalence of Type 2 Diabetes Mellitus (T2DM) with the huge burden of diabetic foot amputation is a challenge to limited healthcare resources. **Methods:** We conducted a retrospective hospital-based study from January 2017 till December 2019 for the T2DM patients who had undergone a non-traumatic, below knee amputation, to evaluate the outcomes and the associated risk factors. **Results:** We analysed a total of 75 patients with diabetes (12 died in due course) who underwent amputation at our center during last 3 years. The mean age of the patients who expired was 63 years (±SD 10, 95% CI 57 to 70) was less than who were alive 64 years (±SD 10, 95% CI 61 to 66); p =0.87 (ns). The mean HbA1c at last follow up, of the patients who expired was 11% (±SD 2.4, 95% CI 9.2 to 9), higher than the alive patients 9.5% (±SD 2.1, 95% CI 9 to 10)); p =0.08 (ns). Total of 63 patients were alive (50 males and 13 females). 23 (36.6%) patients were active users of tobacco including smoking, with 22 (35%) had no usage of tobacco ever. 5 patients had quit tobacco. 40 patients (63.4%) had no any other co-morbidity, excluding hypertension or peripheral vascular disease (PVD). 39 (62%), 11 (17.4%), 25 (39.6%), 25 (39.6%), 21 (33.3%) patients had PVD, CKD, Anaemia, Systemic hypertension, and Ischemic Heart Disease, respectively. 22 patients were actively using prosthesis, 9 were not the active user of prosthesis as were recently operated in last 3 months. In 25 patients (39.6%), the other limb was normal with no signs of vasculopathy, 2 patients previously had below knee amputation and 15 patients had amputation of the toe. **Conclusion(s):** We did not find tobacco usage as a predictive risk factor for amputation. There was high prevalence of PVD, hypertension and anaemia in patients who underwent below knee amputation. Amputation in the past three years is apparently is a direct risk for the impending amputation in T2DM. Poor glycemic control appears to increase the risk of mortality in T2DM who have undergone below knee amputation. An early adequate glycemic control could decrease the probability the development of microvascular complications and mitigate the disease burden of amputation in limited resource setting.

A-1122: Virtual patient connect approach for continuity of care during COVID-19 through accountable care model adopted for last two decades

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Background: To evaluate role of clinical decision support strategies to manage healthcare needs of patients with diabetes holistically through an accountable care model. **Methods:** We evaluated outcomes of differentiated clinical approaches adopted during COVID era in our secondary care model utilised for last two decades involving diabetes delivery care through combining social, cultural, and technological approach to provide an equitable approach across socio-economic spectrum. **Results:** In last two decades, 5000 T2DM patients screened for diabetic complications (retinopathy, neuropathy and nephropathy) through a self-sustained Sardar Trilok Singh Memorial DREAM Trust, resulting in consistency of follow up and early identification

of complications. 60 patients per week for last two decades have been managed through shared resources model including insulins, shared tiffin approach among T1DM children to develop peer connect and bridge socio-economic gap. Virtual consult model incorporating peer connect across 3000 patients from March -Sep 2020, enabled higher frequency of contact (>2-3 times/ week) leading to short-term therapy adjustments, cost, and time savings. Virtual awareness programs facilitated de-stigmatisation techniques resulting in consistent glycemic control (mean HbA1c 7.8%). Consistent digital media campaigns were implemented to address, demonstrate adoption of diabetes risk reduction behaviours in community, which led to prevention of diabetes and delay progression towards complications. **Conclusion(s):** Enhanced glycemic care was delivered through an active participation by the patients, physicians, parents, peer, and psychologists, through zoom as a peer connect approach. Motivating the newly diagnosed through well controlled patients with diabetes was an effective approach to drive better glycemic care amongst the patients in the practice list for over two decades.

A-1118: Neopterin in the evolution from obesity to prediabetes and newly diagnosed type 2 diabetes

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Background: Neopterin, marker of cellular immunity and oxidative stress, mainly produced by activated macrophages and it could play a crucial role in the development of insulin resistance and type 2 diabetes. The aim of the present study was to investigate the circulating levels of Neopterin in different stages of glucose dysregulation from obesity through prediabetes to newly diagnosed diabetes. **Methods:** Neopterin levels were determined using a commercially available human enzyme-linked immune sorbent assay (ELISA) kit. The homeostasis model assessment of insulin resistance (HOMA-IR) was used as an index to measure insulin resistance. **Results:** The sample consisted of 163 subjects with mean age 52,5±11,3 years, divided in three age and BMI matched groups- obesity, prediabetes and diabetes. The control group consisted of 42 healthy individuals. Neopterin levels were significantly higher in patients with obesity and/or prediabetes and newly diagnosed diabetes compared to the control group respectively (4.14±2.51;4.04±2.80 and 2.17±1.93 vs.0.87±0.84; $p<0.05$). Correlation analysis showed that the level of neopterin positively correlated with BMI, waist, WSR, WHR, fasting glucose and TG. ROC analysis established neopterin suitable for distinguishing subjects with obesity (AUC=0.827;$p<0.001$) and carbohydrate disturbances (AUC=0.591;$p<0.05$) from those without these conditions. Neopterin ≥0.47 ng/ml have an OR of 2.712 for development of dysglycaemia while threshold value of neopterin≥0.56 ng/ml show an OR of 5.944 for development of obesity. **Conclusion(s):** The levels of Neopterin were increased in patients with obesity and carbohydrate disturbances. Further studies will elucidate the role of the biomarker in development of type 2 diabetes and its complications.

A-1116: Capture: A cross-sectional study of the contemporary (2019) prevalence of cardiovascular disease in adults with type 2 diabetes in Saudi Arabia

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Background: Data on the prevalence of cardiovascular disease (CVD) in people with type 2 diabetes (T2D) are limited. In the CAPTURE study, the contemporary (2019) prevalence of established CVD was estimated in a sample representative of the general T2D population across 13 countries. Here, we report the prevalence of CVD in patients with T2D in Saudi Arabia (SA). **Methods:** In this cross-sectional, non-interventional study (NCT03811288; NCT03786406) standardised demographic and clinical data were collected from adults with T2D aged ≥18 years, attending primary or specialist care. Prevalence estimates were weighted by care setting for data from SA, but overall CVD prevalence estimates were weighted to account for the diabetes population size in each country. Data were analysed descriptively. **Results:** Overall, 883 adults with T2D (primary care: 566; specialist care: 317) participated in the SA cohort. Participant median characteristics were: age 58.0 years, diabetes duration 10.0 years, body mass index 29.1 kg/m2 and glycated haemoglobin 8%; 45.8% were female. CVD prevalence was 18.0% [15.5; 20.5]95% CI, with most (84.2%) categorised as atherosclerotic CVD (15.1% [12.8; 17.5]95% CI). Prevalences of CVD subtypes were: coronary heart disease 13.4% [11.2; 15.7]95% CI, cerebrovascular disease 1.7% [0.8; 2.5]95% CI, heart failure 0.9% [0.3; 1.6]95% CI, and cardiac arrhythmia and conduction abnormalities 0.7% [0.1; 1.2]95% CI. CVD prevalence estimates were higher across specialist than primary care settings (25.6% vs 13.6%). Multinational weighted prevalence of CVD in adults with T2D was 34.8% [32.7; 36.8]95% CI. **Conclusion(s):** CAPTURE was the first multinational, cross-sectional, standardised study to estimate CVD prevalence in adults with T2D. In SA, approximately one in five adults with T2D had established CVD, lower than the global prevalence, possibly due to genetic factors and/or CVD screening practices and documentation.

A-1114: Quality of life and diet satisfaction in type 2 diabetes

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Background: Nutrition education is essential for treatment of type2 diabetes. However, modifying eating behavior can be a source of resistance for the patient. Moreover it can alter quality of food satisfaction and, consequently, quality of life “QOL”. Our study aims to assess the quality of food satisfaction and to deduce the barriers and to study the relationship between food satisfaction and QOL. **Methods:** A descriptive study including 39 type 2 diabetic patients. For each patient we collected socio-demographic, clinical and biological data. We used two semi structured self administered questionnaire to assess food satisfaction and the SF-36 to assess QOL. **Results:** Main constraints were related to the obligation to eat at regular times in 53.8%; the deprivation of eating favorite foods in 56.4%; and to eat like others in gatherings in 51.3%. Patient did not perceive the benefits of diet neither on glycemic control nor on avoiding diabetic complication in respectively 79, 5% and 76.9%. Patients who could feel the meals were delicious and those who are able to enjoy the meals had a better “limitations due to physical condition” score of SF36 ($p = 0.036$ and $p = 0.021$ respectively). Patients who felt full after meals had a significantly higher score on

GH "perceived health", with a p = 0.029. Subjects able to enjoy meals and who felt full after meals had a significantly higher score in relation to "limitations due to mental state" of SF36 (p = 0.031 and p = 0.02 respectively). The mean psychic summary score was significantly better in patients able to eat their favorite food, and those who felt that it is not necessary to make menus or have someone to cook (p = 0.025, p = 0.025 and p = 0.015). **Conclusion(s):** Understand barriers to following dietary recommendations is essential.

A-1104: Impact of freestyle libre flash glucose monitoring system on glycemic control in patients with type 2 diabetes: Qatar experience

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Background: Several studies have shown an improvement in glycemic control with use of Flash Glucose Monitoring (FGM). Free Style Libre FGM service was first launched in Qatar (at National Diabetes Centre, NDC) in 2016. There has been yet no available data on the effectiveness of its use in patients with insulin treated diabetes. **Methods:** Aim: to assess the impact of FGM on glycemic control in patients with insulin treated type 2 diabetes in real world clinical practice. **Methods:** A total of 138 patients with insulin treated type 2 diabetes, attending NDC, Al Wakra Hospital (October 2016- October 2018) were included to investigate the change in glycemic control upon introducing Freestyle Libre Flash Glucose monitoring (FGM) system. Data was collected retrospectively from medical records (HbA1c) & FGM device downloaded reports (TIR and Hypoglycemic events). The Data was monitored prior to the application of FGM and at 3, 6, and 12 months. **Results:** 138 patients (57% females, 96 % Qataris), with average age of 56 ±13.2 years, were included. Mean HbA1c was 9.4% at baseline, which significantly decreased to 8.4% at 3 months (p-value < 0.05, 95% CI 0.54% - 1.46%), 8.5% at 6 months (p-value < 0.05, 95% CI 0.46% to 1.39%) & 8.3% at 12 months (p-value < 0.05, 95% CI 0.65% to 1.58%). There was also an observed improvement in TIR, with 57%, 48% and 54% of patients achieving an improvement at 3, 6 and 12 months respectively. There was no associated significant change in the average hypoglycemia events at follow up compared to baseline, 4.23 events /day, 4.15 events /day, 4.13 events /day & 4.48 events/day at baseline, 3, 6 &12 months respectively (p-value < 0.05). **Conclusion(s):** In our cohort of insulin treated type 2 diabetes, FGM resulted in a significant improvement in HbA1c levels and TIR without significant change in the number of hypoglycemia events.

A-1101: Association of maternal hemoglobin level and gestational diabetes mellitus in Saudi women

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Background: Gestational diabetes mellitus (GDM) is considered as the most common metabolic disorder of pregnancy globally. Evidence suggests that increased level of HB has also been linked with GDM. However, few evidence was found about the association of HB levels and GDM among Saudi women. Our objective to determine the association between maternal hemoglobin level and gestational diabetes mellitus in pregnant Saudi ladies. **Methods:** A retrospective case-control descriptive-analytical study was conducted in a total of 291 participants distributed among cases group; whom are newly diagnosed gestational diabetes mellitus (GDM) and control groups whom are normal. Data including hemoglobin level and oral glucose tolerance test (OGTT) were collected from a previous study and it was analyzed by using Statistical package for social sciences (SPSS). **Results:** Out of 291 participants the mean age was 30.7 years in cases and 32 years in control group while the mean gestational age was 31 weeks and 31.3 weeks among the GDM group and control group respectively. The mean of hemoglobin level was found to be 12.06 gram/dl among the GDM group and 11.57 gram/ dl among the control group. High hemoglobin levels had been significantly associated with GDM group (p-value: 0.003) and the rise in hemoglobin levels was significantly associated with increased BMI in GDM group but not control group (p-value: 0.009), however it was found to be significantly associated with a gestational age of 28 weeks and more (p-value: 0.01). **Conclusion(s):** This study revealed that high hemoglobin levels have been associated with gestational diabetes mellitus.

A-1098: Association between serum uric acid and the lipid profile in patients with type 2 diabetes

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Background: Hyperuricemia is reported to be associated with glucose intolerance, dyslipidemia, hypertension, and metabolic syndrome. However, the relationship between lipid profiles and serum uric acid (SUA) in patients with diabetes is not clear. Therefore, we aimed to investigate the association between serum uric acid level and the lipid profile of patients with type 2 diabetes. **Methods:** This was a hospital-based cross-sectional study. Patients aged above 18 years and with type 2 diabetes were included. Patients with a history of renal stones or gout diseases were excluded. Basic demography, clinical and biochemical characteristics of the patients were collected and analyzed. **Results:** SUA was significantly higher in patients with hypertension, cardiovascular diseases, retinopathy, and nephropathy. In the univariate analysis, age, triglyceride, total cholesterol were positively associated, whereas HDL and eGFR were negatively associated with SUA. In the multiple regression analysis, only the association between SUA and HDL (beta coefficient -0.209, P-value = 0.002) and eGFR (beta coefficient -0.165, P-value = 0.009) remained significant. **Conclusion(s):** In conclusion, this study found that serum uric acid levels correlated negatively with serum HDL in patients with type 2 diabetic patients. The other lipid markers such as LDL, total cholesterol, and triglycerides were not significantly associated with serum uric acid level.

A-1095: Information and education needs of people with diabetes, Algiers urban area, Algeria

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Background: Diabetes is a chronic disease with which the person and those around him live on a daily basis, and which requires learning and support over time. The aim of our study was to analyze the therapeutic education needs of the diabetic patient. **Methods:** the data for this study comes from the diabetes prevalence survey among the adult population of Bab El Oued commune. All cases of diabetes knowing their status were included in this study. Data analysis was carried out using Epi Info software [version 6.04]. **Results:** A total of 268 diabetics aged 18 and over participated in the survey. Eighty percent of diabetics say they are well informed about their disease, the main source of information being their doctor (95.1%); 68.3% would like additional information, mainly on complications (type 2 diabetes) and self-monitoring and complications (type 1 diabetes). Among all the diabetic people questioned, 8.6% received additional education in addition to the usual medical care, sometimes in-depth individual interviews, rarely group sessions, exceptionally telephone support. In the future, more than 80% of diabetics would like to benefit from an educational supplement, mainly individual. **Conclusion(s):** While the information needs expressed are significant, the desire for "educational" approaches concerns more than three quarters of people with diabetes. These results call for increased awareness by patients and doctors of the importance of the educational approach.

A-1090: Hypoglycemia in a newborn leading to diagnosis of maturity-onset diabetes of the young in his mother

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Background: Diagnosing monogenic forms of diabetes is still a challenge due to overlapping clinical features with the commoner forms of diabetes. A characteristic clinical feature of hepatocyte nuclear Factor 4 alpha (HNF4A) mutation (MODY 1) that aids in diagnosis is the HNF4A-induced neonatal hyperinsulinism, with a later-in-life switch to defective insulin secretion, the mechanism of which remains unclear. We present a case of neonatal hyperinsulinemic hypoglycemia, showing the importance of implementing the accurate approach for neonatal hypoglycemia combined with detailed family history in reaching the right diagnosis. **Methods:** A full term male infant, transferred to the neonatal intensive care unit from nursery at the age of 8 hours as hypoglycemia discovered upon regular blood glucose testing as an infant of diabetic mother. He is the first child for his parents. His mother who is 29-year-old was diagnosed with diabetes and was considered to have type 1 diabetes at the age of 17 years and is on insulin. **Results:** Hormonal work up in the critical sample showed hyperinsulinism. Patient was controlled on diazoxide and discontinued at 3 months of age. Because of the peculiar maternal diabetes pattern and transient neonatal hyperinsulinsm, HNF4A mutation was suspected in both the neonate and his mother and then confirmed by genotyping. The mother was switched to sulfonylurea. Family was instructed that their baby needs regular screen for development of MODY beyond age of 10 years. **Conclusion(s):** The presented case showed the importance of correct diagnostic approach for neonatal hypoglycemia with detailed family history to reach the diagnosis in a timely and cost effective manner and allow better insight into management, genetic counseling, and has implications for cascade screening of extended family members.

A-1083: Discrepancy of blood glucose control parameters in Egyptian patients with prediabetes and iron deficiency

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Background: iron deficiency anemia (IDA) represents a prevalent clinical health disorder in Egypt. There is a lack of data regarding the effect of iron deficiency on blood glucose control parameters in Egyptian patients with impaired glucose regulation. Objective: to detect the influence of iron deficiency on glycaemic control parameters in Egyptian patients with prediabetes. **Methods:** A case-control study included 197 prediabetic patients; 113 patients (41 male and 72 female) with iron deficiency versus 84 patients (34 male and 50 female) without iron deficiency from (May 2019 to October 2019). History, physical examination and laboratory tests of fasting and postprandial blood sugar, HBA1c, fructosamine, serum creatinine, ALT, AST, CBC, Ferritin, serum iron and total iron-binding capacity (TIBC) were done. **Results:** Glycosylated hemoglobin (HBA1c) was significantly higher in the case group than the control group (P-value ≤0.001) meanwhile, no significant difference was found between the study groups regarding the fasting plasma glucose and the postprandial plasma glucose levels (P-value = 0.0613 and 0.0821 respectively). Hemoglobin concentration, ferritin and serum iron levels were significantly lower in the case group versus the control group (P-value ≤0.001). However, total iron-binding capacity (TIBC) was significantly higher in the case group than the control group (P-value ≤0.001). HBA1C level was positively correlated with Fructosamine in the control group only that ensures a lack of credibility of HBA1c in iron-deficient subjects. HBA1C level was inversely correlated with serum Iron levels in both study groups. **Conclusion(s):** there is discordance in glycaemic control parameters in prediabetic patients with iron deficiency. Diagnosis of deranged glucose homeostasis in prediabetic patients with iron deficiency should not be solely with HBA1c.

A-1072: Assessing barriers to insulin injection in people with diabetes

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Background: Diabetes Mellitus is a chronic and prevalent disease worldwide with many challenges regarding its management. In some patients the diabetes is well controlled with life styling and oral medications, but, in others, oral agents are not effective and therefore, insulin injection is required. However, some patients are rejecting insulin therapy. Our study aims to estimate the barriers to insulin therapy and specifically, needle phobia. **Methods:** This is a prospective cross-sectional study utilizing a qualitative questionnaire that has been distributed to and interviewed by patients with diabetes who attended diabetic clinics. The questionnaire includes demographic data about the patients, and 19 questions regarding barriers to insulin

therapy and the forms were available in English and Arabic. **Results:** 201 patients filled the questionnaire. The commonest barriers were concern of a) higher frequency of blood sugar checking (36.3%), b) long term injections (33.8%), c) side effects of insulin (29.9%), and d) weight gain (29.4%). However, needle phobia contributes only 9 %. Overall, 125 (62.2%) of our patients had no problems with these barriers and are willing to initiate insulin therapy and only 20 (10 %) of our patients had problems with them and are not willing to initiate insulin therapy. **Conclusion(s):** Our study shown that 62.2% of our patients accept insulin therapy and only 10 % of our patients reject insulin therapy. The incidence of needle phobia as a barrier to insulin initiation is low in comparison to other barriers.

A-1071: Prevalence and risk factors of diabetic nephropathy in patients with diabetes mellitus at Diabetes Clinic in Benghazi Medical Center, Benghazi, Libya

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Background: Diabetes mellitus (DM) is the leading cause of end stage renal disease worldwide. Microalbuminuria or incipient diabetic nephropathy is one of the initial clinical manifestations of early diabetic nephropathy (DN). **Objective:** The aim of the study was to determine the prevalence and risk factors of DN among patients with DM at diabetes clinic in Benghazi medical center (BMC), Benghazi, Libya. **Methods:** A total of 585 type 1, type 2 patients with DM were included in this cross-sectional study. The subjects aged ≥18 years, they attended the outpatient diabetes clinics at BMC from May 2015 to October 2016, for routine follow-up. Latent autoimmune diabetes in adults (LADA), gestational diabetes, pregnant women and patients with acute infections or heart failure were excluded. Data including, gender, age, type of DM, duration of DM, history of smoking, macrovascular complications, microvascular complications, history of hypertension, weight, height, glycosylated hemoglobin (HbA1c), total cholesterol, triglyceride, LDL, HDL, creatinine and urea were obtained by proforma. Microalbuminuria was assessed using spot urine sample in the early morning, patients were classified according to their urinary albumin concentration (UAC) as having normoalbuminuria (UAC <30 mg/l), microalbuminuria (UAC =30 to 300 mg/l), or macroalbuminuria (UAC >300 mg/l). The three groups were compared to analyze the association between albuminuria and its risk factors. In addition, independent predictors of albuminuria were determined using multiple forward stepwise logistic regression and presented as an odds ratio (OR) and 95% confidence interval (CI). Data was analyzed using IBM SPSS 23 statistical program. **Results:** The prevalence of normoalbuminuria was (63.8%), microalbuminuria (30.9%) and macroalbuminuria (5.3%) in the studied group. A statistical significant association found between albuminuria and age (P<0.001), duration of DM (P<0.001), smoking (P=0.001), macrovascular complications (P<0.001), microvascular complications (P<0.001), BMI (P=0.046), poor glycemic control (high HbA1c) (P<0.001), high LDL (P=0.037), high TG (P<0.001), hypertension (P<0.001), uncontrolled BP (P<0.001), family history of DM (P=0.027) and family history of DN (P<0.001). There was clear association between e-GFR and albuminuria. Multiple forward stepwise logistic regression analyses revealed nine independent risk factors influencing albuminuria: duration of DM, smoking, macrovascular complications, microvascular complications, poor glycemic control (high HbA1c), high TG, e-GFR, hypertension, and BP control. **Conclusion(s):** The overall prevalence rate of DN in this study was (36.2%) among the studied patients with DM, and the significant risk factors associated with it included long duration of DM, smoking, macrovascular complications of diabetes, microvascular complications, poor glycemic control (high HbA1c), high triglyceride, estimated GFR, hypertension and blood pressure control. Therefore, regular screening for microalbuminuria is recommended for all patients with diabetes, particularly those with predicting risk factors. As early treatment is critical for reducing cardiovascular risks and slowing the progression to late stages of DN (overt proteinuria and end stage renal disease).

