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Abstracts from the 7th AACE Gulf Chapter Annual Meeting, Muscat, Oman 1-3 November, 2019

OC1.1: Association of single-nucleotide polymorphisms in pro-inflammatory/toll like receptor genes with type 1 diabetes

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Background: Type 1 Diabetes (T1DM) is a common and serious long-term autoimmune disease that is characterized by progressive destruction of insulin-producing pancreatic beta-cells through T lymphocytes and macrophages. The etiology of T1DM is multi-factorial with strong genetic susceptibility and interaction between the genetic component and a diversity of environmental factors. **Methods:** In this study, we compared frequencies of SNPs located within Toll Like Receptors (TLR), Tumor Necrosis Factor alpha (TNF- alpha) Interleukin One (IL-1) , Interleukin One Receptor (IL-1R1), Interleukin two (IL-2), and Interleukin Twelve (IL-12) , between a cohort of Saudi subjects with T1DM , and a cohort of normal healthy controls. **Results:** Twelve SNPs including: rs1800629, rs361525, rs16944, rs4986791, rs4986790, rs3804099, rs2234650, rs315952, rs1143634, rs1800587, rs3212227 and rs2069762 were investigated. Multiple logistic regression analyses revealed significant differences between patient and control groups for rs1800629 and rs351525 of TNF-Alpha in both allele and genotype models or genotype models only. Some SNPs models were demonstrated as high risk factors for T1DM development while other are found as protective factors. **Conclusions:** In conclusion, we have demonstrated a range of SNPs alleles and genotypes models within the TNF-α and IL-1R that have strong association with T1DM; our findings may indicate functional consequences for T1DM susceptibility. Future studies using sequence base typing methods, measurement of the blood cytokines levels, and in-vitro immune response assays would help to confirm, clarify and extend our findings.

OC1.2: Prevalence of adenovirus-36 antibodies in obese type 2 diabetic and non-diabetic adults in relation to glucose homeostasis in the United Arab Emirates

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Background: The study was aimed to explore the prevalence of human adenovirus-36 infection and its association with adiposity indices and glycemic control among obese diabetic and non-diabetic adults in the United Arab Emirates (UAE). **Methods:** In this prospective cross-sectional study we randomly recruited 346 patients visiting Rashid Centre for Diabetes and Research between march 2014-15, aged >18 years and body mass index ≥ 30kg/m2. ELISA method was used for assessing the presence of antibodies against Adv36 in serum. **Results:** We found 57 % of obese (n=105) and 72% of diabetic obese (n=241) patients were seropositive to human adenovirus-36. There was no association between adenovirus-36 positivity and BMI and waist/hip ratio or glycemic control among the cohort. The risk of adenovirus-36 positivity increases by 25 % in diabetic obese adults compared to non-diabetic obese (OR=1.25, 95% CI 0.71-2.20, p=0.42) after adjusting for the age, gender and BMI, although it was not statistically significant. The estimated risk of adenovirus-36 in diabetic obese adults increases after 30 years of age (OR 2.58, 95% CI 1.49-7.75, p=0.001) after adjusting for gender and body mass index. **Conclusions:** Although the prevalence of human adenovirus-36 in obese population is higher than global reports, it does not show association with adiposity indices or glycemic control in obese non-diabetic and obese diabetic population in the UAE. However, our study design was cross-sectional and no inferences should be drawn regarding causality effects. Further studies are suggested to explore relations between Adenovirus- 36 infection and complications of obesity in this region.

OC1.4: Long term follow up of permanent neonatal diabetes in south region of Saudi Arabia

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Background: Neonatal diabetes is very rare with incidence ranging from 1: 400,000 to 1: 500,000 neonates. **Methods:** Retrospctive study over period of 14 years (2004-2018) all infants age 6 monthes or less was regesterd with detailed history and examination and family pedigree after having having research committee agreement. **Results:** 13 cases in 14 years period; (incidence rate of 1: 37,000

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neonates). They presented with irritability, excessive crying, fever, IUGR, poor weight gain and excessive diaper change seizer disorder. Neonatal diabetes does exist as an isolated phenomenon or in association with the other defects. The associated defects included; exocrine & endocrine pancreas insufficiency, methylmalonic acidemia and Wolcott- Rallison Syndrome. It is of interest to report the association between P.N.D.M. and central hypothyroidism, hemolytic anemia, microcephally and brain dysgenesis. 80 % of cases were products of consanguineous marriages. Familial trend is observed in 7 of the cases. Cases 1 & 2 (sibs) had hemolytic anemia that needed blood transfusion without known cause. However, it could be in part explained by hyperglycemia possibly as a result of hyperosmolarity as the other sister did not have hemolytic anemia. However, other cases did not show this association despite hyperglycemia which might suggest other unrecognized cause. Case 4 was found to have central hypothyroidism. Cases 6 & 7 (sibs) had primary Microcephally with dysgenesis, seizure disorder and hypsarrythmias. Due to this heterogeneity, Molecular DNA studies send for known mutataion which was negative. **Conclusions:** Neonatal diabetes does exist as an isolated phenomenon or in association with the other defects. The associated defects included; exocrine & endocrine pancreas insufficiency, methylmalonic acidemia and Wolcott- Rallison Syndrome. It is of interest to report the association between P.N.D.M. and central hypothyroidism, hemolytic anemia, microcephally and brain dysgenesis. 80 % of cases were products of consanguineous marriages. Familial trend is observed in 7 of the cases. Cases 1 & 2 (sibs) had hemolytic anemia that needed blood transfusion without known cause. However, it could be in part explained by hyperglycemia possibly as a result of hyperosmolarity as the other sister did not have hemolytic anemia. However, other cases did not show this association despite hyperglycemia which might suggest other unrecognized cause. Case 4 was found to have central hypothyroidism. Cases 6 & 7 (sibs) had primary Microcephally with dysgenesis, seizure disorder and hypsarrythmias. We advise that in all cases of PNDM one needs to look carefully for other associated defects (structural, metabolic, endocrine, etc.). Due to this heterogeneity, Molecular DNA studies send for known mutataion which was negative.

OC1.5: Effects of fertility drugs on glucose homeostasis and other metabolic parameters in women undergoing *in vitro* fertilization

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Background: Infertility is defined as the inability to conceive for 12 months of unprotected intercourse; as consequence, in vitro fertilization (IVF) treatment has become more common in nowadays. In mice, IVF was associated with glucose intolerance. Controversies still exist on whether ART would be an additional factor to the known diabetogenic effect of pregnancy predisposing women to adverse obstetric outcomes compared to spontaneously-conceived pregnancy. Thus, the objective of this study was to assess the effect of IVF medications on glucose homeostasis, insulin resistance and other cardio-metabolic parameters (lipid profile and thyroid function). **Methods:** Adult non-diabetic women (BMI: 18.5-37) of ≤ 39 years of age undergoing IVF treatment are recruited (n=131). Blood samples are collected throughout the IVF treatment: at baseline, egg retrieval, 4 weeks and 12 weeks of pregnancy. Changes in glucose homeostasis and insulin sensitivity (using HOMA) are determined with both plasma insulin and glucose. Lipid profile, HbA1c, thyroid-stimulating hormone and women reproductive hormones are also routinely measured. **Results:** At 12 weeks of hormonal intervention, glucose and HbA1c levels were lower (≈6%) and lipid profile was significantly higher in the pregnant group (62% in triglycerides, 11% total cholesterol, 15% HDL and 7% LDL). HOMA was also significantly lower in pregnant women (≈12%). **Conclusions:** Improvement of glucose homeostasis and insulin sensitivity as well as the increase in lipid profile more likely the consequence of pregnancy-related hormonal effect. Fertility medications seem to have no short-term effect on metabolic parameters; more studies are needed to asses the long-term effect in relation to maternal and fetal outcomes.

OC1.3: Leptin G-2548A gene polymorphism is positively associated 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 still discrepancies (1-4). therefore, this study aimed to investigate the association between LEP G-2548A gene polymorphism with increased plasma leptin and glucose levels in 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:** Results showed that 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. **Conclusions:** GA and AA genotypes and A allele of LEP gene may represent important risk factors predisposing healthy subjects to develop T2DM irrespective status of blood pressure.

OC 2.1: Screening for familial hypercholesterolaemia: A United Arab Emirates perspective

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Background: Familial hypercholesterolemia (FH) is characterised by a substantial elevation of circulating Low Density Lipoprotein cholesterol (LDL-c) and is associated with premature atherosclerotic cardiovascular disease. This predominantly autosomal dominant disorder affects all communities and ethnicities worldwide; however, genetic aetiologies differ largely between countries. Here, we assessed for the first time the prevalence of FH in Emiratis. **Methods:** Complying with the inclusion criteria for FH screening, we recruited (Imperial College London Diabetes Centre in Abu Dhabi) 236 participants with severe hypercholesterolemia (LDL-c>5 mmol/L). We used a state-of-the-art customized next generation sequencing pipeline to screen canonical FH genes (LDLR, APOB, PCSK9, LDLRAP1). **Results:** Fifteen out of 229 (7%) participants were genetically diagnosed with FH. Overall, we identified 15 FH causal mutations, 11 affecting LDLR gene, 2 affecting the promoter region of LDLR, 1 affecting APOB and 1 affecting PCSK9 gene. Among mutations identified, four are reported for the first time worldwide. We did not find any autosomal recessive forms of hypercholesterolemia. **Conclusions:** This study shows a low prevalence of FH in Emirati with severe hypercholesterolemia and increases awareness of ethnic differences of FH prevalence. Finding out the metabolic and molecular causes of the extreme phenotype in those without mutations in FH genes (n=214) will be important for clinical care especially when considering the diabetic and cardiovascular disease burden in this middle-aged Emirati cohort.

OC 2.2: Short synacthen test at sultan qaboos university hospital between paediatrics and adults: Single centre experience

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Background: The adrenocorticotrophic hormone (ACTH) test also known as Synacthen test is one of the common medical tests used by endocrinologists to assess the adrenal cortex's ability to produce cortisol. The standard Synacthen test (SST) usually performed by taking 3 cortisol sample; at baseline then 30 and 60 min post injecting Synacthen intravenously. Doses are age-based; 62.5mcg for babies younger than 6 months, 125mcg for infants between 6-24 months and 250mcg for people older than 2 years. There is a controversy among endocrinologists about the necessity of sampling at 30min(1,2). 0 and 60min samples claimed to be sufficient for a diagnostic SST result. This study aims to to review the SST results and focus on the concordance between 30 and 60min serum cortisol (SC) measurements in paediatrics and adults. **Methods:** All SST were performed in our Biochemistry Laboratory were reviewed between 01/01/2014 to 31/12/2018, using the the electrochemiluminescence immunoassay (Roche – Cobas E 601 platform). Internal and external quality control materials are routinely used to ensure the precision and accuracy of SC levels at the laboratory. The cut off used for SC value to pass the test is 550 nmol/L. **Results:** 247 SSTs were identified via Hospital Information System (HIS) database (53 from paediatrics and 194 from adults). 97.5% of adults had 3 cortisol samples per SST, however only 15 children had the same where the rest had only 0 and 60 minutes SC samples. The standard deviation error bars between 30 and 60min showed overlapping with higher mean SC levels at 60 minutes compared to 30min samples for both adults and paediatric patients (Fig.1). The mean SC at 30min was 479nmol/L (adults) and 597nmol/L (paediatrics) with SC levels at 60min of 548nmol/L (adults) and 750nmol/L (Paediatrics). 2 (13%) occasions from SST of paediatrics; the peak SC was recorded highest at 30min with only 6 and 37pmol/L difference in values. However, it did not lead to change of management should we relied on the 60min reading for those 2 occasions. The SC was 48pmol/L for one patient and 684pmol/L for the other i.e. there was clear fail or pass of the SST. 17 (8.5%) occasions from SST of adults; the peak SC at 60 min was less than the 30min sample. However, in 8 cases of them it did not matter as SC at 60min remained higher than 550nmol/L. Whereas 9 cases the peak was less than 550nmol/L. Only 3 of them had a higher peak at 30min, which was above the cut off level, in 1 of them the sample was collected wrongly at 120min instead of 60min. **Conclusions:** From this small sample, we concluded that SST can be done by 0 and 60min sampling. Dropping the 30min sample from the test is going to contribute into patient comfort, cost saving and reducing the workload. However, If the peak at 60min is in a grey area (500-550nmol/L) then it may worth repeating the SST by including a 30min sampling. Further studies are needed.

OC 2.3: Clinical features and therapeutic outcomes of patients with acromegaly in Saudi Arabia: A retrospective analysis

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Background: Acromegaly is a rare disease resulting in clinical sequelae with significant morbidity and mortality due to central tumor mass effects and prolonged growth hormone (GH) hypersecretion affecting multiple body systems.Our objectives were to describe the epidemiology, the presence of comorbidities, quality of care provided to the patients and outcomes of management of acromegaly in Saudi Arabia. **Methods:** Data were collected retrospectively from the charts of patients diagnosed with acromegaly. A total 195 patients (116 males and 79 females) from 9 major participating hospitals were identified and included in the analysis with a mean age diagnosis of 43 ±12 (male) and 46 ± 14 years (female). **Results:** All cases were caused by GH secreting pituitary adenomas, of which 92.4 % were macroadenomas. Headache, coarse facial features, acral growth, and sweating/oily skin were by far the most frequent presenting complaints. The most common comorbidities were diabetes mellitus (51.7%) followed by hypertension (50%) and visual field defects (30.5%). The vast majority (95 %) of the patients was treated surgically by the transsphenoidal route (98 %). 24 % also received radiotherapy, and 74.4 % received medical therapy as adjunctive

therapy to surgery. When stringent criteria were applied based on the latest GH and IGF-1 results for assessment of outcomes of therapy, 28.7% of the patients were cured and 30.1 % had their disease in control while 28.7 % were having active disease despite receiving multimodal therapy. **Conclusions:** This is the first and the largest study of its kind on acromegaly ever carried out in this region. Our findings highlight important comprehensive acromegaly registry to enable early identification, evaluation, and selection of the best therapeutic approaches to improve treatment outcome and remission rate of the disease.

OC 2.4: Octreotide suppression test in patients with adrenocorticotrophic hormone dependent Cushing's disease

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Background: Adrenocorticotrophic hormone (ACTH) dependent Cushing's syndrome (CS) is uncommon. Approximately 90% of cases are caused by an ACTH-secreting pituitary tumour; 40% of these small pituitary tumours cannot be seen on pituitary-directed head MRI scans. Approximately 10% of patients with ACTH-dependent CS have ectopic ACTH secretion by neuroendocrine tumors (NETs). To distinguish between these 2 causes of ACTH-dependent CS the gold standard procedure is inferior petrosal sinus sampling (IPSS). However, because IPSS is not available in our center we have been using a 72-hour trial of the somatostatin analogue (octreotide 100 mcg administered subcutaneously every 8 hours) to distinguish between the eutopic and ectopic ACTH syndromes. NETs have receptors for somatostatin and respond with a fall in serum cortisol concentrations, whereas cortisol levels remain elevated in patients with pituitary-dependent CS. **Methods:** 13 patents with ACTH dependent Cushing's (8 women, 5 men) with ages ranging between 16 to 40 years were studied. Serum cortisol concentrations were measured at 0800 hrs before and during the administration of .Octreotide at a dosage of 100 mcg subcutaneously every 8 hours for 72 hours. **Results:** The serum cortisol concentrations suppressed by returning to normal in 4 patients who were later documented to have ectopic disease, two with typical bronchial carcinoids and two with pancreatic NETs and metastatic disease. The other 9 patients had no suppression in serum cortisol concentrations and were documented later to have pituitary tumours. **Conclusions:** We recommend that a 72-hour octreotide suppression test be given to all patients with ACTH-dependent CS. In our experience this test is safe, simple and reliably distinguishes pituitary from ectopic ACTH overproduction. Patients with NETs who respond to octreotide may then be controlled before surgery or in the long term with long acting octreotide if surgery is declined or not practicable.

OC 2.5: Cardiovascular risk markers in sub clinical hyperthyroidism

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Background: Subclinical hyperthyroidism (SH, defined by low or undetectable serum thyroid stimulating hormone and normal thyroid hormones) is associated with increased prevalence of atrial fibrillation and increased mortality. Lower number of circulating endothelial progenitor cells (CEPC) and increased levels of circulating endothelial cells (CEC) are reported in conditions with increased cardiovascular risk (CVR). Increased plasma concentrations of Asymmetric dimethylarginine (ADMA) and Lipoprotein-associated phospholipase A2 (Lp-PLA2) also predict cardiovascular disease. We aimed to ascertain whether abnormal CEPCs/CECs, ADMA, Lp-PLA-2 contribute to CVR in SH. **Methods:** CEPC/CEC (flow cytometry, quantified as % of monocytes), CRP, ADMA, LP-PLA2 were measured in peripheral blood in 30 SH subjects and 15 matched controls. **Results:** MA and CD34+ cells were significantly higher in SH group compared to controls [Table 1]. There was no significant difference in CEPC/CEC, Lp-PLA-2 and CRP levels between groups. **Conclusions:** Conclusion: Increased ADMA leading to impaired NO synthesis/endothelial dysfunction may contribute to CVR in SH. CEPC/CEC and Lp-PLA-2 are unlikely to contribute to CV risk in SH subjects. The significance for increased CD34+ cells in SH is unclear and needs further evaluation.

Table 1: Characteristics between subclinical hyperthyroidism and control groups

Characteristics	SH	Controls	*P*
Age (years)	54.6 (12.4)	57.7 (10.9)	0.47
Female/male	22/8	11/4	NA
BMI (kg/m^2)	24.7 (3.9)	26.3 (4.8)	0.3
TSH mU/L	0.23 (0.02-0.4)	1.7 (0.41-3.84)	<0.01
FT4 pmol/L	13.0 (10-18)	12.0 (10-15)	0.07
CRP	2.7 (5.3)	2.95 (2.44)	0.16
CEPC (%)	0.0002 (0.0001-0.082)	0.00032 (0-0.0019)	0.28
CEC (%)	0.00019 (0-0.0038)	0.0003 (0-0.0018)	0.19
CD34+ (%)	0.14 (0.04-0.45)	0.058 (0.025-0.14)	0.0002
ADMA	0.54 (0.09)	0.42 (0.08)	0.0002
Lp-PLA-2	638.01 (1268.1)	894.63 (1508.8)	0.96

Data expressed as mean and (SD) except for TSH, FT4, CEPC, CEC, CD34 (as median and range). SD: Standard deviation, BMI: Body mass index, TSH: Thyroid-stimulating hormone, CRP: C reactive protein, CEPC: circUlating endothelial progenitor cell, CEC: Circulating endothelial cell, ADMA: Asymmetric dimethylarginine, Lp-PLA-2: Lipoprotein-associated phospholipase A2, SH: Subclinical hyperthyroidism, FT4: Free thyroxine, NA: Not available

P101: A new Vitamin D deficiency cut off value in Iraq

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Background: Vitamin D deficiency is common worldwide. Clinical observations have shown that majority of healthy people living in Iraq and the Middle East are vitamin D deficient. This study aimed to determine the true cut off value for vitamin D deficiency (25(OH)D) in Iraq by analyzing the value at which parathyroid hormone (PTH) starts to rise above its reference range. **Methods:** A cross-sectional study of 874 apparently healthy subjects from Basrah, Iraq. Serum calcium, creatinine, vitamin D and PTH were measured for each participant. Those with impaired renal function and primary hyperparathyroidism were excluded from the study. The association between serum 25(OH)D and PTH was examined using multiple logistic regression analysis. The best cut-off value of serum 25(OH)D to predict high PTH was determined using receiver

operating characteristic (ROC) analysis. **Results:** The mean values of 25(OH)D and PTH were 16.9 ± 14.9 ng/ml and 129.1 ± 110.5 pg/ml respectively. If the universal cut off values were applied, 25-hydroxyvitamin D deficiency was found in 599 subjects (68.5%) and was inversely related to PTH. Only 139 subjects (15.9%) had optimum 25(OH)D levels. Secondary hyperparathyroidism was found in 487 subjects (45.7%). Using the ROC analysis, the serum 25(OH)D value of 12.5 ng/ml was the best cut-off point to predict secondary hyperparathyroidism in the population (sensitivity: 48.2%, specificity: 53.5%). The number of subjects labelled as vitamin D deficient was reduced to 461 (52.7%) if the new cut off value is applied. **Conclusions:** The cut off value for vitamin D deficiency needs to be redefined in areas were the disease is unexpectedly highly prevalent. Single cut off value cannot be applied worldwide due to genetic and environmental variations. The new cut off value is lower than that used globally. Further studied are required to establish the new cut off values.

P102: Humerus fracture following a seizure in non-epileptic patient

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Background: Hypoparathyroidism is a rare endocrine disorder where parathyroid hormone production is decreased with low serum calcium levels. Most commonly caused by iatrogenic surgical removal of the parathyroid. However, there are other rarer conditions causing hypoparathyroidism such as idiopathic or congenital causes. In this case report, the author describes a 36-year-old male with hypoparathyroidism presenting with generalized tonic-clonic seizure associated with humerus fracture and right anterior shoulder dislocation. In addition, past medical history of delayed development in walking and dental eruptions pointing towards more of a congenital cause as a leading diagnosis. CT brain showing of bilateral basal ganglia calcification. **Methods:** A cross-sectional study of 874 apparently healthy subjects from Basrah, Iraq. Serum calcium, creatinine, vitamin D and PTH were measured for each participant. Those with impaired renal function and primary hyperparathyroidism were excluded from the study. The association between serum 25(OH)D and PTH was examined using multiple logistic regression analysis. The best cut-off value of serum 25(OH)D to predict high PTH was determined using receiver operating characteristic (ROC) analysis. **Results:** The patient was treated with calcium, vitamin D and recombinant parathyroid hormone replacement yielded a good outcome for the patient where the clinical neurological symptoms subsided and complications of it were prevented. **Conclusions:** This case demonstrates late presentation of congenital hypoparathyroidism where earlier diagnosis would have prevented this complication. Teriparatide gave a good result in treating this condition. Patient is doing fine in the follow-up clinic with calcium carbonate and calcitriol treatment.

P103: A paediatric case report of X-linked hypophosphataemia in Dubai hospital

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Background: X-linked hypophosphataemia (XLH) is caused by loss-of-function mutations in the gene encoding phosphate-regulating endopeptidase homologue X-linked (PHEX), resulting in excess circulating fibroblast growth factor 23 (FGF-23).1,2 In children, clinical features include skeletal abnormalities, lower extremity deformity, pain, growth impairment and dental issues.3 Current therapies do not treat the underlying cause of the disease,2 resulting in symptom persistence as well as side effects including gastrointestinal symptoms, mobility issues, developmental delays and reduced quality of life.3,4 Here, we describe the clinical and biochemical features of XLH in a 7-year-old female. **Methods:** The patient was diagnosed with vitamin D-deficiency rickets at age 3 years. Follow-up visits revealed consistent low serum phosphorus levels and high serum parathyroid hormone (PTH) and alkaline phosphatase (ALP) levels, worsening gait abnormalities and lower limb pain, despite treatment with vitamin D, calcium and phosphate supplementation. At age 5 years, she was diagnosed with XLH and recent genetic testing confirmed PHEX mutation. Her most recent examination revealed worsening tooth decay and genu varum deformity in both lower extremities despite adherence to her treatments. There was no improvement in her biochemical parameters, most recent results of which showed the following serum levels: phosphate 2.6 mg/dL (reference: 3.4–5.5); iPTH 93.6 pg/mL (reference: 10–55); ALP 387 U/L (reference: <300 U/L); and calcium: 9.2 mg/dL (reference: 8.8–10.8). **Results:** Due to suboptimal response to treatment, the patient is now being treated with higher dosages of conventional treatment (sodium phosphate, 750 mg q.i.d and 1-alphacalcidiol, 10 drops/am and 4 drops at bedtime), still without any improvement. **Conclusions:** Burosumab is a novel monoclonal FGF-23 antibody that is being considered as therapy in this patient, with the aim of improving deformity, promoting growth and ameliorating de-mineralization, without the serious side effects of long-term phosphate and vitamin D supplementation.

P104: X-linked hypophosphataemia: An adult case report in the UAE

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Background: X-linked hypophosphataemia (XLH) is the most common form of inherited hypophosphataemic rickets, caused by loss-of-function mutations in the gene encoding phosphate-regulating endopeptidase homologue X-linked (PHEX), resulting in excess circulating fibroblast growth factor 23 (FGF-23). There is a lack of consensus regarding treatment of XLH in adults and conventional treatment is used to manage pain and joint stiffness and can involve rehabilitation. Occasionally corrective surgery to treat residual leg bowing at the end of growth is performed. **Methods:** Here we describe a 17-year-old female diagnosed with XLH, confirmed by radiological findings of rickets during childhood, biochemical results, and genetic testing. The patient has a history of low serum phosphorus levels, and the most recent low result was 0.61 mmol/L (reference 1.1–2.0). Moreover, the patient has a history of low serum 25-OH vitamin D, high serum parathyroid hormone (PTH) and high alkaline phosphatase (ALP) levels. **Results:** Following recent biochemical investigations, current serum levels were: PTH; 11.9 pmol/L (reference 0.13–4.1); ALP: 235 U/L (reference 50–117); and 25-OH vitamin D: 28 nmol/L (reference 75–250). She had undergone previous surgical correction of bilateral valgus deformity. The recent radiographic images showed a re-identified deformity (15 months comparison). The patient has previously been treated with daily vitamin D

and phosphate supplements and is continuing on this treatment regimen however there are concerns about her adherence due to gastrointestinal side-effects (severe diarrhoea). A recent evidence-based guideline recommends considering the recently approved burosumab, a novel, fully human anti-FGF-23 immunoglobulin G1 monoclonal antibody, which binds and inhibits FGF-23 activity3,4 for treatment of XLH in children, adolescents with growing skeletons, and adults. **Conclusions:** It is recommended in the following situations: insufficient response or refractory to conventional therapy, complications related to conventional therapy, or pseudofractures or osteomalacia-related fractures.

P105: Experience of burosumab therapy in a case of X-linked hypophosphataemia in Saudi Arabia

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Background: X-linked hypophosphataemia (XLH) is caused by loss-of-function mutations in the gene encoding phosphate-regulating endopeptidase homologue X-linked (PHEX), resulting in excess circulating fibroblast growth factor 23 (FGF-23).1,2 In children, clinical features include waddling gait, leg bowing, pain, dental abscesses and growth failure. Current therapies do not treat the underlying cause of the disease,2 resulting in symptom persistence and side effects, impacting on developmental delays and quality of life.3,4 Burosumab, a novel, fully human anti-FGF-23 immunoglobulin G1 monoclonal antibody, binds and inhibits FGF-23 activity.5,6 Here, we describe the clinical and biochemical features of XLH in a 14-year-old female treated with burosumab. **Methods:** The patient was referred to our clinic at age 8 years with persistent rickets and a history of low serum phosphorus levels and worsening gait abnormalities. Her symptoms included bone pain, genu valgum, dental caries and short stature (114 cm, z-score -2.53). She was receiving phosphate (500 mg t.i.d) and alfacalcidiol (1.7 mcg o.d). Biochemical investigations at age 5 showed the following serum levels: phosphorous 0.85 mmol/L (reference: 0.95–1.62); parathyroid hormone (PTH) 706 pg/mL (reference: 21.89–87.55); and alkaline phosphatase (ALP) 427 U/L. Genetic testing confirmed XLH diagnosis. **Results:** She was maintained on treatment, with the addition of growth hormone (0.035 mg/kg/day) and cinacalcet (30 mg o.d) but had no symptom improvement and went on to develop mild medullary nephrocalcinosis. She underwent corrective surgery for her worsening genu valgum deformity and a distal femoral varus osteotomy. All therapies were stopped prior to burosumab (30 mg s.c) initiation. Following 6 months of treatment, clinical and biochemical parameters improved (25-OH vitamin D 53.7 mmol/L; PO4 0.96 mmol/L; PTH 270.9 pg/mL; ALP 154 U/L), with an 80% reduction in bone pain as reported by the patient. **Conclusions:** No treatment-related adverse events were reported.

P106: Hypocalcemia impervious to treatment: A case report

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Background: This case highlights a rare but important cause of hypocalcaemia and seizures secondary to it. **Methods:** A 19 year old young man presented with a history of 2 episodes of blank spells in September 2018. He was seen in a different hospital and was diagnosed with hypocalcemia. He was commenced on calcium replacement and discharged home. He presented to our hospital in October, 2018 with recurrent episodes of generalised tonic clonic seizures witnessed by his family. He also complaint of intermittent throbbing headaches and double vision. On admission he was alert, oriented with normal higher mental function. He had a healing scar over his head. Chvosteks' sign was positive. He complaint of double vision looking to his right on horizontal gaze. There was no overt ophthalmoplegia. Tone, power and reflexes in his upper and lower limbs were normal. **Results:** His blood investigations revealed low calcium 6.6 mg/dl with normal serum magnesium. His serum PTH (Parathyroid hormone) was elevated 262 pg/ml. He was immediately started on calcium replacement. Despite adequate calcium replacement his serum calcium remained low. His MRI brain showed T1 hyperintensity within the basal ganglia (bilaterally), dentate nucleus and subcortical area. These changes are in keeping with brain parenchymal calcification. **Conclusions:** His condition is in keeping with Pseudohypoparathyroidism. Pseudohypoparathyroidism is a rare cause of seizures due to hypocalcemia. Pseudohypoparathyroidism (PHP) is characterised by end-organ resistance to parathyroid hormone (PTH).

