Free Communications of the Gulf Association of Endocrinology and Diabetes Annual Congress 2023, Muscat, Oman, October 19–21, 2023

Thamer Alessa[1] Wiam I. Hussein[2] Bachar Afandi[3,4] Ali Al Reesi[5] Naji Aljohani[6]

[1] Department of Endocrinology, Mubarak Al-Kabeer Hospital, Jabriya, Kuwait
[2] Department of Endocrinology, Royal Bahrain Hospital, Manama, Bahrain
[3] Department of Endocrinology, Tawam Hospital Al Ain, Abu Dhabi, United Arab Emirates
[4] Department of Medicine, College of Medicine and Health Sciences, UAEU, Al Ain, Abu Dhabi, United Arab Emirates
[5] Department of Medicine, Suhar Hospital, Suhar, Oman
[6] King Fahad Medical City, Riyadh, Saudi Arabia

Address for correspondence Thamer Alessa, MD, Department of Endocrinology, Mubarak Al-Kabeer Hospital, Jabriya, Kuwait (e-mail: thamermd@gmail.com).

J Diabetes Endocrine Practice 2023;6:155–197.

These are the abstracts of the Clinical Congress of the Gulf Association of Endocrinology and Diabetes (GAED) held on October 19–21, 2023.[1,2] The educational objective of the congress was to give a "state of the art in endocrine practice." The programs included plenary symposia, delivered by international and regional key opinion leaders. In addition, free communications on current research and clinical practice within and beyond the Gulf region were presented as oral presentations and posters.

We present here the abstracts of these free communications after minimal restyling and editing to suit the publication requirements of the journal. We hope that by publishing them in our open-access journal, we provide early recognition of the work and extend the benefit to those who could not make it to the live presentations similar to our previous conferences.[3–6] We also hope to stimulate networking between parties of mutual research interests.

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DOI https://doi.org/10.1055/s-0043-1777328.
ISSN 2772-7653.

Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

Oral Communications

OC1. Subacute Thyroiditis: Is There a Seasonal Pattern?

Hind Alshamsi[1], Mohammad Fahad[1], Asma Alneyadi[1], Jawaher Alshamsi[1], Fatima Alkaabi[1], Khaled M. Aldahmani[1]
[1]Department of Internal Medicine, Tawam Hospital, Alain, United Arab Emirates

Address for correspondence: kmdahmani@seha.ae

Background: Subacute thyroiditis (SAT) is an inflammatory thyroid disease usually triggered by viral infections, with main symptoms being neck pain and hyperthyroidism. Data in literature describing seasonal prevalence were scarce and inconsistent, with some supporting higher prevalence during summer, whereas other studies showed no seasonal pattern. Our main objective is to evaluate the presence of seasonal pattern.

Methods: A descriptive retrospective chart review study of all patients who underwent thyroid uptake scan in the Tawam Hospital from January 2011 to December 2020. Diagnosis of SAT was established by biochemical evidence of hyperthyroidism and low uptake on thyroid scan. Demographics, clinical presentation, seasonal distribution, and management of patients with SAT were studied. Data were analyzed using Excel software.

Result: Out of 943 patients, 120 were diagnosed with SAT the majority of whom were women ($n = 88$). The age of the patients ranged between 10– and 89 years. The diagnosis was most frequent in the age group 20– to 39 years ($n = 75$, 62.5%). The most common symptoms at presentation were palpitation ($n = 58$, 48.3%), weight loss ($n = 24$, 20%), heat intolerance ($n = 23$, 19.1%), sweating ($n = 19$, 15.8%), tremor ($n = 19$, 15.8%), and neck pain ($n = 12$, 10%). For the whole cohort, the distribution of SAT diagnosis was as follows: 44 cases in summer (June–September), 37 cases in winter (December–March), 20 cases in transitional months (October–November), and 19 cases in transitional months (April–May). With regard to management, 57 patients required treatment with the following medications: B-blocker (28), NSAID (5), carbimazole (3), steroids (3), B-blocker/NSAID/steroids (2), B-blocker/steroid (5), B-blocker and carbimazole (3), B-blocker and NSAID (5), NSAID and steroids (3). Fifty-three patients did not receive any treatment, while the management for 9 patients was unknown. The duration of follow-up ranged from 2 weeks to 12 years. About 19.1% of patients developed classic triphasic phase (hyperthyroidism, hypothyroidism, euthyroidism). None of our patients developed permanent hypothyroidism requiring thyroxine (two patients had subclinical hypothyroidism). Recurrence of SAT was observed in 5% of patients.