Keywords: Albuminuria, diabetes mellitus, diabetic nephropathy, prevalence, risk factors

A-1069: The extra glycemic benefits of remogliflozin in patients with metabolic syndrome and type 2 diabetes mellitus: A retrospective real-world Study

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Background: SGLT2 Inhibitors as a class are known to be efficacious and established their superiority in various cardiovascular and renal outcomes. This study was an attempt to evaluate the extra glycemic benefits of remogliflozin in patients with metabolic syndrome and type 2 diabetes mellitus who have achieved glycated hemoglobin (HbA1c) levels of less than 7% with optimum dose of metformin and DPP-4 inhibitors. **Methods:** In this single center, retrospective study adult overweight/obese patients, having metabolic syndrome and type 2 diabetes mellitus, on steady dose of metformin and DPP-4 inhibitors for a minimum of 12 weeks with HbA1c less than 7.5 % in whom remogliflozin 100 mgs twice daily was added and followed for > 6 months were included. Parameters studied were body weight, body mass index, blood pressure, liver enzymes, lipid profile and urine albumin creatinine ratio. The means were compared with Student's t test. **Results:** A total of 120 patients [mean (SD) age 31.3 (6.58) years; 60 (50%) males; mean (SD) body weight 83.5 (5.54) kg] were included. Mean (SD) BMI at baseline reduced from 30.59 (1.88) kg/m2 to 29.09 (1.68) kg/m2 (p<0.001). Mean (SD) systolic blood pressure reduced from 132.47 (7.66) mmHg to 129.58 (5.11) mmHg (p<0.001). Mean (SD) of alanine transaminase (ALT) reduced from 67.7 (5.1) U/L to 55.9 (3.4) U/L (p<0.001). Mean (SD) of total cholesterol and triglyceride reduced from 221.24 (16.31) mg/dL and 187.60 (14.43) mg/dL to 195.34 (12.21) mg/dl and 163 (9.19) mg/dl (p<0.001) respectively. The mean (SD) U-ACR reduced from 48.99 (6.05) to 30.29 (4.44) mg/g (p<0.001) at the end of the observation period. Genital mycotic infections were observed in 10 (8.18%) patients. **Conclusion(s):** Remogliflozin as an add-on therapy was tolerated well with significant extra glycemic benefits recorded in body, BMI, blood pressure, microsomal liver enzyme, fasting lipid profile and U-ACR in overweight / obese Indian patients with T2DM.

A-1066: Experiences of patients with type 2 diabetes mellitus patients in the Kingdom of Saudi Arabia

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Background: There is a paucity of health outcomes related data on patients with type 2 diabetes mellitus (T2DM) in the Kingdom of Saudi Arabia (KSA). This study was designed to research health outcomes and treatment preferences in this population. **Methods:** A cross-sectional, multi-phased, face-to-face, mixed methods study was conducted among adult KSA patients with T2DM (Phase 1 qualitative n=11, Phase 2 survey pilot n=10, Phase 3 final survey n=300). The study methods and survey were adapted to ensure they were KSA culturally appropriate. Participants reported their T2DM, current treatment, challenges, Ramadan blood glucose management, willingness to inject, injection preferences for profiles of two injectable treatments (dulaglutide and semaglutide), sociodemographic information and completed the EQ-5D-5L and Impact of Weight on Self Perception (IW-SP) instruments. **Results:** 310 participants completed the survey (53% male; mean (SD) time since T2DM diagnosis 6.3 (5.0) years). The mean EQ-5D-5L visual analogue scale score was 80.2 (SD=13.0). 79% reported that they worried about their T2DM. IW-SP results revealed that 22% of participants indicated they felt self-conscious due to their weight. During Ramadan specifically, a third (32%) reported feeling worried about their T2DM. In this study, patients' willingness to inject T2DM medication changed after learning more about the devices, with more responders willing to take dulaglutide compared to semaglutide. At least twice as many participants preferred the dulaglutide device over the semaglutide device (p<.0001), with ease of use being the most common reason for this preference. Participants reported a wide range of impacts from T2DM on their life. **Conclusion(s):** This study provides valuable insights into KSA T2DM patient beliefs, treatment preferences and the impact of the disease on quality of life. It is imperative to consider cultural sensitivities when conducting studies in KSA.

A-1064: Prevalence of diabetic nephropathy among type 1 and type 2 diabetic patients in Oman

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Background and Aim: Diabetic nephropathy is renal disease characterized by hypertension, low glomerular filtration rate which is decreasing to less than 60 ml/min as well as albuminuria which defined as a continues increasing the concentration of albumin in urine to more than 300 mg/d at least 2 occasions during 3-6 months and albumin creatinine ratio more than 30. This study aims to determine the prevalence of diabetic nephropathy among type 1 and 2 diabetic patients at Sultan Qaboos University Hospital. **Methods:** Method: This is a retrospective observational cross sectional study included 230 patients of type 1 DM and 536 patients of type 2 DM from both gender and with inclusion criteria of microalbuminuria more than 300 mg/d or more than 200 µg/min who was seen at diabetic and family medicine clinic at Sultan Qaboos University Hospital for routine diabetes follow up between 2006 to 2018 (type 1 DM) and 2016 to 2018 (type 2 DM). We used the statistical package for social sciences for data analyzing and to obtain descriptive statistics. **Results:** Result: Among 536 type 2 diabetic nephropathy patients included in our study 53.7% were males and 46.3% were females. The mean age was 57.18years. prevalence of diabetic nephropathy among type 2 DN patients was 14.3%. This study showed that there are many modifiable risk factors contributing in diabetic nephropathy on type 2 DM patients and the most frequent are: obesity88.1%, hypertension82.5%, Glycosylated Hemoglobin 74.6%. The total prevalence of diabetic nephropathy among type 1DM patients was 9.5%. Among 230 patients included in our study, 49.36% were males and 50.63% were females. The mean age was 21.98years years. study observed that there are many modifiable risk factors contributing in diabetic nephropathy on type 1 DM patients and the most frequent are: hypertension 77.7%, obesity 72.8, glycosylated hemoglobin 67.6%. **Conclusion(s):** Conclusion: This study provided information of the prevalence and distribution of modifiable risk factors among diabetic nephropathic patients from both type 1 and type 2 DM admitted to SQUH , alarming the health workers to face this problem and to concern on it to improve the therapeutic and prevention measures.

A-1062: Prevalence of hyperglycaemic and hypoglycaemic emergencies among diabetic pilgrims of the 2019/1440H Hajj Season

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Background: Diabetes is a leading cause of disability worldwide. Hajj season requires health system in Saudi Arabia to prepare efficiently for healthcare of millions of pilgrims, particularly for diabetic emergencies. The purpose of this survey was to estimate point prevalence of hyperglycaemic and hypoglycaemic emergencies in pilgrims during the Hajj season. **Methods:** Methods. This was a hospital-based survey of a sample of diabetic pilgrims who attended any of the three clinics set up during the Hajj season of 2019/1440H. all patients who presented with any of the hypoglycaemic or hyperglycaemic emergencies had their demographic and clinical characteristics recorded in order to estimate the prevalence of each emergency and identify its significant associated factors. **Results:** Results. We investigated (n = 153) patients with diabetes mellitus. Prevalence of Diabetic Ketoacidosis DKA during 1440/2019 hajj season was (n = 11, 7.2%) ans for Hyperosmolar Hyperglycemic State HHS was (n = 19, 12.4%). Point prevalence of hypoglycemia was (n = 28, 18.3%). DKA was more common in the under-30s (odds = 30.4, P = 0.0115). None of the background factors exerted a significant effect on HHS likelihood. Hypoglycemia was associated with neuropathy complication (Odds = 3.54948, P = 0.0187). **Conclusion(s):** Conclusions. Among diabetic pilgrims performing Hajj a considerable proportion present with a range of diabetic emergencies to on-site medical facilities. Preparation is required in terms of logistic and educational supplies to meet the needs of diabetic pilgrims. Further largescale research is required to further elucidate the correlates of diabetic emergencies during Hajj season.

A-1059: Real-world effectiveness and safety of insulin glargine 300 U/mL (Gla-300) in insulin-naïve people with type 2 diabetes: The ATOS Study

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Background: The clinical benefits of Insulin glargine 300 U/mL (Gla-300), a second-generation basal insulin (BI) analog, have been confirmed in real-world studies in the US and Western European population1-3. However real-world effectiveness and safety of Gla-300 in wider geographic regions is needed. ATOS is a prospective, 12-month, observational study assessing real-world effectiveness and safety of Gla-300 in countries outside US and Western Europe. **Methods:** ATOS enrolled insulin-naïve adults (≥18 years) with T2DM, uncontrolled (HbA1c >7–≤11%) on ≥1 oral antihyperglycemic drug(s) (OADs) in whom the treating physician had decided to add Gla-300 to the existing OAD treatment. Here we report the results from the final study analysis. **Results:** Overall, 4422 participants (51.8% females) were eligible. Mean (SD) age was 57.2 (10.8) years, mean (SD) duration of diabetes was 10.2 (6.2) years and baseline HbA1c, % (SD) was 9.28 (1.00). Physician-set individualized HbA1c (%) goals at baseline were <7: 13.7%; 7–<7.5: 70.4%; 7.5–<8: 11.8%; ≥8: 4.1%. The proportion of evaluable patients achieving their HbA1c goal at Month 6 (primary outcome) was 25.2% (95% CI: 23.8 to 26.6) with 44.5% achieving their HbA1c goal at Month 12; HbA1c reductions from baseline to month 6 and 12 are 1.50% and 1.87% respectively. The hypoglycemia incidence and change in body weight was low [Table 2]. Treatment-emergent adverse events (TEAEs) were reported in 283 (6.4%) patients, with 57 (1.3%) serious TEAEs. **Conclusion(s):** In a real-life setting in countries outside US and Western Europe, initiation of Gla-300 in people with T2DM uncontrolled on OADs resulted in improved glycemic control and low rates of hypoglycemia with minimal weight change.

A-1056: Primary hyperaldosteronism and diabetes

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Introduction: Primary hyperaldosteronism (PHA) is the most common cause of secondary hypertension, However it is also counted among the etiologies of diabetes mellitus. Our study attempts to determine the prevalence of diabetes in a population with PAH, and to discuss the role of hypokalaemia in the genesis of diabetes. **Methods:** Retrospective study on 26 files of patients with PAH diagnosed in the endocrinology department of Bab El Oued in Algiers between 2010 and 2016, diabetes was defined according to OMS criteria. Subgroup analyses of hyperglycaemic states were undertaken based on hypokalaemia. **Results:** The mean age was 33 years with a sex ratio of 1/3. Hypokalemia (<3.5 mmol / L) was labeled in 57%. The prevalence of carbohydrate intolerance was 19% and diabetes 11%. This prevalence was not greater in the subgroup with severe hypokalaemia. **Conclusion(s):** On the pathophysiological level, the anomalies of the carbohydrate metabolism are attributed to the consequences of potassium depletion which decreases the secretion of insulin and the direct involvement of aldosterone, via the mineralocorticoid receptor, in the development of peripheral insulin resistance. In our modest serie we find a prevalence of carbohydrate abnormalities in PHA of 30%. The data in the literature are not unequivocal, some studies have shown a prevalence of hyperglycemia of nearly 27%. In contrast, a large series of 460 cases of PHA found no increase in the prevalence of diabetes, compared to patients with essential hypertension. Abnormalities in glucosted metabolism are attributed to the consequences of potassium depletion, which decreases insulin secretion and the direct involvement of aldosterone, via the mineralocorticoide receptor, in the development of peripheral insulin resistance.

A-1048: The prevalence and risk factors of diabetic nephropathy among Saudi subjects with type 1 diabetes attending a tertiary care facility in Riyadh

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Background: Diabetes is the leading cause of end-stage renal disease (ESRD) worldwide. Diabetic Nephropathy(DN) affects 20-30% of patients with type 1 diabetes (T1DM) and is associated with increased morbidity and mortality in this young population, therefore, screening and early interventions are extremely important preventative measures. This study aimed to estimate the prevalence of DN in subjects with T1DM attending King Fahad Medical City, a main tertiary care facility in Riyadh, Saudi Arabia. **Methods:** We performed a cross-sectional study by reviewing the charts and collection of demographic data, diabetes duration, blood pressure, body mass index, lipids, HbA1c, serum creatinine, urine albumin/creatinine among other data of 344 Saudi patients with T1DM who were randomly selected from those who attended the diabetes clinic in the period between January 2017 and January 2019. Subjects were divided into 2 groups according to the albumin/creatinine ratio (ACR, mg/mmol) as follows: No diabetic nephropathy (no DN), if ACR was less 3.5 for females and < 2.5 for males or having diabetic nephropathy (DN) if ACR was > 3.5 (females) or > 2.5 (males). The estimated Glomerular filtration rate (eGFR) was calculated using the CKD-EPI equation and subjects were further divided into the different stages of chronic kidney disease (CKD). SPSS was used for statistical analysis. Data were expressed as MEAN +/- SEM. Statistical significance was set at $p < 0.05$. Comparisons of parameters between those who had DN and those without DN were made using student t-test and Binary logistic regression was used for examining the independent predictors of DN. **Results:** The mean age of the study population was 24.6 ±9.5 yrs, 65.5 % were females and mean DM duration was 12.1 ± 0.3 yrs, mean HbA1c was 9.5 ±0.1 % and mean systolic BP was 123 ±0.7, and mean serum creatinine was 59.8 ± 3.8. BMI was 25.9 ± 0.36. About 24.5 % of the subjects had nephropathy and the distribution of the different stages of CKD was as follows in this group: 90.6 % had stage 1 CKD (eGFR > 90 ml/min), 7.8 % had stage 11 CKD (eGFR between 60-89), 1.6 % had stage IV CKD (eGFR 15-29). Patients with DN had significantly higher HbA1c 10.7±0.3 vs 9.3 ± 0.1, respectively, P <0.001, higher systolic BP (127 ± 1.6 Vs 122 ± 0.9 mmHg, respectively, P <0.001, and higher total cholesterol 5.2± 0.1 vs 4.5 ±0.1, respectively, P 0.02, compared to subjects without DN. Binary regression analysis showed that DN was independently associated with total cholesterol , odd ratio = 1.67, 95 % C.I. (1.13-2.47), P-value 0.009, HBA1c with an odds ratio =1.38, 95 % C.I. (1.2-1.7), P-value <0.001 and systolic BP, odds ratio = 1.03, 95 % C.I (1.0-1.06), P= 0.02 even after correction for age, gender, BMI, and DM duration. **Conclusion(s):** The prevalence of DN in this cohort of patients with T1DM is about 25 %, the vast majority of whom have increased eGFR indicating the presence of glomerular hyperfiltration.

Poor glycemic control, high systolic BP, and poor lipid profile are very important modifiable risk factors that are independently associated with the occurrence of DN in this cohort and should be aggressively treated to slow the progression to ESRD.

A-1045: Factors associated with health-related quality of life in patients with diabetic foot ulcer: A cross-sectional study in Saudi Arabia

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Background: Diabetic foot ulcers (DFU) have been shown to have a high impact on the patients' perceived Health-Related Quality of Life (HRQOL). The aim of the present study was to estimate the HRQOL related risk factors in patients with DFU. **Methods:** This cross-sectional study was performed using 81 type 2 diabetes (T2D) patients with DFU, from January 2019 to July 2019, at one of the major tertiary hospitals in Riyadh, Saudi Arabia. Using the Arabic version of the Short-Form 36-Item Survey (SF-36) these patients were interviewed and the HRQOL was assessed. The SF-36 covered eight aspects of health such as, physical functioning, bodily pain, limitations in the roles induced by physical health problems, limitations in the roles caused by personal or emotional problems, emotional well-being, social functioning, energy/fatigue, and general health perceptions. **Results:** It was evident that age, gender, education, occupation, smoking, duration of diabetes, hypertension, dyslipidemia, body mass index (BMI) and the number of diabetes-associated complications, hypertension and dyslipidemia were significantly influenced in physical function. The physical health of the patient was strongly influenced by gender, education, occupation, income, BMI and a number of complications. The emotional health of the patient was affected by dyslipidemia, deformity and prior amputations, as well as BMI and glycosylated hemoglobin (HbA1c). The social standing of the patient was influenced by age, income, education, and occupation. The degree of pain experienced by the patient varied with age and the number of complications, as well as with the notable differences in their general health. The factors of age, education, occupation, income and number of complications induced several health changes to differing degrees. The DFU patients revealed lower total HRQOL in all the eight aspects of the SF-36. **Conclusion(s):** The DFU patients in Saudi Arabia generally revealed lower HRQOL.

A-1044: Assessing diabetes distress and sleep quality in young adults with type 1 diabetes using freestyle libre: A prospective cohort study

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Background: The burden of diabetes, its potential complications, and related self-care activities can induce negative psychosocial effects in patients with type 1 diabetes mellitus (T1DM). This prospective cohort study investigated the psychosocial benefits associated with 3 months of FreeStyle Libre (FSL) flash glucose monitoring use in young adults with T1DM in Saudi Arabia. **Methods:** Patients completed the Diabetes Distress Scale (DDS) and the Pittsburgh Sleep Quality Index (PSQI) questionnaires at baseline and 3 months. HbA1c, number of confirmed hypoglycemia episodes per month, and frequency of blood glucose testing were also collected at baseline and 3 months. **Results:** Of 95 patients analyzed, significant reductions were observed in mean DDS (3.8 vs. 2.5; $p < 0.001$) and PSQI (8.7 vs. 3.9; $p < 0.001$) scores from baseline to 3 months. Furthermore, HbA1c and confirmed hypoglycemia episodes per month also decreased from baseline to 3 months (HbA1c 8.3 vs. 7.7% [67 vs. 61 mmol/mol], $p < 0.001$; hypoglycemia episodes 3.0 vs. 2.3, $p < 0.001$). In contrast, mean frequency of blood glucose testing per day increased from baseline to 3 months (2.5 vs. 5.2; $p < 0.001$). **Conclusion(s):** These data demonstrate improvements in diabetes distress and sleep quality as well as glycemic outcomes following 3 months' FSL use in young adults with T1DM.

A-1041: Comparing glycemic control and satisfaction with i-Port advance for insulin administration in children and adolescents with type 1 diabetes on basal-bolus therapy

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Background: We assessed changes in markers of glycemic control and perceptions of satisfaction associated with adherence to i-Port advanced system compared to conventional insulin pen needles among young patients affected by type 1 diabetes (T1D). **Methods:** The study enrolled participants aged fourteen and above with type 1 diabetes at Prince Sultan Military Medical City (PSMMC), Riyadh, Saudi Arabia We introduced insulin injection i-port advance to consecutive adolescents meeting our inclusion criteria treated for T1D at our center and followed them for 12 weeks in order to assess changes in markers of glycemic control and perceptions of satisfaction associated with adherence to i-Port system compared to conventional insulin pen needles. **Results:** Data from the 73 participants were analyzed. a statistically significant improvement for the insulin delivery satisfaction (IDSS) from baseline to 12 weeks follow up was observed (median 3.1 (IQR 2.7-3.4) vs 4.0 (IQR, 3.8-4.1) at baseline and follow up, respectively ($P<0.001$). Median MMAS-8 score was 4.8 at baseline and 6.8 at 12 weeks. Compared with the baseline, HbA1c, total daily dose of insulin, postprandial glucose, and fasting blood glucose were significantly different during the follow-up .The overall amount of daily insulin dose was statistically lower at 12 week follow up ($p<0.001$), 55 (75%) patients used the same amount (unit/kg/day) of daily insulin, while 18 (25%) used a lower amount of daily insulin. The HbA1c was statistically lower after 12 weeks of i-Port use, median 8.2 (IQR, 7.8-8.6) vs 7.8 (IQR, 7.4-8.3). Both the fasting blood glucose and the post-prandial glucose were statistically different between baseline and follow up. The median absolute decrease was 14 mg/dL (IQR,4-22) and 14 mg/dL (IQR,4-30, for fasting blood glucose and postprandial glucose, respectively. **Conclusion(s):** i-port has proven to improve metabolic control and level of satisfaction in children and adolescents with T1D.

A-1040: Clinical characteristics of hospitalized and home isolated coronavirus disease 2019 patients with type 1 diabetes

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Background: From the surveys done in the recent past, individuals with type 1 diabetes (T1D) have also been found at risk of contracting severe COVID-19, necessitating a hospital stay. The aim of the present study was to elucidate the clinical features of COVID-19 patients with type 1 diabetes (T1D) under hospitalization and home isolation conditions. **Methods:** This retrospective study was conducted among 32 patients with COVID-19 and T1D, who sought treatment at the Prince Sultan Military Medical City, Riyadh, Saudi Arabia between 01 May 2020 and 30 July 2020. Patients data were extracted from electronic medical records. **Results:** Of the total of 32 COVID-19 patients with T1D, 21.9% required hospitalization, while 78.1% underwent home isolation. Among the study population, 9.4% (3/32) were reported to have hypertension, 21.9% (7/32) had chronic pulmonary disease (CPD), 18.8% (6/32) had thyroid disorders, and 18.8% (6/32) had the celiac disease. Among patients with chronic kidney disease (CKD), 68.8% (22/32) of them were reported have CKD 1, 28.1% (9/32) had CKD II and 3.1% (1/32) had end-stage renal failure. The most common symptoms observed among the hospitalized patients were nausea and vomiting (71.4%;5/7), followed by fever (57.1%; 4/7), cough (42.8%; 3/7), sore throat (42.8%; 3/7), abdominal pain (42.8%; 3/7) and dyspnea (42.%; 3/7). The most common reasons for hospitalization were diabetic ketoacidosis (71.4%; 5/7) followed by bacterial pneumonia (14.3%;1/7), fever (14.3%;1/7), sore throat (14.3%;1/7), severe hyperglycemia (14.3%;1/7) and COVID-19 pneumonia (14.3%;1/7). Except the severity of COVID-19 disease (p=0.0001), none of the demographic and clinical parameters indicated statistically significant differences between patients requiring hospitalization and home isolation. **Conclusion(s):** Majority of the COVID-19 patients with T1D recovered with conservative treatment at home. Diabetic ketoacidosis was the most common reason for hospitalization.