P107: A challenging case of intrathyroid parathyroid carcinoma with microscopic papillary thyroid carcinoma: A case report

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Background: Parathyroid carcinoma is a rare cause of malignant hyperparathyroidism and intrathyroid parathyroid carcinoma is a rare form of presentation of this tumor with only 12 cases reported so far. In addition, the co-occurrence of microscopic papillary thyroid carcinoma was reported only once before. **Methods:** A 63-year-old female, noticed to have hypercalcemia during a psychiatry follow up for schizophrenia. Investigations showed elevated calcium (3.15 mmol/L), decreased phosphate (0.54 mmol/L) and elevated alkaline phosphatase (698 IU/L). Intact parathyroid hormone level was elevated (201 pmol/L), total 25-hydroxy (OH) vitamin D was undetectable (<10 nmol/L) and thyroid stimulating hormone was normal (2.19 uIu/mL). Neck ultrasonography revealed a multinodular thyroid gland with the largest nodule (3.6 x 3.3 cm) in the right lobe with prominent internal vascularity, irregular borders and retrosternal extension [Figure 1]. 99m-Technetium Methoxy-Isobutyl-Isonitrile scintigram (T-99 MIBI) with SPECT/CT showed a homogeneous radiotracer distribution in the thyroid gland with large area of intense heterogenous MIBI uptake at the inferior thyroid poles displacing the right thyroid lobe [Figure 2]. The lesion noted on CT approaching the suprasternal notch causing tracheal deviation to the left [Figure 3]. Fine needle aspiration (FNA) raised the suspicion of a parathyroid origin. **Results:** Total thyroidectomy performed and histopathological examination confirmed intrathyroid parathyroid carcinoma with lymph node metastasis and a focus of papillary microcarcinoma. Two years later, patient presented with severe hypercalcemia and 18F-FDG Whole Body PET/CT showed metastatic disease with multiple hypermetabolic foci in the bones, lung and enlarged lymph nodes in the supraclavicular and mediastinal regions. **Conclusions:** Our case exemplifies the challenge in diagnosing parathyroid carcinoma, specifically

intrathyroid parathyroid carcinoma, given its location and overlap with parathyroid adenoma. It illuminates the great aid of imaging and FNA in directing the diagnosis preoperatively.

P108: Femoral neck fracture as the first manifestation of coelic disease

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Background: Coeliac disease affects bone mineral metabolism by several mechanisms. The classic forms of celiac disease with evident malabsorption cause decreased in plasma calcium and vitamin D levels. These deficits lead to secondary hyperparathyroidism, which in turn increases the remodelling of the bone that result in decreased bone mass, changes the quality of bone, with the consequent decrease in strength of bone and increases the risk of fractures. **Methods:** We report a rare case of fatigue fracture of the femoral neck in young female as the first presentation of celiac disease. **Results:** Osteomalacia was first noted in coexistence with celiac disease more than 64 years ago and the relationship is believed to result from decreased absorption of vitamin D caused by improper functionality of the small intestine in absorbing this vitamin. Therefore, the recommendation is that patients with celiac disease be assessed for osteoporosis. **Conclusions:** We conclude that celiac disease should be evaluated as the underlying cause of osteomalasia, especially in patients with accompanying iron deficiency anaemia.

P109: Vitamin D and parathyroid hormone and their association with symptoms of fatigue and quality of life in advanced cancer Egyptian patients

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Background: Vitamin D deficiency newly recognized association with risk of several types of cancer is receiving considerable attention where new data suggested that its high prevalence may account for several thousand premature deaths from various types of cancer annually. Vitamin D deficiency has been associated with symptoms of fatigue, muscle weakness, depression, increase in falls and secondary hyperparathyroidism (HPT), which leads to cortical bone loss in both cancer and non-cancer patients. **Research Question or Hypothesis:** This study aims to assess the relationship between vitamin D deficiency and parathyroid hormone (PTH) with health-related quality of life (QOL) issues, fatigue and physical functioning in advanced cancer Egyptian patients. Methods: The study was performed on cancer group and control group and was defined as follows: Group (1): 58 advanced cancer patients. Group (2): 22 healthy volunteers recruited from the community through announcement. **Methods:** Serum vitamin D and PTH levels were quantitatively detected by enzyme-linked immunosorbent assay (ELISA) in sera of 58 advanced cancer Egyptian patients in comparison to 22 control subjects. Assessment of symptoms of QOL were done using the European Organization for Research and Treatment of cancer quality of life (EORTC QLQ-C15-PAL) version 1 questionnaire measuring four main domains (fatigue, QOL, physical dysfunctioning and appetite loss), whereas assessment of cancer related fatigue was measured through the fatigue subscale of the Functional Assessment of Chronic Illness Therapy (FACIT) version 4 palliative care questionnaire. Moreover, calculation of performance scores was done using the Palliative Performance Scale (PPS). Anthropometric parameters were measured for each individual. **Results:** Serum vitamin D levels were deficient in group (1) [5.74(5.07), $p<0.0001$] in comparison to group (2) [28.1(8.1), $p<0.0001$], whereas serum intact PTH levels were elevated in group (1) [82(21.7), $p<0.0001$] in comparison to group (2) [33.9(29.2), $p<0.0001$]. **Conclusions:** Low vitamin D levels were highly prevalent among advanced cancer Egyptian patients, which correlated with high symptoms of fatigue, low-performance status and poor QOL. Serum Vitamin D levels showed inverse correlation with serum intact PTH levels. High PTH levels were highly prevalent among advanced cancer Egyptian patients, which correlated with high symptoms of fatigue, low-performance status and poor QOL.

P110: Approach to renal hyperparathyroidism: A stitch in time saves nine

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Background: Advance CKD and dialysis results into a state of affairs where PTH, an important stake holder for bone health turns into an enemy with a catastrophic outcome due to persistent skeletal dysregulation towards continuous PTH release from the parathyroid gland. Harmony between FGF 23,klotho produced from the osteocytes, Ca, Pi absorption from the gut and calcitriol from the kidney causes hyperactivity of parathyroid gland to preserve architectural strength and integrity of the bony skeletal . This protective mechanism exhausts if goes unnoticed and not intervene timely leading to an extent that parathyroid gland becomes autonomic due to the depletion and insensitivity of CaSR into the gland, failure of feedback mechanism . Continuous surges of PTH resorp skeleton, risk into low trauma fractures, change in the individual`s appearance with reduction in height, deformities and strength, stones and vascular calcification threatening vital organs risking life. **Methods:** In Sultan Qaboos University Hospital (SQUH) we have picked up cases with brown tumors based on history, bone profile and PTH levels. Despite on medical therapy (Cinacalcet) and subtotal parathyroidectomy was considered as primary intervention. **Results:** Longitudinal followup of all operated cases showed improved quality of life and this study can be a road map in Oman for managing such patients surgically. **Conclusions:** Cinacalcet is not a cost effective and definitive solution. In fact parathyroidectomy is the right way to deal this misdirected mineral bone renal disorder which should be considered during the earlier phase of Cinacalcet refractory disordered PTH, CKD MBD. Parathyroidectomy is a definitive and cost effective solution which outweighs morbidity and mortality benefits against surgical risks and importance of this surgery increases manifolds especially when kidney transplant is aim to help patient and graft survival.

P111: The burden of X-linked hypophosphataemia in an adult case

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Background: X-linked hypophosphataemia (XLH) is the most common form of inherited hypophosphataemic rickets, caused by loss-of-function mutation in the gene encoding phosphate-regulating endopeptidase homologue X-linked (PHEX), resulting in excess circulating fibroblast growth factor 23 (FGF-23).1,2 There is no consensus regarding treatment of XLH in adults.2 Conventional treatment does not treat the underlying cause of the disease and mainly involves treatment with oral phosphate and vitamin D.3 Occasionally, corrective surgery is required to treat residual symptoms. **Methods:** Here we describe a 40-year-old female diagnosed with XLH. The patient first experienced gait abnormalities aged 3 and rickets was diagnosed aged 10. When aged 32, she was referred to our clinic for further management. She presented with gait abnormalities, tooth loss, short stature (137 cm) and a history of low serum phosphorus and 25-OH vitamin D levels. X-ray examinations revealed genu varum and old fractures in her left tibia and fibula, for which she has previously undergone surgical correction. Despite no family history of XLH, recent genetic testing revealed a PHEX gene mutation. Recent biochemical investigations confirmed low phosphorous 0.54 mmol/L (reference 0.8– 1.45) and 25-OH vitamin D: 43.6 nmol/L (reference 50–150), elevated parathormone 7.0 pmol/L (reference 1.6–6.9); and alkaline phosphatase: 97 IU/L (reference 35–104). **Results:** She is receiving calcitriol (0.5 mcg BID) and oral potassium phosphate/di-sodium phosphate (250 mg/6 times/day) but experiencing intermittent nausea. Her symptoms, including generalised bone, knee and lower back pain (7/10 on pain scale) adversely affected her quality of life. **Conclusions:** We aim to treat the underlying cause of her condition with burosumab, a monoclonal antibody targeting FGF-23, to improve her symptoms and quality of life.

P201: Association between type 2 diabetes mellitus and helicobacter pylori infection among adult Saudi diabetic patients attending national guard primary health care centers in the western region, 2018

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Background: Reports on Helicobacter pylori (H. pylori) infection among diabetics are inconsistent and contradictory. **Objective:** To identify the possible association between type 2 diabetes and H. pylori infection. **Methods:** Following a case-control design, Participants were recruited from four National Guard Primary Health Care Centers in Jeddah City, Saudi Arabia. The study was conducted during the period from December 2017 to November 2018. All participants underwent an HbA1c assessment and stool antigen test for H pylori. **Results:** A total of 212 type 2 diabetic patients aged 40 years or more, and 209 age-matched non-diabetic subjects were included. About one-fourth of diabetics and non-diabetics were positive regarding H. pylori (26.9% and 26.3%, respectively). There was no significant difference. Among type 2 diabetics, the prevalence of H. pylori did not differ significantly according to their age groups, gender, smoking status, body mass index, chronic diseases, their HbA1c level, duration of diabetes or received the type of therapy. Among non-diabetics, the prevalence of H. pylori was significantly higher among overweight and obese subjects (p=0.013). Obese participants in both groups had the highest prevalence of infection (57.9% and 54.5%, respectively, p=0.038). **Conclusions:** About one-fourth of type 2 diabetics and non-diabetics in Jeddah City have H. pylori infection. There is no association between diabetes and H. Pylori infection. This study showed that Hypertension and Dyslipidemia risk factors for H. pylori infection among type 2 diabetics. The occurrence of H. pylori significantly higher with a high body mass index.

P202: Type 1 diabetes and insulin pump therapy: What is the optimal basal insulin proportion?

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Background: Successful insulin pump therapy depends on optimal pump settings for basal infusion, bolus wizard set up based on the total daily dose (TDD). Most guidelines for patients with type 1 diabetes (T1DM) using insulin pump therapy (IPT) are based on clinical experience and retrospective studies of patients consuming an American / western diet and lifestyle. The recommended basal insulin proportion is approximately 50 % of TDD. Our diet composition and lifestyle are different from western countries and in this study we explore the optimal basal proportion of Omani adult T1DM population. **Methods:** This is a retrospective analysis of 58 adult T1DM patients on insulin pump therapy, following at National Diabetes Endocrine Center, Royal Hospital. Then mean HbA1c and pump downloads for the year 2018 was collected from electronic medical records and analyzed by SPSS. 37(63.7%) patients had mean HbA1c of ≤ 7.5 % and 21 (36.3%) had HbA1c≥ 7.6 % for the year 2018.We compare these two groups to determine basal insulin requirement proportion and the variable dose settings of insulin pump therapy. **Results:** The group with HbA1c ≤ 7.5% used only 44% of total dose as basal insulin and 56 % as bolus insulin, whereas the group with HbA1c ≥ 7.6 % used 53% as basal and 47% as bolus insulin, which were statistically significant ($p<0.05$). The group with HbA1c ≤ 7.5% checked blood glucose more often than the group with HbA1c ≥ 7.6 % (4.2±0.4 times/day vs. 3.2 ±0.5times/ day, $p<0.05$). There is no significant difference in terms of their mean insulin carbohydrate ratio (9.7 Vs 9.3g/U), insulin sensitivity factor (2.6 Vs 2.8 mmol/l per U) and BMI (24.8 Vs 24.3 kg/m2). **Conclusions:** Our study finds that Omani adults with type 1 diabetes on insulin pump therapy require <50 % of the total dose as basal insulin. More bolus insulin and frequent SMBG are required for better glycemic control. The higher bolus requirement is likely due to high carbohydrate content in our food and frequent snacking habits in our population. However, ICR and ISF calculations based on current guidelines are acceptable for our population.

P203: Real world evidence data on the role of sodium/glucose cotransporter 2 inhibitors and glucagon-like peptide-1 receptor agonist in chronic kidney disease stage 3 patients beyond glycemic control, at glycemia clinic - Kuwait

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Background: Diabetes remain the most common reason for progression to end stage renal disease. Chronic kidney disease (CKD) is a strong prediction of mortality in patients with diabetes.1 Up to 40% of type two diabetes (T2D) will eventually suffer from

kidney failure.2 Sodium/glucose Cotransporter 2 inhibitors (SGLT2) regularly cause a reduction in Glomerular filtration rate (eGFR) by around 5ml/min/1.73 m2 as well as a reduction in urine microalbumin by 30%-40%.3 SGLT2 inhibitors are also associated with reduction in uric acid and weight. Both high levels of uric acid and obesity are risk factors for diabetic nephropathy and progression of CKD.4 While it was found that studies used Glucagon-like Peptide-1 Receptor Agonist (GLP-1 RA) in patients with higher degree of renal impairment was very limited. However, GLP-1 RA was associated with a urine microalbumin and Hba1c reduction.5 Efficacy of SGLT2 and GLP-1 RA is well documented, though SGLT2 is contraindicated with an eGFR <60 ml/min/1.73 m2 due to lower efficacy on HbA1c reduction. There is little clinical evidence available up to date showing the benefit of using SGLT2 in CKD stage 3 and above, and may be beneficial in improving different renal outcome. More data is coming for other indication use of SGLT2 in CKD patients with lower eGFR (eGFR <60 ml/min/1.73 m2). **Methods:** A retrospective case study was done on 30 patients who attended Glycemia Clinic in Kuwait for better glycemic control. Patients were given different treatments, some of them were on a once GLP-1 RA, dosage between 0.6 up to 3mg/day, some were on SGLT2 inhibitors, where the rest were on a combination of the two medication in addition to other medication to control their glycemic level. **Results:** Nine patients were on GLP-1 RA, six patients were on SGLT2 and fifteen patients were on a combination of both. Patients who were on GLP-1 RA vs. SGLT2 respectively, showed an average improvement in: - eGFR by 16.5 ml/min/1.73m2 vs. 11.7 ml/min/1.73m2 - Hba1c by 2.3% vs. 2.1% - Urine Microalbumin 51.6 mg/L vs. 63.9 mg/L Similar results shown on 15 patients who were on a combination treatment of SGLT2 and GLP-1 RA. **Conclusions:** SGLT2 and GLP-1 seems to be safe and have beneficial effect on eGFR and Urine microalbumin in advanced CKD stages. More research may be needed to study the effect of GLP-1 RA and SGLT2 on CKD patients with higher degree of renal impairment.

P204: Knowledge in diabetes self-management and perceptions of education services in patient with type 2 diabetes in primary care: A pilot study

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Background: Diabetes education is an integral component of diabetes care to empower affected individuals for diabetes self-management (DSM). DSM needs to be compressive in nature including all the dimensions of day-to-day aspects of diabetes self-care. To date, there is no assessment of comprehensive knowledge in DSM or perceptions about diabetes education in Oman. Thus, the aim of this study was to assess knowledge on diabetes self-management and perceived quality of diabetes education in a sample of Omani patient with type 2 diabetes in a primary health care (PHC) setting. **Methods:** The study was conducted in one PHC center. Data on knowledge and perceptions was collected using a questionnaire via face-to-face interviews, anthropometric data were measured, and glycated hemoglobin (HbA1c) was taken from the medical records. The questionnaire assessed knowledge on all aspects of DSM education as recommended by the International Diabetes Federation. Perception about the quality of diabetes education in PHC was assess based on a Likert scale. Patients were conveniently approached during follow-up visits to the center. The study included 101 Omani patients with Type 2 diabetes. Independent t-test and Pearson correlation coefficient were conducted to assess the objectives of the study. **Results:** On average, the sample was 53.5±7.9 years old with poor glycemic control (HbA1c 7.6%). Most patients (67.3%) received no more than 3 encounters of diabetes education. Patients had low average DSM knowledge score (51.1% ±8.9). Within DSM score, the lowest knowledge was that for diet (42.18% ±10.1) compared to other areas (63.6% ±11.1) (general information, foot care, glucose monitoring, medication and physical activity). A significant correlation ($r=0.43$, $P < 0.01$) is noted between knowledge scores in diet and the other areas of DSM. The majority of patients (70%) perceived the overall quality of diabetes education in PHC as poor and 66% of the participants perceived lack of interest from health professionals to empower patients about DSM. **Conclusions:** Low knowledge in DSM that is compounded with poor perceived quality of and professional disinterest to diabetes education is a recipe of poor diabetes self-management as the case in our study sample. Therefore, attention is warranted on the aspects and quality of diabetes education in PHC.

P205: An open label comparative study of glibenclamide plus metformin versus sitagliptin plus metformin in muslim people with type 2 diabetes during ramadan: Glicositaram study

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Background: Most of the current guidelines recommend against the use of second generation sulphonylureas during Ramadan due to their hypoglycemic risk. No study has been conducted on the use of combination tablet in Ramadan so far. The aim of this study was to compare the efficacy and safety of combination tablets of glibenclamide plus metformin versus sitagliptin plus metformin among Muslim diabetic patients who fast Ramadan. **Methods:** A comparative study conducted at The Endocrine Center, Basra, Iraq from 1, May till 1, July 2018. People with type 2 diabetes who were drug naïve or on metformin only with HbA1c < 10 % were included in the study. The participants were divided into two groups. The first group was given a combination tablet of glibenclamide 5 mg + metformin 1000 mg. While the second group was given sitagliptin 50 mg + metformin 1000 mg immediately after Iftar. HbA1c was done before and after Ramadan by BioRad D-10. Several home recording of blood glucose before iftar and 2 hours postprandial by a glucometer (Accucheck) were recorded. In addition, patients were asked to report any hypoglycemic (blood glucose <70 mg/dL) or severe hyperglycemic (blood glucose > 300 mg/dL) episodes. **Results:** A total of 34 participants (18 women) completed the study. The mean age was 49.6 ± 9.3 years with a mean duration of diabetes of 1 ± 2 year. There was a significant reduction in HbA1c from 8.7 % to 7.6 % and from 8.7% to 7.7 % in the first and second group respectively, $p<0.0001$. The mean fasting, and postprandial glucose were 123 mg/dL and 193 mg/dL in the first group and 130 mg/dl and 177 mg/dL in the second group respectively. Only one patient in the first group experienced one episode of hypoglycemia and hyperglycemia. **Conclusions:** Both combination tablets are safe and effective in Ramadan fasting.

P206: The effect of a structured diabetes self-management education on diabetes control measured by glycated hemoglobin (HbA1C%) level in patients with type 2 diabetes at al-yarmouk primary healthcare centre (work in progress)

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Background: Diabetes self-management education (DSME) is the cornerstone of care for patients with diabetes (DM) to achieve successful outcomes (better HbA1C% levels) specially in patients with uncontrolled diabetes (HbA1C% > 7%) (1-5). Specialized clinics at Yarmouk PHC equipped with advanced health educational resources where sessions carried out by certified diabetes educator nurse. Awareness campaigns and increased referral rate to education clinic improved patient participation. The aim of the present project is to assess DSME as a tool to help patients have self-control on their diabetes. **Methods:** This is an intervention study comparing the impact of a structured one-to-one or small group receiving DSME session on HbA1C% level, as a measure of metabolic control of DM, with that of no DSME session as a control group (i.e. receiving routine treatment and regular follow up). Participants were diabetic patient referred to diabetes specialized clinic at Al-Yarmouk PHC. Educational sessions covered topics mainly on diabetes including information on what is diabetes, diabetes and nutrition, diabetes and blood vessel, hypoglycemia and hyperglycemia, insulin, diabetes and feet, self-check, complications from diabetes and structured testing. Proper documentation plans were maintained to help the interdisciplinary team measure better patient outcomes. **Results:** Participants were diabetic patients (n=323) with mean age of 56.7 and baseline mean HbA1c% of 7.7%. The educational program achieved a decrease in the mean HbA1c% level after 6 months (-0.197±1.1, P=0.001) and 12 months (-0.297±1.9, P=0.001) intervention in comparison to baseline. Patient in the intervention arm achieved better diabetes control expressed in decreased HbA1c% level over 12 months. Compared, to female, male patients experienced uncontrolled diabetes (P=0.02) and tend to benefit more from the intervention (P=0.05). Regarding nationality, in contrast to Kuwaiti, non-Kuwaiti patients had a worse HbA1c% (P=0.07) and benefited more from the educational sessions (P=0.003). The educational sessions resulted in a noticeable decrease in the magnitude of HbA1c% among patients with HbA1c% above 7% at baseline. **Conclusions:** In conclusion, the present study confirms that DSME sessions are effective tool in the management of diabetes assessed by HbA1C%, especially in patients with uncontrolled diabetes. Other contributing factors need to be addressed in future research.

P207: The effect of liraglutide on glycaemic control and weight in patients with type 2 diabetes fasting during ramadan

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Background: GLP-1 agonist stimulate insulin, suppress glucagon secretion and may normalize hyperglycaemia in patients with type 2 diabetes. It is not clear if GLP-1 agonists can lower blood glucose to hypoglycaemic levels in fasting status. It is aimed to test the effect of liraglutide 1.8mg combined with metformin and other antidiabetic drugs, on glycaemic control and weight in patients with T2D fasting during Ramadan. **Methods:** The study included people with T2D in one centre who fasted during Ramadan with baseline HbA1c 7.5- 9.0 % and treated with full dose of metformin plus either Sodium Glucose transporter-2 inhibitor (38 patients) or sulfonylurea (12 patients). Liraglutide dose was escalated before Ramadan to reach 1.8 mg od. Data collected during Follow up visits included home blood glucose testing, food diary, and activity level. The primary endpoint: glycaemic control, number of hypoglycaemic episodes during fasting and the effect on appetite and weight. **Results:** Participants (n= 50) had mean BMI of 24-32 kg/m2 at baseline. They demonstrated significant improvement in glycaemic control as well as weight reduction at the end of fifth week. Moreover, they reported fewer confirmed hypoglycaemic episodes during fasting Ramadan. Hypoglycaemia was less reported in SGLT-2 user than sulfonylurea users. mean blood glucose was 4.9- 6.5 mmol/l an hour before sunset, 6-9 mmol/l two hours after Fastbreak and 8.5-10 mmol/l at late night. No hypoglycaemic events were reported during fasting. An average of 7000 steps/day or daily visit to Gym were reported mean weight reduction was 2.8- 4.5 kg/ 4 weeks, with considerable suppression of appetite and craving compared before Ramadan. Most common reported side effect included nausea, abdominal distension/ pain, were minimize by taking liraglutide at late night before sun-rise. **Conclusions:** Liraglutide add on to fasting patients with T2D was shown to be safe and efficacious.

P208: Quality of life in Egyptian patients with diabetic neuropathy

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Background: There are few diabetic neuropathy-specific quality of life assessment tools. **Aim:** To assess impact of painful diabetic neuropathy on life quality and discriminate various levels of neuropathy severity and its detrimental effect on life quality. **Methods:** A cross sectional study included 125 Patients with T2D (100 with diabetic neuropathy and 25 without) from outpatient Mansoura University hospital, Egypt, (October 2017 - Mach 2018). history, examination,HbA1c, albumin, bilirubin, creatinine, INR, vitamin B12 ,TSH, FT4 .Diabetic polyneuropathy tested by bedside tests as modified Neuropathy Disability score (NDS) of (vibration, temperature , ankle reflex and pin prick tests) and Pressure sensation by Monofilament. Diagnosis of peripheral neuropathy by Neuropathy symptom score (NSS) of 5 questions,NDS of 4 tests on both feet, nerve conduction studies for peroneal, sural and ulnar nerves bilaterally, pain severity through visual analogue pain score (VAS) and finally (Norfolk QOL-DN) of 47 questions. Diabetic polyneuropathy diagnosed if 2 abnormalities were found in any event. Other causes of neuropathy were excluded. Statistics: spss (20). **Results:** Significant positive association between each of NSS, VAS, NDS, superficial pain and duration of DM with ADL and health status. NSS ,VAS ,NDS, superficial pain ,duration of DM (independent variables) and effect on ADL (dependent variable), forward stepwise linear regression analysis showed only NDS was independent predictor of ADL. Significant positive association between each of insulin use, HbA1c, electrical sensation, NSS, VAS, NDS, duration of DM and axonal neuropathy. NSS, VAS, NDS, HbA1c, insulin use, electrical

sensation (independent variables) and axonal neuropathy (dependent variable), forward stepwise logistic regression showed that only NDS, electrical sensation, insulin therapy were independent predictors of Axonal neuropathy. **Conclusions:** The longer the duration of DM the greater impact on quality of life. Diabetic neuropathy associated with poor quality of life (daily life activities and health status).

P209: Liraglutide 3.0 Mg as an adjunct to intensive behavior therapy in individuals with obesity: SCALE intensive behavior therapy 56-week randomized, double-blind, placebo-controlled trial

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Background: In this 56-week, randomized, double-blind, US-based multicenter trial (NCT02963935) we investigated the effects of liraglutide 3.0 mg vs placebo, as adjunct to intensive behavior therapy (IBT) (i.e. reduced calorie intake, increased physical activity [max target: 250 min/week], and 23 counseling sessions). **Methods:** Here we report the effects of treatment on weight change (co-primary endpoints: mean change in body weight [%] and proportion of individuals losing ≥5%), glycemic variables, cardiometabolic risk factors, safety and tolerability. Individuals aged ≥18 years with a body mass index (BMI) ≥30 kg/m2 and without diabetes were randomized 1:1 to liraglutide 3.0 mg or placebo along with IBT. Continuous and categorical variables were calculated using analysis of covariance (ANCOVA) and logistic regression respectively, with treatment, gender and BMI as factors and baseline endpoint as a covariate. Missing values were handled using a jump-to-reference multiple imputation model. There were 282 individuals in the full analysis set; 142 were randomized to liraglutide 3.0 mg (45 y, 16% male, 109 kg, 39 kg/m2) and 140 to placebo (49 y, 17% male, 107 kg, 39 kg/m2); 99% and 93% completed the trial, respectively. **Results:** The intention to treat analysis demonstrated weight loss at 56 weeks of 7.5% with liraglutide 3.0 mg and 4.0% with placebo (estimated treatment difference (ETD) [95% CI], 3.5% [5.3, 1.6]; p=0.0003). Weight loss in individuals on trial product at 56 weeks was 9.1% (n=114) and 4.8% (n=103), respectively. The proportion of individuals achieving ≥5% weight loss was 61.5% with liraglutide 3.0 mg and 38.8% with placebo (estimated odds ratio (OR) 2.5 [1.5, 4.1], p=0.0003). The proportion who lost >10% was 30.5% and 19.8% (OR 1.8 [1.01, 3.1], p=0.0469), and >15% was 18.1% and 8.9% (OR 2.3 [1.1, 4.7], p=0.0311, respectively. Change in waist circumference was -9.4 cm with liraglutide 3.0 mg vs -6.7 cm with placebo (ETD -2.7 cm [-4.7, -0.8], p=0.006). Significant improvements at 56 weeks were seen for liraglutide 3.0 mg vs placebo in both HbA1c (ETD -0.10% [-0.16, -0.04], p=0.0008) and fasting plasma glucose (ETD 0.23 mmol/L [-0.36, -0.11] p=0.0002). Blood pressure (BP) reductions were observed in both treatment arms at 56 weeks, but there were no significant differences between groups in systolic (ETD -2.2 mmHg [4.9, 0.5], p=0.11) or diastolic BP (ETD -0.2 mmHg [2.2, 1.8], p=0.87), or heart rate (ETD 1.3 bpm [-0.8, 3.4], p=0.23). Lipids were improved vs baseline but no significant differences between treatment arms were observed at 56 weeks (all p>0.05). **Conclusions:** Liraglutide 3.0 mg was generally well tolerated and no new safety signals were observed in this study. The most frequent adverse events were gastrointestinal (liraglutide 3.0 mg: 71%; placebo: 49%). In conclusion, liraglutide 3.0 mg as an adjunct to IBT resulted in significantly greater weight loss, as compared to IBT and placebo.

P210: Distribution and determinants of risk score for developing type 2 diabetes among Bangladeshi population

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Background: As the prevalence of diabetes mellitus (DM) among Bangladeshi adults raises prediction of new cases of type 2 diabetes (T2DM) in Bangladesh, requires early identification and screening for mitigating early preventive and health pro¬motion measures or actions for the local populations at high risk for developing T2DM. **Methods:** To find out the distribution of ADA risk score for developing of type 2 diabetes among the study population and to determine the association of ADA risk score with modifiable & non-modifiable risk factors of type 2 diabetes. **Results:** The cross sectional observational study was conducted among randomly sampled 410 adult Bangladeshi subjects. The study population consisted of adults, visiting the outpatient department of Medicine, MARKS Medical College & Hospital, Dhaka, Bangladesh from January 2018 to December 2018. The ADA (American Diabetes Association) risk for type 2 diabetes questionnaire was used to collect the data. **Conclusions:** Out of 410, 55.9% were males & 44.1% were females. In this study, both non-modifiable and modifiable risk factors showed statistically significant association with the ADA risk score among Bangladeshi adults (p<0.05). This study predicts that 32.4% of the Bangladeshi adults may have high risk to develop T2DM within the consecutive years.