Conclusion: Our preliminary analysis did not show any specific seasonal distribution for SAT in Al Ain city. Of interest, non-developed permanent hypothyroidism, while 5% had recurrent transient hyperthyroidism.

OC2. The Prevalence, Risk Factors, and Predictors of Diabetic Retinopathy in Patients

Lulwa Al Mazrou[1], Imad Brema[1], Saad Al-Zahrani[1], Abdulrahman Shabear[1]
[1]King Fahad Medical City, Riyadh, Saudi Arabia

Address for correspondence: luuluu.91@hotmail.com

Background: Diabetic retinopathy (DR) is a serious microvascular complication and is associated with significant morbidity and impairment of quality of life in people with diabetes; however, studies about its prevalence in Saudi Arabia has been quite variable.

Methods: We conducted a retrospective study to define the prevalence and risk factors of diabetic retinopathy in 1,399 subjects with both type 2 (T2DM) and type 1 diabetes (T1DM) attending the diabetes clinics at King Fahad Medical City in the period between January 2022 and December 2022. Data are presented as mean ± SD.

Result: The sample included 566 (40.5%) subjects with T1DM and 833 (59.5%) subjects with T2DM. Subjects with T1DM had mean HbA1c of 8.8 ± 3.0% and mean diabetes duration of 11 ± years, while subjects with T2DM had mean HbA1c of 7.8 ± 3.0% and mean diabetes duration of 11 years and mean time in range (TIR) of 42.7 ± 18% ($N = 354$ subjects). For T2DM subjects, mean HbA1c was 7.8 ± 1.5, mean diabetes duration was 14.1 ± 8.8, and mean TIR was 52.7 ± 25 ($N = 139$). The prevalence of DR in the study population was 20.0% (280/1,399). The distribution of DR stages was as follows: 13.9% mild non-proliferative diabetic retinopathy (NPDR), 3.4% moderate NPDR, 0.7% severe NPDR, and 2.0% proliferative DR. T1DM subjects with DR were older and had longer diabetes duration, while subjects with T2DM who had DR were older, had higher diabetes duration, higher systolic BP, higher HbA1c, higher albumin/creatinine ratio, and lower estimated GFR. Female gender was independently associated with DR in both groups. Binary logistic regression showed that diabetes duration and gender were independently associated with DR in T2DM subjects, while, diabetes duration, gender, TIR, and glucose variability were independently associated with DR in T1DM subjects.

Conclusion: In a large sample of patients with diabetes from Saudi, DR was prevalent in 20% of the study population, the majority of whom had mild to moderate NPDR. Efficient screening and targeting modifiable risk factors are important measures in the prevention and avoidance of progression of DR to severe forms.

OC3. Real-World Use of Tirzepatide in the Treatment of Type 2 Diabetes in Emiratis

Mohamed Suliman[1], Adam Buckley[1], Matthew Allum[1], Nagi Mohammed[1], Nader Lessan[1], Sara Suliman[1]
[1]Imperial College London Diabetes Centre, Al Ain, Arab Emirates

Address for correspondence: msuliman@icldc.ae

Background: Tirzepatide is a new, dual glucose-dependent insulinotropic polypeptide and glucagon like peptide-1 (GIP/GLP-1) receptor agonist that was shown in several randomized controlled trials to be highly effective in reducing HbA1c and weight in patients with type 2 diabetes.

Methods: We aimed to assess the real-world use of tirzepatide in an Emirati population with type 2 diabetes followed up at the Imperial College London Diabetes Centre (ICLDC) in Abu Dhabi, UAE.

Result: Tirzepatide became available for prescription to ICLDC patients from October 24, 2022. From this date up to June 6, 2023, a total of 6,524 patients were prescribed the drug, 6,357 had available baseline data for analysis, and 1,375 completed 6 months on therapy. Mean (±SD) age was 53.4 ± 11.9 years, 59% were females, baseline BMI was 34.6 ± 6.2 kg/m^2, HbA1c was 7.5 ± 1.6%, and 4,549 (71%) were switched from other GLP-1 RAs and 441 (7%) had previous bariatric surgery.