A-1039: Risk factors for hospital admission among coronavirus disease 2019 patients with diabetes: A study from Saudi Arabia

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Background: Patients with diabetes having COVID-19 have been observed to have a tendency to experience greater symptom severity and have a higher mortality rate and hospitalization than other patients. The aim of the present study was to elucidate the risk factors for hospital admission among COVID-19 patients with type 2 diabetes (T2D). **Methods:** This retrospective study conducted at the Prince Sultan Military Medical City, Riyadh, Saudi Arabia between 01 May 2020 and 30 July 2020. Out of 7,260 COVID-19 patients, 920 were identified as T2D. After the exclusion process, 806 patients with T2D were included in this analysis. Patients' data were extracted from electronic medical records. A logistic regression model was performed to estimate the risk factors of hospital admission. **Results:** Of the total of 806 COVID-19 patients with DM, 48% were admitted in the hospital, 52% were placed under home isolation. Older age between 70-79 years (OR 2.56; p=0.017), ≥ 80 years (OR 6.48; p=0.001) were significantly more likely to be hospitalized compared to <40 years. Similarly, patients with higher HbA1c level of ≥ 9% compared to < 7%; (OR 1.58; p=0.047); patients with comorbidities such as, hypertension (OR 1.43; p=0.048), cardiovascular disease (OR 1.56; p=0.033), cerebrovascular disease (OR 2.38; p=0.016), chronic pulmonary disease (OR 1.51; p=0.018), malignancy (OR 2.45; p=0.025), chronic kidney disease (CKD) IIIa, IIIb, IV (OR 2.37; p=0.008), CKD V (OR 5.07; p=0.007) were significantly more likely to be hospitalized. Likewise, insulin-treated (OR 1.46; p=0.03) were more likely to require hospital admission compared to non-insulin treated patients. **Conclusion(s):** Among COVID-19 patients with diabetes, higher age, high HbA1c level, and presence of other comorbidities were found to be significant risk factors for the hospital admission.

A-1036: Oral health knowledge, attitude and practice of people with diabetes mellitus in Oman

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Background: Diabetes mellitus is a chronic disease leading to oral health problems. A bidirectional effect has been reported by many researchers. However, in Oman no previous studies have addressed this issue.the primary aim of the study was to assess the level of oral health knowledge, attitude and practice among Omani adults with diabetes mellitus. **Methods:** A cross sectional survey conducted among Omani patients with diabetes mellitus attended outpatient clinic in the national diabetes and endocrine centre (Royal hospital). (1) The recruitment started on May 2019 till May 2020. (2) Included all diabetes (type1 & type 2) aged 15 to 60 years who were competent to give consent and complete the self-administered questionnaire. (3) The study used a two part self-administered questionnaire, part one covered clinical and demographic data ..part two covered knowledge, attitude, and practice both were reliable and valid. (4) Data was analysed using SPSS -24. (5) This study was ethically approved by the Centre of studies and Research, directorate general of planning and studies, ministry of health, Sultanate of Oman. **Results:** In this study, 42% of them had type 1 diabetes, while 58% had type 2. About 10% had diabetes duration of less than 5 years, and (65%) have diabetes duration of more than 15 years. Overall oral health knowledge score, mean 4.83±2.62.Overall oral health attitude score, mean±SD31.65±4.44. The percentage of participants knowledge about oral health issues are presented including the percentage of attitude toward oral health problems and oral hygiene practices of the participants. **Conclusion(s):** These findings necessitate initiative to formulate multidisciplinary team (dentists, diabetologist and diabetic educators) to establish a well structured diabetes related oral health education programs in Oman.

A-1035: Mitigation of hypoglycemia during Ramadan detected by flash glucose monitoring system following dose adjustment of insulin and sulphonylurea in patients taking multiple antidiabetic agents (the PROFAST-IT Study)

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Background: Patients with type-2 diabetes (T2D) on multiple drugs who fast Ramadan are at increased risk of hypoglycemia. We

aimed to utilize the technology of flash glucose monitoring to assess whether adjustment of insulin and sulphonylureas doses will lessen the risk of hypoglycemia in these patients. **Methods:** We studied patients with T2D on either basal insulin or a sulphonylurea agent plus at least 2 other anti-diabetic agents before and during Ramadan using the technology of flash glucose monitoring (FreeStyle Libre), to assess the glucose variability and hypoglycemia. Patients received structured education and underwent dose adjustment of either insulin or sulphonylurea according to PROFAST protocol. **Results:** Eighty-five patients were recruited. Full data were available from 29 patients (24 males), where 17 and 12 patients were on SU+ and basal insulin+, respectively. Patients' average age was 50 years, with diabetes duration of 10 years. Mean blood glucose in the whole group before Ramadan was 156±34 mg/dL, with 70% of the group had levels within the target range, and during Ramadan 160±36 mg/dl with 69.5% of patients were within the target range. Total average hypoglycemia episodes were 3 before and 2.2 during Ramadan. There were differential episodes of hypoglycemia with those on SU+ having higher average episodes before Ramadan and lesser during Ramadan (3.7 vs 1.9), and the converse was true for those on basal insulin+ (1.8 vs 2.7). The difference was not statistically significant either within or between the two groups (SU+ vs. Basal+). Hypos were mostly mild. **Conclusion(s):** Empowerment of T2D patients by education and appropriate dose adjustments of hypoglycemic agents helps to mitigate the risk of hypoglycemia. Our results will have an implication on the management guidelines.

A-1031: Clinical, biochemical, metabolic outcome of Ramadan fasting and outcome of pre-Ramadan education and treatment adjustment in patients with type 2 diabetes mellitus: A real-world, multi-center, prospective observational study

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Background: The study was conducted to understand clinical, biochemical, metabolic outcome of Ramadan fasting and to explore effects of pre-Ramadan education in type 2 diabetic patients who observed Ramadan fast. **Methods:** A real-world, multi-center, prospective, observational study was conducted at the diabetes OPD of National Healthcare Network (NHN) Uttara, Dhaka, Bangladesh and OPD of MARKS Hormone and Diabetes clinic, MARKS Medical College &Hospital in Dhaka, Bangladesh. Randomly selected type 2 diabetic patients were recruited 1 to 12 weeks prior to the Ramadan and followed up till 12 weeks post-Ramadan. A total of 271 participants completed satisfactory follow up. Doses of gliclazide, glimepiride, metformin and insulin were adjusted. Data was collected using a set of questionnaires in a face to face interview. **Results:** The majority (80.1%) of participants received pre-Ramadan education and adjustment of medication. Significant reduction of weight, body mass index (BMI)) and blood pressure were reported after Ramadan fast ($p<0.001$). None of the studied participants experienced severe hyper/hypoglycemia or acute complications requiring hospitalization or an emergency room visit. Metformin was the commonest prescribed anti-diabetic medication. Premixed insulin was the commonest insulin during study period. . Mean of fasting and prandial capillary blood glucose decreased from pre-Ramadan period to post-Ramadan period ($P<0.05$). HbA1c decreased during post-Ramadan period compared to pre-Ramadan visit ($P=0.13$). A significant reduction in the triglyceride level was observed during post-Ramadan follow up ($P< 0.05$). **Conclusion(s):** The study revealed that a safe fasting can be observed with proper pre-Ramadan work-up. Ramadan fasting resulted into significant reduction of weight, BMI, blood pressure, lipid profile and improved glycemic status in patients with type 2 diabetes.

A-1030: Diabetic ketoacidosis among COVID-19 admitted patients in Suhar Hospital, Oman: Clinical characteristics and outcomes

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Background: Diabetic ketoacidosis (DKA) is an acute complication among COVID-19 patients with diabetes mellitus (DM). It is found to be a leading cause of poor prognostic indicators in COVID-19 patients. The aim was to describe the clinical characteristics and outcomes of DKA patients admitted to Suhar Hospital, Oman, investigating the association with COVID-19. **Methods:** A retrospective review of DKA patients admitted to Suhar Hospital, Oman, in the period from March 2020 to August 2020. DKA patients will be classified as with or without laboratory-confirmed COVID-19. SPSS, version 22, was used to describe data (median, interquartile range-IQR and percentages) and to test for statistical differences at 5% significance level (chi-square test, Fisher's exact test and Mann-Whitney U-test). **Results:** Twenty seven patients were found to fulfill the criteria of DKA. Of them, 13 patients had confirmed COVID representing a prevalence of 1.4%. COVID DKA patients compared to non-COVID were characterized of being males (54% vs. 43%), older in age (36 vs. 22), longer on hospital stay (5 vs. 2), had T2DM (62% vs. 7%), admitted to ICU (46% vs. 7%) and higher in mortality (31% vs. 0%) as well as clinically presented with low PH (7 vs 7.2) and bicarbonate (6.2 vs 11.1), high serum creatinine (101.0 vs. 84.0) and CRP (34.0 vs. 4.8). Significant factors ($p<0.05$) found to enhance mortality among COVID DKA patients were COVID pneumonia severity, extensive bilateral radiological infiltrates, ICU admissions, mechanical ventilation, severe metabolic acidosis and higher WBC and Neutrophils. All deceased COVID-19 DKA patients developed complications such as ARDS, renal failure, requiring hemodialysis and septic shock. **Conclusion(s):** This highlights the association of COVID-19 and DKA among T2DM and prolonged hospital stay. Severe COVID pneumonia, severe metabolic acidosis, ICU admissions, mechanical ventilations and high inflammatory markers were poor prognostic factors among COVID-19 patients admitted with DKA.

A-1029: Assessing barriers for self-monitoring of blood glucose in people with diabetes mellitus at Sultan Qaboos University Hospital

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Background: Self-monitoring of blood glucose (SMBG) helps people with diabetes to improve glycemic control. It helps patients to

detect hypoglycemia and hyperglycemia to act accordingly. It helps physicians to adjust medications and insulin doses for the patients. Despite this, adherence to self-monitoring of blood glucose remains low in many countries, including Oman. This study aimed to explore the major barriers to SMBG for diabetic patients at SQUH. The importance of this study is to help health care providers understand the barriers preventing diabetic patients from regular SMBG and to consider these barriers in counseling patients to help them adhere more to SMBG. **Methods:** A quantitative cross-sectional study. A validated questionnaire was distributed to 200 patients to explore the barriers prevented participants from SMBG. The questionnaire had the following domains: Social information, Barriers (cost, learning, family support, pain perception, psychological, health care providers, and workplace related barriers). This study included all Omani diabetic patients who attended the diabetes clinic or admitted in the wards of SQUH during the period from July 2019-October 2019. Questionnaire was not distributed to pregnant women and mentally retarded patients. Data was analyzed using descriptive statistics and tests of association. **Results:** Barriers that influenced the self-monitoring practice were mainly related to cost of strips and needles and participants' education and knowledge of self-monitoring of blood glucose. Less significant barriers included: lack of family support, psychological issues like fear and embarrassment, workplaces related barriers, and health care providers related barriers. **Conclusion(s):** The cost of strips and needles and participants' lack of knowledge of the purpose of self-monitoring of blood glucose or knowledge of how to use the glucometer were the major barriers of SMBG. Less significant barriers included: pain perception, psychological barriers like fear and feeling embarrassed, lack of family support, workplace related barriers, and health care providers related barriers. Health care authorities should support patients financially and focus more on educating patients about the practice of SMBG. Also, health care providers should consider all of these barriers when counseling diabetic patients to help them achieve higher frequencies of SMBG.

A-1028: Exploring the association between 25-hydroxyvitamin D and glycosylated hemoglobin in patients with diabetes mellitus in Saudi Arabia: A population based study

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Background: Saudi Arabia has high burden of diabetes mellitus and vitamin D deficiency. The objectives of this study were to determine the association between uncontrolled HbA1c and the optimum serum 25-hydroxyvitamin D[25(OH)D] after adjusting for potential confounders in Riyadh, Saudi Arabia. **Methods:** Interview based cross-sectional study was conducted on 606 Saudi diabetic patients aged 30-75 years in the primary health care centers. Blood samples were collected for measuring HbA1c, 25(OH)D, bone and lipid markers. Optimal 25(OH)D cut-off was determined using the receiver operating curve analysis (ROC). Multivariate logistic regression analysis was conducted to explore the association between HbA1c and 25(OH)D. **Results:** HbA1c>7.0% was reported in 55% of patients. The optimal criterion value for 25(OH)D was determined at 34.0 nmol/L and 37.6% had low vitamin D. The multivariate analysis found that 25(OH)D <34 nmol/L [1.65 (1.10,2.48)], triglycerides ≥1.49 mmol/L [1.65 (1.12,2.44)], low density lipoprotein ≥2.59 mmol/L [1.49 (1.01, 2.19), infrequent nut consumptions on monthly [2.36 (1.01, 5.49)] and yearly/never basis [2.81 (1.24, 6.37)] and daily rice consumption [2.81 (1.24,6.37)] were significantly associated with uncontrolled HbA1c. **Conclusion(s):** For better control of HbA1c, 25(OH)D levels should be maintained ≥34 nmol/L in our community. Dietary habits should encourage regular intake of nuts and limit the intake of carbohydrates and fatty foods.

A-1027: Improved glycaemic targets with adherence to inpatient hyperglycaemic guidelines

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Background: Managing diabetes in hospitalised patients can be challenging. Several factors in the inpatient setting cause fluctuations in the glycaemic control affecting the clinical outcome and mortality. The objective of this study was to assess whether adherence to Inpatient glycaemic management guidelines can improve glycaemic control. **Methods:** An audit of 150 non-critically ill, diabetic patients was performed. Average fasting and random glucose readings were recorded. Fasting and random glucose targets were defined as <140mg/dl and <180mg/dl respectively. The patients were categorised into 2 groups as to whether inpatient hyperglycaemic guidelines were followed or not. It was noted that management as per guidelines was applied in only in 37.3% of the cases. The blood glucose readings of both the groups were then analysed. **Results:** Following guidelines resulted in improved glycaemic control with fasting and random glucose targets being achieved in 69.6% and 85.7% respectively. In comparison the other group achieved lower targets (12% and 27.7% respectively).($p<0.001$). **Conclusion(s):** Glycaemic targets are more likely to be achieved if guidelines are followed. This data confirms that formation of local protocols would be beneficial in providing consistency in the physician's approach to managing hyperglycaemia in patients admitted with acute medical or surgical illness resulting in better outcomes for these patients.

A-1025: Euglycemic diabetic ketoacidosis in a patient with gestational diabetes mellitus and COVID-19 infection: A case report

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Background: Diabetic ketoacidosis (DKA) is a life-threatening medical emergency requiring urgent treatment. Euglycemic DKA is characterized by milder degrees of hyperglycemia with blood glucose level < 200 mg/dl, and may occur in patients with both type 1 and type 2 Diabetes Mellitus (DM), as well as pregnancy and settings of restricted calorie intake. The absence of marked hyperglycemia can result in delayed diagnosis and treatment, resulting in potential adverse outcomes. Diabetes is one of the major comorbidities, that is associated with severe hospital course and high fatality rate among patients with COVID-19 infection. It has recently been reported that COVID-19 infection is associated with hyperglycemic emergencies including DKA. We report our experience in a patient with gestational diabetes mellitus who developed euglycemic DKA and COVID-19 infection in her third trimester of pregnancy. **Case Report:** A 30-year-old lady at 29weeks gestation presented with two-day history of vomiting, diarrhea and abdominal pain. She reported good fetal

movements. She had been diagnosed with Gestational Diabetes Mellitus (GDM), receiving treatment with multiple daily injection regimen of insulin. On admission she was vitally stable and initial laboratory investigations showed ketonemia with normal glucose level and normal anion gap. She was treated as a case of starvation ketosis and dehydration, with intravenous fluids and electrolyte replacement. However, her symptoms worsened three days later and she developed hypotension. Earlier she tested positive for COVID-19 infection and chest imaging was suggestive of COVID-19 pneumonia. She received 2 units of COVID-19 convalescent plasma. Repeated laboratory investigations showed worsening ketosis with high anion gap metabolic acidosis, consistent with a diagnosis of euglycemic DKA. Insulin infusion was initiated, isotonic saline with electrolyte replacement was also continued. She symptomatically improved over the next two days, she also had resolution of ketonemia and closure of the anion gap. The patient was discharged with follow up in the outpatient clinic. **Conclusion(s):** Pregnancy is a high-risk period for DKA particularly when associated with other stressors that were identified in our patient - gestational diabetes mellitus; starvation due to vomiting; and COVID-19 infection. Prompt recognition of euglycemic DKA is critical in pregnancy, as this condition is associated with high fetal mortality rates.

A-1023: Prevalence of diabetes, management and outcomes among COVID-19 adult patients admitted in a specialized tertiary hospital in Riyadh, Saudi Arabia

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Background: This retrospective study aimed to characterize the common comorbidities and associated with mortality among hospitalized men and women with Covid-19 managed as per the Saudi Ministry of Health protocol in a single specialized tertiary hospital in Riyadh, Saudi Arabia. **Methods:** Medical records of 300 adult patients with PCR-confirmed SARS-CoV2 infection and admitted in King Salman Hospital (KSH) for Covid-19 from March 1 to July 31 2020 were included. Symptoms, medical history, management, biochemical tests and outcomes were noted and analyzed. **Results:** Males significantly outnumber females (259 versus 41). South Asians were the biggest demographic with 41% of all admitted patients. Saudis were the majority among females (48.8%). Mortality rate was 10% and was highest among Saudi males (28.9%). Type 2 diabetes mellitus (T2DM) was the most common comorbidity (45.7%). Almost all patients (99%) had pneumonia. Patients above 50 years were three times more likely to die (confidence interval, CI 1.3-6.9; p=0.01) from Covid-19. Only congestive heart failure (odds ratio OR 19.4, CI-1.5-260.0; p=0.02) and acute kidney injury (OR 11.7, CI-4.7-28.6; p<0.001) were significantly associated with higher mortality. Patients given with hydroxychloroquine and azithromycin were significantly less likely to die from Covid-19 by as much 88% and 97%, respectively (p-values <0.001). **Conclusion(s):** In this single-center study, T2DM is the most common comorbidity among hospitalized Covid-19 patients. Patients above 55 years, those with congestive heart failure and acute kidney injury are at higher risk for worse Covid-19 mortality. The use of hydroxychloroquine and corticosteroids appear to reduce mortality from Covid-19.

A-1022: The Childhood-Onset Diabetes Electronic Registry in Kuwait: What we learned and what we achieved

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Background: A national registry for diabetes is an effective public health tool for disease prevention and management, especially in countries like Kuwait where there is increasing number of children with type 1 diabetes (T1D). The aim of this study is to report on clinical characteristics of children with T1D registered at the Childhood-Onset Diabetes electronic Registry (CODeR) in Kuwait. **Methods:** This is a retrospective review of children with T1D aged 14 years or less registered in CODeR between the period of 2011-2017. **Results:** A total of 864 children aged 14 years or less (410 Males and 454 Females, p=not significant, ns) were newly diagnosed with T1D during the study period. Females were more likely to have an underweight/normal Body mass index (BMI) at diabetes presentation (p=0.001). Furthermore, females had a higher mean HbA1C at diagnosis (11.6 ±2.41, p<0.0001). Out of the total 864 patients, 287 had presented with Diabetic ketoacidosis (DKA) (35.9%) of which most were mild (133/287, 46.3%). From the year 2011 till 2017, the percentage of children older than 5 years of age presenting with severe DKA has been significantly decreasing [p=0.033]. **Conclusion(s):** We learned from the CODeR, that in Kuwait the diagnosis of T1D might be viewed culturally as a social stigma as females seem be diagnosed later with lower BMI and higher HbA1C. This must be tackled by raising more awareness in the community. However, we believe that through the registry process over the years, we have been able to significantly lower the percentage of older children presenting with severe DKA. Further intensifying efforts should be implemented to achieve such success with younger age groups.

A-1019: Integrating microvascular assessments into one clinic, in an annual one-stop approach

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Background: Uncontrolled diabetes can cause many chronic macrovascular and microvascular complications. Long term diabetes complications may already be present in type 2 diabetics by the time they are diagnosed, they can also appear soon after the onset of type 1 diabetes. Early detection and appropriate treatment are essential to prevent diabetes complications that may cause disability and death. Type 2 DM may cause microvascular complications such as retinopathy, nephropathy, and neuropathy. These microvascular complications are common and cause several degrees of visual impairment leading to blindness in retinopathy. Microvascular complications can cause proteinuria leading eventually to end-stage renal disease (ESRD) in nephropathy. Additionally, neuropathological complications can cause pain, numbness, and chronic recurrent infected ulcers in the extremities that may lead to amputation. Thus, screening for retinopathy, nephropathy, and neuropathy is vital in the secondary prevention of

diabetes microvascular complications. Therefore, having an annual screening for microvascular complications is recommended for diabetics, the screening for newly diagnosed type 2 diabetes is recommended at the time of diagnoses and for type 1 diabetes it is recommended 5 years after diagnoses. The main aim of the study is to test the effectiveness of a one stop screening clinic for retinopathy, nephropathy, and neuropathy for diabetic patients. In order to reach this aim, the first objective was to assess the feasibility of the one stop screening clinic. The second objective was to evaluate patient satisfaction. The third objective was to assess the diagnostic efficacy of two point of care devices which are DPN-Check and Sudoscan. **Methods:** This research study was designed as a cross-sectional observational study. The study was done during a period of 3 months from February to March 2019. We used convenience sampling to select participants who attended the screening clinic of the Diabetes Care Center at King Salman Hospital, Riyadh, Saudi Arabia. A total of 260 diabetic patients participated in the study. The inclusion criteria for the study was diabetic patients aged 18 to 70 years. Participants known to have medical issues other than diabetes were excluded from the study, patients with co-morbidities such as chronic heart, renal or liver diseases. Patients with bilateral cataracts were also excluded from the study. An informed consent was signed by each participant. Participants had their microvascular screening done by physicians, optometrists and nurses in the one stop clinic. The protocol and point of care devices were supervised by an endocrinologist and a neurologist. **Results**: The study included 260 participants, around 61% were female participants. The mean age of the participants was 51 years. Most of the participants were type 2 diabetic patient (93.5%). Patients' acceptance and satisfaction rates of the one stop clinic were 100%. Non-proliferative diabetic retinopathy prevalence was 11%. Meanwhile, the prevalence of maculopathy was 1.5%. The prevalence of micro-albuminuria was 18.6% and macro-albuminuria was 1.9%. Also, the prevalence of chronic kidney disease stage 3 was 4.2% and stage 4 was 0.4%. We found that neuropathic symptoms were present in 40.7% of the participants. The prevalence of diabetic peripheral neuropathy (DNP) according to the neuropathy disability score, which is our gold standard test was 13.8% and using 10-g monofilament test was 19.5%. Meanwhile, the prevalence of DNP according to DPN-check was 40.9%, and according to Sudoscan was 73%. **Conclusion(s):** It is feasible to have a one stop clinic service that combines retinopathy, nephropathy, and neuropathy screening. The one stop screening clinic showed prevalence rates of retinopathy, nephropathy, and neuropathy similar to those found in other studies done nationally and internationally. Thus, the one stop clinic approach can detect microvascular disease, it is highly accepted, and reduces clinical visits. Therefore, applying a one stop microvascular screening clinic in the diabetes care centers in Saudi Arabia could be very effective for early diagnosis of diabetes microvascular complications. Finally, more research should study the cost effectiveness of using non-invasive point of care devices for assessing both large and small nerve fibers for diagnosing DPN.