P211: To evaluate the association between type 1 diabetes mellitus in offspring with positive paranatal history of diabetes: The SHINE study

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Background: To measure the association between a parental history of diabetes and the odds of an offspring being T1DM. **Methods:** SHINE was a phase 4, national, multi-center, case control study, with a ratio of 1:2 (case: control) conducted at specialized General Pediatrics and Endocrinology centers of Pakistan between Oct 2017-Aug 2018. Subjects with age ≥ 2 years and ≤ 20 years having type 1 diabetes mellitus (T1DM), on insulin for last 1 year and positive for one or more islet cell auto-antibodies were included in the study. The enrollment duration of the study was 12 months. Each patient underwent laboratory test for insulin autoantibodies (IAA, GAD, or IA2) and HbA1c. Primary data had been collected at the time of enrolment. Subsequently telephonic follow up was performed 15 days ± 5 days to ensure the well-being of patients. **Results:** Three

seventy-five (125 cases and 250 controls) participants were enrolled in this study over a period of 12 months. Most of the study participants were male 58% (mean [SD] age 10.4 [±9.5] years; mean HbA1c 17.05 [±3.4] %). Eleven percent of the cases (n=14) were reported to have positive family history of diabetes (T1DM 10.4% [n=13]; T2DM 0.8% [n=1]). In regard to parental history of diabetes, 8% (n=10) mothers were reported to have diabetes as compared to 3.2% (n=4) fathers. Diabetes related complications were reported in 16% (n=60) of cases (Diabetic ketoacidosis 86% [n=52]; sensory neuropathy 10% [n=6]). Severe episode of hypoglycemia over the period of 3 months were reported in 41.6% (n=53) cases. Human regular/ Human NPH were found to be most commonly prescribed insulin combination therapy taken by 53 % (n=66) of cases and premix insulin therapy alone were taken by 32% (n-40) cases. Healthy lifestyle modification practices were effectively prevalent among cases and face to face diabetic education was imparted to this population by their health care providers. The data also suggest that people with T1DM were paying consistent visits to health care providers for diabetes related management. **Conclusions:** The results of study suggest no association between parental diabetic history and odds of occurrence of T1DM in offspring.

P212: Do we really need pioglitazone for treating type 2 diabetes? A meta-analysis and risk benefit assessment

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Background: With the advent of new and robust anti-diabetics the safety and usefulness of older agents, like pioglitazone (Pio) are repeatedly called into question. A meta-analysis and risk benefit assessment was conducted addressing the various points of debate regarding Pio. **Methods:** Electronic database search (Cochrane library, Embase & PubMed) resulted in 10 citations eligible for this meta-analysis (prospective, randomised studies) which was conducted on the CMA software version 3, Biostat Inc., Englewood, NJ, USA. **Results:** Pio reduced major cardiovascular events (MACE) [(MH-Odds ratio (OR) 0.86 (Confidence Interval (CI) 0.75 – 0.98 p = 0.033)] and Stroke (MH-OR 0.77; CI 0.60 – 0.99, I2: 0.000, NNT: 151). However, Pio increased heart failure (MH-OR 1.47; CI 1.26 – 1.71, I2: 0.000, NNH: 34), fractures (MH-OR 2.05, CI 1.28 – 3.27, I2: 20.20. NNH: 639), and anaemia (MH-OR 2.56 CI 1.55 – 4.21, I2: 0.000, NNH: 87). There was also a nonsignificant increase in bladder cancer and macular oedema. In view of these a risk benefit analysis calculating the likelihood of help/harm (LHH) was calculated [Table 1]. **Conclusions:** Analysing the risk benefit ratio we conclude that the beneficial effect of Pio (reduction in MACE & stroke) outweigh the harmful effects (HF, hHF & anemia). However, with fractures (overall & in females) as an adverse outcomes, the risk-benefit ratio tilts adversely against pioglitazone. Pio should therefore be reserved for treatment of high-risk T2D only in selected patients where other antidiabetics are precluded.

P213: Comparison of glucometers used at king abdulaziz medical city, Jeddah

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Background: Glucometers are widely used for self-monitoring of blood glucose among diabetic patients; however, their accuracy in testing blood glucose may not be obtained. The aim of this study was to determine the accuracy of five commercially available glucometers used at King Abdulaziz Medical City by comparing their readings with the laboratory reference method. **Methods:** 203 blood samples were collected from patient attended the King Abdulaziz Medical City laboratory. Glucose level was tested in the laboratory and one drop of blood was taken from every specimen and its blood glucose was tested by the 5 glucometers. The laboratory value was used as a reference for comparison. The accuracy was determined by t-test, correlation coefficients, linear regression and Bland Altman plots. **Results:** A non-significant difference was found between the mean values of venous blood glucose and the mean of other glucometers 'readings. A highly significant positive correlation was found between laboratory and all glucometers values. Accu-Check, OneTouch and FreestyleOptiumNeo were significantly predictors for venous blood glucose. The coefficient of variation (CV) of glucometers ranged from 37.79% to 41.80%, three meters showed negative bias, and the mean difference was 2.20 for Accu-Check, -2.26 for One Touch, 0.90 for Freestyle, -2.08 for Contour Next and -7.78 for Contour Next One. The bias percentage ranged between -5.01 and 1.42. Bland-Altman plots showed proportional bias where Freestyleoptiumneo showed the minimal mean bias, and Contour next one ®showed the highest proportional bias. **Conclusions:** All glucometers values were correlated well with the laboratory values, however, its reading showed a slight difference when compared to the venous glucose especially with higher blood glucose levels. An independent comparison of all glucometers should be carried out as the proportional bias especially with the high blood glucose levels can affect the patient care.

P214: Uncoupling protein-1 and b3-adrenergic receptor single nucleotide polymorphism in saudi population with type 2 diabetes mellitus

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Background: In recent years, in developed countries and around the world, lifestyle-related diseases including obesity, type 2 diabetes mellitus, and coronary artery disease have become a serious problem. These lifestyle-related diseases are thought to be related to both genetic and environmental factors , and becoming one of the most major health issues all over the world (1,2). A recent worldwide problem is the in increasing number of people with obesity and related metabolic disorders such as diabetes mellitus and dyslipidemia, leading to atherosclerotic disease (3). Obesity and lipid disorders are caused by imbalances in energy intake and expenditure. Energy homeostasis is maintained by signals from feedback loops that regulate food intake, energy expenditure, and lipid and energy metabolism (4,5). Currently it remains to be clarified which genetic variants among many genes contribute to such disorders, and to what degree (3,6). Over recent decades, improvement of socioeconomic conditions has led to expansion of the overweight population worldwide. Obesity is well known to be a risk factor for the development of diabetes mellitus, hypertension, and coronary artery disease (7) . DM is an escalating public health problem with an increased global prevalence of 2.8 % in 2000 and a projected prevalence of 4.4 % in 2030 (171 millions in 2000 to 366 millions in 2030) (8). Saudi-Arabia, a country undergoing a rapid

epidemiologic transition (9), is witnessing a steady increase in the prevalence of DM among adult citizens (10-13). Despite the fact that the cause of DM is unknown, many of its risk factors have been identified and studied. The accumulating evidence suggests that DM is a potentially preventable disease if its risk factors are identified early and avoided (14-17). Lifestyle interventions (e.g. physical activity, weight loss) have proven to be more effective than medicine in preventing or delaying the onset of DM in persons at high risk of developing the disease (14). Learning about DM risk factors and preventive measures is the first step in prevention, since it will enable the public to make the informed decision of adopting a healthy lifestyle (18, 19). In Saudi-Arabia, there are few studies conducted to assess the level of awareness and knowledge of the population of DM risk factors and preventive measure (20). The approach to the genetic background of the lifestyle related disease by recent molecular genetics revealed many genes related to the disease (1). Genetic factors play an important role in various forms of diabetes mellitus (DM), but inheritance is complex and interacts with environmental factors. Although in most cases type 2 DM (T2DM) and T1DM are polygenic disorders, several monogenic forms have been identified (21). Those genes are classified to different categories such as growth factor, signal transduction, energy production and energy expenditure (1). So far, although many association studies on relationship between the genetic variation and lifestyle-related disease (essentially DM), have been carried out, it is often reported that those results cannot be reproduced in the populations with different ethnicity or environmental factors (22, 23). Uncoupling protein 1 (UCP1) plays important roles in metabolic and energy balance and regulation, cold and dietinduced thermogenesis, and in decreasing the production of reactive oxygen species (ROS) by mitochondria, which are mechanisms associated with the pathogenesis of obesity and/or T2DM(6). The UCP-1 is expressed mainly in brown adipose tissue (BAT) and plays important role for energy homeostasis. It is a proton transporter that uncouples oxidative metabolism from ATP synthesis and energy consumption (24, 25). The relationship between the A-3826G polymorphism of the UCP1 and the physical or metabolic variables has been studied in many countries and many populations (26-33). The role of UCP1-mediated thermogenesis in human obesity remains unclear but the presence of the -3826A/G polymorphism in the promoter region of the UCP1 gene has been associated with increased weight gain, lower weight loss under a low-calorie diet, and other lipid-related metabolic features of the obese phenotype (26). It has been shown that the individuals with the G allele of the A-3826G polymorphism have higher BMI than the individuals without the G allele. Importantly, the frequency of the G allele is considerably different among different populations (27). Furthermore, the UCP1 may be associated with the metabolism of lipids such as high-density lipoprotein cholesterol (HDL-C), a major contributor to atherosclerotic disease. It has been reported that the G allele or the GG genotype of the UCP-1 gene is associated with lower HDL-C levels compared to the A/A or the A/G. The uncoupling protein-1 (UCP1) gene is of major importance for regulation of body weight and lipid/lipoprotein metabolism (26). UCP1 is an uncoupling protein found in the mitochondria of brown adipose tissue and is used to generate heat by non-shivering thermogenesis. Non-shivering thermogenesis is the primary means of heat generation in hibernating mammals and in human infants. The cascade is initiated by binding of norepinephrine to the cells β3-adrenoceptors. UCPs are transmembrane proteins that discharge the proton gradient generated in oxidative phosphorylation. They do this by increasing the permeability of the inner mitochondrial membrane, allowing protons that have been pumped into the intermembrane space to return to the mitochondrial matrix. UCP1 mediated heat generation in brown fat uncouples the respiratory chain, allowing for fast substrate oxidation with a low rate of ATP production. UCP1 is related to other mitochondrial metabolite transporters such as the adenine nucleotide translocator, a proton channel in the mitochondrial inner membrane that permits the translocation of protons from the mitochondrial intermembrane space to the mitochondrial matrix. UCP1 is restricted to brown fat, where it provides a mechanism for the enormous heat-generating capacity of the tissue. UCP1 is activated in the brown fat cell by fatty acids and inhibited by nucleotides. Fatty acids cause the following signaling cascade: Sympathetic nervous system terminals release Norepinephrine onto a Beta-3 adrenergic receptor on the plasma membrane. This activates adenylyl cyclase, which catalyses the conversion of ATP to cyclic AMP (cAMP). cAMP activates protein kinase A, causing its active C subunits to be freed from its regulatory R subunits. Active protein kinase A in turn phosphorylates triacylglycerol lipase, thereby activating it. The lipase converts triacylglycerols into free fatty acids, which activate UCP1, overriding the inhibition caused by purine nucleodides (GDP & ADP) (28). At the termination of thermogenesis, the mitochondria oxidize away the residual fatty acids, UCP1 inactivates and the cell resumes its normal energy-conserving mode. Uncoupling protein 1 was discovered in 1979(29) and was first cloned in 1986. Uncoupling protein 2 (UCP2), a homolog of UCP1, was identified in 1997. UCP2 localizes to a wide variety of tissues, and is thought to be involved in regulating reactive oxygen species (ROS). In the past decade, three additional homologs of UCP1 have been identified, including UCP3, UCP4, and BMCP1 (also known as UCP5) (30,31). The adrenergic system plays a key role in regulating energy balance through the stimulation of both thermogenesis and lipid mobilization in brown and white adipose tissues in humans and various animal models. Although these effects have been mainly attributed to β 1 and β 2-adrenergic receptors, the relative contribution in catecholamine action of a third β adrenoceptor subtype, which has been cloned in man , bovines, and rodents should also be considered. Numerous pharmacological studies performed with highly selective β 3-adrenergic agonists considered as potent antiobesity and antidiabetic drugs have confirmed the involvement of β 3-adrenoceptors in both adipocyte lipolysis and thermogenic activity in various laboratory animals (32). A missense mutation in codon 64 of the β3-AR gene that results in the replacement of tryptophan by arginine in the first intracellular loop of the receptor protein, has recently been reported in various ethnic groups including Pima Indians, known for their high prevalence of obesity and type 2 diabetes mellitus, (33) Finns(34), French Caucasians (335) and Japanese (36). In addition, the Tryptophan 64 arginine (Trp64Arg) mutation has been associated with an early onset of type 2 DM and an increased weight gain with age in morbidly obese patients (31). It has been reported that both β3-Adrenergic receptor (β3-AR) and uncoupling protein 1 (UCP1), as mentioned before, are involved in energy expenditure of the adipocytes, and the polymorphism of these genes is associated with the prevalence of obesity and type 2 diabetes. The prevalence of Trp to Arg substitution at codon 64 of the β3-AR gene was documented to be relatively high and associated with early onset of type 2 diabetes in certain populations. This polymorphism was also reported to be associated with abdominal obesity, BMI, and insulin resistance. Uncoupling protein 1 (UCP1), which is predominantly expressed in the brown adipose tissue, also plays an important role in energy homeostasis. In addition, there are several reports demonstrating that these two polymorphisms act synergically to lower the basal metabolic rate (37). Furthermore, it has been

reported that UCP1 variant has a synergistic effect with β3-AR variant in decreasing sympathetic nervous system (SNS) activity. It is likely that certain effects of the low SNS activity caused by UCP1 variant in conjunction with β3-AR variant become more obvious with aging or stressful alteration of environmental factors (38). In the present study, we will perform genotyping for β3-Adrenergic receptor Trp64Arg and UCP-1 3826A/G polymorphism among Saudi population with type 2 Diabetes Mellitus. Also, we will study if there is any synergistic effect between both polymorphisms and the incidence of DM/or obesity in Saudi population. To the best of our knowledge, the study of genetic polymorphism of UCP-1 gene and β3-Adrenergic receptor was not performed before in Saudi population. So this is the first report to study both polymorphisms in Saudi population and try to shed the light about their contribution, if any, in the incidence of DM/or obesity in Saudi people. **Methods:** This study was performed between 2014 and 2016 and it included 161 subjects. 76 unrelated type 2 diabetic patients were recruited from health centers in Makkah region, Saudi Arabia. The control subjects consisted of 85 healthy subjects who either attended a routine health check at a general practice or at their place at work. Fully informed consent was obtained. Venous blood was collected from all subjects between 9:00 and 11:00 a.m. after fasting from 10:00-11:00 p.m. the previous day. Each sample was divided into two halves, one half for serum preparation and the other half was put in sterile K3EDTA (tri-potassium ethylenediaminetetraacetic acid) coated tubes. Plasma was isolated by low speed centrifugation, white cells were removed from the buffy coat for DNA extraction. Samples were stored at −20°C till the time of use. **Determination of Fasting Blood Glucose:** Fasting blood glucose was determined using glucose oxidase method according to the manufacturer instructions (Human Diagnostics, Wiesbaden, Germany). **Determination of Hemoglobin A1c:** HbA1c was quantitatively determined using enzymatic HbA1c assay kit according to the manufacturer instructions (Human Diagnostics, Wiesbaden, Germany). **DNA extraction:** Genomic DNA was extracted from peripheral blood leukocytes using DNA extraction kit (QIAamp DNA Blood Mini Kits, Qiagen, Hilden, Germany) according to the manufacturer instructions. Aliquots of genomic DNA were used for PCR amplification. **UCP-1 genotyping:** The UCP-1 polymorphism at the position -3826 bp in the 5'-flanking domain, was determined by PCR-restriction fragment length polymorphism analysis according to the method described by Cassad-Doulcier et al. The following PCR primers were used: The forward primer: 5'-CTTGGG TAGTGACAAAGTAT-3' and the reverse primer: 5'- CCAAAGGGTCAGATTTCTAC-3'. Genomic DNA (100 ng) in a total volume of 20 µl was used for the PCR. PCR was performed by initial denaturation at 94 °C for 5 min; 30 cycles at 94 °C for 30 sec, 55 °C for 30 sec, and 72 °C for 30 sec; and a final extension at 72 °C for 10 min. The PCR product was subjected to digestion with BclI restriction endonuclease and separated on a 3.0 % agarose gel, stained with ethidium bromide and analyzed under UV light. Genotypes were identified according to the following pattern: G/G- a single 470 bp band, A/G-three bands of 470 bp, 250 bp and 220 bp and A/A- (wild type)- two bands 0f 250 bp and 220 bp. **Beta(3)-Adrenergic Receptor Gene:** The MvaI polymorphism of the b3-adrenergic receptor gene, which detects the Trp64Arg mutation, was determined by PCR-restriction fragment length polymorphism analysis according to Sakane et al. The PCR primers used are: 5'-CCAATACCGCCAACACA CCAGT-3' (upstream) and 5'-AGGAGTCCCATCACCAGGTC-3' (downstream), which flank the whole exon 1 of the b3-adrenergic receptor gene. Genomic DNA(100 ng) in a total volume of 20 µl were used for the PCR. PCR was performed by initial denaturation at 94 °C for 5 min; 30 cycle s at 94 °C for 30 sec, 61 °C for 30 sec, and 72 °C for 30 sec; and a final extension at 72 °C for 10 min. Then the PCR product was incubated with 10 U MvaI at 37 °C in a final volume of 10 µl and then the samples were run on a 3.0% agarose gel, stained with ethidium bromide, and analyzed under UV light. In the presence of the polymorphism, the restriction site for MvaI is lost; therefore, the allele of this polymorphism corresponds to the 158-bp undigested band. **Statistical Analysis:** Data were analyzed using SPSS for Windows version 20.0 (SPSS Inc, Chicago. IL, USA). Student's t test was used to compare mean values of continuous variable in cases and control, whereas $\chi 2$ analysis was used to compare categorical data. **Results:** Genotype distribution and allele frequency of BclI and B3AdR gene polymorphism: The genotype distribution of BclI polymorphism was in Hardy-Weinberg equilibrium in both the T2DM and control groups. Table 1 shows the genotype and allele frequencies in both T2DM and control groups. The genotypes GG, AG and AA were 12.82 %, 39.74 % and 47.43 % in T2DM group respectively and were 7.06 %, 41.17 % and 51.76 % respectively in the control group. There was no statistically significant differences in the distribution of genotypes and alleles between patients with T2DM and healthy controls. For B3AdR genotype and allele distribution, they were all in Hardy-Weinberg equilibrium in both T2DM and control groups. B3AdR genotypes and allele frequencies in T2DM groups and in controls are shown in Table 1. The genotypes TT, TA and AA were 31.58 %, 67.1 % and 1.32 % in patients with T2DM. However, these genotypes were shown in 77.65 %, 21.18 % and 1.17 % in control subjects respectively. There was statistically significant differences in the distribution of TT genotypes between patients with T2DM and healthy controls and TT genotypes seem to be more protected while the TA genotypes and A allele are statistically higher in T2D compared with the controls. **Conclusions:** No association between UCP1 polymorphism and the incidence of T2DM among studied Saudi subjects.

Table 1: Genotype distribution and allele frequencies of uncoupling protein-1 and B3AdR polymorphisms in subjects with type two diabetes and control group

	Control (*n*=85), *n* (%)	T2D (*n*=78), *n* (%)	χ^{2a}	*P**
UCPI polymorphism				
Genotypes				
UU (GG)	6 (7.06)	10 (12.82)	1.325	0.293
Uu (AG)	35 (41.17)	31 (39.74)	0.035	0.874
Uu (AA)	44 (51.76)	37 (47.43)	0.305	0.639
Alleles				
G	47 (27.65)	51 (32.69)	1.55	0.461
A	123 (72.35)	105 (67.31)		
B3AdR (rs)	*n*=76	*n*=85		
Genotypes				
TT	66 (77.65)	24 (31.58)	34.543	0.000
TA	18 (21.18)	51 (67.10)	34.651	0.000
AA	1 (1.17)	1 (1.32)		NS
Alleles				
T	150 (88.23)	99 (65.13)	34.989	0.000
A	20 (11.77)	53 (34.87)	34.989	0.000

[a]Chi-square analysis of genotypes between patients with T2D and healthy controls, *P<0.05 was considered as significant. T2D: Type two diabetes, UCP1: Uncoupling protein-1

P215: Mauriac syndrome still exists in poorly controlled type 1 diabetes

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Background: Mauriac syndrome is a rare complication of poorly controlled type 1 Diabetes mellitus (T1DM) affecting, most commonly, children and adolescents. Its components are growth retardation, delayed puberty, hepatomegaly and cushingoid facial features. Despite the growing advances in glycemic control, this disorder is still being reported. **Methods:** We report a case of a 15-year-old boy who was diagnosed to have T1DM at age of 7 years. He was on insulin glargine 8 IU once daily and 6 IU pre-meal insulin Aspart. He was not compliant to his medications and outpatient follow ups with history of recurrent ketoacidosis and hypoglycemic attacks. His diabetes was complicated by nephropathy, retinopathy and neuropathy. Patient's baseline HbA1c was 10-13%. The patient presented with DKA and staphylococcal bacteremia complicated by abdominal abscesses formation, osteomyelitis and infective endocarditis. He was managed according to American Diabetes Association (ADA) DKA guidelines and by antibiotics under the supervision of infectious diseases service. He was referred to our endocrinology service because of delayed growth and puberty. **Results:** Upon evaluation, patient's height was 120 cm (<3rd percentile), weight 25 kg (<3rd percentile). He had coarse facial features, abdominal distension, hepatomegaly, tanner stage I for puberty and testicular size. HbA1c was 6.9%. Blood sugar profile showed fluctuating hypo- and hyperglycemia. His laboratory studies showed anemia, thrombocytosis, low albumin and high alkaline phosphatase. He had low IGF-1, LH, FSH, and testosterone, normal TFT and celiac workup. Bone age was delayed 4 years. Abdominal CT scan revealed hepatomegaly andbilateral kidney enlargement. Due to his poor clinical course, unfortunately the patient died 3 months later. **Conclusions:** In spite of advancement in diabetic management, Mauriac syndrome, a rare complication in poorly controlled T1DM, still exists. High index of suspicion is needed in T1DM with delayed growth and puberty since good metabolic control could reverse this rare condition.

P216: Diabetic ketoacidosis with hypertriglyceridemia-induced acute pancreatitis as first presentation of diabetes mellitus associated with risperidone treatment: A case report

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Background: The triad of hypertriglyceridemia-induced acute pancreatitis with concurrent diabetic ketoacidosis (DKA) is rare in previously undiagnosed diabetic patients. Drug-induced diabetes is one of the main adverse effects of Risperidone, a second generation (atypical) class of antipsychotic used in the treatment of schizophrenia and bipolar disorder, however, Risperidone-induced diabetic ketoacidosis is rare. We are reporting a case of diabetic ketoacidosis associated with hypertriglyceridemia- induced acute pancreatitis as the first presentation of Risperidone-induced diabetes. **Methods:** None. **Results:** A 29 years old Pakistani male with a background diagnosis of schizoaffective disorder presented to the Emergency Department with nausea, vomiting and abdominal pain three weeks after starting Risperidone treatment.. He reported a history of polyurea and polydipsia few days after initiation of Risperidone treatment. Examination showed obese male with evidence of dehydration and abdominal tenderness. Laboratory investigations revealed marked hyperglycemia with blood glucose level of 583 mg /dl and high anion gap metabolic acidosis. It also showed evidence of acute pancreatitis with serum lipase more than 15000 U/L (Normal range 73-393) associated with severe hypertriglyceridemia with triglyceride level more than 2000 mg/dl (Normal range less than 150). He was managed with intravenous insulin infusion and hydration as per diabetic ketoacidosis protocol. He responded slowly and required high doses of insulin to correct his hyperglycemia , metabolic acidosis and hyperglyceridemia. Acute pancreatitis responded well to conservative measures. The patient was discharged on subcutaneous insulin therapy along with oral fenofibrates. **Conclusions:** Risperidone induced diabetic ketoacidosis with concurrent hypertriglyceridemia-induced acute pancreatitis is rare. Prompt recognition of the coexistence of these three entities is crucial for adequate management.

P217: Case report: Alstrom syndrome

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Background: Case report of a very rare syndrome. **Methods:** Case report. **Results:** Diagnosis and evaluation of such rare case in our region. **Conclusions:** Rare syndrome that was diagnosed and managed at our institution.

P218: Low-dose versus standard-dose insulin infusion in pediatric diabetic ketoacidosis

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Background: Diabetic Ketoacidosis (DKA) is a highly fatal metabolic complication of uncontrolled diabetes mellitus. DKA is a complex metabolic state of hyperglycemia, ketosis, and acidosis. It is a potentially life-threatening complication in patients with diabetes mellitus. The study aimed to compare low dose with standard dose insulin infusion, as regard the outcome in relation to its effect on rate of lowering blood glucose level, improving pH, time till recovery of acidosis and length of hospital stay. Additionally to Evaluate occurrence of complications as hypoglycemia, hypokalemia and cerebral edema. **Methods:** The study was a prospective randomized clinical trial conducted on 70 children with DKA in inpatients Pediatric department and intensive care unit of Suez Canal University Hospital. Cases were equally divided into two groups; Group 1 (standard insulin dose group) and Group 2 (low insulin dose group). **Results:** Low dose was effective as standard dose in children with DKA. However, it may be preferred regards complications of treatment as hypokalemia; there's significant difference between the standard dose group which higher than the low dose group P-value=0.039. Hypoglycemia appears to occur more in standard dose cases than low dose but doesn't reach significance P-value=0.124. The rate of decrease in blood glucose was significantly higher in Established T1D cases in standard dose group than Low dose group. **Conclusions:** Low-dose insulin is

effective as standard-dose in correction of hyperglycemia, and acidosis, the available data suggest that it may be safe to treat most children with DKA with an insulin infusion of 0.05 U/kg/h.

P219: Knowledge and practice of self foot care among type 2 diabetic patient attending al adil PHC in Makkah 2013

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Background: Diabetic foot is one of the main complications of Diabetes Mellitus of high socioeconomic impact, characterized by foot lesions and finally leg amputation in most of the cases. Foot care education is the most crucial tool for preventing lower leg amputation. **Methods:** A cross-sectional analytical study was adopted. It included a representative sample of type 2 diabetic patients registered at Aladil PHC center, Makkah. Systematic random sampling technique was adopted. The data were collected through filling an interview questionnaire. It includes socio-demographic data, clinical data, general knowledge data, knowledge of foot care practice data and source of information. Regarding practice, a check list was used by the investigator after examination of the patient and observing his/her feet. **Results:** Out of 170 eligible type 2 diabetic patients invited to participate in the study, 160 responded, giving a response rate of 94.1%. Almost two-thirds of them (69.4% aged between 45 and 64 years. Male patients present 56.3% of them. Majority of them (85%) were married. Diabetes duration ranged between 5 and 10 years among more than half of the participants (53.8%). The majority of them (88.8%) were treated by oral hypoglycaemic drugs. The overall knowledge score mean was 14.7±2.9 out of 29. The overall knowledge score mean was 14.7±2.9 out of 29. The mean knowledge percentage score was 50.5±7.5%. The mean of the overall practice score was 23.5±3.2 out of 28. The mean practice percentage score was 83.9±11.4%. Older patients (≥65 years) were at almost significant double risk for having insufficient knowledge compared to younger patients (30-44 years) (OR: 2.01 95% CI: 1.11-6.31). Compared to illiterate patients, those with secondary school or university education were at significant decreased risk for insufficient self foot care knowledge (OR: 0.14 95% CI: 0.07-0.078 and OR: 0.06 95% CI: 0.02-0.39, respectively). Compared to patients who reported health care center/hospital as a source of their information about foot care, those who depend on other sources even with health care center/hospital were more likely to have poor practice of self foot care (OR: 1.93 95% CI: 1.02-4.15). Patients treated with insulin only were at three-folded risk for poor practice of self foot care opposed to those treated with oral hypoglycemics alone (OR: 3.51 95% CI: 1.36-6.05). **Conclusions:** The result of this study showed that a considerable proportion of diabetic patients had a poor knowledge and practice of diabetic foot care. Endocrinologists and family physicians were the persons who will be sought by diabetic patients regarding diabetic self care in the future. Role of health educators was very minimal in this regard.

P220: The real-world evidence for the glycemic efficacy and the metabolic effects of the fixed dose combination of empagliflozin and linagliptin

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Background: Empagliflozin in combination with linagliptin is a fixed-dose, once-daily tablet combining a sodium glucose co-transporter-2 (SGLT2) inhibitor with a dipeptidyl peptidase-4 (DPP-4) inhibitor, utilised as an adjuvant to diet and exercise to improve glycemic control in type 2 diabetes and both act with different, complementary mechanisms of action to improve glycemic control. **Methods:** We conducted a real-world analysis for the glycemic and other metabolic parameters (body weight, SBP and DBP) in patients who have been recently initiated on the combination therapy. Unpaired t test was utilised for the statistical analysis. **Results:** 38 patients were initiated on the novel combination. The mean age was 53 years (minimum 30, maximum 64, SD ± 8.6, 95% CI 50 to 55). The mean duration of diabetes was 11 years (minimum 0, maximum 30, SD ± 8.1, 95% CI 8.5 to 14). The mean HbA1c at the initiation was 9.8% (minimum 5.6, maximum 15, SD ± 2.1, 95% CI 9.1 to 11). The need for the enhanced therapeutic compliance and cost effectiveness enabled the shift to the combination in 10 patients (26%) who were on the ongoing individual monotherapy with SGLT2 inhibitor and DPP IV inhibitor, with initial mean HbA1c 9.6 % (minimum 8, maximum 11, SD ± 1.1, 95% CI 8.8 to 10). The mean decrease in the Fasting Plasma Glucose (FPG) was 73 mg/dl, with 16 patients (42%) achieved reduction of more than 100 mg/dl. The mean decrease in the Post Prandial Glucose (PPG) was 101 mg/dl, with 17 patients (45%) achieved reduction of more than 100 mg/dl. The mean initial eGFR at initiation was 101 mL/min/1.73m2 (minimum 61, maximum 145, SD ± 20, 95% CI 94 to 107). The mean reduction of the body weight was 1 kg. There was a mean reduction of 6 mmHg and 2 mmHg of SBP and DBP, respectively. **Conclusions:** The initial real-world results, in line with the randomised controlled studies, demonstrate a powerful glycemic efficacy with the numerically superior reductions in the body weight and blood pressure, as early as one month. The combination of Empagliflozin and Linagliptin is a suitable option as an add on to metformin therapy to improve the glycemic and metabolic parameters. The results need to be validated through a long-term larger study.