After 6 months of treatment with tirzepatide, mean reduction in HbA1c was −−0.7 ± 1.1% from 7.2 to 6.5% ($p < 0.0001$); mean change in weight was −−4.6 ± 5.9 kg (−−5.0%) from 92.6 to 88.0 kg ($p < 0.0001$). GLP-1 RA-naive patients had more reduction in HbA1c (−−1.3 ± 1.3% vs. −0.6 ± 1.1%, $p = 0.0002$) and weight (−−7.7 ± 7.1 vs. −−3.9 ± 5.7 kg, $p < 0.0001$) than those switched from other

GLP-1 RAs. Post-bariatric surgery patients had similar HbA1c reductions ($--0.7 \pm 0.7\%$ vs. $--0.7 \pm 1.2\%$, $p = 0.68$) but larger weight reductions ($--7.8 \pm 8.6$ vs. $--4.3 \pm 5.5$ kg, $p < 0.0001$) than non-bariatric surgery patients, after 6 months of treatment. There were also improvements in systolic blood pressure and lipid profile. The drug was well-tolerated with only 2.5% of patients discontinuing the drug as a result of adverse effects, most commonly gastrointestinal symptoms, specifically nausea, vomiting, and diarrhea.

Conclusion: Real-world use of tirzepatide in patients with type 2 diabetes confirmed that it is effective in reducing HbA1c and weight, regardless of previous GLP-1 RA use or history of bariatric surgery and was well-tolerated.

OC4. Epidemiology of Acromegaly, Its Cardiovascular Correlates in Qatar: A Prima Facie Analysis

Tarik Elhadd[1], Elabbass Abdelmahmuod[1], Zeinab Dabbous[1], George Ponirakis[1], Rayaz A. Malik[1], Zaina Rohani[1], Abeer Abdu Rab[1]

[1]Endocrine Pituitary Clinics, Hamad General Hospital, Hamad Medical Corporation, Research Division, Weill Cornell Medicine in Qatar, Qatar Foundation, Education City, Doha, Qatar

Address for correspondence: tarikelhadd58@gmail.com

Background: The epidemiology of acromegaly in Qatar is not known. Here, we present the clinical and demographic features and management of the first ever series of patients with acromegaly from Hamad Medical Corporation (HMC) in Qatar.

Methods: This is a retrospective observational study of data from the electronic medical record at Hamad Medical Corporation in Qatar.

Result: A total of 57 acromegaly cases, of whom 35 (63.6%) were males with a mean age of 45.9 ± 11.2 years, were identified. Most had macroadenomas ($n = 38$, 73.1%), while six (10.5%) had microadenomas. A total of 46 cases (82.2%) underwent surgery: 27 (55.1%) locally at HMC and 22 (44.9%) outside Qatar, of which only 7 had a histological report. Only six patients (10.5%) received irradiation. There were 12 (21.8%) Qataris, 10 (18.2%) non-Qatari Arabs, 14 (25.5%) South Asians, 14 (25.5%) Africans, and the remainder were of other nationalities. Those who underwent surgery had significantly elevated IGF-1 levels compared to those who did not have surgery, although not all of the last group had available IGF-1 levels. Of the cohort, 29 (53.7%) still have active disease, 17 (31.5%) have non-active disease, and disease activity is not known in 8 (14.8%). Of the whole cohort, 46% are hypertensive, 56% have diabetes mellitus, and 27% suffer from dyslipidemia; 84% are obese (BMI > 30 kg/m^2), 16.4% have electrocardiographic evidence of cardiac hypertrophy, and 4.3% have colonic disorders. There was no association between cardiovascular comorbidities and levels of IGF-1, GH, TFTs, gonadal steroids, and

ACTH. Paradoxically, there was an association between low IGF-1 levels and cardiac hypertrophy.

Conclusion: In summary, this is one of the largest series of patients with acromegaly from the Gulf region and shows a high prevalence of cardiovascular risk factors in patients with acromegaly. Further detailed analysis of this cohort, along with longitudinal follow-up, will provide important insights into the management of acromegaly in the region.