A-1014: Clinical profile of adult patients with type 1 diabetes mellitus in Arabian Gulf Countries

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Background: Optimum glycemic control is necessary to reduce the risk of micro- and macrovascular complications of type 1 diabetes mellitus (T1DM) (1,2). Several studies suggest that the majority of T1DM patients do not achieve their glycemic targets (3,4). The primary objective of this study was to assess the prevalence of adequate glycemic control (HbA1c < 7%) in adult patients with T1DM from Kuwait, Bahrain, Oman, and the United Arab Emirates (UAE). Additionally, possible obstacles to optimal glycemic control were investigated. **Methods:** This was an observational, cross-sectional, multicenter disease registry. Data were collected from adult patients with T1DM treated with insulin within 6 months prior to the study entry. **Results:** A total of 241 patients were eligible for primary endpoint analysis. There were 99 patients from Kuwait, 77 from UAE, 67 from Bahrain, and 18 from Oman. Mean (SD) age was 31.6 (9.4) years, and 53% of the study population were males. The mean (SD) duration of diabetes was 14.6 (9) years and the mean HbA1c was 8.11 (1.8) %. In total, 27.4% (n=66) had adequate glycemic control at the time of the study; 44% (n=29) from UAE, 30% (n=20) from Kuwait, 18% (n=12) from Bahrain, and 8% (n=5) from Bahrain. Only 1.9% of the patients had experienced severe hypoglycemia in the two months preceding the study. Older age, lower body mass index, higher frequency of probable symptomatic hypoglycemia in the two months prior to the study, lower HbA1c at the time of T1DM diagnosis, and family history of diabetes were all significantly associated with adequate glycemic control. **Conclusion(s):** Glycemic control of adult patients with T1DM in Kuwait, UAE, Oman and Bahrain is suboptimal. More efforts are necessary to identify the causes of inadequate control in this population.

A-1007: Maternal obesity influences birth weight more than gestational diabetes

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Background: Maternal obesity and gestational diabetes (GDM) are commonly encountered during pregnancy. Both conditions are independently associated with unfavorable pregnancy consequences. The objective of this study was to compare the effects of obesity and GDM on birth weight, macrosomia, and other adverse pregnancy outcomes. **Methods:** This was a prospective study involving 531 women with a singleton pregnancy attending the Maternity and Children's Hospital, Medina, Saudi Arabia. Participants underwent a 75-g oral glucose tolerance test between 24 and 32 weeks. The International Association of Diabetes and Pregnancy Study Groups criteria were used for GDM diagnosis. BMI was assessed at the first antenatal visit, and obesity was defined as a BMI ≥30.0 kg/m2. Women were divided into 4 groups: non-GDM nonobese (reference group), GDM nonobese, obese non-GDM, and obese GDM. Clinical characteristics and adverse pregnancy outcomes were compared. **Results:** The mean age and BMI of the participants were 30.5 years and 29.3 kg/m2, respectively. Obese women with GDM were the oldest and heaviest among all women. The mean birth weight increased in order among the four groups; it was highest in the infants in the obese GDM group, followed by those in the obese non-GDM, GDM nonobese and reference groups. Obesity and GDM alone or in combination were associated with higher rates of macrosomia and cesarean deliveries than the reference group. Neonatal intensive care unit (NICU) admission was higher in infants in the GDM nonobese and obese GDM groups. The rate of low Apgar score was significantly higher in infants in the obese GDM group than in infants in the reference group. **Conclusion(s):** Maternal obesity seems to influence birth weight more than GDM, while GDM is associated with a greater risk of admission to the NICU. The combination of both conditions is associated with the greatest risk of adverse pregnancy outcomes.

A-1005: Evaluating the user preference and level of insulin self-administration adherence in young patients with type 1 diabetes: Experience with two insulin pen needle lengths

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Background: Selecting the appropriate insulin pen needle is important to reduce pain and injection-related adverse events like insulin leakage. It also helps to improve medication adherence and glycemic control in patients with type 1 diabetes mellitus (T1DM). This study aimed to compare the 6-mm and 8-mm 32.5-gauge insulin pen needles in terms of glycemic control, pain score, user preference, medication adherence, and injection adverse events in patients with T1DM. **Methods:** We conducted a prospective cohort study of 62 patients with T1DM. All patients constituted an experimental group initially and then changed the length of the needle to be part of a self-control group. The glycemic control, visual analog scale (VAS) pain score, Morisky Medication Adherence Scale (MMAS) score, needle attribute score, and injection-related adverse events were measured for all patients with both lengths of needles. Patients were assessed at the baseline visit and followed up for three months. Statistical comparisons were done by the chi-squared test, paired t-test, and paired Wilcoxon test when appropriate with a two-tailed alpha level below 0.05 indicating statistical significance. **Results:** With the NanoPass® 32.5-gauge, 6-mm needle (Terumo Corp., Tokyo, Japan), patients had significantly lower glycated hemoglobin (HbA1c) compared to 8-mm needles (7.9% vs. 8.3%; p<0.001). The proportions of patients who reported no hypoglycemic episodes were 22/62 and 9/62, with the 6-mm and 8-mm needles, respectively. The 6-mm needles were better in terms of the following parameters compared to 8-mm needles: mean needle attribute scores (36.7 vs. 24.2; p<0.001), median VAS pain scores (20 vs. 55; p<0.001), insulin leakage (6/62 vs. 20/62; p=0.002), and the MMAS score (4.9 vs. 3.4; p<0.001). **Conclusion(s):** This study provided an overview of the safety, adherence, pain score, and glycemic control relating to the 6-mm and 8-mm insulin needle lengths. Insulin injections using the NanoPass 32.5-gauge, 6-mm needle were associated with lower pain score, higher patient adherence, fewer adverse events, and better glycemic control compared to the 8-mm needle. Therefore, we recommend the use of the NanoPass 6-mm needle for patients with T1DM. Further studies are needed to confirm these findings in patients with type 2 diabetes mellitus (T2DM).

A-1004: Patient satisfaction and clinical efficacy of novel blood glucose meters featuring color range indicator in patients with type 2 diabetes: A prospective study

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Background: Self-monitoring-of-blood-glucose (SMBG) is a key pillar of diabetes management. The Contour®Next One glucometer is a modern glucometer which gives blood glucose results by instant color indicator to alert users when blood glucose is at a critical high or low. The aim of the study was to evaluate the influence of an implementation of blood glucose meter (BGM) featuring a color range indicator on clinical characteristics and glucose monitoring satisfaction (GMS) in patients with type 2 diabetes (T2D). **Methods:** A total of 85 patients with T2D were switched to a BGM featuring smartLIGHT target range indicator using Contour®Next One glucometer. Demographic data as well as glycemic control were analyzed at baseline and 12 weeks. After initiation of the study a trained interviewer handed over the GMS survey to each patient, at the baseline and at 12weeks of the study. In addition, a patients perceptions of smartLIGHT feature satisfaction survey questions were collected from the patients at the end of the study. **Results:** A substantial augmentation was noticed, in the sub domains of GMSS, that is, openness (P=.0001), emotional burden (P=.0001), behavioral burden (P=.0001), and trust (P=.0001) at 12weeks as compared to baseline. Overall, the total GMSS score at baseline was 2.61±0.51, which increased up to 3.16±0.63 (P=.0001) during the time period of 12weeks. The patient satisfaction with smartLIGHT survey results showed a clear satisfaction among the study population at the end of the study. There were an insignificant improvement observed in HbA1c and the frequency of hypoglycemia at the end of the study. **Conclusion(s):** A significant improvement in the sub domains of GMSS, which includes openness, emotional burden, behavioral burden, and trust, at 12weeks than at the baseline, with the increased total GMSS score. Similarly, a high satisfaction with colr based smartLIGHT feature was also observed at the end of the study.

A-1002: Are we aware of hybrid forms: Two case reports of ketosis-prone diabetes

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Background: Ketosis-prone diabetes (KPD) is defined as a hybrid form of diabetes mellitus, which is predominantly seen in overweight-to-obese men. Although the diagnosis is based on diabetic ketoacidosis (DKA) as a presenting feature, which also is characteristic of type 1 diabetes; the course of the disease differs from type 1. Recognition of this form by the clinicians is important as these patients are negative for autoantibodies and share the characteristics of type 2 diabetes during follow up. Here we report two cases of KDP, presenting with DKA and maintaining normoglycemia without insulin after receiving short-term intensive insulin treatment. **Methods:** Ketosis -prone diabetes (KPD) has been recognized as a clinical entity for the past 30 years. The condition is defined as a syndrome in which diabetes commences with ketoacidosis in individuals who are anti-glutamic acid decarboxylase (anti-GAD) and anti-islet cell (anti-IC) antibody negative and have no known precipitating causes. Here, we report two cases of KPD, presenting with severe diabetic ketoacidosis DKA , one of which was first misdiagnosed as type 1 diabetes. Both were able to be controlled with lifestyle modifications and/or the use of oral antidiabetics after less than six months of treatment with insulin. **Case Series: Case 1 -** A.S., a 31-year-old Palestinian male, attended an internal medicine outpatient clinic in March 2018 because he had been experiencing malaise and polyuria over the past two months. He had no polydipsia or polyphagia and did not complain of nausea, vomiting, or abdominal pain. A comprehensive review did not reveal any other symptoms. He had no history of chronic disease and no family history of diabetes. On examination, the patient was obese, with a body mass index (BMI) of 30 kg/m2, however, his vitals were within normal range. Though a systemic examination was normal, a random blood sugar (RBS)

measurement from a fingerprick was 445 mg/dl. Arterial blood gas (ABG) on the same day showed metabolic acidosis with a pH of 7.26 and bicarbonate (HCO3) levels were 16.6 mmol/L. On biochemical analysis, RBS was 381 mg/dl, urine analysis showed 2+ ketonuria, and HbA1c was 16%. Fasting c-peptide levels were 3.22 ng/ml, which was again within normal limits. Liver enzymes and renal function studies with electrolytes were all normal, apart from triglyceride and low density lipoprotein, which were 250 mg/dl and 188 mg/dl, respectively. The patient rejected admission to the hospital despite being given detailed counselling, however, he agreed to receive basal-bolus insulin at home followed by glucose six times per day. He was prescribed 24 units of insulin glargine, along with eight units of insulin aspart, for each meal. He returned to the clinic three days later and reported no symptoms. His FBS averaged 150 mg/dl, with postprandial glucose (PPG) levels ranging between 175 and 220 mg/dl. Repeat testing for urine showed 2+ ketonuria with relative improvement in ABG, with a pH of 7.35 and HCO3 at 19 mmol/L. Insulin doses were adjusted according to an FBS target level of less than 125 mg/dl and PPG target levels not exceeding 150 mg/dl. The patient was asked to follow up with the clinic after a further five days. Eight days after the diagnosis, FBS was less than 120 mg/dl and PPG ranged between 135 and 155 mg/dl. The last ABG reading showed totally normalized pH and HCO3 levels. Ketonuria had also resolved. Test results for anti-GAD, anti-IC, and anti-insulin antibodies were all negative. The patient was asked to follow up after two weeks, but did not attend his appointment. However, he returned to the clinic three months later, during which time he had adjusted his insulin doses so that he was taking only 12 units of insulin glargine and four units of insulin aspart prior to every meal. He had adopted a vigorous exercise program and a low carbohydrate diet and lost 6 kg in 12 weeks. At that visit, his HbA1c was 7.6% with no acidosis or ketonuria. Short-acting insulin was discontinued; basal insulin was prescribed at the same dose but with a metformin/sitagliptin combination at 1,000/50 mg twice daily . At his next appointment, HbA1c levels were 6.6 and the patient had lost a total of 10 kg. Over subsequent visits, the patient's HbA1c levels dropped to 6.2% and, after one year, the patient is only taking metformin at a dose of 750 mg twice daily, without insulin [Table 1]. **Case 2 -** J.M., a 35-year-old Pakistani male, visited an outpatient clinic in August 2019 to follow up on a diabetes diagnosis that he had received six months earlier in Pakistan. He had no history of chronic disease and there was family history of diabetes. He was thought to have had type 1 diabetes, since he had presented with acidosis with a pH of 7.2 and HCO3 levels of 15, 2+ ketonuria with glucose levels of 510 mg/dl, and his HbA1c was 12.3%. However, his BMI was 31.2 kg/m2 and he had not been following a healthy diet. He was not tested for either c-peptide or autoantibodies. After recovering from DKA, he was discharged and prescribed mixtard insulin at a dose of 15 units each morning and 10 units each evening, however, he experienced several hypoglycemic attacks on this medication and adjusted the insulin doses himself to a maximum of 10 units per day. During the following six months, he lost around 20 kg thanks to a diet and exercise regimen. At the time of his first visit to our clinic, his BMI was 23.9 kg/m2. To confirm a diagnosis, anti-GAD, anti-IC, and anti-insulin antibodies, as well as c-peptide levels and routine biochemistry, were tested. HbA1c was 5.7, c-peptide was within normal limits (2.03 ng/ml; range: 0.78-5.19 ng/ml), and all autoimmune antibodies were negative. After a one-week trial period during which time he discontinued insulin, the patient's FBS did not exceed 105 mg/dl; however, his PPG reached a maximum of 138 mg/dl. He was asked to continue only with his dietary regimen. Three months after his first visit to our clinic, HbA1c controlled without insulin was at 5.4%. Nine months after his first diagnosis, with diet and regular exercise only, his HbA1c was at 5.7% HbA1c, c-peptide levels, and autoantibody status of each case. Results before and after the slash (/) are for case 1 and 2, respectively. Figures 1 and 2: Case 2, before and after weight loss, respectively. **Discussion:** KPD is defined as a heterogeneous syndrome characterized by patients who present with DKA or unprovoked ketosis but who do not have the typical phenotype of autoimmune type 1 diabetes. These subjects are usually obese and have a low prevalence of autoimmune markers. At presentation, they usually have impairment in both insulin secretion and insulin action. Aggressive diabetes management leads to significant improvement in cell function and insulin sensitivity, sufficient to allow discontinuation of insulin therapy within a few months of treatment. Upon discontinuation, the period of near-normoglycemic remission may last from a few months to several years. Patients newly diagnosed with ketoacidosis, particularly those that are overweight or obese, are more likely to demonstrate clinical and immunologic features of type 2 rather than type 1 diabetes during follow-up appointments. For this reason, the name "type 1B diabetes" was recently updated by the World Health Organization classification to "ketosis-prone type 2 diabetes," a term which distinguishes it as a hybrid form of the disease Insulin secretion in KPD is impaired in several ways. The beta cells of patients with severe hyperglycemia with or without ketosis lose the ability for exogenous or endogenous glucose to stimulate beta-cell insulin secretion. The ability of glucose to stimulate insulin secretion begins to return after two weeks of normoglycemic treatment and maximizes by eight to 12 weeks. In terms of alpha- and beta-cell function, a case-control study that took place in France found that glucagon suppression after glucose infusion was impaired in patients with KPD; however, fasting plasma glucagon did not differ between normal subjects and KPD patients.Umpierrez et al. assessed the possibility that patients with KPD might have increased sensitivity to lipotoxicity, finding that there was no difference in beta-cell response in patients with KPD as compared to obese patients who had presented with severe hyperglycemia or non-diabetic obese controls after 48-hour lipid infusion. In summary, the exact causes of the development of severe hyperglycemia in overweight or obese patients with KPD remain unknown. However, the inability of glucose to stimulate insulin secretion appears to be its central mechanism. **Conclusion(s):** Accurate diagnosis of KPD in overweight-to-obese patients who present with DKA is of paramount importance, since the symptoms these patients exhibit are more likely to be similar to type 2 diabetes rather than type 1, thus requiring close monitoring during off-medication periods. Clinicians should also be aware that hybrid forms of diabetes are on the rise. With regards to patient follow-up, it is worth bearing in mind that insulin secretagogues such as sulfonylureas have been shown to prolong the remission period and, if oral antidiabetics are needed, that SGLT-2 inhibitors should be avoided because of the risk of acidosis.

A-1000: Study to evaluate type 2 diabetes mellitus patients for their knowledge, beliefs and practices towards diabetes and diabetic foot specifically and how professional education can change these parameters

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Background: Diabetic foot syndrome is one of the common and most devastating preventable complications of diabetes mellitus (DM). It is associated with morbidity and premature mortality due to long-term complications affecting foot. Lower extremity disease,

which includes foot ulceration, peripheral neuropathy, peripheral arterial disease, or amputation, is twice as common as in people with diabetes when compared with healthy individuals. In DM, the annual incidence of foot ulcer ranges from 1.0%–4.1% to 4%–10% of prevalence rate, which suggests that the lifetime incidence may be as high as 25%. (1) The prevalence of foot problems is higher in low socioeconomic groups due to poor glycemic control and improper care of foot. The direct and indirect cost involved in the treatment of foot problems in patients with diabetes is enormous. There is an urgent need to implement preventive measures to reduce the cost burden of the patients and the society. The American Diabetes Association recommends that people with diabetes should have a comprehensive foot examination once per year. (2) Most of the foot problems can be prevented with careful foot care. It may take effort and time to build up good foot care habits, but self-care is essential. Furthermore, the use of inappropriate foot wear tends to further expose the foot to injury. Along with this, the practice of not wearing socks results in a hyperkeratosis and fissured heel or a callosity of the first interdigital space or injury to the great toe. Hence, this study was planned. **Methods:** In this study we will compare awareness of 50 patients of type 2 DM about diabetic foot disease and the diabetic education system. At outpatient clinics, a questionnaire consisting of 40 questions concerning awareness about diabetes and diabetic foot disease will be given to patients. Every answer will be scored and a total score will be obtained for each patient, then will accordingly start professional educational program to improve their status, then reevaluate. **Results:** There was a statistically improvement in lot of parameters about KAP in the 50 patients enrolled in the study.which denotes that strengthening the educational programe will definitely improve the heath status and the control of diabetes. **Conclusion(s):** The main aim of the study is to analyze the knowledge, attitude, and practice of foot care in patients with DM type 2 before and after starting professional education program to improve consciousness for diabetic foot lesions and increase the awareness of patients regarding this complication.

A-1077: The Association of anti-Mullerian hormone (AMH), thyroid stimulating hormone (TSH) and insulin resistance in Omani women with polycystic ovarian syndrome (PCOS)

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Background: Although PCOS is the commonest endocrine disorder in women of reproductive age, it's pathogenesis is still not clearly understood. Recently AMH was implicated with symptoms and severity of PCOS. Additionally, an association between elevated TSH and insulin resistance was reported. To our knowledge this is the first study aiming to determine the association between AMH and TSH levels with impact on insulin resistance among Omani women diagnosed with PCOS. **Methods:** We conducted a prospective case-control study including 50 cases and 50 controls (Omani women) in reproductive age (16-49 years) attending the Gynaecology clinic at Sultan Qaboos University Hospital from September 2019. Cases fulfilled the Rotterdam criteria for PCOS. Controls were randomly selected from non-pregnant women who were not diagnosed with PCOS. Other endocrine disorders were excluded. Statistical Package for the Social Sciences (SPSS) program version 25 was used to analyze the collected data. P-value of 0.05 or less was considered significant. **Results:** We found 55 % of cases and 46 % of controls were obese. Additionally, 34.7% of cases and 36.0% of controls had HbA1C levels between 5.7%-6.4 %, however 10.2% of cases and no controls had diabetes. Cases had higher serum AMH levels than controls ($P < 0.05$) with mean AMH 34.38 pmol/L (4.8 ng/ml) and 11.4 pmol/L (1.6 ng/ml) respectively. A significantly higher percentage of cases 34.0% (n=25) expressed elevated TSH, in contrast to controls 16.0% (n=15) with cut-off of 2.5 (mIU/L), P= 0.028. In addition, a positive relationship was seen with an odds ratio of 1.3 for TSH more than or equal to 2.5 mIU/l and severe insulin resistance. **Conclusion(s):** Omani women with PCOS exhibited elevated AMH values and a positive association between TSH 2.5 mIU/l or greater and severe insulin resistance. Further research is required to study the risk factors for PCOS in Oman.

A-1112: 46 XX pure gonadal dysgenesis: A rare cause for primary amenorrhoea

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Background: Case report of 17 year old girl who presented with primary amenorrhoea. **Results:** 46 XX gonadal dysgenesis with hypergonadotropic hypogonadism and normal phenotype. **Conclusion(s):** 46 XX Pure gonadal dysgenesis is a rare case of Primary amenorrhoea which requires early diagnosis and prompt treatment with hormone replacement.

A-1106: Graves' disease associated with primary amenorrhea and premature ovarian failure: A case report

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Background: Primary ovarian insufficiency (POI), also known as premature ovarian failure or premature menopause, is defined as cessation of menstruation before the expected age of menopause. The authors report a 24 years old female diagnosed with graves disease when she was 12 years old. She received definite treatment with radioactive iodine ablation that time and she was clinically euthyroid on thyroxine replacement since then . The patient presented to our clinic at age 23 years old, her menarche did not started. She has no acne, hirsutism, skin hyperpigmentation or galactorrhea. The diagnosis of premature ovarian failure was established and confirmed by her high FSH, LH and low Estradiol. Her genetic study has ruled out mosaic Turner Syndrome and it was 46, XX. She has normal thyroid function, androgens and prolactin levels. **Methods:** Case Report. **Results:** This case illustrates a very rare presentation of a female patient who had graves disease during her childhood, associated with primary amenorrhea due to premature ovarian failure. Thyroid autoimmunity is the most common coexistent endocrinopathy in type 1 diabetes (T1D), Addison's disease, and premature ovarian failure (POF).There is no consensus on criteria to identify primary ovarian insufficiency in adolescents, and delay in diagnosis is common. **Conclusion(s):** Early recognition and diagnosis of patients at risk of premature ovarian failure is essential. POF treatment with hormonal replacement is important to avoid

complications associated with hypoestrogenemia like osteoporosis. Infertility is an important issue for patients with premature ovarian failure (POF), but patients still have a 5-10% chance to conceive following diagnosis.