P221: National differences and similarities in youth-onset type 2 diabetes

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Background: With the recent increased awareness of youth-onset type 2 diabetes (T2D) cases, an overview of national differences in epidemiology data is needed to obtain a global picture of the disease development. **Methods:** This review examined national epidemiology data of youth-onset T2D published between 1st January 2008 and 15th January 2018, and searched for national guidelines on this topic to understand better national similarities and differences. **Results:** Of the 1005 articles and 14 congress abstracts identified, 42 studies were included. The highest reported prevalence rates of youth-onset T2D were found in the USA and China (38 and 18 cases/100,000 people, respectively), and lowest in Denmark and Ireland (0.6 and 1.2 cases/100,000 people, respectively). However, the highest incidence rates were reported in Taiwan and the UK (63 and 33 cases/100,000

people, respectively), with the lowest in Fiji and Austria (0.4 and 0.6 cases/100,000 people, respectively). These differences may be partly explained by variations in diagnostic criteria, national screening recommendations, and ethnicity within countries. **Conclusions:** Our review suggests that published national epidemiology data for youth-onset T2D may underestimate its disease burden. Finding optimal diagnostic criteria and screening strategies for this disease should be of high interest to every country.

P222: Use of big data algorithms to characterize patients with T2D on basal insulin who add a glucagon-like peptide-1 receptor agonist and predict their A1C response

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Background: Machine learning allows extensive analysis of big complex data. This study had two aims: 1) characterize patients on BI who add a GLP1RA and 2) identify predictors of ≥1% decline in A1C. **Methods:** Patients with T2D who were prescribed BI for ≥90 days but not GLP1RA for 180 days beforehand (in the US IBM Explorys database between 2010 and 2016) were included (N=80,019). For the A1C analysis, A1C readings ≤180 days before, and 180–360 days after initiating GLP1RA were required (N=8731). Logistic regression with 23 pre-specified variables, and subsequent hypothesis-free machine learning models, with 155000 additional variables covering clinical, claims and billing data addressed both aims. **Results:** GLP1RA initiators were characterized by a BI duration of >180 days (vs ≤180 days) estimated odds ratio (OR) 5.87 (95% CI: 5.49–6.27), receiving oral antidiabetic drugs(s) OR 1.70 (1.64–1.77) and co-medication(s) (both vs none) OR 3.22 (2.96–3.50), a BMI >30 kg/m2 (vs <30 kg/m2) OR 1.93 (1.84–2.03), age <75 years (vs ≥75 years) OR 3.63 (3.37–3.92) and private insurance (vs non-private) OR 2.2 (2.10–2.31). Variable selection via machine learning confirmed the importance of these variables. Baseline A1C was the only strong predictor of ≥1% decline in A1C, ORs (95% CI) compared with A1C <7% were 4.99 (3.29–7.57), 7.04 (4.77– 10.39), 14.56 (9.98–21.24), 23.21 (15.92–33.85), 36.28 (25.05–52.54), 73.14 (50.32–106.32) for categories 7–<7.5, 7.5–<8, 8–<8.5, 8.5–<9, 9–<10, ≥10%, respectively. Machine learning, applying 155000 variables, confirmed the importance of baseline A1C. On average, patients who improved lowered A1C from 10.0% (interquartile range [IQR]: 8.6–11.0) to 7.7% (IQR 6.7–8.4). **Conclusions:** Patients with T2D on BI who added a GLP1RA were likely to be <75 years old and had characteristics of progressed disease. Baseline A1C determined a ≥1% decline in A1C, suggesting patients on BI with high A1C would benefit from combination treatment with GLP1RA.

P223: IDeglira improves glycemic control in subjects with type 2 diabetes uncontrolled on basal insulin without deterioration despite discontinuing pre-trial sulphonylurea

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Background: As combining sulphonylurea (SU) and insulin can elevate the risk of hypoglycaemia, prescribers often reduce SU dose or stop SUs altogether when initiating insulin. This can lead to a deterioration of glycaemic control. The DUAL II trial compared the efficacy and safety of insulin degludec/liraglutide fixed-ratio combination (IDegLira) versus insulin degludec (degludec), (starting doses 16 U, max doses 50 U), both plus metformin (met), in subjects with poor glycaemic control previously treated with met ± SU/glinides and basal insulin (20–40 U). This sub-group analysis compared clinical findings in subjects discontinuing SU (pre-trial SU users) to those not taking SU pre- trial (non-SU users). **Methods:** Change from baseline in HbA1c, fasting plasma glucose (FPG) and body weight, and end of trial (EOT) insulin dose after 26 weeks of treatment were analysed with an analysis of covariance (ANCOVA) model with region, pre-trial use of SU at screening, randomised treatment and interaction between pre-trial use of SU and randomised treatment as fixed factors, and baseline value as covariate (and baseline HbA1c for insulin dose). Treatment-emergent confirmed hypoglycaemia was analysed using a negative binomial regression model with a log link and the logarithm of the time period in which a hypoglycaemic episode is considered treatment emergent as offset and the same fixed effects as the ANCOVA model. Missing data were imput- ed using last observation carried forward. **Results:** IDegLira resulted in greater reductions in HbA1c, FPG and body weight from baseline and lower rates of hypoglycaemia compared with degludec in both pre-trial SU users and non-SU users. Minor differences were seen in EOT insulin doses. Treatment effect was consistent between the two groups, with no statistically significant interaction be- tween randomised treatment and SU use for all endpoints. As insulin dose was reduced at randomisation from a mean of 27–32 U to 16U and pre- trial SU stopped, a non-clinically relevant increase in mean self-measured fasting plasma glucose (SMPG) was seen in weeks 0–3 in both arms in the pre-trial SU users. This had returned to baseline by week 4, with a general decrease continuing until the EOT. Mean SMPG decreased from week 0 until EOT with IDegLira in the non-SU users group. **Conclusions:** In subjects who reduced their insulin dose and discontinued SU at IDegLira initiation, no clinically relevant deterioration in glycaemic control was seen. For all endpoints analysed, regardless of SU use pre- trial, IDegLira showed better results in all metabolic parameters versus degludec (both with a max dose of 50 U). The clinical findings.

P224: Duration of diabetes and cardiorenal efficacy of liraglutide and semaglutide: A post hoc analysis of the leader and sustain-6 clinical trials

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Background: The LEADER and SUSTAIN-6 cardiovascular (CV) outcome trials demonstrated CV risk reduction for liraglutide and semaglutide in patients with type 2 diabetes (T2D). We analysed post hoc the impact of diabetes duration on cardiorenal efficacy of these GLP-1 analogs. **Methods:** LEADER and SUSTAIN-6 randomized 9340 and 3297 patients with T2D and high CV risk to liraglutide or semaglutide vs placebo. Primary endpoint was a composite of CV death or nonfatal myocardial infarction or stroke (MACE). Other endpoints included expanded MACE and nephropathy. We evaluated efficacy of liraglutide and semaglutide by duration of diabetes at baseline using an adjusted Cox proportional hazards model. **Results:** In LEADER, 15% (n=1377), 50% (n=4692), 27% (n=2504) and 8% (n=748) of patients had a baseline duration of diabetes of <5, 5 to <15, 15 to <25 and ≥25 years; proportions in SUSTAIN-6 were 13% (n=422), 48% (n=1582), 30% (n=977) and 10% (n=316). Longer diabetes duration was associated with higher age, proportion of women, peripheral arterial disease and insulin use, and worse renal function. Frequencies of MACE, expanded MACE and nephropathy increased with diabetes duration. Liraglutide and semaglutide reduced the risk of cardiorenal outcomes across categories of diabetes duration. **Conclusions:** Increasing diabetes duration is associated with a higher risk of cardiorenal events. The GLP-1 analogs liraglutide and semaglutide demonstrate cardiorenal efficacy across the spectrum of diabetes duration.

P225: Chronic kidney disease and risk of mortality, cardiovascular events, and severe hypoglycemia in type 2 diabetes: DEVOTE results

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Background: T2D is associated with an increased risk of cardiovascular disease (CVD) and CKD. CKD is a known risk factor for major adverse cardiovascular events (MACE), all-cause mortality and hypoglycemia. This secondary, pooled analysis from DEVOTE examined whether baseline CKD stages were associated with an increased risk of MACE, all-cause mortality or severe hypoglycemia in T2D patients. **Methods:** DEVOTE was a treat-to-target, randomized, double-blind trial in 7637 patients with T2D at high CV risk, treated once daily with insulin degludec or insulin glargine 100 units/mL. According to baseline CKD stages (CKD stage 2: n=3118; stage 3: n=2704; stages 4+5: n=214), more patients had a history of CVD (CKD stages 3–5), were older and had lower A1C vs. those with normal kidney function (normal + CKD stage 1, n=1486). Risk of MACE and all-cause mortality was significantly higher ($p<0.05$) in those with a higher baseline CKD stage [Figure]. **Results:** There was a significantly higher rate of severe hypoglycemia for stages 3 and 4+5 vs. stage 2 or normal + stage 1. There were no significant interactions between treatment and CKD stages. Comparisons between treatment groups by CKD stage mirrored those from the primary analyses. **Conclusions:** Increasing severity of baseline CKD stages was associated with a higher risk of MACE, all-cause mortality and severe hypoglycemia in T2D patients at high CV risk.

P226: From guidelines to clinical practice, reflections on the multinational randomised trial investigating the efficacy and safety of insulin degludec/insulin aspart and biphasic aspart 30 in patients with type 2 diabetes before, during and after Ramadan

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Background: To provide clinical evidence reinforcing practical guidance concerning the titration algorithm and dose modification for patients with Type 2 diabetes fasting during and/or outside Ramadan. **Methods:** Data were retrieved from a multinational, randomised, treat-to-target trial of insulin degludec/insulin aspart (IDegAsp) twice-daily (BID) (n = 131) vs biphasic aspart 30 (BIAsp 30) BID (n = 132) before, during and after Ramadan in fasting patients with Type 2 diabetes. A structured titration algorithm and dose modification, based on IDF – Diabetes and Ramadan 2016 guidelines, were applied during treatment (8- to 20-week initiation, 4-week Ramadan, 4-week post-Ramadan). Hypoglycaemia was analysed as overall (severe or blood glucose confirmed [<3.1mmol/l]) symptomatic, nocturnal (00:01 to 05:59) overall symptomatic or severe (requiring third-party assistance). **Results:** Glycaemic control was maintained in both arms during and after Ramadan, regardless of treatment initiation duration. For both treatments, total daily doses rose during titration, and as per protocol (30% to 50% reduction of latest pre-Ramadan breakfast/ lunch or evening dose), decreased when Ramadan began and increased to pre-Ramadan level after Ramadan. During Ramadan, IDegAsp was associated with 62% lower overall hypoglycaemia rate (estimated rate ratio [ERR] 0.38 [0.19, 0.77], p = 0.0070) and 74% lower nocturnal hypoglycaemia rate (ERR 0.26 [0.08, 0.88], p = 0.0304), vs BIAsp 30. Post-Ramadan, overall, nocturnal and severe hypoglycaemia rates were IDegAsp: 78.6, 44.9 and 0.0 per 100 patient-years of exposure (PYE) respectively; BIAsp 30: 821.7, 142.4 and 32.9 per 100 PYE respectively. **Conclusions:** This study provides clinical evidence that reinforces recent practical guidance for patients with Type 2 diabetes who fast during and/or outside Ramadan.

P227: Hypoglycemia with mealtime fast-acting insulin aspart versus insulin aspart across two large type 1 diabetes trials

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Background: Hypoglycemia is a ubiquitous challenge with insulin treatment in type 1 diabetes (T1D), with nocturnal episodes of particular concern. **Methods:** Severe (as defined by the ADA) or blood glucose-confirmed (<56 mg/dL [3.1 mmol/L]) hypoglycemia was investigated across two double-blind, treat-to-target, randomized trials assessing the efficacy and safety of mealtime fast-acting insulin aspart (FA) vs. insulin aspart (IAsp) by multiple daily injections in adults with T1D: a 52-week trial in combination with insulin detemir

(onset 1; n=761), and a 26-week trial in combination with insulin degludec (onset 8; n=684). **Results:** FA was confirmed to be non-inferior to IAsp regarding change from baseline in A1C in both trials, with a statistically significantly greater A1C reduction with FA in onset 1. Importantly, nocturnal hypoglycemia rates were consistently lower with FA vs. IAsp in both trials (pooled estimated treatment rate ratio [ETR] 0.84 [95% CI 0.72;0.98]; p=0.02), while no significant difference was observed for overall (pooled ETR 0.94 [95% CI: 0.85;1.05]) and diurnal hypoglycemia (pooled ETR 0.96 [95% 0.86;1.07]) with some heterogeneity across trials. **Conclusions:** Analysis across two large trials supports the safety of mealtime FA, with lower rates of nocturnal hypoglycemia with FA vs. IAsp.

P228: Screening of diabetic retinopathy using non-mydriatic digital retinal camera compared to ophthalmoscope examination in al-khor community medical centre

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Background: Retinal screening is a vital part of the examination in all Diabetic patients. Early detection can prevent severe complications like maculopathy, proliferative retinopathy, and blindness. The ophthalmoscope is still the commonest method for screening, however, retinal cameras are increasingly being used in Primary Care. The purpose of this study was to evaluate whether the Retinal camera is superior in detecting DM retinopathy compared to conventional Ophthalmoscope examination in Primary Care. **Methods:** Prospective study with 120 Diabetic patients were screened for retinopathy using a Non-Mydriatic Retinal Camera. Nonstereoscopic 45° photographs at 3 fixation targets-Temporal, Nasal and Central were taken by the physician. The uploaded images were compared to their previous Ophthalmoscopic findings stored in the computer (Medical Director Software) prior to camera installation. The images were over-read by a Vitreo-Retinal Surgeon. SPSS version-15 was used for analysis. **Results:** Of the 120 patients screened 103(85.8%) had normal ophthalmoscopic findings compared to 83(69%) who underwent retinal photographs. Mean duration between both examinations was 8.8 months. 28(23.3%) had features of mild NPDR by Retinal Camera compared to 7(5.8%) by ophthalmoscope ($p < 0.001$). Maculopathy was present in 9 (7.5%) by retinal imaging as compared to 4(3.3%) by ophthalmoscope ($p < 0.001$). Moderate NPDR by Retinal Camera and Ophthalmoscope were seen in 3 (2.5%) and 2 (1.6%) respectively. No cases of severe NPDR or PDR were reported, however, 11 (9.17%) had other findings like drusen, cataract, retinal scar and vitreous hyalosis by imaging in contrast to 1(0.8%) with an ophthalmoscope ($p < 0.001$). **Conclusions:** Non-Mydriatic Retinal Camera was significantly superior to Clinical Ophthalmoscopic examination in detecting early retinopathy and maculopathy.

P229: The effect of fast-acting insulin aspart versus insulin aspart on glycaemic control according to age at baseline in children and adolescents with type 1 diabetes

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Background: To explore the effect of fast-acting insulin aspart (faster aspart) vs insulin aspart (IAsp) on glycaemic control according to age at baseline in a paediatric sample with type 1 diabetes (T1D). **Methods:** Post hoc analysis of a 26-week, treat-to-target, multicentre trial that randomised participants to mealtime faster aspart (n=260), post-meal faster aspart (n=259), and mealtime IAsp (n=258), all with daily insulin degludec. The analysis evaluated the 26-week treatment effect of faster aspart vs IAsp on change in HbA1c from baseline, according to age at baseline as a continuous variable. **Results:** At week 26, the primary analysis showed that mealtime and post-meal faster aspart were non-inferior (0.4% margin) to IAsp for the change in HbA1c from baseline, with a statistically significant difference in favour of mealtime faster aspart (estimated treatment difference [ETD 95%CI]: –0.17% [–0.30;–0.03]; –1.82 mmol/mol [–3.28;–0.36], p=0.014). Results of the post hoc analysis showed there were no statistically significant differences between the regression coefficient of faster aspart and IAsp in the change in HbA1c from baseline at week 26 vs age at baseline (ETD [95%CI] mealtime faster aspart – IAsp: –0.02 [–0.05;0.02], p=0.38; post-meal faster aspart – IAsp: 0.00 [–0.04;0.04], p=0.99). **Conclusions:** The treatment difference between faster aspart and IAsp in change in HbA1c from baseline was independent of age in children and adolescents with T1D.

P230: Insulin pump therapy among adult type 1 diabetes mellitus: Patient profile, effect on glycemic control-experience from Oman

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Background: Insulin pump therapy (IPT) is a very effective method of intensive insulin therapy; however, there is no data about this group in Oman. We explored the patient's profile and evaluated the long-term efficacy of IPT in a cohort of adult patients with type 1 diabetes mellitus (T1DM). **Methods:** This is a retrospective observational study of 58 adult patients with T1DM on insulin pump therapy, following at The National Diabetes and Endocrine Centre (NDEC), Royal Hospital, Muscat. The patient's socio-demographic details including age, sex, and duration of diabetes; clinical details such as complications, HbA1C before & 6 months after initiation of pump therapy, and the meanHbA1C for the last 5 years (2014-2018) were collected from the computerized medical record and analyzed by SPSS. **Results:** Among the 58 patients, 24 were males and 34 were female. Their mean age was 27.5 years and the mean duration of diabetes was 14.6 ± 6.8years. Mean duration of pump therapy was 7.1± 2.1 years. Mean HbA1c at the time of initiation of IPT was 8.75%, 6 months after the initiation of IPT, HbA1c dropped by 1.15% (p-value = 0.001) which was statistically significant. This improvement persisted (range 6.9 to 7.3%) and the HbA1c remained lower than pre-pump HbA1c. Overall 64 % of

patients had a mean HbA1c <7.5% for the last 5 years, interestingly 70.5% males among males and 58.5% females among females had HbA1c <7.5 %. Retinopathy was found in 19% of patients, 12% had nephropathy and 3 % had neuropathy. **Conclusions:** The improvement in glycemic control amongst adults with T1DM on IPT can be maintained for a long period time provided proper candidates are chosen. Higher pre pumps HbA1c, less frequent SMBG, and less frequent carbohydrate counting are predictors of patients those less likely to achieve optimal glycemic control with IPT in our population.

P231: Clinical response (HbA1c ≥1% and/or body weight ≥5% reduction) to semaglutide by baseline HbA1c and body weight in the SUSTAIN program

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Background: The SUSTAIN clinical development program assessed semaglutide once weekly, a glucagon-like peptide-1 (GLP-1) analog, across the continuum of type 2 diabetes (T2D) care, including in drug-naïve subjects and those on a background of oral antidiabetic drugs and/or insulin. Semaglutide demonstrated superior reductions in HbA1c and body weight (BW) vs placebo and comparators (sitagliptin, exenatide extended release, insulin glargine, dulaglutide). **Methods:** This post hoc analysis assessed the proportion of semaglutide-treated subjects achieving clinically relevant responses (composite endpoint: ≥1% HbA1c reduction and ≥5% BW loss; individual components: ≥1% HbA1c or ≥5% BW loss) by baseline HbA1c and BW across SUSTAIN 1–5 and 7. **Results:** A consistently high proportion of semaglutide-treated subjects achieved clinically relevant responses (composite, 42.0%; ≥1% HbA1c reduction, 76.6%; ≥5% BW loss, 49.9%), regardless of baseline HbA1c and B. Baseline HbA1c and BW did not affect the likelihood of achieving the composite and ≥5% BW endpoints. A ≥1% HbA1c reduction was significantly more likely to be achieved with higher baseline HbA1c (143% increased odds per 1% unit higher baseline HbA1c; p<0.0001). **Conclusions:** Semaglutide provides meaningful reductions in HbA1c and BW across a range of HbA1c and BW. Individuals with poorly controlled HbA1c were more likely to achieve a ≥1% HbA1c reduction.

P232: Development of type 1 diabetes while in pregnancy

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Background: Gestational Diabetes Mellitus (GDM) is considered a risk factor for the development of type-2 diabetes mellitus (T2DM) post-partum. There is a minor percentage of women who could slowly progress to type-1 diabetes mellitus (T1DM).1,2 **Methods:** We report a 27-year-old primigravida with GDM. Her family history of diabetes reveals only one 2nd degree relative to T2DM. Her BMI during pregnancy was 20 kg/m2, and her blood sugar remained controlled with insulin throughout pregnancy. After delivery holding insulin lead to marked hyperglycemia without acidosis, hence insulin was resumed. During the postnatal visit, her BMI became 17.8 kg/m2 and there was no history of chronic pancreatitis, malabsorption, or alcohol abuse. **Results:** Repeated postprandial c-peptide tests levels were very low or undetected even during the holding of insulin with negative autoimmune markers (glutamic acid decarboxylase (GAD) antibodies, & islet cell antibodies) and normal thyroid functions. Two years after diagnosis, she developed hypothyroidism. Over 3 years she developed a single episode of diabetic ketoacidosis during a trip which highly suggested the diagnosis of T1DM. This raises the question of whether the development of T1DM could have happened during pregnancy in this case. **Conclusions:** Presence of GDM in a patient with low BMI and no family history of diabetes should direct attention to the possibility of development of T1DM even in the absence of autoimmune markers. Identification of those cases could help in the prevention of acute hyperglycemic emergencies.

P233: Rates of major adverse cardiovascular events and mortality with basal insulin by liraglutide use: A DEVOTE sub-analysis

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Background: Cardiovascular (CV) safety profiles for insulin degludec (degludec) and insulin glargine 100 units/mL (glargine U100) were established by the DEVOTE and ORIGIN trials. In the LEADER trial, the GLP-1 analog liraglutide significantly reduced risks of Major Adverse Cardiovascular Events (MACE) and mortality vs placebo in patients with type 2 diabetes (T2D) and high CV risk. **Methods:** This post hoc analysis compared effects of concomitant liraglutide vs no liraglutide use on MACE and mortality in 7637 patients with T2D and high CV risk randomized 1:1 to degludec/glargine U100 in DEVOTE (NCT01959529). Hazard ratios (HRs) for MACE/mortality were calculated using a Cox regression model adjusted for treatment and time-varying liraglutide use at any time in the trial, without interaction. Sensitivity analyses adjusted for baseline covariates including age, sex, smoking, T2D duration, CV risk, insulin therapy, A1C, LDL, HDL and liver/kidney function. **Results:** At baseline, 436 (5.7%) patients were on liraglutide: 187 (2.4%) started and 210 (2.7%) stopped liraglutide thereafter. Mean liraglutide exposure from randomization was 731 days. Liraglutide use was associated with significantly lower HRs for MACE and mortality vs no liraglutide use. HRs from sensitivity analyses were consistent with these results. **Conclusions:** Thus, liraglutide was associated with significantly lower MACE and mortality rates in basal insulin users.

P234: DUAL VIII (NCT02501161): Significantly longer time to treatment

INTENSIFICATION WITH INSULIN DEGLUDEC/LIRAGLUTIDE VERSUS INSULIN GLARGINE IN A 104-WEEK RANDOMIZED TRIAL MIRRORING CLINICAL PRACTICE

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Background: Patients (pts) (n=1012) with Type 2 Diabetes (T2D) (A1C 7–11%) on oral antidiabetic drugs (OADs) were randomized 1:1 to open label Insulin Degludec/Liraglutide (IDegLira) or Insulin Glargine (IGlar U100) in a 104 week (wk) trial to assess treatment durability. **Methods:** The primary endpoint was time from randomization to treatment intensification (A1C ≥7.0% at 2 consecutive visits including wk 26); pts who met the primary endpoint discontinued study drug. **Results:** Baseline characteristics were similar. Over 104 wks, fewer pts with IDegLira required intensification vs IGlar U100 (37.4% vs 66.2%). Pts treated with IDegLira had a significantly longer time to intensification [median: >2 years/~1 year for IDegLira/IGlar U100; . There was greater effect with IDegLira vs IGlar U100 after 104 wks, had intensification not been needed, in terms of: pts achieving A1C <7% (55.7 vs 28.5%), and A1C <7% with no weight gain (20.9 vs 6.3%), lower estimated mean insulin dose (36 vs 51 U; estimated treatment difference –14.9 U), and 56% lower rate of severe or blood glucose confirmed symptomatic hypoglycemia (0.38 vs 0.86 events/patient-year of exposure, (p<0.0001 for all). Safety results were similar. **Conclusions:** Improved long-term glycemic control, evidenced by significantly longer time to treatment intensification, was achieved with IDegLira vs IGlar U100 in pts previously uncontrolled on OADs.

P235: IMPROVED GLYCEMIC CONTROL AMONG PATIENTS NEWLY PRESCRIBED INSULIN DEGLUDEC/LIRAGLUTIDE ACROSS VARIOUS BACKGROUND THERAPIES IN US REAL WORLD PRACTICE

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Background: Insulin Degludec/Liraglutide (IDegLira) is a fixed-ratio combination of degludec and liraglutide indicated for the treatment of Type 2 Diabetes (T2D). This is the first real world study describing change in glycated hemoglobin (HbA1c) among US patients initiating IDegLira. **Methods:** The primary objective was to observe the effect in metabolic control of initiating IDegLira in adult T2D patients previously on basal insulin (Basal), glucagon-like peptide-1 receptor agonist as only injectable (GLP-1), and no injectable therapy (N-INJ) between March 2017 and June 2018 (index date). Patients with HbA1c data 6 months prior to and 6months post index date were included from the Practice Fusion Electronic Health Record database. Of the 1,384 IDegLira patients, 206 patients had baseline, and follow-up HbA1c (180 ± 45 days) data. Changes in clinical outcomes were evaluated by paired t-test. **Results:** Overall there was significant change in HbA1c of -0.9% (p<.001), and there was an HbA1c reduction in all three background therapy groups, ranging from -0.7 in the Basal to -1.0 in N-INJ (p<0.001). There was no significant change in weight in the overall group despite initiating or intensifying insulin therapy with IDegLira, as expected weight in the GLP-1 subgroup increased (3.0 lb; p<.05). **Conclusions:** Consistent with previous real-world studies, IDegLira is effective at lowering HbA1c across different background therapies with minimal impact on weight.

P236: EFFICACY AND SAFETY OF FASTER ASPART COMPARED WITH INSULIN ASPART BOTH WITH INSULIN DEGLUDEC IN ADULTS WITH T1D

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Background: Fast-acting insulin aspart (FA) can improve glycemic control in subjects with T1D. To further assess the effect and safety of FA, a multicenter, treat-to-target, 26-week trial (onset 8) randomized subjects with T1D to double-blind mealtime FA (n=342), or insulin aspart (IAsp; n=342), or open-label post-meal FA (n=341), each with insulin degludec. **Methods:** All available information regardless of treatment discontinuation was used for the evaluation of effect. Non-inferiority for the primary endpoint, change from baseline in A1C, was confirmed for mealtime and post-meal FA vs. IAsp (Fig). **Results:** Mealtime FA was superior to IAsp for 1-h PPG increment using a standard meal test (ETD: –0.90 [–1.36;–0.45] mmol/L; –16.24 [–24.42;–8.05] mg/dL). Self-measured 1-hr PPG increment favored FA at breakfast (ETD: –0.58 [–0.99;–0.17] mmol/L; –10.43 [–17.85;–3.02] mg/dL) and across all meals (ETD: –0.48 [–0.74;–0.21] mmol/L; –8.58 [–13.35;–3.81] mg/dL). No significant differences were observed in treatment-emergent adverse events or overall rate of severe or confirmed hypoglycemic episodes (PG <3.1 mmol/L [56 mg/dL]), but significantly less hypoglycemia was seen 3 to 4 h after meals with mealtime FA. **Conclusions:** In summary, mealtime FA provided superior PPG control to IAsp with a similar overall improvement in A1C and no increased safety risk. These findings were consistent with those previously reported in subjects with T1D.

P237: ASSOCIATION BETWEEN ELEVATED LIVER ENZYMES AND INCIDENT TYPE 2 DIABETES IN YEMENI POPULATION: A CASE CONTROL STUDY

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Background: The presence of liver disease and raised liver enzymes in Type 2 diabetes mellitus is receiving increasing attention because of the large population at risk and may be multifactorial in origin. Therefore, our study carried out to assess the association between elevated liver enzymes and incident type 2 diabetes in a set sample of Yemeni population. **Methods:** This is a case control study involved

284 adult Yemeni subjects (142 cases and 142 controls) with aged ≥35 years; randomly selected from the outpatient diabetic clinic of Ibn-Seena hospital, Mukalla, Yemen. Case group was composed of 142 T2D patients (64 males and 78 females). Controls group was composed of 142 non-diabetics healthy subjects (51 males and 91 females). Serum fasting blood glucose, lipid profile, ALT, AST and GGT concentrations were measured using a chemical autoanalyzer instrument (Cobase Integra 400 plus, Roche). **Results:** Positive correlation was showed between ALT with FBG (r=0.174, P= 0.002), TG (r=0.237, P= <0.001), AST (r=0.549, P= <0.001) and GGT (r=0.506, P= <0.001). Positive correlation also was showed between GGT with diastolic BP (r= 0.182, P= 0.001), FBG (r= 0.212, P=<0.001), total cholesterol (r= 0.183, P= 0.001), triglyceride (r= 0.164, P= 0.003) and LDL (r= 0.186, P= 0.001) remained significant after controlling age in the entire population. Higher levels of ALT and GGT levels were significantly associated with increased risk of T2D (P for trend= 0.006 for ALT and P for trend= 0.022 for GGT), and the ORs (95%CIs) comparing highest versus lowest tertiles of ALT and GGT were 2.75(2.01 to 3.48) and 1.17(1.83 to 6.42) respectively. **Conclusions:** Taken together, these data suggest that higher levels of ALT and GGT are positively associated with increased T2D risk and thus, ALT and GGT may be used as predictive markers for identifying people at higher risk of T2D.