OC5. Effects of Vitamin D Replacement in Vitamin D Deficient Subjects with Subclinical Hypothyroidism

Naji Aljohani[1], Majd Kallash[1], Omar Alhuzaim[1], Ahmed Alghamdi[1], Shawan Zaher[1], Imad Brema[1]

[1]King Fahad Medical City, Riyadh, Saudi Arabia

Address for correspondence: Njaljohani@kfmc.med.sa

Background: Vitamin D status has been implicated to influence several non-skeletal diseases including diabetes, cardiovascular diseases, and auto-immunity. Several observations have also associated vitamin D deficiency with thyroid disorders, but prospective data are lacking. In this randomized clinical trial, we aimed to determine whether vitamin D correction improves subclinical hypothyroid status of Arab adult patients.

Subjects and Methods: A total of 84 subjects with subclinical hypothyroidism were recruited and allocated (1:1) to receive either vitamin D 50,000 IU weekly in first 4 months (cases) or placebo (vitamin D 5000 IU weekly). Thyroid function and thyroid autoantibodies were repeated after 3 and 6 months with vitamin D level to see sufficient vitamin D replacement status.

Results:: Post-intervention, 31 cases and 37 controls completed the intervention. Cases had a significant increase in 25(OH)D levels after 3 and 6 months of intervention. In both cases and controls, there was a significant decrease in TSH over time ($p < 0.05$), with no significant changes in both circulating FT4 and FT3 levels. A significant decrease in TPO ab and anti-TG ab levels after 6 months ($p < 0.05$) were observed only in cases.

Conclusion: Vitamin D correction modestly improves thyroid status of Arab patients with known subclinical hypothyroidism. Further investigations are needed as to whether vitamin D supplementation is more beneficial among subclinical hypothyroid patients who were deficient at baseline.

Poster Presentations

P1. Bone Marker Changes in Saudi Women with and without Gestational Diabetes Mellitus

Nasser M. Al-Daghri[1], any other authors??
[1]King Saud University, Riyadh, Saudi Arabia

Address for correspondence: aldaghri2011@gmail.com

Background: We conducted a follow-up study to observe changes in biochemical markers related to bone including alkaline phosphatase, calcium, phosphorous, albumin, and vitamin D.

Methods: This study involved the participation of 102 Saudi women, aged 18 to –46 years, who were in their 24- to 28-week of pregnancy. These women visited different hospitals in Riyadh. Baseline serum vitamin 25(OH) D levels, along with various biochemical parameters, were measured. Gestational diabetes mellitus (GDM) screening was done based on the criteria established by the International Association of Diabetes and Pregnancy Study Groups (IADPSG).

Result: The mean age of participants was 28.1 ± 5.4 with mean BMI of 27.1 ± 6.1. A total of 38 women were diagnosed with GDM. No significant differences were observed in age and BMI among GDM and non-GDM participants. In non-GDM participants, 25(OH)D increased significantly from 1st trimester to 2nd trimester (32.8 ± 2.4 nmol/L vs. 43.6 ± 2.8 nmol/L, $p < 0.001$); however, no significant change was observed in 3rd trimester. In GDM participants, no significant changes were observed in 25(OH) D level across three trimesters. In non-GDM participants, calcium levels decreased significantly from 1st trimester to 2nd trimester (2.14 ± 0.02 mmol/L vs. 2.07 ± 0.02 mmol/L; $p = 0.007$). Furthermore, albumin concentration also decreased significantly from 1st to 2nd trimester (34.3 ± 0.5 g/L vs. 32.9 ± 0.4 g/L; $p = 0.029$]. In GDM participants, no significant changes were observed in calcium level overtime. However, albumin concentration decreased significantly from 1st trimester to 2nd trimester (36.0 ± 0.7 g/L vs. 32.7 ± 0.7 g/L; $p = 0.003$), but no significant change was observed in 3rd trimester. Phosphorous level in GDM participants declined significantly from 1st trimester to 3rd trimester (1.3 ± 0.2 mmol/L vs. 0.9 ± 0.2 mmol/L; $p = 0.026$). Lastly, alkaline phosphatase level increased insignificantly from 1st trimester to 3rd trimester in non-GDM (8.2 ± 0.6 vs. 11.9 ± 2.2 Î¼ g/L; $p = 0.283$) and GDM (8.5 ± 1.6 vs. 9.9 ± 0.6 Î¼ g/L; $p = 1.00$) participants.