A-1092: Development of the first health-related quality of life questionnaires for Arabic women with polycystic ovary syndrome: Formation, reliability analysis, and validation of the PCOSQoL-47 and PCOSQoL-42 questionnaires

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Background: We lack a reliable and validated HRQoL questionnaire to measure negative impact of PCOS on different life aspects for Arabic women which address sexuality in married women only. We aimed to develop two simple, reliable, validated, interpretable, Arabic HRQoL questionnaires for married and unmarried women with PCOS separately for effective QoL evaluation **Methods:** PCOSQoL-47 and PCOSQoL-42 development passed three quantitative and qualitative phases. Phase (1) included 158-items retrieval from 584 PubMed articles, item reduction, Arabic translation, content and face validity, creating five-domains draft (married-53 items and unmarried-45 items), no sexuality domain for unmarried women. Phase (2) involved test-retest reliability, using Spearman's correlation, Wilcoxon nonparametric-signed rank, and internal consistency using Cronbach's-alpha, inter-item, and intra-class correlation coefficients, creating second draft (married-47 items and unmarried-42 items). Phase (3) included construct validity analysis by comparing domains of present questionnaires to the corresponding domains from well-validated comparator scale (WHOQOL-BREF). **Results:** Content validity indices testing by 26 healthcare experts decreased item pool to (married-57 items and unmarried-45 items). Face validity by another 30 experts and 30 women from each group resulted in further reduction to (married-53 items and unmarried-45 items), to be tested in pilot study which included another 30 women from each group. Test-retest reliability analysis by (195 married and 173 unmarried women), revealed significantly excellent redundancy, reliability, and stability of items (highly significant Cronbach's alpha and ICC by internal consistency testing), and reduced the item pool to (married-47 items and unmarried-42 items). Questionnaires' construct validity was tested by evaluating the responses of 768 women with PCOS within a year, and found moderately to highly significant stability with high capability to measure the requested construct with high validity. **Conclusions:** Both questionnaires are highly reliable and validated for HRQoL evaluation for Arabic married and unmarried women with different phenotypes of PCOS.

A-1084: Evaluation of generalized acquired hypoactive sexual desire disorder in premenopausal women in Basrah: A clinic-based study

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Background: Hypoactive sexual desire disorder (HSDD) is the persistent or recurrent deficiency (or absence) of responses to sexual and erotic cues. The goal of this study was to evaluate the HSDD frequency in a sample of premenopausal women with low sexual desire in Basrah. **Methods:** We conducted an observational cross-sectional study on 102 premenopausal women with previously normal hormonal and metabolic workup who presented with different degrees of low sexual desire for > 6 months before presentation, to be screened with Decreased Sexual Desire Screener Questionnaire. A thorough sexual history with the relevant clinical examination, with the aid of testosterone estimation, insulin resistance, hirsutism, and androgenetic alopecia screen by modified Ferriman–Gallwey score and Sinclair's score, respectively, aided in the diagnosis of primary and secondary HSDD and the possible hormonal and physical factor linkage. **Results:** Diagnosis of HSDD was achieved in 44 women, 10 women had primary (generalized acquired), and 34 women had secondary HSDD. No significant relationship could be elicited between the hypoandrogenism and the diagnosis of HSDD of either type. The age at marriage and the frequency of sexual relationships preceding the initial concern had a significant relationship with the diagnosis of HSDD. Still, neither the duration of marriage nor the biophysical and biochemical profile showed any significant relationship to the final diagnosis. **Conclusion(s):** The diagnosis of HSDD in women is multifactorial, and involves the contribution of psychosocial and clinical factors, with age at marriage and recent frequency of sexual activity during the last month as significant factors in the diagnosis of the primary type. Testosterone level has no significant association with the diagnosis.

A-1088: Perspective of self-diagnosis from sex education

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Background: 5α-reductase deficiency is a rare disorder described worldwide. The genitilia could appear male, female or ambiguous at birth. During puberty secondary sexual characteristics may develop but due to lack of 5 hydroxy testosterone very little facial or body hair develop. Nevertheless, even in patients carrying the same homozygous mutation, a variable phenotype was observed, suggesting that additional genetic factors might be influencing it.1Mutation in SRD5A2 gene, inherited recessively, causes 5 alpha reductase deficiency. This enzyme is essential for the conversion of testosterone to Dihydrotestosterone (DHT). DHT is needed for development of external genitalia in particularly in the male. Female carriers of SRD5A2 gene do not exhibit any physical changes. Gender identity in patients with 5 alpha reductase deficiency raised as females was in conformation with being female and heterosexual in the majority of patients. **Methods:** 12,5 year old well patient presented to her GP when she realised that her external genital appearance was different to normal at a recent biology lesson. She was referred to the gynaecology, paediatric and endocrine services for absent secondary female genitalia. Clinically, the patient came across as an intelligent and articulate girl. Her weight was on the 50th centile, height on the 91st centile, normal blood pressure and nil of note on clinical examination. Pubertal assessment was Tanner 1 for breast and pubic hair with no axillary or facial hair. There was significant clitoromegaly with fused labia minora but separate labia majora with no evidence of a vaginal orifice, with urethra visible on the underside of the tip of the clitoris. **Results:** A pelvic ultrasound revealed absent intraabdominal ovaries or testes, uterus and vagina. The kidneys appeared normal with no evidence of adrenal hyperplasia. The diagnosis

of 5α-reductase deficiency was confirmed via a urine steroid profile demonstrating a low concentration of total corticosterone metabolites (274 ug/24h (mean for normal child 11-16y 533 with standard deviation 165). Chromosomal investigations showed a XY karyotpype. The serum testosterone was raised at 13.9nmol/L (female range: 0-0.98) and low serum oestradiol <37 pmol/L (0-345). **Conclusion(s):** The patient was happy with female gender identity. GnRH blockage and oestrogen replacement was commenced. Psychological support and ongoing paediatric endocrinology review is ongoing. Correctional surgery will be considered at a later stage. This rare cause of DSD needs an index of suspicion for accurate diagnosis in order to offer the patient options of treatment. These may involve DHT cream if virilisation desired, oestrogen therapy, surgery both correctional and gonadal removal and psychological support if needed.

A-1053: Differentiating Sawyer syndrome and complete androgen insensitivity syndrome: A diagnostic dilemma

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Background: Swyer syndrome is classified as a disorder of sex development (DSD), which encompasses any disorder in which chromosomal, gonadal or anatomic sex development is abnormal. People with Swyer syndrome have XY karyotype with a female phenotype having typical female external genitalia, normally developed Mullerian structures but undeveloped, residual gonadal tissue (streak gonads). We present a Swyer case where Mullerian structures could not be visualized and the differential diagnosis between Swyer syndrome and Complete androgen insensitivity syndrome was difficult. **Conclusion(s):** This case highlights the difficulties encountered in the diagnosis of 46XY DSD. Visualization of Mullerian structures is sometimes difficult. In order to make a correct diagnosis it is important to do excessive screening. Hormone Replacement therapy could lead to growth of "hidden" uterus as evident from literature. Performing diagnostic laparoscopy with histopathological examination of gonadal tissues is sometimes necessary for diagnosis.

A-1109: Giant adrenal pheochromocytoma presenting with stroke: A case report

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Background: Pheochromocytomas and paragangliomas (PPGLs) are rare neuroendocrine tumours arising from the adrenal medulla or from paravertebral ganglia of the sympathetic chain. The tumours commonly produce one or more catecholamines: epinephrine, norepinephrine, and dopamine leading to a classic triad of presentation with pounding headache, profuse sweating, and palpitations occurs in spells; However, one in 10 patients may be completely asymptomatic and the diagnosis of PPGL is frequently missed. Surgical resection is the treatment of choice, but perioperative medical management is essential as hypersecretion of catecholamines can be life threatening perioperatively. Medical management includes intravascular volume expansion to reverse catecholamine induced plasma volume contraction and avoid post-operative hypotension. Alpha adrenergic receptor blockade is recommended to prevent perioperative cardiovascular complications. The Endocrine Society recommends 7 to 14 days preoperative medical treatment to allow adequate time to normalize blood pressure and heart rate. **Case Report:** A 29 years old African female presented with one-month history of throbbing headache, palpitations, profuse sweating, and unintentional weight loss. Her previous medical history and family history was unremarkable. She was found to have accelerated hypertension and a small lacunar infarct and some suspected subarachnoid hemorrhage on MRI head but was clinically silent. Investigation for secondary causes of hypertension revealed high metanephrine in urine and her imaging showed giant adrenal mass suggestive of pheochromocytoma. She was scheduled for open resection and left adrenalectomy after 10 day and was treated with high-sodium diet, alpha blockers, and beta blockers perioperatively. Histopathology examination revealed Pheochromocytoma measuring 8 x 7 x 5 cm with diffuse growth >10% of tumor volume with central necrosis; PASS =4, which has malignant potential. She recovered well post operatively and required no further antihypertensive therapy or hormonal replacement, follow up hormonal profile and imaging with Iodine-123 metaiodobenzylguanidine (MIBG) scintigraphy were negative for remnants or metastasis, further evaluation with gallium DOTATATE PET CT and molecular genetic testing was considered, but it was not available. **Conclusion(s):** Pheochromocytoma is a rare cause of secondary hypertension with a variable clinical presentation. Episodes of tumoral catecholamine release, are thought to be responsible for the high prevalence of cardiovascular emergencies, such as myocardial infarction, heart failure, and stroke as a complication of hypertensive crisis. Timely diagnosis and treatment are crucial to prevent life-threatening complications.

A-1100: Catastrophic presentation of a ruptured pheochromocytoma: Case report

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Background: Pheochromocytoma is a catecholamine-secreting tumor, encountered in less than 0.5% of patients with hypertension and around 4% of patients with adrenal incidentaloma. It classically presents with episodic headache, sweating, and hypertension but rarely can present with serious complications such as hypertensive, pheochromocytoma crisis, and hemorrhagic shock. **Case Report:** We report a 49-year-old male patient with a history of hypertension for five years on Amlodipine but not compliant. Presented to the Emergency Department with sudden onset left severe flank pain associated with one episode of vomiting for six hours. Vital signs were stable, and basic labs were within normal. Bedside ultrasound couldn't appreciate any abnormality due to obesity, urinary tract CT-scan showed a large heterogeneous non-enhancing mass, possibly hematoma arising from left adrenal gland. Afterward, his condition deteriorated rapidly, he became hypotensive, and hemoglobin level dropped from 14 to 8gm/dl within a few hours. He became agitated with a worsening level of consciousness, so he was admitted under the medical intensive care unit (MICU) and required intubation and started on mechanical ventilation. Abdominal CT-angiography was done to look for any active bleeding, showed re-demonstration of the same lesion in the left adrenal without contrast enhancement or extravasation. He underwent urgent explorative laparotomy that showed ruptured large left adrenal hematoma, which was entirely evacuated with the adrenal tissue, his vital signs were maintained stable during the surgery. Postoperative course showed uncontrolled

blood pressure requiring three anti-hypertensive medications; otherwise, he had gradual improvement until successful weaning, and returned to his baseline. The histopathology result was suggestive of pheochromocytoma with extensive bleeding. **Conclusion(s):** Ruptured pheochromocytoma is an extremely rare presentation of hemorrhagic shock and needs a high index of suspicion. In our patient, the lack of classical presentation and imaging features of pheochromocytoma combined with the condition rarity made the diagnosis very challenging. Urgent surgical intervention may be warranted, and multidisciplinary perioperative preparation is the key to a favorable outcome.

A-1089: Pancreatic neuroendocrine tumour masquerading as Cushing's syndrome: A case report

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Background: Ectopic Cushing syndrome (ECS) is commonly associated with bronchial carcinoids and small cell carcinoma of the lungs. ACTH producing pancreatic neuroendocrine tumor (PNET) is very rare, and tends to be diagnosed very late. We describe one such case that presented very late with unrespectable PNET and multiple metastases. **Methods:** A 30 years old female presented to the endocrine outpatient department with recent-onset diabetes, weight gain, severe low backache, amenorrhoea, the rapid darkening of the skin, proximal muscle weakness, and uncontrolled hypertension despite multiple antihypertensive drugs. O/E Blood pressure was 171/107 mm of Hg, moon face, central obesity, facial acne, hirsutism, abdominal striae, and taenia corporis all over the body. **Results:** Blood tests revealed hypokalaemia with metabolic alkalosis (pH: 7.576 and HCO3: 23.7 mmol/L); which improved with treatment. Endocrine tests are shown in confirmed ectopic Cushing's syndrome. A CECT abdomen showed a mass lesion of size 4.7 x 3.9 x 4.4 cm in the pancreatic body and tail with liver metastasis. Ultrasound-guided FNA Cytology was done from the pancreatic and liver lesion conformed PNET. Treatment: She was started on Somatostatin LA 30 mg S.C injections monthly and oral tablet everolimus 10 mg od for one month as palliative chemotherapy. Outcome and Follow-up: She had some improvement while on chemotherapy. She was not able to afford further treatment due to financial constrain. She died in August 2020; 18 months after diagnosis of PNET. **Conclusion(s):** Early detection of such cases is of utmost importance, as total surgical resection is the only hope for a cure. Patients with advanced disease may benefit from targeted therapies, however, the currently available drugs are costly and there is a need for the development of cheaper alternatives for better patient care.

A-1087: Adrenocorticoid functioning oncocytoma in paediatrics: How puberty can be tricked!

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Background: Paediatric adrenocorticoid tumours (ACT) are rare in children, with a global incidence of 0.3/million (Bonfig *et al*., 2003), although the incidence increases with age (McHugh, 2007). Risk factors for childhood onset form include female sex (2:1) although this equalises by adolescence (McHugh, 2007). Clinical presentation tends to involve marked virilisation, with clitoromegaly and hirstutism among females, and gynaecomastia among males. In contrast to adult ACTs, the majority of childhood ACTs are hormone-secreting. Other associated features include hypertension (43%), and Cushing's Syndrome. Oncocytomas arising from the adrenal gland are rare ACT subtypes, with a predominance of granular eosinophilic cytoplasm (Poretti *et al*., 2003). Whilst the majority of such tumours have been detected with recent advances in cross sectional imaging techniques, as 'incidentalomas', the following case report describes the clinical presentation and endocrine profile of a rare case of secretory oncocytoma in adolescence. **Methods:** A 16 year old female patient was referred by the paediatric outpatient department to the gynaecology and endocrine clinic with amenorrhoea, hirsutism and acne. She had been treated for nine weeks with the combined pill by her GP and did not have a withdrawal bleed. Bloods showed raised serum testosterone 10.2nmol/L (0.49-1.7), low SHBG 8.1nmol/L (11-98), raised Free Androgen Index 125.9nmol/L (0.5-7.3), with normal random cortisol, 17-OH progesterone, androstenedione as well as normal urine catecholamines , urinary metanephrines and pituitary profile. Her urinary steroid report showed high levels of DHEA and its metabolites, androstenedione, pregnenelone and 17OH pregnenolone metabolites. An abdominal-pelvic MRI revealed a 6cm well defined, homogenous and rounded lesion from the left adrenal with no evidence of necrosis or haemorrhagic change. There was no involvement of the adrenal vein, IVC or retroperitoneum. There were no visible associated lymphadenopathies. The pelvic views showed normal appearance of both ovaries and uterus. Despite the absence of malignant features, a biopsy and excision was recommended in light of the size of the tumour. MRI neck and thorax were normal. **Results:** She underwent prompt laparoscopic left adrenalectomy with no postoperative complications. Histology confirmed the diagnosis of adrenal oncocytoma with no intermediate or high risk features according to the Bisceglia stratification and therefore qualified as a benign tumour. One month post laparoscopic left adrenalectomy the patient had normal serum testosterone levels and spontaneous period. **Conclusion(s):** Adrenal oncocytomas and hormone secreting tumours with androgenic effects as described have been documented in this age group within the literature. Oncocytomas per say tend to be non functioning tumours.

A-1086: Adrenocortical carcinoma in woman in childbearing age

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Background: Adrenocortical carcinoma (ACC) is a rare neoplasm with a slight predilection for female patients. We describe the case of a 33 year old female who was diagnosed with ACC. **Methods:** She was referred through her GP to the joint gynae/endocrine clinic with sudden severe hirsutism and amenorrhea. She already had a long history of oligomenorrhoea hirsutism secondary to IR . She had IVF treatment (due to male factor) which was successful with two male offspring 5 and 3 year old. She had noticed excessive hair on her face, chest, upper limbs, naval and abdomen. Aside from hirsutism physical exam was normal. Her bloods showed raised testosterone at 6.8 nmol/L. SHBG was reduced at 21.6 (40-120) and the free androgen index was markedly elevated at 28.2% (normal - 0.3 to 5.6). FSH/LH was normal, elevated haemoglobin of 162 mg/dl with raised haematocrit of 0.501 (0.36 to 0.44). Her CA 125 was normal, cortisol at 10am was 544 nmol/L and calcium was also normal . Urine catecholamines and metanephrines were normal.

The aldosterone / renin ratio was 6.5ng/ml (0-25). Her prolactin was normal. This prompted her GP to do an ultrasound and subsequently a CT scan which showed a 12cm solid mass in the left supra renal region with enhancement on post contrast scan with increased adjacent vascularity. There was extension noted of the tumour in the supra renal vein and left renal vein. The upper abdominal organs, spleen and left kidney appeared displaced but otherwise normal. There was no evidence of metastases. **Results:** She underwent major abdominal surgery within two weeks of being referred with left adrenalectomy, nephrectomy, splenectomy and some part of her diaphragm. She was soon after started on Mitotane, hydrocortisone and fludrocortisone replacement therapy. As she remained symptomatic despite adequate cortisol replacement therapy, mitotane was intermittently reduced and discontinued. A new growth on the right adrenal gland was picked up on follow up scans two years after initial surgery and the patient underwent a further two nodulectomies and reinitiating of mitotane. She soon after presented with viable intra uterine pregnancy (6 weeks gestation) despite a copper coil insitu. A termination of pregnancy was arranged with no further complications. She remains currently stable on mitotane, hydrocortisone and fludrocortisone replacement therapy. A nodule to her left upper long was noted on PET scan which remains stable under regular surveillance. Adrenocrtical cancer remains a challenge to treat with incidence of recurrence locally and also distant metastases. Mitotane is the only adjuvant therapy available with little data to support long term use and the need to monitor levels. **Conclusion(s):** In a woman in child bearing age on mitotane in the context of adrenocortical carcinoma, it is crucial to secure safe, non hormonal contraception. In the rare event of achieving pregnancy despite efficacious contraception such as the copper coil, termination of pregnancy is the recommended management plan to avoid dramatic consequences of the teratogenicity of mitotane.

A-1082: Adrenal incidentaloma in a patient with headache and papilledema

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Background: Adrenal incidentaloma (AI) is an adrenal lesion ≥ 1 cm which is discovered accidentally during an imaging technique not aimed to assess the adrenal gland(1). Most AIs are benign and nonfunctioning, but in about 20% of cases it is hyper functioning in form of hypercortisolism, hyperaldosteronism, pheochromocytoma or sex steroid overproduction (2). It is uncommonly to find AI with dual secretion. Here we report a case of co-secreting pheochromocytoma and MACE. **Methods:** Case Report: A 15 years old an adolescent male patient presented with paroxysmal headache for two months with progressive decline of vision. The patient consulted an ophthalmologist, who referred him to neurosurgeon. The neurosurgeon advised him to do urgent surgery in form of shunt due to raised ICP which caused papilledema. After surgery, there was continuous deterioration in vision and more headache. Fortunately, the patient developed abdominal pain and palpitation; consulted physician who advised him to do an ECG and abdominal u/s which showed an adrenal mass while ECG showed LVH strain pattern. The physician referred him to endocrine center, where full endocrine and radiological assessment had been done. **Results:** Triphasic CT scan of abdomen showed left adrenal mass 39x34 mm, heterogeneous texture with 30 HU and features suggestive of PCC. Endocrine assessment showed no Cushingoid features, BMI was 18 kg/m2; his hormonal assessment showed elevated normetanephrine (1967.9 pg/mL) and cortisol (26.1 µg/dL), non-suppressible serum cortisol (2.1 µg/dL) after 1-mg overnight dexamethasone suppression test (ONDST), low DHEA-S (35 µg/dL), and ACTH was 19 pg/mL(within lower normal range). Aldosterone, renin, aldosterone/renin ratio (ARR), metanephrine, K+ and all other biochemical assessment was normal. Left adrenalectomy was performed after good preoperative preparation, removed mass send for histopathological assessment which revealed 6X6 cm soft tissue mass with histopathological features suggestive of PCC, completely resected surrounded by adrenocortical tissue which require immunohistochemical (IHC) staining to exclude adrenocortical tumor. After surgery there was good clinical & hormonal improvement (Plasma normetanephrine 165 Pg/mL, Cortisol= 5.2 µg/dL, ACTH= 37 pg/mL, DHEA-S =64 µg/dL and 1-mg ONDST = 0.8 µg/dL). **Conclusion(s):** (1) Normal blood pressure does not exclude pheochromocytoma. (2) Paroxysmal headache could be a presenting feature of pheochromocytoma. (3) Adrenal mass could be co-secretor of more than one hormone, so should check all hormones according to clinical guidelines.

A-1067: Continuous subcutaneous hydrocortisone infusion causing refractory hypokalemia: A case report

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Background: Continuous subcutaneous hydrocortisone infusion (CSHI) has been used off-label for adrenal insufficiency (AI) without data supporting its safety and efficacy. It is thought to mimic the circadian rhythm of cortisol secretion. Hydrocortisone (HC) can cause hypokalemia by its mineralocorticoid action, especially at higher doses. Refractory hypokalemia has not been previously described in the literature in a patient treated with CSHI. **Case Description:** A 46-year-old woman with a chronic high-dose glucocorticoid, avascular necrosis of the hip, DM, and secondary adrenal insufficiency presented with fatigue and potassium(K) of 2.9 mmol/L. She looked cushingoid. She was placed on many glucocorticoid tapers starting in the late 1990s for a history of lung disease. She developed gastrointestinal symptoms and difficulty absorbing oral steroids, so she was transitioned to IV HC via IV port. Then, she was prescribed an insulin pump 3 months before admission and began CSHI. On hospital presentation, she was on 150 mg of HC daily. She was on fludrocortisone, which we held. TTKG was 10. Aldosterone and plasma renin activity were suppressed, indicating renal potassium wasting from the HC mineralocorticoid activity. HC taper was started. She needed aggressive K replacement to normalize her K. The patient refused our recommendation for further dose reduction at discharge and had to be readmitted for hypokalemia. In 2 weeks, she required potassium, and spironolactone was added. She was discharged with HC 50 mg daily with a plan for future discontinuation of CSHI. **Discussion:** This patient was on supra-physiologic HC dose for several months. High dose HC can cause a mineralocorticoid excess syndrome. The potassium wasting in mineralocorticoid excess syndrome can be improved with an aldosterone receptor antagonist. CSHI is not US-FDA-approved yet. The use of continuous subcutaneous hydrocortisone infusion should be limited until further data regarding safety and efficacy is available.