P238: Hypoglycemic events and fear of hypoglycemia in patients with type 2 diabetes mellitus initiating a second-line therapy in the gulf: Two-year follow up of the DISCOVER study program

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Background: Hypoglycemia remains one of the main health concerns affecting the daily activities of patients with diabetes mellitus (DM).1 Data on the frequency of hypoglycemia and fear of hypoglycemia in the Gulf are limited. We described the clinical and laboratory characteristics of hypoglycemia in four Gulf countries from the DISCOVER study. **Methods:** The presented data is a 2-year interim analysis of the DISCOVER study (a prospective, multicenter, cohort, non-interventional study). Over 15,000 patients initiating a second-line anti-diabetic treatment were enrolled, including 247 patients from four Arabian Gulf countries (United Arab Emirates, Kuwait, Bahrain, and Oman). We assessed the history of hypoglycemic attacks and hypoglycemic fear along with laboratory parameters. The hypoglycemic fear survey (HFS-II) is a questionnaire that measures behaviors and worries about hypoglycemia. **Results:** Overall, 220 patients completed 24 months of the 3-year long study. The incidence of major hypoglycemic events was similar throughout the study. However, minor hypoglycemic events varied, as shown in Figure 1. It was observed that only two patients changed their previous therapy because of hypoglycemia. **Conclusions:** This study observed that patients initiating a second-line treatment showed improvement in glycemic control, reflecting better efficacy of their second-line therapies. The variance in rates of minor hypoglycemic events could be related to different anti-diabetic classes or combination therapies. On the other hand, the low rates of major hypoglycemic events were re-assuring. This was supported by the favorable hypoglycemia fear scores observed throughout the study.

P239: Patterns of vascular complications in patients with type 2 diabetes initiating a second-line therapy in gulf countries: Two-year follow up of the DISCOVER study program

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Background: Patients with diabetes mellitus (DM) are at heightened risk of vascular complications that exert an enormous economic and social burden. Understanding their patterns will help inform healthcare providers and authorities where to concentrate their resources.1 We assessed the occurrence of vascular complications during the DISCOVER study program in four Gulf countries. **Methods:** This data is a 2-year interim analysis of the DISCOVER study (a prospective, multicenter, cohort, non-interventional study). Over 15,000 patients initiating a second-line anti-diabetic treatment were enrolled, including 247 patients from four Arabian Gulf countries (UAE, Kuwait, Bahrain and Oman). Macrovascular complications, microvascular complications, and their effect on the quality of life of patients were described. **Results:** After two years of follow up, the mean (SD) HbA1c level was 7.4 (±1.3), which decreased from 8.7 (±1.8) at baseline. The rate of macrovascular complications was variable by the end of the first year in relation to baseline results. However, the rate of all macrovascular complications decreased in the second year. Only three patients were hospitalized for cardiovascular events. **Conclusions:** This analysis observed that diabetes-related macrovascular and microvascular complications, excluding neuropathies, decreased by the end of the second year, which could be related to improved glycemic control in this patient population. On the other hand, hypertension and hyperlipidemia increased steadily in the 2-year duration of this study, which urges the need for further patient education and earlier therapeutic interventions.

P240: Ultra-rapid lispro improves postprandial glucose control versus Humalog® (lispro) in patients with type 2 diabetes: PRONTO-T2D

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Background: Ultra rapid lispro (URLi) is a novel prandial insulin lispro formulation developed to more closely match physiological insulin secretion. This phase 3, multicenter, treat-to-target, 26-week trial evaluated the efficacy and safety of URLi vs. lispro in patients

with type 2 diabetes (T2D). **Methods:** Primary endpoint was A1C change from baseline to week 26, with multiplicity adjusted objectives for postprandial glucose (PPG) excursions (PPGE) with meal test. After 8-week lead-in to optimize basal insulin glargine or degludec and transfer to prandial lispro treatment, patients were randomized to double-blind URLi (n=336) or lispro (n=337) injected 0 to 2 minutes prior to meals. Patients could continue metformin and/or SGLT2 inhibitor. **Results:** Non-inferiority for primary endpoint was confirmed for URLi: estimated treatment difference (ETD) 0.06 [95% CI -0.05; 0.16], with mean change in A1C of -0.38% URLi and -0.43% lispro. Mean A1C at week 26 was 6.92% URLi and 6.86% lispro. URLi was superior to lispro in controlling 1- and 2-h PPGE with standardized meal test at week 26, with lower PPGE from 0.5 – 4 h with URLi. There were no significant treatment differences in rates of severe or overall hypoglycemia. Incidence of overall treatment-emergent adverse events was similar between treatments. **Conclusions:** URLi in a basal-bolus regimen led to superior PPG control vs. lispro in patients with T2D.

P241: Ultra rapid lispro improves postprandial glucose control versus Humalog® (lispro) in type 1 diabetes: PRONTO-T1D study

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Background: Ultra rapid lispro (URLi) is a novel prandial insulin lispro formulation developed to more closely match physiological insulin secretion. This phase 3, 26-week trial evaluated the efficacy and safety of URLi vs lispro in 1222 adults with type 1 diabetes (T1D). The primary endpoint was A1C change from baseline after 26 weeks of treatment, with multiplicity adjusted objectives for postprandial glucose (PPG) excursions (PPGE) after test meal. After an 8-week lead-in to optimize basal insulin glargine or degludec, patients were randomized to double-blind URLi (n=451) or lispro (n=442) given at the start of the meal, or open-label URLi (n=329) given 20 minutes after the meal (URLi +20). **Methods:** A1C was reduced for URLi and lispro and non-inferiority (NI) was shown: estimated treatment difference (ETD) -0.08 [-0.16; 0.00] p=0.06. NI for URLi +20 vs lispro was also shown: ETD +0.13 [0.04; 0.22] p=0.003. URLi was superior to lispro in controlling 1- and 2-h PPGE during the test meal. **Results:** No significant differences were seen between URLi vs lispro in rate or incidence of severe hypoglycemia; overall daily or postprandial hypoglycemia (<54 mg/dL) <4 h after meals, but URLi had a 37% lower hypoglycemia rate in the period >4 h, (p=0.013). Overall, the incidence of treatment-emergent adverse events was similar between groups. **Conclusions:** URLi was efficacious with a similar safety profile to lispro and, when given at start of the meal, provided superior PPG control vs lispro.

P242: Patient preferences and health state utilities associated with mealtime insulin concentrations among patients with diabetes in Italy

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Background: Standard concentration (100 units/mL) mealtime insulin is frequently used to treat patients with type 1 (T1D) and type 2 diabetes (T2D). A more concentrated version of the medication (200 units/mL) has been available in Italy since 2016. The concentrated version is bioequivalent to the standard and delivers the same amount of medication in half the volume of liquid. The purpose of this study was to examine patient preferences in Italy and estimate health state utilities associated with standard and concentrated rapid-acting mealtime analog insulin. **Methods:** Participants with T1D and T2D in Italy valued two health states in time trade-off interviews. The health states had identical descriptions of diabetes and treatment, other than differences associated with insulin concentration (e.g., half as much liquid for the same dose, less effort to press the injection button, and fewer injection pens required with concentrated insulin). To ensure participants understood the health states, they were shown a video illustrating the differences between concentrations. **Results:** A total of 217 participants completed interviews (49.8% male; mean age=56.1 years; 109 from Milan; 108 from Rome; 12% T1D; 88.0% T2D). When asked which health state they preferred, 98.2% said concentrated, 0.9% said standard, and 0.9% had no preference. Mean (SD) utilities rounded to three decimals were 0.892 (0.099) for concentrated and 0.884 (0.101) for standard. The mean (SD; p-value) utility difference between standard and concentrated rapid-acting insulin was 0.007 (0.019; p<0.0001). **Conclusions:** Findings from this Italian sample provide insight into patient preferences associated with rapid-acting insulin concentration. Although the difference in utility is small, patients consistently preferred concentrated over standard insulin, and for some patients, this difference had an impact on utility valuations. Results suggest that concentration of rapid-acting insulin should be considered because it could have an impact on treatment preference and quality of life.

P243: Efficacy, effectiveness and safety of nasal glucagon as a rescue therapy for severe hypoglycaemia in adults with type 1 diabetes

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Background: Injectable glucagon is one of the therapeutic options for severe hypoglycaemia which involves prior reconstitution. Nasal glucagon (NG), containing 3mg of glucagon dry powder absorbed through the nasal mucosa, is a ready-to-use drug-device combination. NG is under development to treat severe hypoglycaemia in adults, children and adolescents with diabetes. This abstract presents the efficacy, effectiveness and safety of NG in adults with Type 1 diabetes (T1D). **Methods:** The randomised non-inferiority trial compared NG with injectable glucagon administered intramuscularly (IMG) for treatment of insulin-induced hypoglycaemia. The real-world use study evaluated the effectiveness and tolerability of NG 3mg to treat moderate/severe hypoglycaemic events (HEs). **Results:** In the randomised trial, NG 3mg was non-inferior to IMG in treating insulin-induced hypoglycaemia (98.7% versus 100%; difference: 1.3%, upper

end of 1-sided 97.5% CI: 4.0%). NG 3mg was effective in a real-world setting in treating moderate/severe hypoglycaemia in adults with T1D, resolving 96.2% HEs including moderate and severe hypoglycaemia. Importantly, all 12 severe HEs resolved, and participants regained consciousness, stopped convulsions or achieved normalcy within 15 minutes of administration, as assessed by caregivers. NG and IMG showed consistent safety profiles for nausea and vomiting. Headache and nasal symptoms occurred more frequently with NG versus IMG, but most symptoms were transient. **Conclusions:** NG appears to be an efficacious and well tolerated ready-to-use nasal dry powder with potential to substantially ease severe hypoglycaemia rescue treatment in adults with T1D. It may also expand the community of people who could quickly render aid in a rescue situation.

P244: Efficacy, effectiveness and safety of nasal glucagon as rescue therapy for severe hypoglycaemia in children and adolescents with type 1 diabetes

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Background: One of the therapeutic options for severe hypoglycaemia is injectable glucagon which requires prior reconstitution. Nasal glucagon (NG), containing 3mg of glucagon dry powder absorbed through the nasal mucosa, is a ready-to-use drug-device combination. NG is under development for severe hypoglycaemia treatment in adult and paediatric populations with diabetes. The efficacy, effectiveness and safety of NG in children and adolescents with Type 1 diabetes (T1D) are discussed here. **Methods:** The pharmacokinetic, pharmacodynamic, efficacy and safety profiles of NG 3mg and injectable glucagon administered intramuscularly (IMG) 0.5 - 1mg were studied in a randomised trial. Subsequently, real-world effectiveness and tolerability of NG 3mg were evaluated. **Results:** NG 3mg achieved treatment success (based upon pre specified criteria) in 100% of participants with glucose-raising effect similar to IMG (weight-based doses) in children and adolescents with T1D. In the real-world setting, NG 3mg resolved 100% of moderate hypoglycaemic events (≤70 mg dl-1 or ≤3.9 mmol l-1) including clinically significant hypoglycaemia with a glucose level <54 mg dl-1 (3.0 mmol l-1) and signs and symptoms of neuroglycopaenia. No severe hypoglycaemic events were reported. Safety profiles of NG and IMG were similar for nausea and vomiting. Headache and nasal symptoms occurred more frequently with NG compared to IMG; most of these were transient. **Conclusions:** NG appears to be an efficacious and well tolerated ready-to-use nasal dry powder with potential to substantially ease severe hypoglycaemia rescue treatment in children and adolescents with T1D. It may also expand the community of people who could quickly render aid in a rescue situation.

P245: Treatment and dosing patterns among patients with type 2 diabetes initiating glucagon-like peptide-1 receptor agonists in several countries

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Background: Glucagon-like peptide-1 receptor agonists (GLP-1 RA) class is evolving and expanding. We sought to understand current treatment and dosing patterns of GLP-1 RAs in real-world, namely Canada (CA), Germany (DE), France (FR), Belgium (BE), Netherlands (NL) and Italy (IT). **Methods:** Adult patients with type 2 diabetes (T2D) initiating a GLP-1 RA (liraglutide [LIRA], dulaglutide [DULA], exenatide once-weekly [exQW], exenatide twice-daily [exBID], or lixisenatide [LIXI]) between 1/1/2015-12/31/2016 were identified using country-specific IQVIA Longitudinal Prescription Databases (LRx). Therapy initiation date was termed the 'index date.' Patients had continuous eligibility/data stability 6 months pre- and ≥12 months post-index and were GLP-1 RA naïve. Persistence on index therapy (until discontinuation or switch) was evaluated descriptively at 1-year post-index (and over available follow-up [data not shown here]). Average daily dose (ADD; and average weekly dose [AWD] for once-weekly GLP-1 RAs) was calculated over the available follow-up while persistent. Results for treatment cohorts with N>100 are included. **Results:** Study sample comprised of 48,317 LIRA, 34,649 DULA, 11,138 exQW, 3,616 exBID, and 2,204 LIXI patients (across countries/therapy cohorts: 34.9-63.2% female, median age 53-62 years, median follow-up 16-30 months). Proportion persistent at 1-year post-index ranged from: 36.8–67.2% for DULA, 5.9–44.4% for exBID, 24.7–44.2% for exQW, 22.2–57.5% for LIRA, and 15.5–40.0% for LIXI. Mean ADD ranged from: 1.44-1.68mg for LIRA, 13.21-20.43µg for exBID, and 19.88-20.54µg for LIXI. Mean AWD for DULA was 1.25mg in Canada, and 1.43-1.53mg in EU countries. Mean AWD for exQW ranged from 2.03-2.14mg across all countries. **Conclusions:** Treatment patterns varied among patients initiating different GLP-1 RA therapies. Across countries, the proportion of patients persistent at one year was highest among DULA and LIRA patients and generally lowest among exBID patients. This analysis shows that ADD/AWD for all GLP-1 RAs was in line with the recommended label.

P246: Dulaglutide has better glycemic effectiveness versus basal insulin in injection-naïve patients with type 2 diabetes: The DISPELTM study

Ibrahim Turfanda, Reema Mody[1], Qing Huang[2], Maria Yu[3], Xian Zhang[2], Liya Wang[2], Michael Grabner[2], Hiren Patel[1]

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Background: 2018 ADA-EASD consensus report recommends GLP-1 RAs over basal insulin (BI) as the first injectable medication in most patients with type 2 diabetes (T2D). Objective of this US retrospective observational study was to compare 1-year real-world glycemic effectiveness among patients with T2D initiating dulaglutide (DU) vs BI. **Methods:** Patients ≥18 years with T2D initiating DU or BI between Nov'14–Apr'17 (index date=earliest fill date), and no claim for any antidiabetic injectable in 6 months pre-index period (baseline), continuous enrollment and ≥1 HbA1c result 6 months pre-index and 1-year post-index were identified from a US claims database. DU users were

propensity-matched 1:1 to BI users. **Results:** Pre-matching mean baseline HbA1c for DU cohort (n=1,103) was 8.4% vs 9.9% for BI cohort (n=3,193). Matched cohorts (903 pairs) were balanced in baseline characteristics with mean HbA1c~8.6%, mean age=54 years, SGLT2 inhibitor use: 24% and DPP-4 inhibitor use~38%. 1-year post-index, 11% of DU cohort used BI and 10% of BI cohort used GLP-1 RAs; DU patients used less rapid-acting insulin (2% vs 16%) and DPP-4 inhibitors (24% vs 39%) and more SGLT2 inhibitors (34% vs 23%) vs BI patients. For the matched cohorts, change (mean; SE) in HbA1c levels from baseline was significantly greater in the DU (-1.12; 0.05) vs the BI cohort (-0.51; 0.05) ($p<0.01$). HbA1c level was reduced by ≥1% or decreased to <7% in significantly more number of patients in the DU (65.6%) vs the BI cohort (45.3%) ($p<0.01$). Among patients with baseline HbA1c>9%, change (mean; SE) in HbA1c levels was significantly greater in the DU -2.11; 0.10) vs the BI cohort (-1.52; 0.10) ($p<0.01$). Similar observations were made in patients aged ≥65 years. **Conclusions:** This real-world study, patients with T2D initiating DU demonstrated significantly greater and clinically meaningful HbA1c reduction compared to those initiating BI.

P247: Adherence and persistence for dulaglutide versus basal insulin in injection-naïve patients with type 2 diabetes: The DISPELTM study

Ibrahim Turfanda, Reema Mody[1], Qing Huang[2], Maria Yu[3], Liya Wang[2], Xian Zhang[2], Michael Grabner[2], Hiren Patel[1]

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Background: Adherence and persistence are key considerations in patient-centric treatment selection for type 2 diabetes (T2D) management. The objective of this retrospective real-world study was to assess 1-year adherence and persistence using different measures among injection-naïve patients with T2D initiating dulaglutide (DU) vs. basal insulin (BI). **Methods:** A US claims database was used to identify patients with T2D initiating DU or BI between Nov'14–Apr'17 (index date=earliest fill date). Patients ≥18 years, with no claim for any antidiabetic injectable in the 6 months pre-index period (baseline), continuous enrollment and ≥1 HbA1c result at baseline and 1-year post-index were included. Two widely used measures for assessing persistence of injectables in the real-world were implemented. DU users were propensity-matched 1:1 to BI users. **Results:** Matched cohorts (903 pairs) were balanced in baseline patient characteristics with mean age of 54 years. At 1-year follow-up, matched DU patients were significantly more likely to be adherent [PDC≥80%, n (%)] than BI patients [516 (57.1%) vs. 262 (29%); p<.001). When measuring persistence as no gap between fills >45 days [n (%)], more BI [605 (67.0%)] vs. DU [367 (40.6%)] patients discontinued their therapy but more BI [422 (69.8%)] vs. DU [141 (38.4%)] patients restarted their index therapy. More DU [519 (57.5%)] vs. BI [317 (35.1%)] patients discontinued based on the 90th percentile measure, and more DU [320 (61.7%)] vs. BI [126 (39.7%)] patients restarted their index therapy. **Conclusions:** In this real-world study, DU demonstrated higher adherence than BI. Given the results, the most appropriate persistence measure may vary for different classes of antidiabetic injectables.

P248: Fasting decisions of people living with type 1 diabetes

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Background: People with type 1 diabetes are considered exempt from fasting Ramadan, but many still wish to fast. Previous studies have not explored patients' decision-making process concerning fasting. Understanding why patients decide to fast is imperative for health care professionals (HCP) providing advice. The aim of this study was to identify and explore the reasons why people with type 1 diabetes fast during Ramadan, and the factors impacting this decision-making process to improve patient care. **Methods:** Participants were recruited from Dasman Diabetes Institute in 2018, from the Dose Adjustment for Normal Eating (DAFNE) registry. A qualitative approach using semi-structured interviews was used to enable a comprehensive view of issues. The interviews were audio-recorded and transcribed verbatim. An iterative approach using thematic analysis was utilised, and constant comparison was employed across interview transcripts. **Results:** Forty participants were interviewed, achieving data saturation. Topics discussed included beliefs and perceptions about fasting and factors affecting their decisions to break their fast. Most participants did not feel religiously obligated to fast, but rather wanted to experience the Ramadan spirit enjoyed by their community and needed to feel "normal". Factors impacting their decision-making process were extensive and involved the timing and severity of hypo/hyperglycaemia episodes, the use of assistive technology, their working environment, family support, trusting HCPs, and balancing their main reason for fasting against their health. **Conclusions:** Previous literature focused on the religious and social aspects affecting decisions; current findings indicate that factors are wide-ranging and are central to each participants' self-reliance. Many participants were highly self-motivated and perceived fasting as a challenge they wanted to succeed in to overcome feelings of inadequacy. HCPs can play a part in the decision-making process by fostering trust and understanding patients' reasons for fasting; this will enable them to provide patient-centred advice to promote safe fasting practices.

P249: The first audit of patients with type 1 diabetes from the endocrine center in Basrah, southern Iraq

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Background: Analysis of large type 1 diabetes (T1D) registers in several countries has shown that glycemic control is suboptimal (55-85% do not achieve the target). This study aimed to assess glycemic control, insulin regimens and anthropometry among patients with T1D in Basrah, Iraq. **Methods:** Cross-sectional analysis of records of 2536 patients with T1D registered in two Diabetes Centers in Basrah, Iraq from 2008 to 2017. Gender, age, age at diagnosis, age at registration, residency, family history, month at diagnosis, diabetes complications, glutamic acid decarboxylase (GAD) antibodies, availability of home glucometer, glycated hemoglobin (HbA1c) at first and last visit, body mass index (BMI) and insulin regimens were recorded. **Results:** The mean age of the 2536 participants was 24.8 ± 18.5 years. 53% of them

were males. Age at diagnosis was 15.2 ± 1.0 years. Average height and weight were 140.5 ± 5.2 cm and 48.1 ± 12.3 kg respectively. BMI was 20 ± 8.8. Those from urban areas represent 72%. Family history of T1D documented in 52%. Only 35% had glucometers at home. BMI was classified as follows: 42% underweight, 40% normal, 11% overweight and 7% obese. 81% were on basal-bolus insulin. 29% had GAD positive. Only 14% achieved the target HbA1c of less than 7%. The average entry HbA1c was 10.6% compared to 10.5% at the last visit. **Conclusions:** Majority of Iraqi patients with T1D living in Basrah are not meeting the target glycemic control despite the fact that most of them were on basal bolus regimen. The prevalence of underweight is high. More effort to identify obstacles to achieve glycemic control should be spent.

P250: Hypoglycemia unawareness among insulin-treated diabetic patients in Madinah, Saudi Arabia: Prevalence and risk factors

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Background: Hypoglycemia unawareness (HU) is associated with significant risks. Screening for impaired awareness of hypoglycemia in patients with diabetes is important to minimize the risk. There are limited data on the prevalence of HU in Saudi Arabia (KSA). In the current study, we investigated the frequency of HU and its risk factors among diabetic patients in Madinah, KSA. **Methods:** A cross-sectional study was conducted at Diabetes Center and four Primary Health Care Centers between April and May 2018. Diabetic patients ≥14 years with type 1 or type 2 on insulin for more than a year were included. HU was assessed by Clarke's and Pedersen- Bjergaard's scores. Risk factors for HU were determined. **Results:** From 413 included patients, 60.3% were females and 60.8% were in insulin alone. One third of the participants had T1DM, while 68.5% were T2DM patients, with median; age 25 and 56 years, diabetes duration10 and 15 years, and duration of insulin use 10 and 5 years, respectively. The prevalence of HU was 25.2% by Clarke's survey. Poor knowledge on patients' own latest HbA1c, type and the dose of insulin were risk factors for HU. Poor medical follows up, previous stroke, and ischemic heart disease, were other risks for HU. When modified Pedersen-Bjergaard's method was used, the prevalence of HU was 48.9%. **Conclusions:** Despite the advances in diabetes management, HU continues to be prevalent among diabetic patients on insulin and poor diabetes knowledge is a major risk factor. Self-management of diabetes education is of utmost importance to reduce hypoglycemia and HU.

P251: Perceived changes in general wellbeing: Findings from the "MOVEdiabetes" study

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Background: Studies have been consistent in reporting the health benefits of physical activity in diabetes care. This current work aims to explore perceptions on general wellbeing in participants of the "MOVEdiabetes" intervention aimed at increasing PA in adults with type 2 diabetes in Oman. **Methods:** Participants in the intervention group (IG) received PA consultations, pedometers and WhataApp messages and the comparison group (CG) received usual care. At baseline and 12 months, perceptions on wellbeing were assessed using an English to Arabic 13-item questionnaire. Between groups difference in responses were compared using chi-squared tests. Spearman correlation analysis was utilised to explore associations between changes in responses and self-reported PA levels (MET.min/week). **Results:** Of the 232 participants of the "MOVEdiabetes" study, 75% completed the study. Overall, findings indicated a positive effect of the intervention on perceived general health, sleep, mental health, pain and responses to quality of life. For the IG and CG, significant associations were shown between changes in self-reported PA (MET.min/week) and general health (r=0.70 & 0.36), and feeling calm/peaceful (r=0.86 & 0.93, P=<0.001), energetic (r=0.86 & 0.82) and depressed (r=-0.35& -0.30). However, the Cronbach's alpha values was 0.50 indicating insufficient internal consistency of the assessment tool. **Conclusions:** Results from this study indicate positive effect of the "MOVEdiabetes" intervention on many parameters of well-being. Further studies are needed to identify robust tools appropriate for Arabic cultures in order to measure associations between wellbeing and PA.

P252: Change in reported self-efficacy and social support in the "MOVEdiabetes" intervention trial: Findings from a cluster randomised controlled study to increase physical activity in adults with type 2 diabetes in Oman

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Background: Studies from Western countries have indicated that self-efficacy (SE) and social support (SS) are strongly correlated with physical activity (PA), but little is known about this relationship in Arab populations. This paper describes changes in self-reported SE and SS at 12 months from baseline in participants of the "MOVEdiabetes" trial which aimed to increase PA in adults with type 2 diabetes in Oman. **Methods:** "MOVEdiabetes" was a cluster randomised study where participants in the intervention group (IG) received PA consultations (delivered by dietitians), pedometers and "WhatsApp" phone messages, vs. usual care in the comparison group (CG). Measures of SE and SS (from family and friends) were assessed using 12-item and 13-item (respectively) interviewer-led questionnaires with English to Arabic translated scales. Between groups difference in sum scores were described and correlations with PA levels were obtained. Reliability was assessed by internal consistency of the scales using Cronbach's Alpha coefficient. **Results:** Of the 232 participants [59.1% female, mean (SD) age 44.2 (8.1) years], 75% completed the study. Changes in scores from the SE scale were positive and increased significantly more in the IG than CG(+10.3, 95%CI 7.1-13.5, P<0.001), but were weakly correlated with participants' changes in PA levels(MET.min/week) (r=0.3, P<0.001). Within the IG, higher SE scores were found in those reporting no comorbidities vs with comorbidities+12.2 (95%CI 6.8-17.6, P<0.001), and high vs low income+9.7 (95%CI 5.2-14.2).Changes in SS scores regarding support from friends, but not support from family increased significantly more in the IG vs CG(+2.3, 95%CI 1.1-3.7). However, correlations with changes

in PA levels were not significant. At 12 months, Cronbach's alpha value for internal consistency was acceptable for both the SE (0.82) and SS scale for support from family (0.82). However, lower values were obtained for SS from friends (0.40). **Conclusions:** The physical activity intervention was associated with positive changes in the SE and SS (family). However, results from the internal consistency test suggest that SS from friends may be less reliable and indicate the need for further work in culturally bounded Arabic speaking countries.

P253: Change in reported self-efficacy and social support in the "MOVEdiabetes" intervention trial: Findings from a cluster randomised controlled study to increase physical activity in adults with type 2 diabetes in Oman

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Ministry of Health, [1]Sultan Qaboos University, Muscat, Oman, [2]University of Dundee, Dundee, United Kingdom, [3]University of Edinburgh, Edinburgh, United Kingdom.

Background: Studies from Western countries have indicated that self-efficacy (SE) and social support (SS) are strongly correlated with physical activity (PA), but little is known about this relationship in Arab populations. This paper describes changes in self-reported SE and SS at 12 months from baseline in participants of the "MOVEdiabetes" trial which aimed to increase PA in adults with type 2 diabetes in Oman. **Methods:** "MOVEdiabetes" was a cluster randomised study where participants in the intervention group (IG) received PA consultations (delivered by dietitians), pedometers and "WhatsApp" phone messages, vs. usual care in the comparison group (CG). Measures of SE and SS (from family and friends) were assessed using 12-item and 13-item (respectively) interviewer-led questionnaires with English to Arabic translated scales. Between groups difference in sum scores were described and correlations with PA levels were obtained. Reliability was assessed by internal consistency of the scales using Cronbach's Alpha coefficient. **Results:** Of the 232 participants [59.1% female, mean (SD) age 44.2 (8.1) years], 75% completed the study. Changes in scores from the SE scale were positive and increased significantly more in the IG than CG(+10.3, 95%CI 7.1-13.5, P<0.001), but were weakly correlated with participants' changes in PA levels(MET.min/week) (r=0.3, P<0.001). Within the IG, higher SE scores were found in those reporting no comorbidities vs withcomorbidities+12.2 (95%CI 6.8-17.6, P<0.001), and high vs low income+9.7 (95%CI 5.2-14.2).Changes in SS scores regarding support from friends, but not support from family increased significantly more in the IG vs CG(+2.3, 95%CI 1.1-3.7). However, correlations with changes in PA levels were not significant. At 12 months, Cronbach's alpha value for internal consistency was acceptable for both the SE (0.82) and SS scale for support from family (0.82). However, lower values were obtained for SS from friends (0.40). **Conclusions:** The physical activity intervention was associated with positive changes in the SE and SS (family). However, results from the internal consistency test suggest that SS from friends may be less reliable and indicate the need for further work in culturally bounded Arabic speaking countries.

P254: Type 2 diabetes in a five-year-old Kuwaiti girl

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Background: Type 2 diabetes mellitus (T2DM) was traditionally considered to be a chronic medical condition affecting mostly adults. However, increasing incidence of T2DM in children and adolescents has been noted in recent decades although youth-onset T2DM rarely occurs prior to puberty. In this case report, we present a case of T2D in a very young girl identified from a national diabetes registry. To our knowledge, this is one of the youngest patients diagnosed with T2DM reported in the literature. **Methods:** The Childhood-Onset Diabetes electronic Registry (CODeR) is a population-based diabetes registry system maintained by Dasman Diabetes Institute in collaboration with the Ministry of Health in Kuwait. It was established in 2011 for registration of children with new-onset diabetes in the country. **Results:** A Kuwaiti girl (five years and 3 months old) born to a diabetic mother presented to Farwaniya hospital with symptoms of polyuria, polydipsia, and weight loss. Her weight, height and BMI were 16 kg (-1.09 SDS), 109 cm (-0.34 SDS) and 13.5 kg/m2 (-1.34 SDS), respectively. She had no dysmorphic features. Her blood profile showed random blood sugar of 17.9 mmol/L and HbA1C at 5.4%. She had high insulin and c-peptide concentrations (43.98 µIU/ml and 1826 pmol/L). Pancreatic immune antibodies were negative. Genetic testing was not performed. **Conclusions:** This young girl represents an unusual case of insulin resistance, diagnosed asT2D, although genetic causes of diabetes were not ruled out. Our report highlights the importance of accurate diagnosis of diabetes in young children.

P255: The utility of neutrophil to lymphocyte ratio in detecting early diabetic kidney disease among patients with type 2 diabetes mellitus

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Background: Few data are available about the clinical use of neutrophil to lymphocyte ratio (NLR) as an inflammatory marker in the diagnosis of early diabetic kidney disease (DKD). **Methods:** An observational study involving 416 adult patients with type 2 diabetes mellitus (DM) from one center. The performance of NLR was compared to urine albumin creatinine ratio (uACR) as a marker of early DKD. **Results:** Among the 416 patients with type 2 DM (Median age 57 [11] years, 40% men and median duration of DM 10 [IQR: 5, 15] years), 169 patients developed albuminuria (Proportion 0.41; 95% CI 0.36, 0.45). The NLR levels were significantly higher among diabetic patients with albuminuria as compared to those without albuminuria; median 1.5 (IQR: 1.1, 2) vs 1.2 (IQR: 1, 1.9), p value 0.004. The receiver operating curve analysis of NLR revealed area under the curve of 0.58 (95% confidence interval 0.528 to 0.638; p 0.004). On multivariable analysis; the rate of albuminuria was found higher among patients with HTN (AOR 1.97, 95% CI 1.3 to 2.99;

p 0.001); patients with A1c >7 (AOR 2.08, 95% CI 1.21 to 3.59; p 0.008) and patients with NLR score >1.25 (AOR 2.1, 95% CI 1.39 to 3.18; p <0.001). **Conclusions:** NLR was found to be an independent predictor of albuminuria in patients with type 2 DM. Therefore, NLR as a marker of inflammation may serve as a cost-effective and readily available marker of DKD. However, its clinical utility in the context of DKD diagnosis and monitoring remains to be established in future studies.

P256: Improvement in type 2 diabetes following sleeve gastrectomy in an Emirati population

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Background: There are few published studies on change in diabetes status following sleeve gastrectomy (SG) from the Middle East. Our aim was to assess efficacy of SG as a treatment for type 2 diabetes, by studying outcomes at our metabolic surgery centre in Abu Dhabi. **Methods:** Data were collected for patients with confirmed diagnosis of type 2 diabetes who underwent SG at the Centre and who attended 12 month medical follow-up. We included patients operated from May 2016 to February 2018. Gender, age, nationality, weight change, diabetes duration, pre and postoperative diabetes medications and HbA1c were recorded. Information was gathered from the Centre's clinical database. Patients taking liraglutide for weight loss at the time of follow-up were excluded. **Results:** We included 65 patients, 36 of whom were female(55.4%). At the time of operation, mean age was 42.9 years(SD 11.8), median BMI 42.0 kg/m2(IQR 39.3-47.6) and median duration of diabetes 3.4 years(IQR 1.3-6.8). 61 patients(93.8%) were Emirati and the remainder other Arab nationals. At one year follow-up 55.4% achieved complete diabetes remission with HbA1c <6% off all diabetes medication. 64.6% were in either partial or complete remission with HbA1c <6.5% and off all diabetes medication. All patients saw an improvement in diabetes status with a reduction in HbA1c or number of diabetes medications. Mean HbA1c reduced from 7.0%(SD 1.3) before operation to 5.7%(SD 0.7) after 12 months. Of the 22 patients(33.8%) who were taking insulin pre-operatively, all of them(100%) stopped insulin before one year follow-up. The longest duration of diabetes prior to surgery to achieve complete remission was 9.6 years. **Conclusions:** These early data suggest SG is an effective treatment for type 2 diabetes in our Arab population and are concordant with international outcomes. Longer term follow-up is required to assess sustainability.

P257: Diabetic cardiomyopathy a call for an open eye

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Background: DM is associated with 2-4-fold increased Risk of HF.Diabetic cardiomyopathy DC is a specific type of HF linked toDM, a primary disease with normal coronaries in patients with uncontrolled DM. Usually associated with elevated HbA1C& albuminuria. Spectrum of presentation varies from cough only to pulmonary congestion and HF. A symptomatic or asymptomatic abnormalities of ventricular systolic & diastolic function, independent of IHD or systemic hypertension. Usually started with myocardial fibrosis followed by dysfunctional remodeling leading to diastolic dysfunction then systolic dysfunction ending with clinical HF. Cardiac MRI is a tool, not only in differentiating non ischemic from ischemic cardiomyopathy, but also in aiding the accurate diagnosis and management of the subtype of non ischemic cardiomyopathy. CMR should routinely be integrated in the diagnostic workup of DC. **Methods:** We noticed an increasing frequency of HF in patients with uncontrolled diabetes &the lake of awareness among physicians about DC pathology and the need towards targeting it with cardio protective medications. Here we present a case of young patient with DC presented as clinical HF markedly improved on anti failure and cardio protective diabetic medications. **Case Presentation:** A 40 years old Emirati,with HT, DM& Obesity diagnosedfive years ago with non-adherence to regular medications.Presented with persistent cough, shortness of breath on exertion with rapid progressionin severity last 2 months, significantly deteriorated in last two weeks prior admission with bilateral lower limb edema 4-5 days prior admission. On admission,he was conscious, dyspneic& orthopnea, with elevated JVP & bilateral lower limb pitting edema.BP 132/95mmHg, PR 96/min, bilateralbasal crepitationwith S3 Gallop rhythm. ECG showed sinus tachycardia andnon specific T wave changes, Echocardiography showed Global hypokinesia, severe LV systolic dysfunction with EF 25%, right ventricular dysfunction, dilated LA and LV. Serial cardiac enzymes were negative& coronary angiography showed normal coronaries, HbA1c 9.7% with no Microalbuminuria. High NT proBNP1335 pg/ml and all other labs are normal. Patient was managed with HF protocol and was put on cardio protective diabetic medications. Empagliflozin /Metformin with Liraglutide sc. During follow up his symptoms was markedly controlled and repeated echocardiographyafter 12 days showed improved LV EF 30%. Planned for cardiac MR for further confirmation. **Results:** Patient withuncontrolledDM developed progressive symptoms and rapid deterioration over two months with no history of flu illness, no family history of HF, stage I BP, normal lipidsand no visible atherosclerosis. Initial diagnosis acute pulmonary congestion with the above Echocardiography findings. The only significant underlying cause is uncontrolled T2 DMon irregular medications for the last 5 years.Cardio protective medications started with proven benefit in HF resulted in marked improvement during follow up. A significant weight reduction nearly 26 kg in one month interval with patient adherence to lifestyle & medications. During follow up weight drop from 141kg to 115 kg (47.2 BMI to 38 .66)after one month. **Conclusions:** Suspect DC after exclusion of coronary artery disease. SGLT2 inhibitors are cardio protectivemedications with specific utilization to improve HF.Cardiac MRI an important diagnostic tool still not widely available. Recognition of DC as a specific diagnostic entity can help in gathering more patients & in future research.

P258: Establishing a remission clinic at a type 2 diabetes specialist institute in Kuwait

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Dasman Diabetes Institute, Kuwait City, Kuwait.

Background: Exciting data from the DiRECT trials and indications from clinical audits globally clearly show that remission of type 2 diabetes is possible for some people with the condition. Cultural attitudes to food and diabetes differ between countries and regions, and we wanted to understand whether people in Kuwait

would be interested in achieving remission of type 2 diabetes. **Methods:** We designed an advertising strategy in the form of digital display advertising and leaflets available within Dasman Diabetes Institute in Kuwait City which commenced in June 2019. In addition, healthcare professionals including medical doctors and dieticians at the Institute were informed about the study and requested to refer suitable patients. Inclusion criteria for the remission clinic were adults aged 21 – 65 years old that had type 2 diabetes of any duration, and on any medications including both oral and insulin therapy. Patients presenting with high microalbuminuria or GFR < 60 ml/min, as well as retinopathy were excluded. Patients could choose a flexible meal replacement approach (one or more meals replaced with a shake or soup) or a low-carbohydrate diets. If the meal replacement option was selected, patients were given products to try for 2 to 7 days, and then asked to purchase the products themselves. **Results:** To date (4th September 2019), 29 patients have been enquired or been referred to the service. Of these 10 patients have attended a baseline appointment. Of these, 1 patient achieved type 2 diabetes remission with A1c dropping from 6.1% to 5.2% after 17.6kg weight loss (13%) using total diet replacement dietary approach for a period of 3 months and major medication reduction, including stopping all insulin and oral antidiabetic agents with the exception of metformin. 1 patient achieved 17% weight loss using the same dietary approach and normalizing of blood glucose level after cutting off all insulin and oral medications. 4 out of the 10 patients dropped out and the remaining 4 are still ongoing. The majority of the patients found out about the clinic mainly from medical doctors and dietitians' referrals, as well as word of mouth. To date, 9 of the participants have chosen a meal replacement approach, and only one participant chose the low-carbohydrate dietary approach. **Conclusions:** Interest in a type 2 diabetes remission clinic relies largely on word of mouth. A total diet replacement approach is of interest to people with type 2 diabetes in Kuwait. Greater efforts are needed to inform the populace of the efficacy of lifestyle to help people off reduce their medication burden.

P259: Efficacy of SGLT2 inhibitors in achieving glycemic control in pakistani population: An observational study from a tertiary care center in Karachi

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Background: Sodium-glucose co-transporter 2 inhibitors (SGLT2i) are novel oral anti-diabetic agents based on selective inhibition of SGLT2 at the level of proximal renal tubules. This group is shown to be effective for glycemic control and improvement in cardiovascular and renal outcomes. Efficacy and safety data from Pakistan and its neighboring countries is scare. We aimed to describe efficacy and safety in the Pakistani population. **Methods:** We conducted a retrospective review of 100 consecutive patients prescribed with any agent of SGLT2i group from July 1, 2018, to February 2019 at Aga Khan University Hospital, Karachi. SGLT2i was offered to patients of above 18 years of age with inadequate glycemic control on existing antidiabetic agents. Changes in HbA1c, weight and any side effect were recorded. **Results:** Most patients in the study were females (56%) with the mean age of the study population was 52± 10 years. The average duration of diabetes was 12±6 years and average BMI was of 32.4 ±5.9 kg/m2. Significant reductions were observed in HbA1c (7.57±1.2%, 7.91±1.2% from 8.72±1.2%) and weight (2.4 Kgs and 3.3 Kgs) and at 3 and 6 months of follow up visits. The drug was discontinued in 14 individuals (UTI 5, Genital infection 3, nausea +UTI 1, abdominal pain +UTI 1, mild DKA 1, polyuria 1, acute illness 1 and hyponatremia 1). None reported Fournier's gangrene, limb amputation or fracture. **Conclusions:** Similar to the results of major clinical trials SGLT2i significantly improved glycemic control and body weight in the Pakistani population. Long term follow-up studies are required to determine cardiovascular and renal outcomes.

P260: Chronic kidney disease outcomes with dulaglutide versus insulin glargine in type 2 diabetes and moderate-to-severe chronic kidney disease by albuminuria status: AWARD-7

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Background: In this study, conducted in type 2 diabetes (T2D) and moderate-to-severe chronic kidney disease (CKD), dulaglutide (DU) treatment was associated with slower decline in estimated glomerular filtration rate (eGFR) versus insulin glargine (IG). DU=1.5mg weekly (1-yr treatment) was associated with fewer CKD outcomes, including eGFR decline ≥40% or end-stage renal disease (ESRD), versus IG at similar levels of glycemic control and blood pressure. Aim now is to determine risk of CKD outcomes between treatments in albuminuria subgroups. **Methods:** Participants with T2D and CKD stages 3-4 were randomized (1:1:1) to DU=0.75mg/DU=1.5mg weekly versus titrated IG daily, added on to titrated insulin lispro, for 1yr. Composite outcome of eGFR decline ≥40% or ESRD was compared between treatments (Cox-proportional hazards model time-to-first-event analysis). **Results:** At baseline, treatment groups had similar eGFR by albuminuria subgroups; majority of events occurred in macroalbuminuria patients. Compared to IG, incidence rate of composite endpoint was significantly lower for DU=1.5mg in overall study and macroalbuminuria population. **Conclusions:** Risk of ≥40% eGFR decline or ESRD outcomes was reduced by >half for DU=1.5mg versus IG, particularly in macroalbuminuric subgroup.

P261: Prevalence of hyperglycaemia emergencies, hypoglycaemia among patients with diabetes mellitus who participated in the hajj of 1440 H

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Background: Diabetes mellitus is a chronic disease due to complete or partial insulin deficiency. Diabetes is considered as a leading cause of disability in the developed world more than 25 million cases of deaths globally every year. The prevalence of type 2 diabetes in Saudi Arabia is estimated at approximately 23.7 % (1). Health system has to have the highest level of preparation for diabetes, so, it needs to treat patients in every stage of development. Primary diabetes known complications requires health care services

to stand ready to treat diabetes-related complications such as hypoglycemia, diabetic ketoacidosis (DKA), and hyperosmolar hyperglycaemic state (HHS). Health sectors in Saudi Arabia not only have a responsibility toward patient's locals but their responsibility extend with honor to pilgrims and visitors who come to Macca for Hajj and/or Umrah. According to the recent states published by Saudi- Statistics Authority: a total number of pilgrims of Hajj 1440 H. reached 2.5 million pilgrims (2).In this study, we conduct a survey to evaluate the prevalence of hyperglycemia emergencies, hypoglycemia and its associated factors among patients with diabetes mellitus condition who participated in the Hajj of 1440 H. **Methods:** This study uses a cross-sectional survey (n=153 patients) with diabetes mellitus performed at three major emergency units at health care-providing facilities of Arafat, Muzdelefah, and Muna. **Results:** Our observation from the data of the total 153 patients with diabetes mellitus 11 (7.2%) found having a history of DKA during hajj, and 19 (12.4%) with HHS. whereas hypoglycaemia rate was 18% attacks during Hajj season. More than 90% of participants were patients with type 2 diabetes mellitus, while around 7% had type 1 diabetes mellitus. We also found that statistically, both "Age" and "Type of Medication" are significantly associated with diabetic ketoacidosis. Moreover, the "Type of Medication," "Having CVD," and "Diabetes Duration" was found to have a significant association with HHS. **Conclusions:** This study aims to shed light on the need for the prevalence of hyperglycaemia emergencies, hypoglycaemia, and its associated factors among patients with diabetes mellitus who participated in pilgrimage at Mecca 1440. Our observation from the collected sample of diabetes patients contains 7.2% with a history of DKA, 12.4% with HHS, and 18% with hypoglycaemia attacks. We believe this sample is a representative, and we outline our recommendations as follows: (1) Further efforts are needed for promoting awareness by holding Health educations session for a diabetic patient who will perform Hajj. (2) Provide guidance and recommendation for health care providers to ensure the right exposure antidiabetic dose so that we mitigate risks associated with hypoglycaemia. (3) Promote research in the field of diabetic disease and encourage initiatives creating guidelines for health provider, diabetic patients and pilgrims in general.

P262: Recruiting to a type 2 diabetes remission study in Kuwait

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Background: The DiRECT trial was a type 2 diabetes remission trial carried out in primary care in the UK. Recruitment to, and participation in the trial was possible within this framework, and different from a typical clinical trial design. It is unclear whether a similar approach could be used in Kuwait. **Methods:** A feasibility study to recruit 30 patients with type 2 diabetes of less than 3 year's duration, aged 21-65 years, BMI: 27-45kg/m2 not receiving insulin or GLP-1 receptor agonists. The feasibility study was advertised on social media through a post in both English and Arabic language in the Instagram, Twitter and WhatsApp messages. Two telephone numbers were made available for interested members of the public to call, and a standardised telephone screening protocol was used to perform the initial screening. **Results:** In 3 weeks, 43 people expressed interest in the study from social media campaign. Of these 17 met the initial inclusion criteria. The major reason for not meeting the inclusion criteria was diabetes of longer than 3 years duration. **Conclusions:** There is some interest in type 2 diabetes remission in Kuwait in people with diabetes of long duration. Given the rapid progression to polypharmacy in these patients, remission programmes should be offered to patients soon after diagnosis, and effective remission programmes are needed for people with type 2 diabetes of long duration and those on insulin.

P301: Vitamin D and diabetes: Is the dilemma solved in 2019?

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Background: Research studies continue to pour into the literature stating that vitamin D is a superstar when it comes to health despite most of the research is based on observational, epidemiological studies, which are important for generating hypotheses but do not prove causality. The challenge is to determine whether vitamin D deficiency actually causes or increases the incidence of diabetes or low levels of vitamin D are simply coincidental given that the majority of the general population, regardless of disease, is likely to have insufficient levels of vitamin D. Will supplementation with vitamin D prevent and can it be used to treat diseases such as diabetes? **Methods:** Both impaired pancreatic beta-cell function and insulin resistance have been reported with low blood level of 25-hydroxyvitamin D. Mechanistic studies showing that vitamin D supplementation improved pancreatic beta-cell function by 40%. Vitamin D is believed to help improve the body's sensitivity to insulin and thus reduce the risk of insulin resistance, which is often a precursor to T2 diabetes. Some scientists also believe it may help regulate the production of insulin in the pancreas. **Results:** A recent published study from Canada, evaluate the effects of 5,000 (IUs) of daily vitamin D supplementation for 6 months on insulin sensitivity and secretion concluded that in individuals at high risk of diabetes or with newly diagnosed type 2 diabetes, vitamin D supplementation for 6 months significantly increased peripheral insulin sensitivity and β-cell function, suggesting that it may slow metabolic deterioration in this population, despite past researches has failed to find a benefit from vitamin D supplementation on insulin sensitivity. Finally, the findings from the recently released Vitamin D and Type 2 Diabetes D2d study, did not show a statistically significant benefit for vitamin D in decreasing progression to type 2 diabetes in those with pre-diabetes who have sufficient levels, with a potential benefit in those with very low vitamin D levels 'insufficient' as opposed to the remainder who were vitamin D sufficient. **Conclusions:** Data still conflicting but vitamin D levels should ideally be between 20-56 ng/ml (50-140 nmol/l), with anything below 20 ng/ml considered deficient. However, it is now known that raising the amount of vitamin D to around 60-80 ng/ml can help keep blood glucose levels under control, which is vital for people with diabetes.

P302: Insulin autoimmune syndrome in a young previously healthy Kuwaiti male: A case report

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Background: A 25 years old Kuwaiti male, previously healthy, brought to the emergency department after loss of consciousness

with capillary glucose value < 2 mmol/L. The patient had two months history of recurrent emergency room visits for symptomatic hypoglycemia, managed with intravenous dextrose infusion. The symptoms developed late after meals and after prolonged hours with no carbohydrate intake and improved after eating. The patient mentioned using injectable anabolic steroids, growth hormone with oral amino acid for bodybuilding in the last two months. He denied using insulin or insulin analogues. The patient admitted for a planned 72 hours fasting test. **Methods:** After 24 hours of fasting, the patient had symptomatic hypoglycemia with a capillary glucose value of 2.5 mmol/L and several laboratory blood tests performed. **Results:** During the hypoglycemia, serum glucose was 2.4 mmol/l, insulin was inappropriately elevated, c-peptide was within reference range and proinsulin was below normal as well as beta-hydroxybutyrate. Anti-insulin antibody titer (IgG) was significantly elevated (>100.0 IU/mL). The test for circulating oral hypoglycemic agents was not available. Other laboratory investigations were normal. Given his high levels of serum insulin, anti-insulin antibodies, late postprandial hypoglycemia and the use of anabolic steroids and other products like thiol and amino acid with exclusion of other differential diagnosis of hypoglycemia, the diagnosis of insulin autoimmune syndrome (IAS) was made. His hypoglycemia is caused by the binding and release of insulin by the autoantibodies leading to the increase of free insulin concentration. The patient was treated with high dose prednisolone therapy (1 mg/kg/day) for several weeks. His hypoglycaemia events resolved and his anti-insulin antibody titer was absent weeks later. **Conclusions:** In patients with repeated late postprandial hypoglycemia and history of recreational drug and supplements use, IAS should be considered.

P401: Hypertriglyceridemia induced acute pancreatitis managed with low dose intravenous insulin case study and literature review

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Background: Hypertriglyceridemia (HTG) is the third most common cause of Acute Pancreatitis (AP). The mechanism of hypertriglyceridemia-induced pancreatitis is postulated to involve hydrolysis of triglycerides (TG) by pancreatic Lipase and release of free fatty acids that induce free radical damage. Insulin acts by activating lipoprotein lipase (LPL) which is a hydrolytic enzyme enhances removal of TG from plasma. Infusion of Insulin is likely to be more effective than using subcutaneous route. Insulin can be used to treat HTG in diabetic and non-diabetic patients; it is competitive to other modalities as plasmapheresis in cost and availability. The appropriate dose and duration of Insulin in this context need to be further elucidated. **Methods:** A 35-year old male presented with upper abdominal pain and vomiting for three days. He is known to have previous HTG induced AP five years ago. He is not diabetic. Examination of abdomen elicits epigastric tenderness, Pulse rate 105 bpm, Blood pressure 127/66, and temperature 37.2 C. Pancreatic enzymes at presentation: Amylase 739 U/L (50-150 U/L), Lipase 1289 U/L (10-140 U/L) and TG 1208 mg/dl (40-170 mg/dl). Serum Creatinin is 0.98 mg/dl (0.6-1.3mg/dl), ALT 21 IU/L (8-32 IU/L), CRP 1.46 mg/dl (< 6 mg/dl). ECG was normal sinus rhythm. Explanation was given to the patient that use of Insulin for HTG induced AP is not included in the local guideline but well recognized treatment option; his HTG induced AP was managed with low dose soluble insulin infusion in a dose of (0.5U/h) along with intravenous fluid, antibiotic, analgesia and he was kept nil per mouth. A total of 10 U of actrapid insulin was infused over 20 hours daily for two days then Fenofibrate was reinstituted when he started oral intake. The patient was closely monitored for glucose level hourly; Potassium and Magnesium were closely monitored. There was substantial reduction in TG level from 1208 down to 646 mg/dl after 12 hours and to 218 mg/dl after 36 hours, normalization of pancreatic enzymes after 48 hours (Amylase 82 IU/L, Lipase77 IU/L), symptoms disappeared after hours. The patient discharged home safely after 3 days. **Results:** Acute Pancreatitis caused by HTG is likely to be more severe with higher rate of complications compared to other aetiologies (1-4) Therefore; rapid lowering of HTG is a priority as it improves outcome of AP (5-7). Insulin emerges as safe and effective agent in lowering Triglyceride level within few days. The dose of insulin is widely variable among different studies, ranging from as low as 0.1-0.3 U/kg/h (2, 5, 8, 9) to higher doses of 6-10U/kg/h; which are usually needed in diabetic patients (5, 7, 9). The duration of Insulin therapy is another variable among reported cases; it ranges between 2-4 days (5, 7, and 8). In non-diabetic patients lower doses of Insulin are usually used (7-10). Although we used the lowest reported dose (8); however it was safe and effective to lower hypertriglyceridemia within two days. **Conclusions:** Low dose Insulin infusion is safe and effective to use in treating severe HTG induced AP.

P402: Finding FH in Al Ain-United Arab Emirates

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Background: Studying the characteristics of lipid disorders and addressing care-gaps in patients attending the Imperial College London Diabetes Center in Al Ain, United Arab Emirates. For this purpose, a dedicated lipid disorder clinic led by a trained lipidologist was established in December 2017. **Objective:**

- To treat complex cases of uncontrolled Hyperlipidemia using lifestyle modifications and medications including statins, Ezetimibe and PCSK9 inhibitors
- To identify individuals with FH using Dutch Lipid Clinic Network criteria, confirm with genetic tests and offer CASCADE screening to relatives of index cases
- To treat statin intolerant individuals.

Methods: A dedicated lipid disorder clinic was established for the purposes of identifying and treating complex lipid disorders. Specified criteria for referral to the lipid clinic were introduced. The lipid clinic was staffed by a lipidologist certified by the American Board of Clinical Lipidology and supported by clinical coordinator, reception team leader, educator and registered dietician. Between December 2017-December 2018, 441 patients were seen in the lipid clinic. Of these 214 patients were new and 227 patients were seen in follow up. Among the new patients, 102 were males and 139 were females. Age range was 3-76 years. Genetic tests were done in 145 patients using Dutch Lipid Clinic Network Criteria and sent to Viapath Genetics Laboratory at Guy's Hospital London UK. Genetic test included test for LDLR, PCSK9, and LDLRAP1 and exon 26 of APOB genes. **Results:** Nine patients were diagnosed with Homozygous LDLRAP1 FH, four of them also had heterozygous variant of unknown significance. Twenty patients were found to have different heterozygous variants and three of them also had heterozygous variant of unknown significance. Twenty-six were identified with heterozygous variants of unknown significance. Eighty-one patients

had no clear pathogenic sequence variant detected. Nine are still awaiting results. Genetic tests were not done in sixty-nine patients due to various reasons. Lipoprotein (a) was >75nmol/L in twenty-nine patients. **Conclusions:** Familial Hyperlipidemia is common in our patient population due to consanguinity and large family size. The importance of a dedicated lipid disorder clinic is instrumental in identifying this issue which was previously not well recognized.

P501: Juvenile granulosa cell tumour as a rare cause of isosexual precocious puberty in a child: Case report and review of the literature

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Background: Juvenile granulosa cell tumour is a rare cause of isosexual precocious puberty in children. Early diagnosis and surgical removal of the tumour is essential since the delay in treatment can result in malignant transformation. **Methods:** A 22-month-old girl presented with isosexual precocious puberty. Huge pelviabdominal mass involving the right side, which was firm, smooth surface, mobile, not tender, not pulsatile measuring 9x12 cm which was confirmed by computedtomography (CT) of the abdomen. Laparotomy revealed a unilateral involvement, with successful removal of the tumour. Histopathology reported a juvenile granulosa cell tumour. Postoperatively, she experienced cassation of vaginal bleeding and her breast size regressed. She has a good prognosis. **Results:** Postoperatively, she experienced cassation of vaginal bleeding and her breast size regressed. She has a good prognosis. **Conclusions:** Ovarian tumors are uncommon during childhood and constitute rare cause of precocious puberty.Recognition of the symptoms, signs and abnormal hormone production, and consideration of such tumours in the differential diagnosis can allow early identification and timely surgical management and, hence, an excellent outcome.

P601: Micropenis in males followed up at a paediatric endocrine clinic in Muscat, diagnosis and response to treatment

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Background: Micropenis is defined as a penile stretched length below the -2.5 SDS for age. It can be isolated or associated with other genital anomalies or syndromes. Isolated micropenis may result from hypogonadotrophic hypogonadism, testicular dysgenesis, testosterone biosynthetic defects, partial androgen insensitivity or 5 alfa reductase deficiency. However, there remain a good number of cases with unknown etiology. **Aim:** To look retrospectively at cases of non-syndromic micropenis followed up at a paediatric endocrine clinic at a referral hospital in Muscat Oman, (January 2012 –May 2019), documenting the possible etiology, treatment received and the response to treatment. **Methods:** The clinical information of 16 males presenting with micropenis were obtained from the computerised clinical records at the treating hospital, looking into the investigations, possible etiology, treatment received and the response to treatment; in terms of the change in the penile stretched length and the SDS change. Syndromic cases and cases with other abnormalities in the penile shaft were excluded. **Results:** 16 males presented to our paediatric endocrine clinic (January 2012 to May 2019) with a mean age of 7.6 years +/- 4.5 and mean penile stretched length of 2.9 cms +/- 1. 10 patients had isolated micropenis and 6 patients had associated anomalies: bilateral undescended testes and bifid scrotum. According to the hormonal investigations 8 (50%) had hypergonadotropic hypogonadism, 6 (37.5%) had hypogonadotropic hypogonadism and 2 (12.5%) had no clear diagnosis. Out of the Hypergonadotropic hypogonadism, 2 (22%) had 5 alfa reductase deficiency, 1 (11%) had partial androgen insensitivity syndrome and 2 (22%) had testosterone biosynthetic defect. 9 patients received a minimum of 3 IM Testosterone injections; 5 (56%) for diagnostic purpose and 4 (44%) for treatment; out of which 2 are still in their first year of treatment. The remaining 2 showed improvement in their SDS by more than 1. **Conclusions:** Males with micropenis benefit from IM Testosterone injections for diagnostic purposes and treatment with PSL reaching near normal length. Genetic analysis is required to reach an accurate diagnosis and correlate with the clinical course and response to treatment.

P701: Familial glucocorticoid deficiency presenting as progressive hyperpigmentation: A case report

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Background: Familial glucocorticoid deficiency (FGD) is a rare autosomal recessive disease caused by resistant of ACTH receptor at adrenal cortex leading to (usually) isolated glucocorticoid deficiency with normal mineralocorticoid secrete. Patients with FGD usually presented in neonatal–childhood period with signs/symptoms of glucocorticoid deficiency such as hypoglycemia, hyperpigmentation, Failure to thrive, shock and death if treatment was delayed. Labs usually revealed high ACTH, low cortisol but normal 17 OHP, electrolyte, androgen. **Methods:** Here we describe a 3-years old Saudi girl, with history of progressive hyperpigmentation for first year of life, but no history of hypoglycaemia or neonatal jaundice, no history of a lacrimation or dysphagia and positive similar family history. She had generalized Hyperpigmentation with normal female genitalia. Her cortisol was low with high ACTH level, but normal electrolyte 17, Hydroxyprogesterone, aldosterone, renin, androgen. Familial Glucocorticoid Deficiency was diagnosed, and maintenance dose of hydro cortisol was started, and patient pigmentation was improved few week latter. **Results:** Familial Glucocorticoid Deficiency was diagnosed, and maintenance dose of hydro cortisol was started, and patient pigmentation was improved few week latter. **Conclusions:** FGF should be kept in mind as a differential diagnosis of any patient who present with signs of hypocortisolaemia and should be diagnosed and treated early to prevent adrenal crises which could kill the patients.