A-1060: Bilateral adrenal incidentalomas, uncommon presentation and very rare pathology

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Background: Adrenal incidentaloma is an adrenal mass larger than 1cm accidentally discovered by radiological examination. The incidentalomas should be evaluated for malignancy and functionality. The prevalence of adrenal incidentaloma is 4-10%, and around 10-15% of incidentally discovered adrenal masses can be bilateral. We present a patient with bilateral adrenal masses due to primary adrenal lymphoma. **Methods:** 74-year-old gentleman, with past medical history of type-2 Diabetes mellitus, hypertension, presented to our hospital with 2 months history of right-sided flank pain, 20 kg weight loss, loss of appetite and dizziness. Otherwise, no fever, night sweats, bleeding per rectum or urinary symptoms. On physical examination, vital signs were within normal, no remarkable findings other than tenderness over the right flank. Complete blood count and chemistry panel were within normal. Abdominal CT scan was done for evaluation of the abdominal pain which showed two large masses replacing the adrenal glands measure about 10cm in diameter with patchy areas of enhancement. Adrenal insufficiency was suspected based on the symptoms and the CT scan findings. Syncatin test was done, which showed a cortisol baseline 152nmol/L, 30minutes 168nmol/L, and 60minutes 169nmol/L. This was suggestive of adrenal insufficiency, so he was started on hydrocortisone. Screening for pheochromocytoma was done as the patient developed uncontrolled BP readings prior to a scheduled adrenal biopsy. 24-hour urine metanephrines and normetanephrine were negative. **Results:** CT-guided adrenal mass biopsy showed findings suggestive of large B-cell lymphoma. FDG PET-CT scan showed huge bilateral intense FDG uptake in the adrenal glands with no extra-abdominal manifestations noted. He was started on R-CHOP chemotherapy and after 4cycles, a PET scan showed a significant decrease in the size of previous adrenal masses. **Conclusion(s):** Bilateral adrenal incidentaloma should be evaluated the same as unilateral adrenal mass. Although adrenal involvement is common in non-Hodgkin lymphoma, primary adrenal lymphoma is extremely uncommon.

A-1054: Male gynaecomastia: A rare case of feminizing adrenal tumor

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Background: Adrenocortical carcinoma (ACC) remains a rare endocrine malignancy. Oestrogen producing feminizing ACC is even more rare with an incidence of 2% among all ACCs. Common clinical manifestations of FAT are gynaecomastia and hypogonadism. Rarely, it can present as an abdominal mass. The management of FAT includes surgery or use of adrenolytic or aromatase inhibitor drugs. They are supposed to have dire prognosis. **Case Report:** We present a case of male gynaecomastia caused by a feminizing adrenal tumor. **Conclusion(s):** This case aims at drawing attention to a very rare tumour. It highlights two important points that led to delay in the diagnosis: bladder cancers usually cause gynaecomastia via increase in beta HCG levels and normal HCG level in these cases should prompt consideration of a different pathology. Multiple primaries although rare can co-exist.

A-1009: A diagnostic and therapeutic challenging case of ectopic Cushing syndrome

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Background: Cushing syndrome secondary to ectopic ACTH secretion is a rare entity and it accounts for approximately 10 % of the cases. The identification of the ectopic source involves a complex evaluation. **Methods:** Case Report. **Results:** 45 years old man diagnosed case of type 2 diabetes and hypertension for 12 years initially presented to us in 2011 for the investigation of generalized weakness, proximal myopathy and weight loss of 14 kg for the last 6 months. At that time on workup, he was found to have ACTH dependent Cushing syndrome. On imaging he was found to have lesions in lungs and pituitary gland, inferior petrosal sinus sampling was planned which failed to show any significant central to peripheral gradient for ACTH. The source of ACTH was not evident so he was started on ketoconazole and cabergoline with complete disappearance of pituitary macroadenoma and lung lesion. The patient improved clinically as well as biochemically and lost to follow-up. In 2018 he again presented to us with history for generalized weakness and uncontrolled diabetes. Keeping in mind his previous history, his workup was sent that came as am cortisol 28 ug/dl, ACTH 30 pg/ml and 24-hour urinary cortisol came as 7590ug. MRI brain was reported as normal with no evidence of pituitary adenoma and CT head, neck and abdomen also reported as normal with no adrenal mass. To localize the source his Ga-68 DOTATOC scan was planned that was reported as two radiotracer avid sub centimetric mural nodules along the greater curvature of the stomach. He underwent EUS and biopsies from the gastric nodule and pyloric growth was taken and reported as well-differentiated neuroendocrine tumor (NET) and moderately differentiated adenocarcinoma respectively. He underwent gastrectomy, with the histopathological report of NET. On postoperative follow-up, his urinary cortisol level again is on increasing trained with clinical deterioration. He is asked to arrange metyaropne and observe response over it or go for the bilateral adrenalectomy. **Conclusion(s):** Early diagnosis of the ectopic source is crucial and if it can't be found patient should be referred for bilateral adrenalectomy if uncontrolled, to decrease the morbidity and mortality from hypercortisolemia.

A-1121: A rare case of an ectopic pituitary neuroendocrine tumor producing prolactin and growth hormone

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Background: Ectopic pituitary adenomas (EPA) are rare tumors thought to arise from embryological remnants along the route of normal pituitary migration. Clinically, these tumors vary in hormonal activity and can exert mass effect based on location and size. We present a rare case of ectopic functioning pituitary tumour which has partially responded to medical therapy so far. **Methods:** A 37 year old patient presented with an acute headache and a transient left VI nerve palsy. MRI demonstrated a left-sided lesion (11.2 x 5.8 mm) in the para-sellar region within the cavernous sinus, along left 6th or 3rd nerve and encasing the internal carotid artery. There was no evidence of apoplectic changes radiologically. The pituitary gland was separate with no compression of the stalk. The patient reported

mild hypogonadal symptoms and examination was unremarkable. Hormonal testing revealed hyperprolactinaemia (1878 mIU/L, NR 86-324), secondary hypogonadism (Free testosterone 29 pmol/L, NR 198-619) and raised IGF-1 at 44 nmol/l. An oral glucose tolerance test failed to fully suppress growth hormone levels (nadir GH 1.18 ug/L), confirming biochemical GH excess. His hypogonadism resolved on treatment with cabergoline 250mcg twice daily as his prolactin level was normalised. Repeat MRI 6 months later demonstrated stable appearance of the lesion. He is currently in the process of uptitrating his cabergoline dose in the hope of normalising his IGF1 level. Failing this, somatostatin analog therapy would be the next line of treatment. **Conclusion(s):** Clinical manifestations of EPAs are variable. Almost 70% of EPAs are hormonally active, of which ACTH and prolactin-secreting adenomas comprise the majority. EPA should be considered as a differential diagnosis of juxta-sellar lesions. Appropriate hormonal testing may lead to early diagnosis, avoidance of unnecessary biopsy or surgery, and improved outcomes.

A-1119: Routine macroprolactin assessment is recommended in Roche Elecsys platform

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Background: Hyperprolactinemia is common in clinical practice with different etiologies. Macroprolactin (MPRL) excess contributes to about 20% of hyperprolactinemia cases. Several prolactin assays have high reactivity to MPRL. However, MPRL measurement is not routinely performed in many labs. **Aim:** to evaluate the prevalence of macroprolactinemia in patients with elevated prolactin using Roche Elecsys assay in a large tertiary center in UAE. **Methods:** Consecutive samples of patient with mildly elevated prolactin presenting to tawam hospital during the period of June to August 2018 were evaluated for the presence of macroprolactinemia. Polyethylene glycol (PEG) was used to precipitate MPRL. Monomeric prolactin recovery cutoff ≤50% was used to determine the prevalence of macroporlactinemia. **Results:** 180 patients with mildly elevated prolactin were included in the study. The mean age of the patients were 32.9 +/-12.2. The majority were women (87.2%) and about 78% were newly diagnosed patients with hyperprolactinemia. The indication for prolactin testing was menstrual Irregularities in 121 patients, Infertility in 11, galactorrhea in 11, sellar masses in 12 , other reasons in 16 and unknown in 9 patients. Macroprolactinemia was present in 8.3% (15/180) of the patients. The median (IQR) of total prolactin level was 740.5 (579-1085) IU/m before PEG precipitation and it was not significantly different between macroprolactinemia and true hyperprolactinemia cases. Three patients with macroprolactinemia had pituitary MRI evaluation, which were normal. Eight patients were treated with cabergoline among the macroprolactin group. **Conclusion(s):** One in 12 patients with hyperprolactinemia had macroprolactinemia on Roche Elecsys assay defined as cutoff recovery of ≤50% post PEG precipitation. Physicians should be aware of the prolactin assay used in their labs and we recommend routine macroprolactin assessment in mild hyperprolactinemia samples in labs using Roche Elecsys platform.

A-1115: A case of partial nephrogenic diabetes insipidus associated with tigecycline treatment

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Nephrogenic Diabetes Insipidus (NDI) can be caused by a number of drugs including lithium, antifungal amphotericin B, tetracycline and Demeclocycline. Here we describe a case of a 35-year-old male presenting with NDI following treatment with Tigecycline. The patient was admitted for sever CoVID-19 management, he had long and complicated hospital stay more than 3 months in ICU for acute respiratory failure, he had multiple courses of antibiotic and antifungal during his stay, after initiation of Tigecycline his urine output increased dramatically (>200ml/hour) with total urine output of more than 4 L/d, plasma sodium level rose to 157 mmol/L with serum and urine osmolality of 320 and 315 mmol/kg, respectively. After Tigecycline was discontinued and desmopressin IV was initiated, Sodium levels eventually returned to normal, urine output improved and electrolyte corrected. Changes in sodium, and serum and urine osmolality, as well as delayed resolution of NDI fit with the fourty-hour half-life of Tigecycline. This case suggests that Tigecycline may be associated with NDI.

A-1103: Pituitary stalk interruption syndrome

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Background: Pituitary stalk interruption syndrome (PSIS) is a triad of interrupted pituitary stalk, aplasia or hypoplasia of adenohypophysis, absent or ectopic neurohypophysis. It is one of the rare causes of congenital hypopituitarism. They tend to present early during infancy with adrenal crisis or later in childhood with growth retardation. It depends on the severity of pituitary hormones deficiencies and there clinical manifestations. In rare cases a genetic mutation is found but most of the cases the etiology is yet to be found. Its exact prevalence is unknown. **Methods:** Our case is 19-year-old male, first presented to our institution to paediatric endocrinology as case of short stature at age of 11 years. Laboratory work up revealed hypopituitarism in form of GH deficiency, central adrenal insufficiency, central hypothyroidism, hypogonadotrophic hypogonadism. MRI brain and pituitary showed ectopic posterior pituitary, hypoplasia of anterior pituitary with disruption of the stalk. The triad of PSIS. The patient was started on hormonal replacement therapy including: hydrocortisone, levothyroxine, recombinant human growth hormone and at age 16 years testosterone was started. He will require life long hormonal replacement therapy. **Results:** Initial basic work up was normal including Complete blood count, renal profile, and celiac screen. Screening for growth hormone deficiency revealed IGF-1 <3.25 (normal range 16.5-62.8). Then clonidine stimulation test confirmed GH deficiency with delayed bone age on left hand X-ray. Other pituitary hormones showed central hypothyroidism, hypogonadism and hypocortisolism confirmed by synacthen stimulation test. MRI pituitary showed PSIS triad. **Conclusion(s):** Although PSIS is extremely rare but it should be always considered as a cause of hypopituitarism presenting at young age.

A-1079: Thyroid cancer in patients with acromegaly: A case study

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Background: Acromegaly is a rare endocrine disorder characterized by growth hormone (GH) hypersecretion mainly due to a pituitary adenoma. It has been associated with increased risk of developing both benign and malignant tumors in many organs in the body the relationship between acromegaly and thyroid cancer may seem rare

however there is some evidence showing a higher incidence of thyroid cancer in acromegalic patients. **Case Report: Case 1:** 31 years old male presented to the endocrine clinic with a history of coarsening of facial features and an increase in ring and shoe size for the last 2 years. On examination, he had typical features of acromegaly. Work up showed growth hormone-producing pituitary macroadenoma. He underwent Transsphenoidal resection of the pituitary tumor followed by cyberknife radiation. Post-treatment the disease remains active with persistent elevation of IGF1 level for which he was started on Sandostatin. The disease was controlled on Sandostatin. After 1 year he noticed a swelling in the neck which was gradually increasing in size. On examination, a thyroid nodule was present which was confirmed by ultrasonography. Fine needle aspiration cytology of this solitary heterogeneous nodule was done that was reported as suspicious for follicular neoplasm (SFN) as per Bethesda's system. This patient underwent total thyroidectomy and the histopathology report showed a poorly differentiated thyroid carcinoma (insular type) measuring 6 x 5.5 cm with minimal capsular and lymphovascular invasion, pT3, Nx. He is now under surveillance for this thyroid cancer also. **Case 2:** 55 years old female diagnosed case of Acromegaly secondary to growth hormone-producing pituitary adenoma, status post-trans-sphenoidal resection of pituitary adenoma followed by radiation 6 years back presented to the clinic with increasing size of goiter for last few years. She still has active acromegaly for which she is on Sandostatin LAR 20mg once a month. She had goiter for last 10 years but it is gradually increasing in size and now it is causing pressure symptoms. She is clinically and biochemically euthyroid. On examination, she had a multinodular goiter and the ultrasound neck confirmed the finding of multinodular goiter. She underwent total thyroidectomy because of pressure symptoms and the histopathology report showed minimally invasive follicular carcinoma of the thyroid with minimal capsular invasion, PT3, Nx. Post-surgery radioactive iodine ablation was done and she is under surveillance for the last 3 years with no evidence of recurrence so far. **Conclusion(s):** Although simple goiter and multinodular goiter are very common in acromegalic patients, thyroid cancer is rare. For thyroid nodules screening by thyroid ultrasound, followed by FNAB, particularly, in cases of nodules of greater than1 cm should be done. As carcinomas are the third most frequent cause of death in patients with acromegaly next to vascular and respiratory diseases, therefore, these patients should be under surveillance for various carcinomas. Our cases demonstrate that it is important to be aware of the association of various malignancies, especially thyroid cancer, with acromegaly in the endocrine setting.

A-1073: Complete resolution of pituitary mass lesion and improvement of pituitary function with corticosteroid in autoimmune hypophysitis

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Background: Autoimmune hypophysitis (AH) is a rare inflammatory disease of pituitary gland with an incidence of one per nine million people. It is characterized by infiltration of the pituitary gland by lymphocytes and macrophages,[1] mimicking the presence of a pituitary adenoma on radiological images; a definitive diagnosis requires histopathological assessment, i.e., the pituitary biopsy. **Objectives:** (1) Approach to the diagnosis and treatment of AH. (2) Evaluating the role of steroids as the first line of therapy. **Methods:** we are presenting a case report of AH with pan hypopituitarism; how it has responded dramatically to steroid with total disappearance of pituitary mass lesion and recovery of pituitary function. A fifty-one years old ophthalmologist presented to us with a four-week history of lethargic, feverish feeling, unremitting headache, proximal weakness, flushing with nausea. He was a diabetic with dyslipidemia on medication. **Results:** The visual field examination was within normal limits. On evaluation he was diagnosed as panhypopituitarism. A MRI of pituitary revealed a homogenous mass lesion, stalk thickening with dural tail but preserved posterior bright spot. Treatment was started with glucocorticoid 20 mg[2] once daily for two weeks along with thyroid hormone replacement for central hypothyroidism. After 2weeks of treatment, he felt better symptomatically. A repeat MRI imaging of pituitary done 2 weeks later showed complete resolution of the homogenous mass with recovery of tropic pituitary hormone. He was advised to taper the glucocorticoid over a period of next 4weeks. **Conclusion(s):** Our case had responded dramatically with glucocorticoid therapy with total resolution of mass lesion in the pituitary with improvement of pituitary function. Due to excellent response to the GC and absence of other systemic inflammatory biomarkers, he was diagnosed as AH. However, the recurrence of hypophysitis is often reported, so he was advised to remain under regular follow up.

A-1026: Cushing's disease: The excitement of cabergoline

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Background: Adrenocorticotrophic hormone (ACTH) dependent Cushing's syndrome is uncommon. Approximately 90% of cases are caused by an ACTH-secreting pituitary tumour. Pituitary surgery is the first line treatment, drugs available to control and reduce cortisol before surgery or if patients relapse, or long term if patient refused are limited. Drugs works at the adrenal level cause many side effects. **Objective:** To determine whether the use of cabergoline will suppress the cortisol and ACTH in other patients with Cushing's disease. Plan: We planned to use a therapeutic trial of cabergoline to prepare patients before surgery , or if needed treated medically in the long term. **Methods:** 14 patients with ACTH dependent Cushing's disease (13 women, 1 man) with the median age 30 years were studied. (3) of them with relapse disease post pituitary surgery. Serum cortisol concentrations were measured at 0800 hrs before and during the administration of cabergoline at a dosage of 1mg daily and at weekly interval for 4 weeks. **Results:** The serum cortisol levels returned to normal in 11 patients. There were 3 non responders one relapsed post-surgery and two had no surgery. **Conclusion(s):** We offer a trial of high dose Cabergoline to induce disease remission before surgery, with disease relapse or long term if surgery refused. Our studies using cabergline have shown that high doses are effective in most patients with Cushing's disease (75% response rate). We suggest a high dose of cabergoline initially, then the dose can be reduced later according to the response and in our experience caberoline is a safe drug and without serious side effects.

A-1016: Corticosteroids replacement in a patient with panhypopituitarism and COVID-19 infection: A case report

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Background: Hypopituitarism refers to complete or partial insufficiency of pituitary hormone secretion. This condition is associated with significant morbidity and premature mortality; patients require lifelong hormone replacement. Those with Adrenocorticotropic hormone (ACTH) deficiency rely on exogenous glucocorticoids and adrenal crisis remains an important cause of death in such patients. The benefits and adverse effects of corticosteroids for treatment of coronavirus disease 2019 (COVID-19) pneumonia is currently under investigation. We report our experience in a patient with COVID-19 pneumonia who received high dose corticosteroids for panhypopituitarism. **Case Report:** A 51-year-old man had been diagnosed with a non-functional pituitary macro-adenoma causing panhypopituitarism one year back. He underwent trans-sphenoidal resection of the pituitary adenoma; however, he then discontinued his hormonal replacement therapy and was lost to follow up. He now presented with one week history of fever, generalized weakness and fatigue. He was hospitalized with mild COVID-19 pneumonia. Laboratory investigations revealed secondary adrenal insufficiency, secondary hypothyroidism and hypogonadotropic hypogonadism. Magnetic Resonance Imaging (MRI) of the pituitary during this admission showed persistence of the pituitary macroadenoma, causing sellar obliteration and left cavernous sinus invasion. Treatment with stress dose steroids, Hydrocortisone 50 mg four times daily was initiated. He was started on Levothyroxine 125 mcg daily. He also received antivirals and supportive care for COVID-19, guided by the local hospital protocol. After significant clinical improvement, steroids were tapered down and he was discharged on a maintenance dose of 20 mg hydrocortisone per day. The patient was stable at outpatient follow up after one month. **Conclusion(s):** Patients with adrenal insufficiency require stress doses of corticosteroids at times of intercurrent illness to prevent an adrenal crisis. Despite receiving stress dose corticosteroids, this high-risk patient recovered from COVID-19 pneumonia without complications. These findings support the use of corticosteroids when necessary for treatment of coexisting conditions in patients with COVID-19.

A-1113: Virtual diabetes education program for children and adolescents with diabetes in response to COVID-19 pandemic

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Background: Education of self-management skills in children with type 1 diabetes mellitus is essential for their care. (1-3) A few studies were conducted to assess glucose control of children with type 1 diabetes during camp. (4) Bahrain Diabetes Society (BDS) has been the pioneer in the Gulf region in diabetes camps and during COVID-19 pandemic, we transitioned the program using online delivery method. (1) Creating a live diabetes education program for children with diabetes. (2) Assessing parents satisfaction of this method of delivery of diabetes education. **Methods:** Cross sectional study in the form of a survey that was sent to parents of children enrolled in the online diabetes education program. Data from the survey was analyzed to evaluate the satisfaction of parents with the program. **Results:** An invitation was sent to advertise for the program and 40 children and adolescents were enrolled. Participants were divided into two groups depending on age (7-11 years and 12-16 years). The sessions were conducted weekly as live session. The content included carbohydrate counting, techniques of insulin inject, and meetings with adults who had diabetes as children. 29 parents responded. Parents responded favorably to the format and content of the sessions and preferred 15 participants instead of 25 per session. Overall the parents provided positive comments requesting to continue such activities beyond COVID-19. **Conclusion(s):** Bahrain Diabetes Society successfully conducted an online diabetes education program for children and adolescents with diabetes. This model of delivery of education and self-empowerment and motivation was appropriate during the current pandemic and can be considered in the long term as one of the options to provide such education. We intend to follow these children and adolescents and study the impact of the program in their health and glycemic profile as well.