P702: Unusual presentation of multiple endocrine neoplasia type 2A in young female

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Background: Multiple endocrine neoplasia type 2 is hereditary disorder inherited in autosomal dominant mannermutations in RET gene that predispose to tumors such as medullary thyroid cancer, pheochromocytoma .MEN 2A variant account approximately 75% of all MEN2 cases. **Methods:** A 24-year-old woman presented with headache, sweating and palpitation. Biochemical

investigations revealed an elevated urinary catecholamine level and abdominal CT localize bilateral adrenal gland mass (chromaffin tumour) also diagnosed with medullarly thyroid carcinoma and hyperparathyroidism. **Results:** Given the young age and diagnosis of a chromaffin tumor, in conjunction with medullary thyroid carcinoma rise the possibility of MEN 2A therefore genetic testing to identify RET gene mutations were performed and confirmed a mutant RET oncogene confirming our clinical suspicion of MEN2A syndrome. **Conclusions:** This case draws attention to importance of screening individual diagnosed with endocrine tumor for other tumors. Family screening and genetic testing are required for any patient diagnosed with multiple endocrine neoplasia.

P703: Pheochromocytoma in pregnancy: Report of a case

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Background: Pheochromocytoma is a catecholamine producing neuroendocrine tumor leading to hypertensive crises in untreated patients. In this report, we present a case of pheochromocytoma who was diagnosed and treated during pregnancy. **Methods:** A 27 years old female Gravida 4, Para 3, 18 weeks gestation, admitted because of high blood pressure 210/100 mmHg. She was known to have hypertension for 4 years. Patient reported intermittent episodes of palpitations, sweating and headaches. Work-up for secondary hypertension revealed 24 hour urine vinyl mandelic acid (VMA) 108.310 (0 - 33 umol), 24 hour urine normetanephrines 25.052 (0- 2.13umol), 24 hour urine dopamine 3655 (0 - 3240 nmol), 24 hour urine noradrenaline 10,719 (0 - 570 nmol). Plasma normetanephrines level 8.22 (<0.94 nmol/l) and metanephrines 0.24 (<0.37 noml/l). Screening for vasculitis, lupus, cushing's disease and primary aldosteronism was negative. MRI abdomen showed left adrenal mass of 6 x 5.5 x 5 cm with features suggestive of pheochromocytoma. RET proto-oncogene mutation testing was negative. Calcitonin level was normal. She was started on nifedipine, methyl dopa and prazocin 1.5 mg twice daily, followed by a beta-blocker. Later in the second trimester, she underwent laparoscopic resection of the adrenal mass. Histopathology was suggestive of pheochromocytoma. Her blood pressure improved and she came off the anti-hypertensive medications. She delivered a healthy baby at term. **Results:** Catecholamine secreting tumors are very rare during pregnancy. They could be sporadic or part of a familial syndrome. Presentation during pregnancy closely resembles pregnancy-induced hypertension, essential hypertension or pre-eclampsia, which makes it harder to be recognized. It is important to differentiate for optimal and safe management of both the mother and the fetus. **Conclusions:** Physicians need to keep high index of suspicion in order to have timely diagnosis and management of pheochromocytoma during pregnancy. Optimal outcome requires multidisciplinary approach by endocrinologist, adrenal surgeon, anaesthesiologist and obstetrician.

P704: A 38 year-old man with hypertension, hypokalemia and gynecomastia

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Background: 38-year-old man was seen in our Community Clinic with raised BP for 6 months, not on any medications. 6 months prior to presentation, he was diagnosed with gynecomastia. He had a lower lip mass but otherwise asymptomatic. His past history included GERD for which he took regular antacids He was married with two children with no h/o impotency. Father died of throat cancer. **Methods:** Average built, BMI-26.1. BP: 162/87 Pulse: 86/min. Breast – bilateral gynecomastia with palpable subareolar tissue. Tanner Stage IV. Testes- normal. **Results:** MRI/CT: Showed a lobulated mass from the left Adrenal gland 9.4 X 5.9 X 5.4cm suggestive of Adrenocortical Carcinoma. **Management:** Complete surgical resection of the left adrenal mass, weighing 337 g, was done laparoscopically. Histopathology confirmed Adrenocortical Carcinoma with a WEISS Score of 7. Radiotherapy and mitotane started with dexamethasone. FDG-PET Scan after 6 months of surgery, showed peritoneal and lung metastases. Hence Doxorubicin, Etoposide, Cisplatin was added along with mitotane. Despite intensive chemotherapy, patient died due to pulmonary complications 29 months after tumor removal. **Diagnosis:** Adrenocortical Carcinoma (ACC) with feminization. **Conclusions:** Adrenocortical Carcinomas are rare, often aggressive tumors with an incidence of one to two per million per year. Our case is extremely rare form of ACC presenting with feminization and hyperaldosteronism, which occurs in fewer than 10 percent of ACCs. The diagnosis initially was delayed as gynecomastia was attributed to cimetidine. Laboratory tests of hypokalemia, mild metabolic alkalosis combined with hypertension and gynecomastia lead to the suspicion of primary aldosteronism. No features of Cushing's syndrome. MRI confirmed large Adrenal mass. Feminization was attributed to elevated estrogen from the tumor and peripheral conversion of adrenal androgens.

P705: Adrenal incidentaloma: A case of concomitant aldosterone producing adenoma with symptomatic hypoparathyroidism

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Background: Adrenal incidentaloma (AI) is an adrenal lesion ≥ 1 cm discovered accidentally during an imaging technique not aimed to assess the adrenal gland, mostly benign and nonfunctioning; but could secrets hormones like aldosterone (Aldosterone Producing Adenoma [APA]) causing primary aldosteronism(PA)(1). Hypoparathyroidism (HP) is a condition of low parathyroid hormone due to surgical, genetic or autoimmune causes, mostly causes symptomatic hypocalcemia. **Methods:** A 39 female with paresthesia, cramps, fit and abdominal pain. Body mass index was 26 kg/m2, blood pressure (Bp) 160/110 mmHg; no clinical features of cushing syndrom , abdominal ultrasound showed left (Lt) adrenal mass referred for assessment. **Results:** Hypokalemia, hypocalcemia, alkalosis, very low parathyroid hormone (PTH), high aldosterone, suppressed renin and very high aldosterone-renin ratio(ARR) [Table 1], all other investigations were normal including pheochromocytoma screen and subclincal cushing syndrom. The ECG showed hypokalemia and hypocalcemia changes (prolonged QT interval and sagging of T-wave) [Figure 1]. Adrenal CT-scan revealed 22x20 mm Lt adrenal mass with 64% absolute percentage washout (APW)[Figure 2]. Adrenalectomy resulted 40x30x10 mm adrenal mass(Figure 3) confirmed to be adrenal cortical adenoma by histopathological examination(Figure 4). After surgery the patient showed normal Bp, potassium, aldosterone, ARR and stopped antihypertensive drugs, still had mild hypocalcemia.

Conclusions: Primary aldosteronism causes hyperparathyroidism, but here we reported a hypoparathyroidism, wheather there is an association or accidental finding, need further studies. These observations suggested the assessment of parathyroid gland in all patients with primary aldosteronism.

P706: Adrenal vein sampling procedures in royal hospital, Oman

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Background: Adrenal vein sampling is most commonly performed in primary aldosteronism, as this is the most common hypersecretory adrenal disease. Adrenal vein sampling is performed to assess whether autonomous hormone production is unilateral or bilateral and to distinguish between surgically curable and unilateral, and bilateral adrenal disease. Many centers throughout the world are reporting a prevalence of between 5% and 10% in unselected hypertensive patients (1,3). It has been difficult to perform a good adrenal vein sampling because of the anatomical locations of the right adrenal vein and distinguishing other vessels that may arise from the posterior wall of the inferior vena cava (IVC) close by. The aim of the study was to analyze the adrenal vein sampling (AVS) experience in our center. **Methods:** The data of the patients who were referred for adrenal vein sampling were enrolled in the study. All AVS procedures were performed according to the routine standardized protocol used in our center. An infusion of cosyntrophin was administered 30 minutes before and during the procedure. Samples were taken step by step from both adrenal veins, and the inferior vena cava. Adrenal samples were considered adequate if the cortisol concentration was at least 5-fold greater than that of the inferior vena cava. The lateralization of aldosterone secretion was confirmed when cortisol-corrected aldosterone concentration from the affected gland was at least 4-fold higher than that of the contralateral side. Results: **Conclusions:** Compared to high volume centers results success rate. The success rates were 63%, 82%, and 94% during the first, second, and third years, respectively (1) Success rate has been reduced by the learning curve process of the procedure, by our intervention radiologist. The difficulty has been limited by access to the right adrenal vein. Guidelines standardization in our center still being assessed, the outcomes have been successful, the failed procedure were converted to successful localization, after repeating the procedures.

P801: Hypopituitarism following traumatic brain injury

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Background: Traumatic Brain Injury (TBI) is a major cause of death and disability in children, Post-traumatic hypopituitarism was initially recognized more than a century, but it was thought to be a rare occurrence. **Methods:** We describe a case of Post-traumatic panhypopituitarism following head injury. He presented with recurrent hypoglycemia and short stature, and proved to have growth hormone, Thyroid-stimulating hormone (TSH) and cortisol deficiencies. Magnetic Resonance Imaging (MRI) revealed an empty Sella turcia. Accurate evaluation and long-term follow up are necessary to detect the occurrence of hypopituitarism. In order to improve the outcome and quality of life of traumatic brain injury (TBI), an adequate replacement therapy is of paramount importance. **Results:** The patient improved after hormonal replacement. **Conclusions:** Accurate evaluation and long-term follow up of patients with traumatic brain injury (TBI are necessary in order to detect the occurrence of hypopituitarism, regardless of clinical evidence for pituitary dysfunction. It is therefore, necessary that medical professional involved in the management of TBI patients, be aware of this issue in order to timely diagnose pituitary dysfunction and adequately replace the deficiency if indicated in order to improve outcome and quality of life of patients with traumatic brain injury.

P802: Case of late onset hypogonadism in patient with type 2 diabetes due to large prolactinoma

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Background: Late-onset hypogonadism is defined by reduced serum testosterone levels and the exclusion of any form of classical hypogonadism. A detailed medical history, physical examination and appropriate investigations are the keys in the management of this condition. Prolactinomas account for approximately 40% of all pituitary adenomas, with an estimated prevalence of 100 prolactinomas per million adults. **Methods:** A 56-year-old gentleman presented with symptoms of late onset hypogonadism. He is known to have type 2 DM and dyslipidaemia, and he takes Vildagliptin 50/ Metformin 1000mg and Rosuvastatin 10mg. BMI 28, BP 119/70. His glycaemic control worsened over 3 months period (HBA1C risen to 8.7% compared to 7%) and he was started on Dapagliflozin. He came back 3 weeks later complaining from reduced libido and erectile dysfunction. His further investigations revealed severe hypogonadotrophic hypogonadism with very low testosterone 2.98 nmol/l (6.6-25.7) FSH 3.95, LH 1.56, prolactin was high 12939 MIU/L, TSH 1.40, Cortisol 335 nmol/l, ACTH 35 (7-65), IGF-1 122 ng/ml (61-200), Ferritin 44 mmol/L. His MRI pituitary confirmed Macroprolactinoma on the right side measuring 13, 12, and 13 mm invading right parasellar space with no compression on optic chiasma. **Results:** He was started on Cabergoline 250 mcg twice per week after initial echocardiography screening. His Cabergoline dose was increased slowly to 500 mcg twice weekly. Prolactin level normalized over 9 months to 192 MIU/L and his Testosterone improved to 18. Repeated MRI pituitary showed reduction in the sized of his pituitary adenoma. His symptoms improved quite significantly with normal libido and sexual function. **Conclusions:** This case highlighted the importance of checking Testosterone, Prolactin and anterior pituitary hormones in patients with late onset hypogonadism. Appropriate treatment of the underlying pathology will result in favorite outcome.

P803: Case report: FSH secreting pituitary macroadenoma causing ovarian hyperstimulation syndrome

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Background: FSH secreting pituitary adenomas are relatively uncommon brain tumors and usually non-functioning however in rare cases they produce ovarian hyperstimulation. We report a case of A

29 years old Omani female, obese with BMI 38 kg/m2, married with secondary amenorrhea, severe headache, and mild galactorrhoea since 7 months. Initially thought to be a simple prolactinoma with multicystic ovaries, but after thorough investigations to our surprise diagnosed to be a rare case of gonadotropin secreting pituitary adenoma. Patient was successfully managed by excision of the pituitary adenoma. **Methods:** This is A 29 year's old Omani female, obese with BMI 38 kg/m2, patient initially referred to endocrine department by the anesthetist for pre-operative assessment of second laparoscopic ovarian cystectomy. Background of Macroprolactinoma diagnosed by neurologist on 2016 based on symptomatology (headache, secondary amenorrhea, mild galactorrhea, high prolactin level and pituitary macroadenoma on MRI (patient was kept on cabergoline 0.5 mg bid), Polycystic ovary syndrome (PCOS) on metformin 500 mg TID and first laparoscopic ovarian cystectomy was done on 2016. Patient presented to the daycare with chief complains of 7 months history of secondary amenorrhea, galactorrhea, severe chronic headache which was worsening for the last few weeks without any vomiting or visual field defect. Further history; menarche started at the age of 14 (2 – 3 cycle/year) and gradual progressive weight gain. Married at the age of 21; first child at the age of 24, pre-matured 28 weeks (died after few weeks) and second pregnancy at the age of 26 (abortion after 12 weeks of gestation). She develop headache at the age of 26 (diagnosed initially with migraine by neurologist, never responded to treatment). Headache never responded to dopamine agonist. Few weeks prior to our referral it increased in frequency and severity associated with reduced vision in her left eye. On examination, she was obese BMI: 38 kg/m2, her vitals are normal, thyroid is not enlarged, abdomen was soft, non-tender and vaginal examination revealed bulky uterus with bilateral adnexal cystic structures. Ultrasound performed was suggestive of bilateral multicystic ovaries. Hormonal profile: initial prolactin was 3127 and the latest level is 405, FSH:16.3, LH: 0.6, Estradiol: 12417, normal thyroid function test, Normal IGF1 and Overnight dexamethasone suppression test (<30 nmol/l). MRI abdomen and pelvis: First pituitary MRI: The repeated one showed: Increased the size of the adenoma and classical growth pattern of the adenoma. Visual field: Visual field defect in the left eye while on treatment. Patient went to Pakistan operated there by neurosurgeons and endoscopic transsphenoidal excision of pituitary macroadenoma was performed. Immunohistochemistry showed pituitary adenoma, no stain for FSH, LH or its subunits and no stain for Ki-67. Post-operative patient's investigations was done and showed in details in the Table 1. Other investigation including basal cortisol, prolactin, and IGF-1 and thyroid function test were normal. Post-operative course showed remarkable improvement includes: Significant weight loss, all compressive symptomology resolved, normalization of her visual field, resume of her menstrual cycle and normal pituitary function. **Results:** A few cases of FSH-secreting gonadotroph cell adenoma manifesting as ovarian hyperstimulation have been reported with the endocrinological characteristics, but the true incidence of this condition including unnoticed or subclinical cases remains unclear. Age of the patient is the most important characteristic for the diagnosis of this entity, because the response of the ovary to FSH stimuli is important for the onset of ovarian hyperstimulation. In postmenopausal women, FSH over secretion cannot be recognized unless a very low LH level is noticed, so that all reported patients with ovarian hyperstimulation are of reproductive age. Serum estradiol level is elevated in response to FSH stimulation, which is secreted in adenoma cells. Subsequently, the hypothalamus-anterior pituitary gland axis is suppressed due to the negative feedback mechanism. As a result, the excessive FSH level is reduced to the normal range. Serum LH level is also significantly reduced to below the lower limit of the normal range, probably due to the negative feedback mechanism or compression of the normal pituitary gland by the tumor. Serum prolactin concentration was elevated in most cases, probably due to pituitary stalk compression by the sellar tumor, the so-called stalk effect. The management being resection of pituitary tumor and follow up. After resection of a pituitary adenoma, patients need to be monitored annually with MRI, looking for evidence of a possible recurrence. Patients should also undergo hormonal testing three months after surgery to assess whether hypo-pituitarism is present. If there is deficiency of any of the pituitary hormones, hormonal replacement therapy should be initiated. **Conclusions:** The present case of FSH-secreting gonadotroph cell adenoma was the cause of ovarian cysts. We emphasize the importance of pituitary imaging and detailed endocrinological examinations as well as careful evaluation of the gynecological history in women of reproductive age to avoid unnecessary ovarian surgery.

P804: Hypophysitis: Do systemic steroids work?

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Background: Hypophysitis is a rare condition characterized by inflammation of the pituitary gland, usually resulting in hypopituitarism and pituitary enlargement. Pituitary inflammation can occur as a primary hypophysitis (most commonly lymphocytic, granulomatous or xanthomatous disease) or as secondary hypophysitis (as a result of systemic diseases, immunotherapy or alternative sella-based pathologies). **Methods:** A 39 years old women present with polyurea, polydipsia since 3months, she drunk about 20 liters of water daily, no headache at that time, no blurred vision, no psychiatric symptoms, no history of head trauma nor weight change, regular period, her medical history was unremarkable, positive family history of thyroid illness and Diabetes mellitus , she is mother of 5 kids, physical examinations was unrevealing except mild dry skin, we did for her laboratory workup including complete blood count, hormonal assay, water deprivations test, pituitary MRI. **Results:** Water deprivation test was started at 6 AM, urine osmolality 71mosm/kg,serum osmolality 274 mosm/kg,serum sodium 137mmo/l, patient was monitored vitally during test, after 6hrs we repeat urine osmolality 78 mosm/kg, serum osmolality 287mosm/kg, serum sodium 144mmo/l, Desmopressin 2mcg IV injection was given and labs checked 1hr after showed urine osmolality 104mosm/kg, serum osmolality 290 mosm/kg, serum sodium 146mmo/l,but after 2 hrs showed urine osmolality 227 mosm/kg, serum osmolality 284mosm/kg, serum sodium 142mmo/l, HA1C 5.7%, IgG subclass 4 0.136 g/l, Angiotensin converting enzyme 14 u/l,Alphafetoprotein 1.14 iu/ml, prolactin level 26.98 ng/ml, Thyrotrophin 2.04 miu/l, Follicular stimulating hormone 1.31 iu/l, lutenizing hormone 4.55iu/l,ACTH 61.56 pg/ml, ADH L E S S THAN 1,MRI gadolinium scan for pitutary show: absence of the normal posterior pitutary bright spot, focal nodular thickening of the distal pitutary stalk size 4.2mm homogeneous contrast enhancement. hypophysitis with infundibuloneurohypophysitis was our diagnosis, we started her on desmopressin 10mg nasal spray TID prednisolone 30mg po daily for two months then tapered gradually , she had marked improvement and decrease water drinking to 2.5liters/day , MRI GADOLIMUM REPEATED show regression in size measuring 3 mm, one week after stopping steroids she came back to emergency room complaining of headache, dizziness, generalized fatigue, diarrhea, the ACTH test was done to r/o adrenal insufficiency which was normal, she was assessed by neurologist regarding her new onset headache and was labeled as migraine headache and treated accordingly. **Conclusions:** Treatment includes replacement of hormone deficiency (including ADH) and decision making regarding

conservative medical and surgical therapies. High-dose suppressive glucocorticoid remains the cornerstone of medical therapy but a variety of immunosuppressive treatments have been used. Surgery is indicated for non-responders, mass effect, headache, visual failure or when a tissue diagnosis is considered important. Radiotherapy may be useful when there is relapse of disease and some patients require multi-modal treatment.

P901: Turner syndrome and thallasemia beta mayor as a genetic disorder in one person

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Background: Turner syndrome is a chromosomal disorder affected most likely in female with a prevalence of 1:2500. Turner syndrome is diagnosed when sex chromosome have partial or complete absence of one X chromosome (45,X karyotype). Clinical manifestation may vary from short stature, a broad chest with widely spaced nipples, cubitus valgus, webbed neck, congenital lymphedema and disturbance of pubertal develompment due to insufficiency of sex hormone. Most patient turner syndrome in pubertal age may complain about primary or secondary amenorrhea. Thallasemia is a genetic disorder that affected production of globin chain leading to decreased and defective production of hemoglobin. Classically, thallasemia divided into two groups, there are thallasemia mayor and minor. Thallasemia minor seldom required transfusion during patient's life. It consists of thallasemia alpha and thallasemia beta minor. While, thallasemia mayor is transfusion dependent. Thallasemia beta mayor is one of thallasemia mayor. Turner syndrome and thallasemia in one persone is a rare case. There are only two case report about it, Alfonso Lopes in 1995 and Dorina Stoicanescu in 2009. **Methods:** A 18 years old girl came to the internal medicine ward of Soetomo Hospital in Surabaya, Indonesia for routine blood transfusion due to thallasemia beta mayor. She was diagnosed thallasemia beta mayor since six month years old. She always needs blood transfusion every two months. Her averages hemoglobin level is about 7,0 gr/dl. She looks shorter than her friends with thallasemia. Her height is only 126 centimeters and weight 26 kilograms. She has wide chest (66 centimeters) with widely spaced nipple. There was no cubitus valgus and webbed neck. She had splenomegaly (suffner level 3). She was diagnosed turner syndrome since 16 years old. She complained about primary amenorrhea. She went to sex hormone and chromosome analysis, bone survey, psychological examination. She has low estradiol, high level of FSH and LH, bone age examination most likely a 13 years old girl, IQ 93 and mosaic karyotipe mos 46,X,idic(Y)(q11.22)[27]/45,X[7]/47,X,idic (Y)(q11.22)x2[6]. She routinely consume contraceptive pills and deferasirox as an iron chelating agent. **Results:** Turner syndrome and thallasemia beta mayor can affect one person, while two of this condition is not linked but can be worsened such condition. In this patient, short stature because of turner syndrome worsened by thallasemia. Maximum height for patient with turner syndrome is 140cm without growth hormone. In Indonesia, growth hormone is very expensive so most of patient can not effort for that. Patient with mosaic karyotipe most likely come with amenorrhea while physical symptoms not as clear as monosomi 45,X. Average score of IQ for patients with turner syndrome is about 90 with verbal ability better than abstraction ability. Hypogonadism in this patient due to turner syndrome can be worsened by hemochromatosis in gonads due to repeated transfusion. **Conclusions:** Sex chromosome abnormalities and some single-gene disorders may show phenotypic overlappings. Cytogenetic examination is necessary to diagnose all patients with abnormal sexual development or hypogonadism. Physicians must have abilities to recognize the signs and symptoms and confirmed the diagnose by a chromosome or molecular analysis.

P902: Rabson-mendenhall syndrome: First report from Kuwait

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Background: Rabson-Mendenhall Syndrome (RMS) represents a rare insulin resistance syndrome caused by mutations in both alleles of the insulin receptor gene (INSR), resulting in severe insulin resistance. Treatment of RMS patients is a challenge due to poor metabolic control, resulting in high incidence of diabetes long-term complications. Novel approaches, such as insulin sensitizers, may be useful initially but eventually most patients require high doses of insulin with limited effect. New treatment modalities like recombinant Insulin-like growth factor 1 (rIGF-1) and subcutaneous Leptin have shown promising results but, so far, have only been tested in a few cases with unclear effects on long-term survival. Our aim was to report the first two cases diagnosed with RMS from Kuwait. **Methods:** A Lebanese toddler, aged one and a half years, was referred with high insulin with (641.6 pmol/L) (reference 109-23). On examination, his BMI was 19.0 kg/m2 (+1.97 SDS) and he had dysmorphic features suggestive of RMS including coarse facial features with globular nose, full lips and furrowed tongue. His skin was hyperkeratotic with hypertrichosis. The child has an older sister aged 13.5 years who is managed with insulin since her diagnosis with diabetes at the age of 9 years. She had similar dysmorphic features along with extensive acanthosis nigricans, dental abnormalities and bilateral nephrocalcinosis. **Results:** Both siblings were found to be homozygous for the p.Arg141Trp missense variant (p.Arg114Trp if numbered according to proreceptor sequence) in the alpha subunit of the insulin receptor. **Conclusions:** We are reporting clinical, laboratory and genetic findings of two siblings with Rabson-Mendenhall syndrome and to our knowledge there has been no reports of cases with similar genetic mutation from Kuwait.

P1001: A case of toulouse lautrec syndrome

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Background: Patient 'Mark' presented aged 22 months with severe short stature (Height -4.05SD). His parents were first cousins. He appeared disproportionate and a skeletal dysplasia was suspected. A skeletal survey showed increased bone density with classic features of Toulouse Lautrec Syndrome (pycnodysostosis). This was genetically confirmed by the finding of a deleterious homozygous frameshift mutation in CTSK. Pycnodysostosis results in a complex skeletal dysplasia with increased bone density, brittle bones and disproportionate short stature. Children are otherwise healthy and of normal intelligence. **Methods:** Uniquely among skeletal dysplasias, pycnosysostosis is commonly associated with Growth Hormone (GH) deficiency. As such an MRI and an Insulin-like Growth Factor (IGF) generation test were performed. **Results:** The MRI showed pituitary

hypoplasia and he subsequently underwent an Insulin-like Growth Factor (IGF) generation test in which biochemical responsiveness to growth hormone is demonstrated by a rise in IGF-1 and IGF Binding Protein-3 (IGFBP-3). This was thought to be safer than a classic Growth Hormone Stimulation Test, in view of his very small size. Baseline IGF-I and IGFBP-3 were both <-1SD and the test demonstrated biochemical responsiveness to GH. These results are consistent with growth hormone responsiveness defined as a rise of ≥25% in IGF-1 and IGFBP-3. Subsequently, his height has markedly improved on growth hormone therapy. His height is now -2.69SD, with an annualised growth velocity of 15.7cm/year. **Conclusions:** Our patient had hypopituitarism on MRI and has responded to GH with a substantial gain in height. Pycnodysostosis is a rare skeletal dysplasia but in contrast with other dysplasias, it is commonly associated with pituitary hypoplasia resulting in GH. Published data have shown that GH in children with pycnodysostosis is effective in restoring normal/near-normal height and, as such, it is important to consider GH therapy with the greatest benefit seen in children started on treatment from a young age.

Table 1: Pre- and post-growth hormone insulin-like growth factor-1 and insulin-like growth factor binding protein-3 following 4 days of growth hormone (1 μg/m²/day)

	Day 1	Day 5	Response
IGF1/μg/L	50 (−1.56 SD)	71	+42%
IGFBP-3/μg/L	1661 (−1.70 standard deviation)	2073	+25%

IGF1: insulin-like growth factor-1, IGFBP-3: Insulin-like growth factor binding protein-3

P1101: Obesity perceptions among adults attending public healthcare clinics in Bahrain: A cross-sectional study

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Background: One of the highest worldwide prevalences of obesity has been reported in Bahrain. Despite a third of the population being classified as overweight or obese, research on public perceptions of obesity in Bahrain is lacking. The purpose of this study was to evaluate perceptions of obesity among adults attending public healthcare clinics in Bahrain. **Methods:** This was a cross-sectional, observational study utilizing a combined questionnaire of 3 previously-validated obesity surveys: the Chicago Obesity Survey, the Tanzania's Obesity, Overweight and Perceptions about Body Weight Survey, and the Impact of Weight on Quality of Life-Lite Survey. Adult residents of Bahrain, aged 18 years and above, attending 8 randomly selected but equally distributed public healthcare centers in the 4 governorates of Bahrain, were selected to participate. After completion of survey, anthropometric measurements of weight and height were obtained from consented participants. **Results:** Our study included a total of 356 respondents, with mean age (±SD) of 38±13 years, 53.1% were male, and mean reported BMI of 29.8±6.1 kg/m2. While the majority (91.6%) reported obesity being moderate-to-very high risk to a person's overall health, only 45.6% considered obesity a disease. Additionally, 19% of respondents thought their weight "always" affected their self-esteem, whereas 13% reported a marked effect of obesity on their physical function. Amongst the 356 survey completers, 228 (64%) respondents agreed to have their weight and height measured. The mean measured BMI within the latter group was 29.6±6.2 kg/m2, which was comparable to the self-reported BMI of 29.9±13.3 kg/m2. **Conclusions:** Despite public's acknowledgement of obesity's health risks and its impact on self-esteem and physical function, many still do not consider it a disease. Further research is needed to further explore this gap in obesity knowledge.

P1102: 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. Therefore, our study aimed to investigate the association between LEP G-2548A gene polymorphism and obesity-related markers such plasma leptin, plasma glucose and blood pressure in a sample of obese Saudi patients. **Methods:** This cross-sectional study involved 206 Saudi adult subjects with aged ≥18 years (94 males and 112 females), randomly selected from the primary health care centers, Riyadh, KSA. The study sample was categorized into three groups: 50 normotensive nondiabetic controls, 80 obese normotensive and 76 obese hypertensive with T2D patients. 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). In contrast, no association was elicited with either systolic or diastolic blood pressure. 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). **Conclusions:** GA and AA genotypes and A allele of LEP gene may represent important risk factors predisposing healthy subjects to develop T2DM irrespective status of blood pressure. A larger clinical study should be undertaken with a larger population sample to investigate the real correlations between this variant and diabetes mellitus.