A-1020: An assessment of the diabetic knowledge, attitude, and practice of school teachers in Riyadh, Kingdom of Saudi Arabia

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Background: Diabetes is one of the most common non-communicable diseases worldwide. There are three main types of diabetes type 1, type 2, and gestational diabetes. Type 1 diabetes accounts for 5–10% of diabetes and mostly affects children and adolescents. Mean-while, type 2 diabetes accounts for 90–95% of all diabetes. Most patients with type 2 diabetes are overweight or obese, because of their sedentary lifestyle, high calorie in-take, also body fat itself causes insulin resistance. In both types of diabetes type 1 and type 2, genetic and environmental factors cause the loss of beta cells in the pancreas re-sulting in hyperglycemia. Thus it is important to raise the awareness level of school teachers about type 1 di-abetes through health education campaigns in order to lower the risk of Diabetic ke-toacidosis (DKA) among type 1 diabetic students. Therefore increasing teachers' knowledge about diabetes will have positive effects in ensuring diabetic students' safety in school. Diabetes has a high financial cost on a nation's healthcare system, because it is a chronic disease that cause many complications later in a patient's life. The healthcare expenditures not only goes toward the treatment of diabetes itself, but also the treatment of its lifelong associated complications. Public health has evolved from both managing the acute symptoms of diabetes and preventing its long term complications, towards ad-ditional means concentrating on the primary prevention of diabetes. So countries with high prevalence of diabetes should urgently implement a public health approach to dia-betes mellitus (DM) prevention, through increasing the level of health awareness among their communities. Implementing a public health approach to diabetes prevention in a specific group of the community such as school teachers, requires assessing their Knowledge, attitude, and practice (KAP) and identifying the associated factors. Most studies assessing KAP in KSA have been done on diabetic patients and some on non-diabetic patients. **Methods:** This research study was designed as a quantitative cross sectional study. A stratified sampling technique was applied for randomization. For the purpose of this study, the population included are all teachers from schools in Riyadh city. According to the Min-istry of Education Statistics there are 79188 male and female teachers working at public and private schools in Riyadh city throughout the school year 2019-2020. The Sample size needed for the study population was 383. The Sample size was calculated using OpenEpi, which is an open source sample size calculator for public health. A total of 633 male and female teachers working at public and private schools participated in this study. Participants were randomized by means of stratified sampling

technique by the Technology Department at the Ministry of Education using their database. The online questionnaire link was send via short message service (SMS) to the randomized sample of male and female teachers working at public and private schools in Riyadh city. The response rate for the online questionnaire was 6.33%. The data collection period was for one month from 16 October 2019. **Results:** The study included 633 teachers. Overall, 57.2% of the surveyed teachers were knowledgeable about DM. Teachers aged between 51 and 60 years (p=0.005), males (p=0.018), PhD holders (p=0.011), teaching science (p=0.021), having more than 20 years of teaching experience (p=0.001), diabetics (p<0.001), and having family histo-ry of diabetes (p=0.007) had the highest level of knowledge. Overall, positive attitude towards DM was reported among 53.1% of the teachers. Those with teaching experi-ence between 11 and 15 years (p=0.024), diabetics (p=0.029), and having a diabetic student (p=0.012) had more positive attitude towards diabetes. Good diabetes-related practice was observed among 54.3% of the teachers. Older (p<0.001), having more than 20 years of teaching experience (p<0.001), non-Saudi (p=0.011), diabetic teach-ers with longer duration of the disease (p<0.001), having family history of DM (p=0.028), and principals (p=0.002) had the highest level of good diabetes-related practice. **Conclusion(s):** Knowledge of teachers in public and private schools in Riyadh about diabetes is suffi-cient in many aspects. However, deficient knowledge was reported among some im-portant aspects of the disease. Older and more experienced teachers were more knowl-edgeable about diabetes than younger and less experienced teachers. Teachers with a higher level of education showed to have better knowledge level than others. The cur-rent study showed that science teachers had a higher level of knowledge compared to others. Diabetics and teachers with a family history of DM were more knowledgeable about the disease. More than half of the teachers had positive attitude and good diabe-tes-related practice towards DM. Diabetics and teachers that reported to have a diabetic student, showed to have more positive attitude towards DM than their counterparts. Also Older, more experienced, non-Saudi, diabetic teachers with a longer duration of DM and with a family history of the disease showed the highest level of good diabetes-related. Participants with more teaching experience showed a higher level across all aspects of KAP, as opposed to teachers with only 1 to 5 years of experience. So, targeting new young teachers should be a priority in order to raise their KAP level. The most frequent sources of information about DM were relatives/friends, social media, internet, physi-cian and awareness campaign. Although, the highest level of KAP was among partici-pants who reported medical book/scientific journal, health educator and physician as their source of information. Therefore, we can conclude that having a reliable trusted source of information about DM for teachers will be beneficial to improve their KAP level as well as make them more confidant in sharing and applying their KAP. Finally, health care workers should be strongly encouraged to participate and play a role in rais-ing the level of teachers' KAP about diabetes.

A-1097: A novel case of DNAJC3 mutation in a Saudi family causing, maturity onset diabetes mellitus of the young, hypothyroidism, short stature, neurodegeneration, hearing loss

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Background: Monogenic diabetes results from a mutation in a single gene that is mostly inherited and typically affects young people. DNAJC3 acts in attenuating endoplasmic reticulum stress and is found in abundance in pancreatic tissue. Novel DNAJC3 homozygous mutation has been described to cause a constellation of juvenile-onset diabetes, neurodegeneration, hearing loss, short stature, and hypothyroidism. **Methods:** Case-report and literature-review. **Results:** We report a homozygous DNAJC3 mutation in two siblings of a consanguineous Saudi family. A 3-year-old boy presented with short stature and thyroid nodule; lab findings confirmed hypothyroidism. Subsequently, L-thyroxine was started. Growth hormone stimulation test was normal. His stature was severely short; 80.5 cm (<1 percentile, -3.79 SD). The patient developed sensorineural hearing loss (SNHL) at 6 years old. He had moderate intellectual function leading to low school performance. GH treatment was postponed to the age of 9 years due to family history of diabetes. At the age of 9 years, the patient developed a progressive ataxic gait for which the workups excluded mitochondrial disease and multiple-sclerosis. MRI showed prominent neurodegeneration. At 11 years old, the patient developed diabetes, 4 years after the initiation of growth hormone treatment. Diabetes autoimmune markers were negative. Lifestyle modification was initiated, but eventually required basal insulin therapy. Whole exome sequencing revealed a homozygous DNAJC3 mutation explaining his clinical presentation. At the age of 17 years, his final adult height is 141 cm (Z-score -5.87). His older brother had a similar history except for not having ataxia and has the same DNAJC3 mutation. **Conclusion(s):** We add a new family with DNAJC3 mutation to the literature. We propose considering DNAJC3 gene mutations as a cause for monogenic diabetes especially in the setting of sensorineural hearing loss, progressive neurodegeneration, and short stature. Hypothyroidism is another endocrine manifestation of homozygous DNAJC3 mutations, mainly due to primary thyroid dysfunction.

A-1096: DICER1 syndrome and risk of endocrine tumors

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Background: DICER1 syndrome is a rare autosomal dominant syndrome resulting in multiple tumors, benign and malignant, including endocrine tumors (pituitary, thyroid, adrenal, ovaries and pancreas). Here we present rare cases of twin sisters with DICER1 syndrome. **Methods:** Our cases are 18-year-old identical twin sisters, who presented at age of 15 years with hirsutism, deepening of voice and amenorrhea. They were diagnosed with Sertoli-Leydig cell tumor of the ovary and underwent unilateral oopherecomy, without evidence of recurrence or metastasis during follow up (clinically, biochemically and radiologically). They also have large multinodular goiter (with nodules size ranging from 1 cm to 2.3 cm in size) that are increasing in size. Both sisters had fine-needle aspiration of thyroid nodules showing atypia of undetermined significance. For both patients, their brain MRI didn't show any pituitary lesion. In addition, both sisters have bilateral subpleural

benign-looking nodules in chest CT (as part of workup for patients with DICER1 syndrome to rule out pleuropulmonary blastomas). **Results:** Our patients with DICER1 syndrome developed some features of their disease (Sertoli-Leydig cell tumor and multinodular goiter) with risk of developing differentiated thyroid cancer (especially with father and grandfather having papillary thyroid cancer). Their father does not carry the same gene mutation, yet their mother is unknown for the same mutation. **Conclusion(s):** Both patients need active surveillance for their potential risk of developing multiorgan tumors known for DICER1 gene mutation. More research is needed to extend our knowledge of the phenotypes of the DICER1 gene mutation, including thyroid and pituitary neoplasia, especially for patients who did not receive chemotherapy or radiotherapy (like our patients).

A-1033: Are we late in treating with growth hormone short small for gestational age children? Experience of a tertiary care center

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Background: Short small for gestational age (SGA) children not showing a catch up growth by 2–4 years of age is an indication for growth hormone (GH) therapy. However, we believe that, in our institution, affected children are presenting late and started on GH therapy late. The aim of our study is to evaluate at what age short SGA patients present to our pediatric endocrine clinic and start on GH therapy. In addition, we aim to assess their GH response during the first year of therapy. **Methods:** This retrospective observational study included 108 "SGA" children with "short stature" who were managed in the pediatric endocrine clinic at Tawam hospital, a tertiary care center, within a 5-year period. Patients' electronic medical records were reviewed and their data retrieved. **Results:** Median [iqr] age at time of presentation was 6.8years [3.3, 10.0] with a statistically significant difference between the non-syndromic and syndromic patients, 7.3 [5.2, 10.7] vs 3.2 [1.8, 5.9] years respectively. While the median age at time of starting GH treatment was 10.7 years [8.1, 13.6], with 47.4% treated at 5-10years of age and 42.1% at >10years of age. The mean (± SD) delta height z-score for all treated patients was 0.58 ± 0.40 at 1 year. There was a significant difference in both the mean height at pre and post one year of starting GH treatment between the non-syndromic and syndromic groups, (P <0.0001 and 0.003 respectively) but not in the delta height z-score (±SD) one-year post GH treatment (0.56 ± 0.39 vs 0.71 ± 0.45, P =0.3). **Conclusion(s):** The majority of our short SGA patients presented late and was subsequently treated with GH later than the international consensus or guidelines recommendations. There is a need for increased awareness to refer these children earlier to start GH therapy for better outcome.

A-1117: A study on the impact of nutrition educational program on obesity

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Background: This study was designed to study the impact of a nutrition education program for the female students in the University of Hail. The knowledge of nutrition plays a vital role in food choices; any step towards improving this paves way for better nutritional choices and resultant better health. To study the impact of a Nutrition Educational program on Obesity among female students. **Methods:** The study was carried out using the following tools for the purpose of imparting education and subsequently assessing the level of knowledge attained. (a) Pretested questionnaire (b) A Powerpoint presentation on "Obesity 29 young-adult females, from nutrition background in the age group of 18 - 24 years, studying in the university of hail. **Results:** The statistical analysis revealed a significant difference between the correct responses obtained from the pretest and posttest for 50% of the questions asked and a poor significance for 25% of the questions and no significance could be established for 25% of the responses, indicating an overall satisfactory impact of the education imparted through this study program. **Conclusion(s):** This study highlighted the effectiveness of the nutrition educational program provided to the randomly selected students from the nutrition back ground. It was found to show different levels of significance of the impact on participants' nutrition awareness and their attitudes toward healthy dieting behaviors. Our findings showed a significant change in the nutrition knowledge of the participants.

A-1111: Association of metabolic syndrome and chronic kidney disease in Moroccan adult population

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Background: Metabolic syndrome (MetS) is a cluster of cardiovascular risk factors that may promote the development of chronic kidney disease (CKD). The aim of this research was to determine the prevalence of MetS and its components and, to study their association with CKD among Moroccan adult population living in an agricultural province. **Methods:** The study involved 210 adult participants of 18 and over years old, of both sexes, sampled from urban and rural areas of Sidi Bennour province in Morocco. Systolic and diastolic blood pressure, weight, height and waist circumference were measured and body mass index (BMI) was calculated. Blood Total Cholesterol, Triglycerides, Glucose and serum creatinine were determined. Subsequent glomerular filtration rate (GFR) was estimated by the modification of diet in renal disease (MDRD) formula and the CKD was defined by an eGFR<60 mL/min/1.73 m². The diagnosis of metabolic syndrome was based on the NCEP ATP III report. **Results:** The mean age of the participants was 54.18 ± 13.45 years old, the prevalence of MetS and CKD were 38% and 4.4%, respectively. Abdominal obesity was the strongest risk factor of MetS among the studied population (71%), followed by increased fasting plasma glucose (40.5%), high blood pressure (35.2%), hypercholesterolemia (31.0%) and hypertriglyceridemia (23.8%). The prevalence of these comorbid factors increased with age, BMI, and decreased with education level. The presence of MetS was significantly associated with decreased eGFR, hence the prevalence of CKD was markedly greater in subjects with MetS than those without. **Conclusion(s):** Our finding indicates that MetS is a serious public health problem in the study population and that its individual components are involved in decreasing the eGFR and the progression of renal dysfunction. The study results support the need of the development of a strategy to

contrôle and prevent worsening of the MetS individual components and development of CKD.

A-1094: Association of leptin G-2548A gene polymorphism with increased plasma leptin and glucose levels in obese Saudi patients irrespective status of blood pressure

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Background: Leptin is a polypeptide hormone synthesized mainly by a white adipose tissue, present in the circulation in amounts proportional to fat mass, which acts to reduce food intake and increase energy expenditure. A common G-2548A variant of leptin (LEP) gene has been associated with obesity, but its association with diabetes and hypertension are controversial. This study was aimed to investigate the association between LEP G-2548A gene polymorphism with increased plasma leptin level, plasma glucose level and blood pressure in a sample of obese Saudi patients. **Methods:** This cross-sectional study involved 206 Saudi adult subjects (94 males and 112 females), randomly selected from the primary health care centers, Riyadh, Saudi Arabia. . The study sample was categorized into three groups: 50 normotensive ND controls (age: 47.9±5.4 yr.; BMI 22.9±2.1 Kg/m2), 80 obese normotensive ND (age: 47.7±6.0 yr.; BMI 34.1±4.2 Kg/m2) and 76 obese hypertensive with T2D patients (age: 49.4±5.9 yr.; BMI: 35.1±4.7 Kg/m2). Analyses of LEP G-2548A gene polymorphism were determined using PCR followed by RFLP with 2U of HhaI restriction enzyme. **Results:** AA genotype of LEP gene had a significantly higher plasma glucose levels and HOMA-IR against those carrying GG genotype (6.8±0.55 vs. 5.8±0.30; p< 0.04; 4.1±0.84 vs. 2.6±0.67; p=0.03 respectively). GA genotype had a significantly higher plasma leptin levels against those carrying GG genotype (40.0±2.6 vs. 29.6±2.6; P= 0.04). Additionally, GA, AA, GA+AA genotypes and A allele of LEP gene had a significantly higher risk for developing T2DM (OR= 3.7, 95% CI= 1.6 to 8.4, P= 0.001; OR= 3.2, 95% CI= 1.2 to 8.6, P= 0.03; OR= 3.5, 95%CI= 1.6 to 7.7, P= 0.001; OR= 1.9, 95%CI= 1.2 to 3.0, P=0.006 respectively). **Conclusion(s):** GA and AA genotypes and A allele of LEP gene may represent important risk factors predisposing healthy subjects to develop T2D irrespective status of blood pressure.

A-1063: The relation between body mass index, paraoninase-1, cholesterol and triglyceride in polycystic ovary syndrome women

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Background: The present work aims to evaluate the role of the BMI and paraoninase-1 in the 34 woman behavior of polycystic ovary syndrome (before and after 3 months of treatment). **Methods:** Materials and Methods: The present study is conducted in Kirkuk city from July 2018 to March 2019. Sixty eight Blood samples were collected from 34 patients suffering from PCOS, ages of the subjects range from (16-50) years. The formula is BMI = kg/m2 where kg is a person's weight in kilograms and m2 is their height in meters squared. Determination of PON1 done by Elisa kit. **Results:** The results showed that: There are a highly significant increase ($p<0.001$) in BMI in patients before treatment group when compared with control group and patients after 3 months of treatment, and significant decrease ($p<0.05$) when compared patients after 3 months of treatment with patients before treatment in both age groups. There are a highly significant increase ($p<0.001$) in the serum levels of paraoninase-1 in patients before treatment age 30> and age ≥30 when compared with control group, and a highly significant decrease ($p<0.001$) in the serum levels of paraoninase-1 in patients after 3 months of treatment when compared with patients before treatment group in age30> and age ≥30 group. A significant increase ($p<0.05$) in the serum levels of paraoninase-1 in patients before treatment group with overweight & obese (BMI=28-35) when compared with patients before treatment group with normal weight (BMI < 25). **Conclusion(s):** There was a correlation between PON-1 levels and BMI development of Polycystic Ovary Syndrome (PCOS) women.

A-1008: The Children from Homes In which Parents Singularly study: Reviewing results from UMMC, Jackson, US

Tobe Momah

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Background: Mississippi has the highest childhood obesity rates in USA. The Children from Homes In which Parents Singularly (CHIPS) raise the child study was designed to assess a possible correlation between children who are overweight and who live in single parent homes. **Methods:** Our study employed a case-controlled retrospective protocol, and collated data including race, sex, body mass index, blood pressure, weight, height, head circumference, ICD 10, respiratory rate, temperature, no. of parents (1 or 2) living with patient from electronic health record (EHR). A spearman's rho correlation 2-tailed test was utilized for the analysis. **Results:** Out of 4,192 patients, whose EHR was assessed, only 1425 individuals (659 Males and 766 Females) had complete enough data for analysis. Results showed significant correlation between patient weight and parental status (rho=.055 ($p = 0.039$), and there was no correlation between child's weight and their sex or race. **Conclusion(s):** This study highlights the need to enquire about other social demographics of health among children including marital status of parent.

A-1107: Parathyromatosis, recurrent hyperparathyroidism and refractory hypercalcemia successfully managed with addition of denosumab: A case report

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Background: Parathyromatosis is a rare cause of recurrent hyperparathyroidism in which multiple nodules of hyperplastic parathyroid tissue are scattered throughout the neck and superior mediastinum. It is proposed to be a result of spillage and seeding of parathyroid tissue during parathyroid surgery. It presents as recurrent or persistent PTH mediated hypercalcemia. Management of Parathyromatosis is challenging and frequently refractory to

surgical intervention; hence there is a need for an effective medical treatment. **Methods:** Case report. **Results:** A 34 -year-old Saudi female patient was first diagnosed with hyperparathyroidism in 2003 at the age of 16 years. Tc 99m-sestamibi scan showed parathyroid adenoma with a cystic lesion. She underwent surgical intervention, which was complicated by parathyroid cyst rupture. However, the patient remained asymptomatic for 4 years of follow-up. Then in 2007, she had a recurrence of the same initial presentation with laboratory values confirming relapse of hyperparathyroidism. A nuclear parathyroid scan showed remnant parathyroid tissue inferior and posterior to the right thyroid lobe along with multiple subcutaneous nodules. Neck Exploratory surgery was performed, and histopathological examination showed multiple nodules of hyperplastic parathyroid tissue and cystic changes consistent with the diagnosis of Parathyromatosis. Attempts at satisfactory surgical resection failed, we started the patient on cinacalcet that was gradually increased besides vitamin D analog. This helped in achieving a partial but not full control of calcium levels, so we decided to add Denosumab. This regimen has successfully maintained a stable calcium level with normal corrected calcium, and our patient has been in remission with no recurrence of renal stones or other symptoms. **Conclusion(s):** Parathyromatosis should be kept as a differential diagnosis in the event of recurrent hyperparathyroidism. The Addition of Denosumab to Cinacalcet can make a big difference in achieving a successful medical treatment of the condition, therefore avoiding the detrimental effects of long-standing hypercalcemia.

A-1105: Association between body mass index and aggressive features of differentiated thyroid cancer

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Background: Obesity is recognized as a risk factor for several types of cancers, including differentiated thyroid cancer (DTC). However, the association between obesity and aggressiveness of DTC is controversial. The aim of this study was to assess the relationship body mass index (BMI), aggressive clinicopathological features of DTC and response to therapy in Saudi population. **Methods:** We evaluated 209 patients retrospectively who underwent total thyroidectomy and diagnosed with DTC. Patients were stratified into 4 groups based on their BMI: underweight (< 18.5 kg/m2), normal weight (18.5-24.9 kg/m2), overweight (25-29.9 kg/m2), and obese (≥ 30 kg/m2). Pathological aggressiveness of DTC as well as clinical outcome were evaluated according to the 2015 American Thyroid Association (ATA) guideline. **Results:** Data were described as Mean ± SD and percentages. 120 (57.4%) of our cohort were obese. There were no differences in histopathological features, including tumor size, extrathyroidal extension, vascular invasions and lymph nodes metastasis, were shown between the groups. In addition, ATA risk of recurrence, response to therapy and survival across the groups did not show any significant association. **Conclusion(s):** No association between BMI and DTC aggressiveness were found in our study population of Saudi patients. In addition, no association were demonstrated between BMI and response to therapy in DTC. These findings suggest that BMI may not be an independent risk factor for aggressiveness in DTC and that other traditional clinicopathological factors should be applied for risk assessment.

A-1099: Managing thyroid nodules in Qatar during the COVID-19 pandemic

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Background: The Coronavirus disease 2019 (COVID-19) pandemic impacted health care systems in all countries, including Qatar. Hamad Medical Corporation (HMC); In compliance with recommendations, suspended all non-urgent procedures, including thyroid fine needle aspiration biopsies (FNAB). Thyroid nodules are second most common cause of referral to HMC endocrine clinic. FNABs are gold standard to differentiate benign from malignant nodules. **Methods:** Our approach includes a teleconsultation to obtain patient's history and risk factors. Reviewing neck ultrasound (US) , obtaining a calcitonin level if indicated, considering comorbidities associated with a high risk of COVID-19 morbidity and mortality.[3] **Results:** We developed a pathway triaging thyroid (FNAB) to: (1) Urgent : patients at higher risk of aggressive thyroid malignancy. Benefits of early detection and treatment outweigh the risk of COVID-19 exposure.[4] FNAB should not be delayed. (2) Semi-urgent : patients at low risk for COVID-19 and high suspicion thyroid nodules, but no evidence that early detection improves overal survival,[2] FNAB may be delayed up to 12 months. (3) Non-urgent : patients with asymptomatic nodules that have low or intermediate suspicion US pattern.[2] Also, includes nodules with ATA high suspicion US pattern in pregnant women and patients at high risk for COVID 19 . The risks outweigh the benefits. FNAB should be delayed until outbreak is controlled.[4] When urgent FNAB is indicated, safety of patients and medical staff needs to be addressed.[5] We recommend testing patient for COVID-19 before FNAB, utilizing US guidance with rapid on-site adequacy evaluation in all cases . Cervical lymph node FNAB with TG washout should be done if indicated. The patient should wear a mask. All medical staff involved should wear personal protective equipment (PPE). The operator should wear N95 mask and face shield. The patient should be informed about cytopathology results via telemedicine. **Conclusion(s):** Triaging thyroid (FNAB) during the COVID-19 pandemic should be based on nodule characteristics and risk of COVID-19 morbidity and mortality. Our group recommends deferring FNAB for asymptomatic patients.[4] FNAB should not be delayed in selected patients who benefit from early detection and intervention.

A-1093: Challenging thyroid storm in pregnancy; A case report

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Background: Thyroid storm is a rare complication of hyperthyroidism. It can lead to life-threatening complications such as Arrhythmias, multiorgan failure and disseminated intravascular coagulation (DIC). In pregnant patients can cause spontaneous abortions, fetal demise.[2] Aggressive treatment under critical care settings is needed. **Methods:** Case report. **Results:** We report a case of 24-year-old Indian female twelve weeks pregnant; background of Graves' disease for five years, was on carbimazole but she discontinued since she became pregnant. Presented to Hamad general hospital with nausea, vomiting and altered mental status for one day. She was afebrile,

normotensive, tachypneic, tachycardiac (HR 150), and confused. Investigations showed supraventricular tachycardia aborted by adenosine and amiodarone, TSH was < 0.01mIU/l(0.3-4.2) and FT4> 100 pmol/L(11.6-21.9),normal baseline liver function and complete blood counts. In the emergency department, she was managed for thyroid storm with hydrocortisone, propranolol, propylthiouracil (PTU), iodine solution and cholestyramine. Then suddenly she deteriorated requiring intubation and vasopressor support under care of Medical Intensive Care Unit (MICU) progressed to multiorgan failure; acute liver injury, acute kidney injury and DIC. So, PTU was stopped and started on plasma exchange followed by total thyroidectomy and tracheostomy. US pelvis showed nonviable fetus, so dilation and curettage were done by obstetric team. Afterwards, she markedly improved except her conscious level and kidney function which required Hemodialysis. MRI brain showed small subdural hematoma treated conservatively and Wernicke encephalopathy treated with thiamine with substantial response and spontaneously breathing. Post thyroidectomy she required calcium supplementation and levothyroxine, liver function and coagulation parameters back to baseline. **Conclusion(s):** Thyroid storm in pregnancy is a medical emergency with high mortality rate, it needs high index of suspicion and early aggressive management by a multidisciplinary team. Plasmapheresis may be considered for challenging cases as a bridge for definitive therapy. Thyroidectomy may be the only option in selected cases like our case.

A-1074: The ratio of thyroglobulin in wash-out fluid from fine-needle aspiration to serum thyroglobulin level in the evaluation of metastatic cervical lymph nodes in patients with papillary thyroid cancer

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Background: Fine needle aspiration (FNA) with cytology analysis and thyroglobulin level of the aspirated biopsy (FNAB-Tg), is an important tool to assess metastasis to cervical lymph nodes (CLN) in patients with papillary thyroid cancer (PTC) who have suspicious CNL features on ultrasound. Despite the great diagnostic accuracy of the FNAB-Tg, studies failed to define the best cutoff value for FNAB-Tg. In our study, we describe a novel way to overcome the heterogeneity in both cutoff values and the assays used to detect thyroglobulin level by calculating the ratio of FNAB-Tg to serum thyroglobulin level (FNAB-Tg/serum-Tg). **Methods:** We conducted a retrospective analysis of 22 patients with suspected or confirmed PTC, who have suspicious CLNs on ultrasound. All patients underwent FNA, with cytology analysis and FNAB-Tg from the suspicious CLN. Simultaneously, serum-Tg was measured. If FNAB-Tg/Serum-Tg ratio>3, this is suggestive of CNL metastasis. We compared our results to the histopathology reports after neck dissection. **Results:** 59%(13/22) patients had cytology results consistent with metastatic PTC. 12 of the 13 patients had FNAB-Tg/serum-Tg ratio>3, one had FNAB-Tg/serum-Tg ratio<3, though the FNAB-Tg was 4474ng/ml and serum-Tg was 2444ng/ml. Metastatic PTC to these CLNs was confirmed on histopathology after neck dissection. 27%(6/22) patients had negative cytology and FNAB-Tg/serum-Tg ratio>3. Five of them had neck dissection with pathology confirming PTC metastasis to these CLNs. One patient did the surgery in his home country and no available pathology result. 14%(3/22) patients had negative cytology and FNAB-Tg/serum-Tg ratio<3. Two of them underwent surgery with histopathology concordant with the FNAB-Tg results. **Conclusion(s):** The FNAB–Tg/serum-Tg ratio >3 is more accurate than cytology in detecting CLN metastasis in patients with PTC. In our study, 27% of CLN metastasis would have been missed if FNAB cytology was used alone. This will help optimizing surgical approach in patients with PTC before initial surgery or for suspected recurrence.

A-1065: Pattern of Vitamin D deficiency in Hashimoto's thyroiditis and its association with thyroid hormone

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Background: The role of vitamin D as an immune modulator has been recently emphasized. However, at this time the research on its role in autoimmune and thyroid disease is not conclusive. The purpose of this study was to examine the association of Hashimoto's thyroiditis (HT) and vitamin D deficiency and to clarify the correlation between vitamin D levels with thyroid hormone. **Methods:** In this cross-sectional study, hypothyroid Hashimoto's thyroiditis (HT) patients were selected among referents to the endocrinology outpatient clinic of MARKS Medical College & Hospital, Dhaka, Bangladesh for thyroid evaluation from January 2019 to March 2020. A total of 150 patients were enrolled and placed in the newly diagnosed Hypothyroid Hashimoto's thyroiditis (HT) 'Case Group' and a 'Control Group' included 145 apparently healthy individuals (matched for age and gender). All the patients underwent a thyroid function tests, and serum 25(OH) D [25-hydroxyvitamin D] levels. The antibodies of interest were Thyroid Peroxidase Antibody (TPO-Ab) and Thyroglobulin Antibody (Tg-Ab), suggesting Hashimoto's thyroiditis (HT) cases. Data was analyzed using SPSS version 18 statistical software. **Results:** In this study, vitamin D deficiency was prevalent in 32.2% of the 'HT group' and 1.0 % of the 'Control group' [p<0.001]. The vitamin D deficiency subjects had a significantly higher TSH (Thyroid Stimulating Hormone) level and lower of Free thyroxine (FT4) level than the vitamin D insufficiency subjects [TSH: 18.58±8.73 vs. 8.52±9.61 (µIU/mL), t = -7.816, p<0.001; FT4: 0.81±0.15 vs.1.12± 0.17(ng/dL) , t = 13.36, p<0.001 respectively]. Concerning the Hashimoto's thyroiditis (HT) case group, there was significant negative correlation between serum 25(OH)VitD and TSH [r = -0.178, P <0.05]. On the other hand, significant positive correlation was recorded between serum 25(OH) Vit D and serum FT4 levels [r = 0.610, P < 0.001]. **Conclusion(s):** Patients with Hashimoto's thyroiditis present with a reduced serum 25(OH)D level, and low serum vitamin D levels were independently associated with high serum TSH levels and low serum FT4 levels. TSH is negatively correlated with 25(OH)D level. On the other hand, FT4 levels were positively correlated with 25(OH)D levels

A-1049: Weight-based thyroid dosing versus fixed-dosing during pregnancy for subclinical hypothyroidism: A retrospective cohort study

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Background: Thyroid hormones play a crucial role in fetal growth and neurocognitive development. The goal of starting thyroxine treatment in newly diagnosed pregnant women with hypothyroidism is to attain euthyroidisim as early as possible. The aim of this study was to compare a weight-based dosing method of starting thyroxine to a fixed-dose method in newly diagnosed women with hypothyroidism discovered during pregnancy. **Methods:** We performed a retrospective cohort study of consecutive women with newly diagnosed hypothyroidism during pregnancy seen at Mount Sinai Hospital and Womens' College Hospital, Toronto, Canada between 2015-2018. We identified women that were treated based on pre-pregnancy weight, and those that were given a fixed dose of 50 mcg/day. The percent of women who reached the target TSH of <2.5 mIU/L within 4-8 weeks was compared using a Chi squared test and a logistic regression model, adjusting for maternal age, level of initial TSH, and gestational age levothyroxine treatment was started. **Results:** Of the 479 charts reviewed, 393 were included. Of these, 252 women were treated with thyroxine based on a fixed-dose approach and 141 women were treated based on their pre-pregnancy weight. In the unadjusted analysis, there was no difference between the groups in the percentage of women in the target range within 4-8 weeks (89.6% in the fixed-dose group vs 88.8% in the weight-based group (p=0.954). However, after adjusting for maternal age, level of first TSH, and gestational age levothyroxine was started, there was a significantly greater odds of achieving the target range using the weight-based dosing (OR 4.26 (1.60-11.7), p=0.004), particularly when levothyroxine was started after 9 weeks gestation. Similar results were seen in analyses including only women who met the American Thyroid Association guidelines for treatment and including only women with positive thyroid peroxidase antibodies. **Conclusion(s):** Treating women with newly-diagnosed hypothyroidism during pregnancy with a weight-based strategy increased the odds of reaching the target TSH range of <2.5 mIU/L within 4-8 weeks of starting thyroxine therapy. Clinicians caring for these women should consider this approach when treating women with subclinical hypothyroidism during pregnancy.

A-1043: Risk stratification of thyroid nodules with Bethesda III Category (AUS/FLUS): The experience of a territorial healthcare hospital

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Background: The Bethesda system for reporting thyroid cytolopathology is the standardized reporting thyroid nodules aspirations, but atypia of undetermined significance/follicular lesion of undetermined significance (Bethesda category III, AUS/FLUS) was the most controversial category. The aim of the study was to identify the degree of malignancy-risk and related risk factors in the surgical pathology of the Bethesda Category III thyroid nodules. **Methods:** A total of 4074 patients (15-90years, 81.5% of females) were subjected to retrospective analysis. Out of these, 463 nodules were classified as Bethesda Class III and included in the analysis. Once all the thyroid cytopathological slides and ultrasound (US) reports were reviewed, they were classified according to the Bethesda System for Reporting Thyroid Cytology, the American College of Radiology (ACR), and the Thyroid Imaging Reporting and Data System (TI-RADS). **Results:** Among the 463 Bethesda class III nodules, 167 nodules were surgically excised, showing an overall malignancy of 27.6% (n= 46). Patients having TSH levels of >4.5mIU/L (35%), TN <2cm (34.6%), solid or nearly solid (28.7%), highly hypoechoic (58.3%), longer than wide (50%), lobulated (45.5%), punctate echogenic (48.6%) ACR TIRAD 5 (55.2%) and falling under the ATA category of high suspicion (50%), displayed a higher risk of malignancy (ROM). The chi-square test revealed a strong link between the echogenicity, echogenic foci, ACR TIRAD, and ATA category between the malignant and benign nodules. The PTC follicular variant (39%) and PTC classical (27%) were identified, in this study population, as the commonest form of thyroid cancer. **Conclusion(s):** Diagnostically, we have almost met the international standards of designating cases with AUS/FLUS (Bethesda category III) and approximate the risk of malignancy. Guidelines should be based on the data from the institutions themselves for a better assessment of the outcomes.

A-1037: The relationship between thyroid function and body composition, leptin, adiponectin, and insulin sensitivity in morbidly obese euthyroid subjects undergoing sleeve gastrectomy

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Background: The relationship between obesity and thyroid function (TF) has been studied in the past decades with increasing interest, however, studies have been inconsistent. The objectives of this study were to compare the changes in TF in morbidly obese euthyroid Saudi subjects undergoing bariatric surgery and lean controls and to examine the influence of leptin, adiponectin, and insulin resistance on TF. **Methods:** 55 euthyroid obese subjects undergoing bariatric surgery and 52 lean age-matched controls were recruited. We measured body weight, BMI, body composition, thyroid-stimulating hormone (TSH), Free T4 (FT4), Free T3(FT3), thyroid antibodies, fasting leptin, adiponectin, and lipid profile in both groups. Insulin resistance was quantified by HOMA-IR. Data are presented as mean ± SEM. The same parameters were measured at 3- and 6-months periods post sleeve gastrectomy. **Results:** The mean BMI was 45.6 ± 1.5 and 23.2±0.5 kg/m2, for the obese and lean controls, respectively, p < 0.001. The mean TSH was 2.7 ±0.18 in obese subjects and 1.7±0.13 in lean controls, respectively, P= 0.014. Mean FT3 was 3.9± 0.1 in obese subjects compared to 5.0 ± 0.1 in lean controls, respectively, P= 0.001, however, FT4 was similar in the two groups. BMI correlated positively with TSH and negatively with FT3 . Leptin correlated negatively with FT4 and FT3 in the lean but not the obese subjects. In binary logistic regression, TSH and FT3 were the only independent predictors of obesity among other variables. In parallel with the achieved weight loss, there was a non- significant reduction in TSH from 2.7 ±0.86 at baseline, to 2.0 ± 0.85 and 2.2± 0.78 at 3 and 6 months, respectively, P = 0.06 and 0.23, respectively. Free T3 reduced from 3.7.0 ± 0.41 at baseline to ± 3.2 at 3 months (P < 0.9)

followed by an increase to 3.9± 0.53 at 6 months, respectively, P < 0.33. **Conclusion(s):** Obese subjects demonstrated a small increase in TSH and a small decrease in FT3 within the normal range that may be associated with or obesity or a result of the obesity state. Further studies on larger numbers of patients are needed to further explore the relationship between obesity and TF.

A-1012: Correlation of the diagnostic performance of ultrasonography with fine-needle aspiration cytology in thyroid nodules: A single centre retrospective study

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Background: Endocrinologists frequently evaluate thyroid nodules which are typically found on physical examination or detected incidentally when other imaging studies are performed. The prevalence of palpable nodules is only 4 to 7%. Ultrasonography is far more sensitive than palpation, as it detects nodules of any size in up to 67% of the general population3. There are several risk stratification systems in thyroid imaging and the Thyroid image reporting and data system (TIRADS) classification system is the most popular among all. The objective of this study was to correlate the sonographic findings and Bethesda system for reporting thyroid cytopathology. **Methods:** In this study, data from 70 patients were analysed (December 2017- January 2020) retrospectively. Patients having thyroid nodule evaluated using B-mode ultrasound and who eventually underwent guided FNA and were included in the analysis. The ultrasonography was performed by two of the most experienced sonologists and the FNA was reported by a single pathologist. The positive characteristics of thyroid nodules that were studied included microcalcifications, an irregular margins, marked hypoechogenicity, a shape that is taller than wide, and colour flow pattern in Colour Doppler ultrasound. **Results:** Among 70 solid thyroid nodules, 9 lesions were classified as positive considering the sonographic characteristics and 6 of them were proved to be malignant on histopathology. Of 59 lesions which were classified as negative, none was proved to be malignant. The sensitivity, specificity, positive predictive value, and negative predictive value based on our sonographic classification method were 100%, 81%, 33%, and 100%, respectively. **Conclusion(s):** This study showed that ultrasound scan, done by experienced hands, can be a useful and non-invasive tool for differentiating benign from malignant thyroid nodules with fair amount of accuracy.

A-1011: Alemtuzumab induced thyroid chaos

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Background: Alemtuzumab is a humanized monoclonal antibody against CD52, located on the surface of the lymphocytes, used in the treatment of relapsing-remitting multiple sclerosis. Alemtuzumab induces an immune reconstitution phase with reconstitution autoimmune diseases represent the most common side effect. **Methods:** A 41-year-old female has been diagnosed with multiple sclerosis in 2017 supported by MRI report. She has been commenced on alemtuzumab in 9/2018 after being suffering from symptoms related to the active relapsing-remitting form of MS, although no previous medication attempted. She had another dose of alemtuzumab in 9/2019. Following this, she has been reported feeling unwell with hotness, has poor sleep with some weight loss. She has had a regular check-up with TSH monitoring. Her TSH in 12/19 showed TSH<0.01.clinical examination revealed tremor, mild neck swelling no ophthalmoplegia. The patient has been started on propranolol alone. Her investigations on 2/20 showed: positive Thyroid receptor Ab. The US of the thyroid diffuse enlargement of the thyroid gland with normal diffuse uptake in thyroid scan with no evidence of thyroiditis. Her TSH started to rise and reached it's the peak of 100 mu/l on 3/20 so thyroxine started, and her recent TSH result indicated hyperthyroidism. **Results:** Alemtuzumab is known to cause either Graves' and thyroiditis, but the occurrence of both and moving from overt hyper to overt hypo without treatment in a short period of time is rare and likely due to change in the balance between TSAb and TBAb.The phenomenon of TSH receptor antibody switching between stimulating and blocking is very uncommon and not well understood. **Conclusion(s):** This case highlights the challenges of managing a patient with alemtuzumab induced thyroid dysfunction (imagine if she was started on carbimazole alone) so the good work up in these patients and close follow up is vital.

A-1010: Pattern of altered lipid profile in patients with subclinical hypothyroidism and its relation with thyroid stimulating hormone

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Background: The relationship between subclinical hypothyroidism (SCH) and dyslipidemia is still controversial about whether SCH is constantly and universally associated with lipid disorder. The aim of this study was to assess the lipid abnormalities in patients of subclinical hypothyroidism (SCH) and to evaluate the relation between thyroid stimulating hormone (TSH) and lipid profile. **Methods:** This observational type of case control study was conducted in outpatient department (OPD) of the Hormone and Diabetes clinic at MARKS Medical College & Hospital in Dhaka, Bangladesh. The study was carried out during May 2018 to October 2019 after taking permission from the ethical review committee of the institute. A total of 308 male or female subjects age ranging from 30 - 60 years were included in this study using non-probability type of purposive sampling. Among them, 156 patients were diagnosed as case of subclinical hypothyroidism, while 152 patients were euthyroid healthy individuals in control group (matched for age and gender). For TSH, and free thyroxine (FT4), serum was analyzed by Advia Centaur CP Imunoassay analyzer. For lipid profile, serum was analyzed on chemistry analyzer using the Siemens Dimensions Rx Max kit. Data was analyzed using SPSS version 18 statistical software. **Results:** In this study, dyslipidemia was more prevalent in patients with SCH compared to control group [p<0.001]. Subclinical hypothyroid groups showed altered lipid profile i.e. significantly higher serum total cholesterol (TC), low density lipoprotein cholesterol (LDL-C), triglycerides (TGs) and lower high density lipoprotein cholesterol (HDL-C) when compared with the euthyroid subjects [p < 0.05]. The Pearson's correlation coefficient for the relationships between serum TSH and lipid level showed that TSH levels were positively correlated with cholesterol, LDL-C, triglycerides and negatively correlated with HDL-C in patients with subclinical hypothyroidism [p < 0.01]. **Conclusion(s):** Dyslipidemia is a prevalent feature in subclinical hypothyroid patients compared to euthyroid controls. The

study shows that TSH levels are positively correlated with cholesterol, LDL-C, triglycerides, and negatively correlated with HDL-C. SCH should be a matter for further investigation because dyslipidemia is associated with this thyroid disorder.

A-1001: Assessment of the selenium supplementation on Hashimoto's thyroiditis, systematic review and meta-analysis

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Background: Minerals are inorganic substances required by the human body for normal functioning. Minerals are provided in the diet since the body cannot manufacture it (Mason, 2012). Minerals divided into two, macro and micro minerals. Ultra trace minerals are required by the body in trace amounts lower than micro-minerals. Their daily intake is less than one microgram (Kipp et al. 2015). Selenium is one of the trace minerals required by the body. It plays several roles in the body. This article aims to find out the correlation between the supplementation of selenium and anti-TPO antibodies as well as T4 levels in Hashimoto's Thyroiditis. **Methods:** A literature search conducted using various human studies databases like Cochrane, Medline, Biomed, Google Scholar, Scopus, and Embase. Smaller journals that are not in the databases also review, and non-published articles from like abstract presented in conferences and current research also included. After abstraction, data analysis carried out. The mean and standard deviation (SD) calculated. One of the researches had all the information in figures, and only the levels of FT4 and anti-TPO antibodies obtained. Two random effect analyses performed for the mean difference in the selected studies for FT4 and anti-TPO antibodies level. Heterogeneity was estimated using I2. If the heterogeneity index were less than 25 percent, the random effect would fix, and if it is higher than 25 percent, the random fact will be selected. In the comprehensive meta-analysis, paired mean difference and variance chosen. The mean difference between the set-point and after treatment in test groups and the sample size also entered. The summation of before calculated the variation of mean deviation and after variances (SD)^2. **Results:** The results obtained from the 8-literature reviewed were analyzed using SPSS software version22 to come up with the data used to give a conclusion on the meta-analysis. The research was done by (Gartner 2002) showed that anti-TPO antibodies decreased significantly in the treatment group supplemented with selenium to 63.5% and 88% in the control group given the placebo. (Eske et al.,2014) showed that there was no significant difference between the treatment and control or placebo group after selenium supplementation. (Duntas 2003) showed a decrease in anti-TPO antibodies and TSH. (Turker, 2006), the anti-TPO value was 4 IU/ml, and the TSH level was 0.025. (Esposito 2016) showed no difference between the treatment and placebo groups. (Farias2015) showed a 5% decrease in anti-TPO antigens at three months and a 20% decrease at six months. Pirola study done in 2016, 17.2% of patients received euthyroidism after supplementation with selenium,(Kachouei 2018), the mean of anti-TPO antibodies was682.18 before selenium supplementation and 522 after supplementation. The p-value calculated for Anti-TPO by SPSS of the eight groups resulted in a p-value of 0.142. The p-value calculated for T4 levels by SPSS of the five groups resulted in a p-value of 0.239. The heterogeneity test was zero after the I2 tests. **Conclusion(s):** From the literature reviewed in the meta-analysis, six of the randomized clinical trials showed that selenium supplementation lowers the serum levels of anti-TPO antibodies while two experiments by (Eskes et al. 2014) and Pirola et al. show that selenium supplementation does not affectation-TPO antibodies. Despite various researches concluding that selenium supplementation significantly lower anti-TPO antibodies, the meta-analysis shows no significant statistical results in support of selenium supplementation lowering anti-TPO antibodies and FT4 Levels. My meta-analysis had a P-value of 0.142; the value is more than 0.05; therefore, rejects the alternative hypothesis that selenium decreases anti-TPO antibodies. Selenium does not affect anti-TPO antibodies and T4. (Duntas et al., 2014) determined the rate of absorption of selenium. After oral administration of the serum levels of Se, increase drastically, indicating rapid absorption. Further studies should perform to assess the bioavailability of Se. Intake alone cannot be conclusive about the effect of Se. The mechanism of action of Se on the immune system is not well established, and further studies need to conduct on the same. Selenium biomarkers such as chemokines CXCL 9 and 10 induced y IFN y should further investigated to help in the control of selenium supplementation. Further studies should conduct to determine the modification of selenium supplements to make them useful for the treatment and prevention of Hashimoto's Disease.

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Conflict of interest: Abstracts were accepted on the basis of no conflicts of interests that may jeopardize the impartiality and validity of the research.

Compliance with ethical principles: Abstracts reporting human and animal research were considered on the basis that ethical approval where appropriate was obtained and all participants provided informed consent.