P1103: The clinical and biochemical characterization of polycystic ovarian syndrome among females attending King Khalid University

hospital, Riyadh, Saudi Arabia

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Background: To study the clinical and biochemical features of polycystic ovarian syndrome (PCOS) among females attending King Khalid University Hospital (KKUH). **Methods:** This was a retrospective study in which files of Saudi patients attending gynecology clinics in KKUH were analyzed. The medical records used in this study was based on the time of diagnoses between year 2015 and 2018. Rotterdam criteria was used for identifying cases. **Results:** Based on the criteria above, 203 patients were identified. The mean age was 27 (±5.862) years and the marriage incidence was 40.4%. Out of 190 patients, the mean BMI was 28.946 (±9.979), 3.9% of the patients were underweight, 29.9% were overweight and 35.5% were obese. The mean age of menarche was 12.64 (±1.638). **Conclusions:** PCOS among Saudi females has similar features to other populations. Many patients have common features of metabolic syndrome were obesity was the most common. Treatment of PCOS among Saudi patients should concentrate on weight reduction and decreasing insulin resistance, in addition to pharmacologic treatment.

P1104: Serum tristetraprolin levels and their associations with biochemical parameters in Saudi patients with or without metabolic syndrome

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Background: Obesity-mediated metabolic syndrome (MetS) poses an increasingly heavy burden on Saudi society, with a widespread economic impact. As such, new insights into the care and treatment of MetS are urgently required. Tristetraprolin (TTP) is a new candidate gene for obesity related MetS. However, there are limited studies that support the role of TTP in MetS at the level of proteins. In this study we aim to examine the associations of TTP at the protein level with clinical and biochemical characteristics related to MetS. **Methods:** A total of 200 Saudi adults [male and female subjects (30-65years of age)] were recruited and divided into two groups based on the presence of MetS. [with MetS (n=100) and a control without MetS (n=100)]. Biochemical characteristics like fasting glucose, lipid profile and anthropometric measurements were recorded. Circulating levels of TTP in both groups were measured using commercially available ELISA kit. **Results:** Serum TTP levels in MetS group were significantly higher than controls [Median (Q1, Q3) of 287.1 (230.3, 372.7) pg/ml in MetS versus 147.1 (68.2, 280.5) pg/ml in controls, p< 0.001)]. TTP was found to be positively correlated with waists circumference (R=0.25,P=0.001), diastolic blood pressure (R=0.15,p=0.05),glucose (R=0.28,P=0.001), and triglyceride (R=0.20,P=0.001), and negatively correlated with HDL-cholesterol (R=-0.22,P=0.001). **Conclusions:** Our results suggest that there are higher circulating levels of TTP in individuals with MetS compared to those without. Further investigation may provide valuable insights about the specific mechanism of TTP in MetS.

P1105: Bone density changes and obesity paradox in Egyptian premenopausal women

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Background: Various trials showed a protective role of obesity against osteoporosis but others considered obesity may lower bone density. Can overweight and obesity have a detrimental or protective effect on bone health? We studied correlation between obesity parameters and mineral bone density in premenopausal women. **Methods:** Case control study on 60 obese premenopausal women from outpatient, Mansoura University hospital (October 2017 to March 2018) compared with 30 normal weight women of matched age (control group). Middle age of (BMI) 25 - 40. Not diabetic, hypertensive, nor chronic morbidity. No drugs as diuretics or prior bariatric surgery. With informed-consent signed .medical history, examination, anthropometrics, Calcium, phosphorus, TSH, lipids and DEXA were done .SPSS (version 20). **Results:** Weight, BMI and waist circumference were significantly higher in case group. Z score (forearm, lumbar vertebrae and hip) and T score (hip, forearm and lumbar vertebrae) were significantly lower in cases than control. Significant negative correlation between BMI with Z score (forearm, hip and lumbar), body weight with Z score (hip and lumbar) and waist circumference with Z score at lumbar area in all subjects. Insignificant association between overweight and obese versus lean individuals with Z score at forearm, hip and lumbar after adjustment of each of (age and BMI) (age and weight) but significant negative correlation in simple linear model was found after adjustment each of (age and waist circumference), (age and waist hip ratio). **Conclusions:** Overweight and obese Egyptian premenopausal women were more likely to have osteopenia and osteoporosis. Overweight premenopausal women should lose weight to improve BMD.

P1106: Ramadan fasting after bariatric surgery

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Background: Muslims abstain from food and drink from dawn to sunset during Ramadan. Bariatric surgery (BS) is currently the most effective treatment for morbid obesity. Smaller size of stomach after BS may pose difficulty in Ramadan fasting. We aimed to study the safety of Ramadan fasting for patients who had undergone Sleeve gastrectomy (SG) or Roux-En-Y gastric bypass (RYGB) in non-diabetic and diabetic subjects (DM). **Methods:** A total of 50 fasting month of Ramadan were evaluated after BS in 35 subjects (15 patients studied for two Ramadan in different years) and 27 had DM. In the form of questionnaire, information such as vomiting, giddiness, dehydration and hypoglycemia during the fasting period, able to finish full day fasting, need to break the fast mid-way, vomiting after breaking the fast were obtained. **Results:** Most of the study subjects were able to fast in Ramadan with no major ill effects. There was no significant difference in the safety parameters between Diabetic and non-diabetic subjects [Table 1] as well as between two types of BS. Vomiting after evening meal was experienced by 8 subjects (5 after SG, 3 after RYGB). **Conclusions:** Most of the subjects including those with DM who had undergone BS can safely fast in Ramadan. Dietary advice emphasising slow eating pattern is essential to prevent vomiting after evening meal in Ramadan.

Table 1: Parameters in diabetic versus non-diabetic subjects during ramadan after bariatric surgery

Characteristics	Diabetic subjects ($n=27$)	Subjects without diabetes ($n=23$)
Male/female	15/12	4/19
SG/RYGB	12/15	12/11
Vomiting	4	4
Missing fasting (days)	10	14*
Need to break the fast midway (days)	0	6**
Hospital admissions/emergency visits	0	0
Hypoglycaemia/dumping events	0	0

*P=0.26 and **P0.08. SG: Sleeve gastrectomy, RYGB: Roux en Y gastric bypass

P1201: Thyroid hormone resistance due to a novel de novo mutation in thyroid hormone receptor alpha: First case report from Oman

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Background: Thyroid hormone (TH) physiological actions are mediated through TH alpha and TH beta receptors. Resistance to thyroid hormone is characterized by a lack of response of peripheral tissues to the active form of thyroid hormone. TH receptor beta is extensively studied and previously thought mutations in this receptor are considered to be the main reason for Thyroid hormone resistance. However, the discovery of TH receptor alpha (TRα) has attained more focus and interest in recent years. **Methods:** Auxological, hormonal and molecular genetic profiles of a A 13 years child with classical features of hypothyroidism are reviewed and discussed. **Results:** Classic features of hypothyroidism (growth and developmental delay, skeletal dysplasia, generalized muscular hypertrophy and severe constipation) associated with near-normal thyroid hormone levels. Using whole exome sequencing, a de novo heterozygous mutation in a gene encoding TRα was identified establishing resistant to thyroid hormone alpha (RTHα) diagnosis. **Conclusions:** This patient case demonstrate defective human TRα -mediated thyroid hormone resistance presentation and emphasis the concept of hormone action through distinctive receptor subtypes in different target tissues. Moreover, it show that is likely that RTHα is more common than expected and may even be more common than RTHβ.

P1202: Diagnosis of follicular carcinoma of thyroid without primary tumor evidence: A case report and literature review

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Background: Initial presentation with distant metastases is rare in follicular thyroid carcinoma (FTC); especially in young patients with no histopathological evidence of carcinoma after thyroidectomy. **Results:** A 47-year-old woman who had undergone a right subtotal thyroidectomy in 2008 because of nodular goiter, with benign nodular hyperplasia of thyroid on the histopathological examination. She again developed nodules in her both lobes of the thyroid gland and underwent total thyroidectomy in 2013, histopathology of thyroid tissues again reported as benign. After 6 months of total thyroidectomy she presented with history of a pathological fracture of left proximal humerus, the MRI scan revealed a 4.8 x 4.4 x5.2 cm pathological mass in the proximal left humerus with bony destruction and bone scan was also consistent with bony metastases, open biopsy of left humerus was performed, followed by a histopathological examination. The result revealed metastatic carcinoma with features favoring FTC. The patient was treated with iodine ablation and radiotherapy of humerus outside our hospital and lost to follow-up to us. In February 2018 she again presented to our institute with the history of fall and fracture of the femur. Initial X-ray and then MRI was reported as metastatic lesion involving left proximal femur with the pathological fracture. She underwent intramedullary nailing and tissues were sent for the histopathological report that was reported as tiny clusters of atypical cells with hyperchromatic nuclei, suggestive of metastatic carcinoma of thyroid origin. **Conclusions:** With this case, we conclude that metastases of FTC may arise without primary tumors in the thyroid gland probably due to dedifferentiation of the primary tumor. Further studies are needed to understand this metastatic pattern of FTCs.

P1203: Disease free survival of patients with differentiated thyroid cancer, study from a tertiary endocrine center in Oman

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Background: Similar to the global trend, the prevalence of differentiated thyroid cancer has been increasing in Oman .There is no study available from the region to know the prognosis of differentiated thyroid cancer. This study aimed at assessing the general prognosis and prognostic factors related to differentiated thyroid cancer among Omani patients. **Methods:** In this retrospective study, data related to disease free survival and prognostic factors of 346 patients, aged 18 years and above diagnosed with differentiated thyroid cancer and treated at the National Diabetes and Endocrine center in Oman between January 2006 and May 2016 were evaluated .The details of diagnosis , initial and additional treatments, levels of thyroid cancer profile and imaging results at base line (after surgery), 1, 3, 5 and 10 years of follow-up were obtained from their medical records. **Results:** Of the 346 differentiated thyroid cancer cases, almost 83% of the study group was disease-free at the last follow up. The mean follow up duration was 68.6 + 30.5months with a median of 60 months. The mean disease free survival period was 44.6+ 34.6 with a median of 42 months .In multivariate analysis N0 lymph node status p=.017, tumour with no angio-vascular invasion p=.016, and the number of surgery and iodine therapy p=.022 were the independent predictors of disease free status at the last follow up. Although in univariate analysis , tumour histology like Papillary ,hurthel cell ,minimally invasive follicular (p=.03), tumour without extra-thyroidal regional or distant spread ,and low TNM risk groups all p value<.001 were significant prognostic variables for disease free survival , but in multiple logistic regression method failed to show a strong association. Extra-thyroidal spread, angio –vascular invasion, metastasis to lateral cervical group of lymph nodes and distant metastasis were strong predictors of persistent disease (p = <.001). **Conclusions:** The overall the prognosis of differentiated thyroid cancer among Omani patients was good .At the last follow up,

a good number of patients were disease free .N0 status, tumour with no vascular invasion and requiring least number of surgery or iodine therapy were strong predictors of disease free survival

P1204: A case of severe hepatic dysfunction in graves' disease: Management considerations

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Background: Severe hepatic dysfunction in Graves' disease limits the use of antithyroid drugs (ATDs). We report a case of a 41-year-old woman presenting with new-onset overt Graves' hyperthyroidism accompanied by severe hepatic impairment, whom was successfully treated with ATDs with subsequent normalization of her lab parameters. **Methods:** A 41-year-old woman, previously healthy, presented with a one-month history of unintentional weight loss, progressive jaundice and pruritis. She reported a strong family history of thyroid disease. Her exam was notable for diffuse thyroid enlargement estimated at 45 grams and severe jaundice. Labs were significant for an undetectable TSH of <0.005 uIU/ml (ref range: 0.25-4 uIU/ml), elevated free T3 of 13.54 pmol/L (ref range: 2-7.8 pmol/L), elevated free T4 at 59.34 pmol/L (ref range: 6-24 pmol/L) and elevated TSH receptor antibodies at 17.44 IU/L (ref range <1.75 IU/L). Liver function tests were significantly deranged: AST at 927 umol/L (ref range <37 umol/L), ALT at 384 umol/L (ref range <41 umol/L), ALP at 147 umol/L (ref range <129 umol/L) and total bilirubin at 468 umol/L (ref range <18 umol/L). Hepatitis profile was negative. Due to patient preference and strong personal beliefs, RAI therapy and surgery were both deferred, and she was initiated on low dose carbimazole of 10 mg daily, prednisolone 40 mg daily and propranolol with very close follow-up. **Results:** Within 2 months, patient demonstrated significant and rapid improvements in thyrotoxicosis symptoms and jaundice. Her laboratory parameters showed parallel improvements with subsequent normalization of her thyroid and liver labs 2 months following her initial presentation (TSH: 0.43 mIU/L, FT4: 9.49 pmol/L, FT3: 2.67 pmol/L, ALT: 18 umol/L, ALP: 100 umol/L, total bilirubin: 16 umol/L). Patient experienced no side effects to the treatment. **Conclusions:** Initiation of ATDs in the setting of hepatic dysfunction can be both safe and effective. However, close monitoring is mandated.

P1205: Is there association between antithyroid antibodies and recurrent miscarriage in Egyptian pregnant women?

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Background: Miscarriage rate among the Egyptian pregnant women with subclinical hypothyroidism (SCH) is still controversial; therefore, it is necessary to evaluate the relation between SCH & the miscarriage rate among the Egyptian women before twenty weeks of gestation. **Methods:** We included in this study 230 pregnant women before twenty weeks of gestation with history of recurrent miscarriage (group 1); they were divided into the euthyroid, subclinical hypothyroidism, and clinical hypothyroid women. A second group comprising 50 pregnant women without history of miscarriage was taken as healthy controls (group 11). Detailed history, clinical examination and laboratory testing for thyroid function and thyroid antibodies: anti-thyroid peroxidase & anti-thyroglobulin were done for all participants. **Results:** In group 1; 30.87% of pregnant women were Anti-TPO+. Risk ratio for pregnancy loss in Anti-TPO+ pregnant women were significantly higher than Anti-TPO- pregnant women (p= 0.0001). There was significant positive correlation between TSH level with number of miscarriage and Anti-TPO. In pregnant women with recurrent miscarriage (group 1): 68.26% of women were euthyroid from them 17.83% were Anti-TPO+. In spite of 22.17% women were found to have subclinical hypothyroidism, 56.86% of them were Anti-TPO+ and 9.57% pregnant women had clinical hypothyroidism, 63.64% of them were Anti-TPO+. Clinical hypothyroid pregnant women with anti-TPO+ had significant risk ratio for pregnancy loss compared to sub clinical and euthyroid pregnant women with anti-TPO+ after adjustment for age (P= 0.0001). **Conclusions:** Existence of thyroid antibodies in subclinical hypothyroid women is associated with recurrent miscarriage. We need to carry out more studies targeting pregnant women who are at risk of, or diagnosed with, thyroid abnormalities. Special attention on non-pregnant patients with a previous history of recurrent pregnancy loss is desirable.

P1206: Poorly differentiated thyroid disease

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Background: Poorly differentiated thyroid disease, mixed with papillary /follicular disease iodine -avid. Poorly differentiated thyroid cancer is rare and is challenging to treat, in the context of non avid to iodine ablation therapy. Current available therapy and experience has been scanty and dependent to genetic testing to map targeted personalized therapies. Lenvetinib has a broad kinome, once a day and doses vary from 14mg to a maximum of 24 mg per day. Like all Tyrosine kinase inhibitors:the side effects may outweigh the benefits. Common side effects well documented foot-hand syndrome, neutropenia,hypertension and cardiovascular disorders. Disease free progression outcomes are better in Lenvetinib versus Sorefinib, though head to head comparisons studies are not available. No studies to assess outcomes in Poorly differentiated thyroid cancer are available in abundance in the literature, due to rarity of case. Lenvetinib can cause bleeding in non avid iodine tumors compared to another systemic therapy: Systemic therapy might consist in targeted therapy against an activated oncoprotein such as dabrafenib-trametinib in case of BRAF mutation, or in the absence of actionable mutation in lenvatinib. Both patients did not undergo genetic testing to define the best possible therapy.BRAF, RAS, TRK-RET-ALK that can be targeted with a specific TKI. **Methods:** Case 1 : A 50 years old man underwent thyroidectomy in India , review of the imaging- indicated partial thyroidectomy. He was subjected to further surgical procedures, after the imaging indicated large tumor at thyroid bed , encasing the tracheal and multiple metastatic lymph nodes, and pulmonary metastasis. Histopathology :Staging : T 5,M3,N4 (Anaplastic/poorly differentiated).Genetic profiling and Immunocytology not available . Clinical progress and evaluation: The subject required tracheostomy due to the encasement of the trachea , followed by high dose iodine ablation therapy ,tyrosine kinase inhibitor : lenvetinib was started in Thailand and continued in Oman. The thyroglobulin levels remained high, another dose of iodine therapy was planned , but the subject could no swallow and this could not be entertained.His condition continued to deteriorate, the mass at the thyroid bed grew in size , oozing blood .On the eventful day , he got re-admitted , with confirmation of a bleeding fungating tumor seen by Fibre-optic scope (ENT).Multi-disciplinary team (

endocrinologist,ENT surgeon,Intervention Radiologist) reviewed the case , with the intention to conduct arterial embolization. CT -angio, did not reveal any bleeding coming from arteries, hence , palliative care/therapy extended at the Medical high dependency, the subject succumbed within 24hrs of admission. **Case 2:** A 53 year's old lady, with left sided swelling, over the last 18 months, associated with change in her voice and night sweating. She has been suffering from chronic headaches over the last 20 years. Initially she sought medical care from a private clinic in Oman .The initial impression, following examination, reveal neck swelling, and left side. Investigations indicated, normal thyroid profile, ESR , a TB Spot test was negative. Imaging by ultrasound showed: thyroid mass with multiple cervical lymph nodes. She was ref to Tertiary Care Center : Ultrasound guided Fine needle Aspiration : THY5 . Second opinion and surgery was given to her in Thailand , extended therapy and care in the form :operative radiotherapy (PORT), was followed by multiple kinase inhibitor therapy: Lenvetinib 24mg once a day . She received 2-3 month course of therapy with good tolerance , side effects of therapy was minimal. Post Care followup , she presented with bleeding fistula at the upper level of the oesophagus and trachea. Multidisciplinary team : upper gastrointestinal surgeon, gastroenterologist, intervention radiologist addressed the hemoptysis. Unfortunately prior to intervention, the subject had a massive hemoptysis and succumbed. **Results:** Thyroid carcinomas are classified according to the cell type they derive from, their degree of differentiation and their cytoarchitecture. Follicular cell-derived tumours comprise well-differentiated thyroid carcinoma (WDTC), poorly differentiated thyroid carcinoma (PDTC) and undifferentiated thyroid carcinoma (UTC). The well- differentiated group encompasses, according to cytoarchi- tecture and nuclear features of the neoplastic cells, follicular thyroid carcinoma (FTC) and PTC, with the latter having two main variants: classic PTC (cPTC) and follicular variant PTC (FVPTC). The minority of carcinoma that derive from parafollicular C cells are named medullary thyroid carcinoma . In PDTC the RAS genes play a major role in re-enforcing the degree of invasiveness, both locally and at a distance, is measured by the TNM staging, which is the most powerful predictor of outcome of almost all cancer patients. All of the three RAS genes (H, K and N-RAS) were shown to be mutated in both benign and malignant thyroid tumours but the frequency of the mutations is higher in FTC (36%), PDTC (55%) and UTC (52%) and more frequently affects the N-RAS gene . Both cases presented with aggressive disease , the second case had a mass for almost 18months,with lymphadenopathy.The first case , partly operated abroad , with encasing the trachea.. The average period of therapy with Lenvetinib was 6-8 months , after which both subjects succumbed. Imaging , followup did not show regression of the metastatic disease, however there was a short window reflecting stable disease.Unfortunately both patients bleed from their tumors, this maybe associated to treatment with the current Tyrosine kinase Inhibitor. **Conclusions:** More studies are required to validate this , experience in Poorly differentiated thyroid carcinoma and systemic therapy is scanty.

P1207: Trend in clinical presentation and management of thyroid cancer: Experience from a large referral center in the UAE

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Background: The incidence of Thyroid cancer (TC) has substantially increased over the last two decades with recent guidelines advocating for less aggressive treatment in most patients. **Aim:** To assess the clinical characteristics and treatment trend of patients with TC presenting to Tawam hospital (TWM). **Methods:** Methods Retrospective analysis of all patients with TC presenting between 2008 and 2018 to TWM. Cases were identified using ICD 9 and ICD 10 codes. **Results:** A total of 766 patients were included in the analysis. The mean age at the diagnosis was 39.6 (±12.6) and 45 (60%) were women. The vast majority of patients (92.2%) were diagnosed with Papillary thyroid cancer (PTC) and about one-third of the 555 patients with available data had tumor size of 2-2.9 cm at diagnosis. The vast majority(88.7%) had stage I TC at diagnosis while only 3.9% were stage IV. All of the patients in this cohort underwent surgery; the details of which were available for 758 patients and of those the majority (93.7%) underwent total thyroidectomy. RAI was administered to 564 patients. The number of patients with TC has substantially increased during study period from 25 cases in 2008 to 109 cases in 2018. Total thyroidectomy showed a gradual decline from 100% in 2008 to 90.1% in 2019. In contrast, the number of patients undergoing hemithyroidectomy has mildly increased. There was a substantial decline in use of RAI therapy among patients with TC (96% in 2008 vs 56% in 2018). **Conclusions:** There is a substantial increase in the number of thyroid cancer encountered in our center. The majority are stage I PTC and managed with total thyroidectomy with a clear decline in the use of RAI ablation.

P1208: Management of thyroid nodules: An evaluation of hospital practice and outcomes from a tertiary care centre

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Background: Ultrasound thyroid and Fine needle aspiration cytology (FNAC) are recommended as part of diagnostic steps in the workup of patients with thyroid nodular1. The aim of this study was to conduct an audit to reveal the relationship between the thyroid activity status, ultrasound thyroid finding and FNAC in the evaluation of thyroid malignancies in our practice. **Methods:** We conducted a retrospective analysis of all the patients who had FNAC of thyroid nodules in our hospital for over 2 years. Demographic data was collected including gender, age and nationality. Ultrasounds were assessed using BTA "U" classification of thyroid nodules2. The Bethesda system was used for reporting FNAC samples3. Analyses were made using Microsoft Excel and SPSS software. **Results:** FNA data was available for 193 patients (70% female). The mean age was 44 years. UAE nationals constituted 13.5% of the sample, other Arabs 45%, followed by 32.5% South Asians.143 patients were euthyroid, 21 hypothyroid and 29 hyperthyroid. Majority of the nodules were U3 (46%) followed by U2 (34%), U4 (17%), U5 (3%) and U1 (<1). FNA results were categorized by Bethesda staging, Stage 1 (14.5%), Stage 2(61%), Stage 3 (14%), Stage 4 (7%) and Stage 5 (3.5%). 10 patients underwent surgery (9 total thyroidectomies, 1 hemithyroidectomy). Histopathology confirmed malignancy in 6 patients (5 papillary, 1 medullary), whereas 4 had benign lesions. Of the 6 patients who had U5 nodules, FNA reported stage 5 for 1, Stage 4 for 1, Stage 2 for 3 and Stage 1 for 1 patient. Of the 7 patients with Bethesda 5, the nodule was U5 in 1, U4 in 2, U3 in 3 and U2 in1. **Conclusions:** We hereby present the results

of an audit on thyroid nodule evaluation and subsequent outcome from our hospital. We didn't find much agreement between the U classification and FNA in our patients. We acknowledge that our study may be limited by the retrospective nature of data collection and missed or lost data.

P1209: Fine needle aspiration cytology of thyroid and its diagnostic accuracy and correlation with post-surgical histopathology: Our experience from Oman

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Background: Fine needle aspiration cytology (FNAC) of thyroid has been introduced as a reliable and cost-effective method for diagnosing thyroid disorders. The aim of this study was to describe cytological features of FNAC outcomes and to assess the FNAC accuracy compared to the final histopathology report for Omani adult patient with thyroid nodules. **Methods:** We retrospectively reviewed the result of 1359 ultra-sound guided FNACs of thyroid nodule done at National Diabetes and Endocrine Center (NDEC) of Oman, from January 2014 till January 2017 using their computerized medical records. The results were classified according to Bethesda system. Final histopathogical reports of patients underwent surgery were also reviewed from the medical records. **Results:** The study included 867 patients, 87.8% were females. The mean age of the study population was 43.7±13.3, with median of 42. Out of 1359 FNACs, 1001 (73.7%) were reported as benign (thy2), 119 (8.8%) as Atypia of Undetermined Significance or Follicular Lesion of Undetermined Significance (thy3a), 31 (2.3%) as Follicular Neoplasm or Suspicious for a Follicular Neoplasm (thy3f), 52 (3.8%) as Suspicious for Malignancy (thy4), 55 (4%) as malignant (thy5), 101 (7.4%) as Unsatisfactory (thy1). Only 137 patients underwent thyroid surgery and their FNAC reports were compared with their final histopathology reports. The sensitivity, specificity and total accuracy were 80.2%, 98.9% and 89.9% respectively .The positive and negative predictive values were 98.6% and 84.3% respectively. **Conclusions:** Our findings suggest FNAC as a useful sensitive and highly specific tool for preoperative diagnosis of thyroid lesion in our population. Fine needle aspiration cytology of the thyroid is reliable, simple, and cost-effective diagnostic tool. Because of few false negative results, it is important that patient with benign FNAC should have close clinical and radiological follow up.

P1210: Sever unilateral exophthalmous as an early presentation of hashimoto's thyroiditis

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Background: Thyroid -associated orbitopathy constitutes an immune- mediated inflammation of the orbital tissue of unclear etiopathogenesis. Thyroid associated orbitopathy is most prevalent in hyperthyroid patients with Grave's disease; however, severe cases of orbitopathy associated with Hashimoto's thyroiditis have rarely been described. **Methods:** A 25- old female consulted an ophthalmologist with a chief complaint of diplopia and unilateral proptosis in the right eye developing for about four weeks. **Results:** We report an unusual case of young- aged women with toxic Hashimoto's thyroiditis who developed a sever unilateral thyroid associated orbitopathy. Thyroid- associated orbitopathy is a set of symptoms caused by an autoimmune process; it is a typical of Grave's disease and rarely accompanies Hashimoto's thyroiditis. In both Grave's and Hashimoto's diseases, antithyroglobulin and anti-peroxidase antibodies are detected. **Conclusions:** Our report presents a rare case of unilateral sever thyroid associated orbitopathy in the course of Hashimoto's thyroiditis in the absence of TR Ab ,unilateral exophthalmos in patients with Hashimoto's thyroiditis who are TR Ab – negative is not a typical manifestation of the disease and requires a wider differential diagnosis with MRI or CT scan of the orbits.

P1211: The Likelihood of malignancy in a single thyroid nodule of HIV-positive euthyroid patients

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Background: Human immunodeficiency viral (HIV) infection is associated with increased risk of malignancy. The likelihood of thyroid malignancy in euthyroid patients with a single thyroid nodule in our environment is about 15-20%, this will often require thyroid biopsy to exclude malignancy. There is an increased number of euthyroid but HIV-positive patients who presents to our facilities with a single thyroid nodule. It is difficult to take decision on whether or not a biopsy should be performed because of risk of contracting HIV infection. In addition, there are no guidelines or data on this subject. The aim of this study was to determine if HIV infection is associated with an increased risk of malignancy in patients who are HIV-positive and have a single thyroid nodule. The results of this study will determine whether a thyroid biopsy should be performed in these patients. **Methods:** We include all patients with a single thyroid nodule(based on thyroid ultrasound and thyroid scintigraphy) that are euthyroid and HIV-positive who were referred to our department between 2008-2016. An ultrasound guided Core thyroid biopsy was performed and tissue sample sent for histology. Results were analyzed based on the presence or absence of malignancy, type of malignancy and gender. Ethical clearance was obtained from our institutional review board. A total of 46 patients were included in this study, comprising of 32(70%) females and 14(30%) males. **Results:** Of the total number of patients, 14 (30%) patients had a histological evidence of thyroid malignancy as follicular 6 (43%), papillary 4 (29%), anaplastic 1 (7%), medullary 1 (7%) and lymphoma 2 (14%). **Conclusions:** This study showed that the likelihood of malignancy in a single thyroid nodule of euthyroid, HIV-positive patient is about 30% with follicular thyroid cancer been the most common. We recommend core thyroid biopsy in these patients. Further studies with a large patient population are required to validate this data.

P1212: Biotin induces thyroid function tests misleading results: Case series

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Background: Many thyroid bioassays depend on the streptavidin-biotin complex as immobilizing method to improve sensitivity to detect low analytes level. Biotin is used as hair remedy, and in

treatment of many metabolic diseases, and was proven for progressive multiple sclerosis treatment. **Methods:** We present four cases with false diagnoses of hyperthyroidism after administration of 20-30 mg biotin, with no signs and symptoms of hyperthyroidism. All assays returned to pretreatment level after biotin discontinuation within 24-48 hours. **Results:** Grave's disease was diagnosed in a 23-year-old female after routine checking after ingestion of prescribed biotin 20 mg/day for three months for hair fall. Case 2: A 19-year-old female with hair and nail problems associated with iron deficiency anemia. She had self-prescribed biotin dose of 20 mg a day for a month. She asked for endocrinologist opinion about a recent change in her thyroid bioassay, yet no signs of hyperthyroidism were found. Case 3: A 45-year-old man with subtotal thyroidectomy for compressive retrosternal goiter, his clinician had decreased his usual levothyroxine dose from 100 to 50 mcg/day, after which he felt unwell and gained four kilograms with signs and symptoms of hypothyroidism. His investigations were consistent with hyperthyroidism while his signs were of hypothyroidism. He administered 30 mg medically prescribed biotin for a recent mild psoriasis nail changes. Case 4: The authors volunteered to take 30 mg of biotin daily for one week. His initial investigations were normal but changed within this period to be Grave's disease-like, with no signs or symptoms to be felt. **Conclusions:** The ingestion of 20 mg or more biotin was associated with potentially clinically relevant thyroid assay interference in all the four cases. The biotin should be discontinued for at least 48-72 hours before thyroid assaying by any commonly used biotin-streptavidin immunoassay.