Conclusion: In summary, the presence of GDM alters bone markers overtime. Whether these changes affect fetal outcomes and skeletal health post-pregnancy remains to be investigated.

P2. Prevalence of Depression among Diabetic Patients Attending the Armed Forces Hospital

Malak Abdul Aziz Khiro[1], Moneer Mohammed Alamri[1], Ali Abdullah S. Alshahrani[1], Yasser Abdullah Mushabab Alyahya[1], Shahad Hassan Yahya Jabali[1]
[1]King Abduallah Medical City - Makkah, Armed Forces Hospital Southern Region, King Khalid University, King Khalid University, Makkah, Saudi Arabia

Address for correspondence: khiro.malak.a@gmail.com

Background: Depression associated with diabetes is one of the major obstacles in diabetic patient management, In Saudi Arabia, the prevalence of depression and anxiety disorders in 2017 was nearly 4.5 and 4.3%, respectively (World Health Organization, 2017). In Saudi Arabia, the prevalence of diabetes in adults is 18.3% and total cases of diabetes in adults are 4,275,200 as reported by the International Diabetes Federation.

Methods: A cross-sectional analytical study was conducted at the King Fahd Armed Forces Hospital (KFAFH), Southern Region, Kingdom of Saudi Arabia (KSA), among adult diabetic patients attending the diabetic center. Interview-validated questionnaire was utilized to collect data. It consists of three main parts: demographic data, diabetic assessment tool, and depression assessment tool (Patient Health Questionnaire [PHQ-9]).

Result: A total of 386 Saudi diabetic patients were included in the study. Their age ranged between 17 and 95 years with an arithmetic mean of 53.4 years and standard deviation of (±18.2) years. Almost two-thirds (62.2%) were males. The prevalence of depression among diabetic patients was 48.2%; mostly of mild (31.4%) or moderate severity (12.7%). Multivariate logistic regression analysis revealed that female diabetic patients were at almost double-folds risk of developing depression compared to males (adjusted odds ratio [AOR] = 2.73, 95% confidence interval [CI]: 1.70–4.38), $p < 0.001$. Also, type 2 diabetic patients were at almost double-folds risk of developing depression compared to type 1 diabetic patients (AOR = 2.07, 95% CI: 1.16-3.67), $p = 0.013$. Patients with history of any social issue with your family, relative, or friends were at about three-folds risk of developing depression compared to those without such history (AOR = 3.45, 95% CI: 2.11–5.66), $p < 0.001$. Patients who reported compliance to diet were at higher risk for developing depression compared to their peers (AOR = 2.57, 95% CI: 1.25–5.28), $p = 0.010$, while those compliant to physical activity about 150 min/week or more were at significant lower risk to develop depression (AOR = 0.56, 95% CI: 0.35–0.89), $p = 0.015$. Patients with nephropathy or neuropathy were more likely to have depression compared to their counterparts (AOR = 2.52. 95% CI: 1.33–4.80, $p = 0.005$ and AOR = 1.80, 95% CI: 1.11–2.90, $p = 0.016$), respectively.

Conclusion: Depression is a very prevalent problem affecting diabetic patients, particularly those of type 2, female patients, and those with nephropathy or neuropathy. Therefore, regular screening of diabetic patients for depression and referral of severe cases to psychiatric care is highly warranted.

P3. Place of Arterial Hypertension in the Metabolic Syndrome in Subjects with Type 1 Diabetes

Mohamed Mesli[1], Ghembaza Chemseddine[1]
[1]Public Establishment of Health and Proximity Tlemcen Sub-Sector Sidi Chaker, Tlemcen, Algeria

Address for correspondence: toobibmed@gmail.com

Background: The phenotypic characteristics and cardiovascular profile of type 1 diabetic patients increasingly resemble those of type 2 diabetic patients, including clinical and biological features of the metabolic syndrome. The objective of this work was to study the relationship between metabolic syndrome and blood pressure in type 1 diabetic patients.

Methods: This is a cross-sectional study of 150 patients with type 1 diabetes. The study population was divided into two groups according to the presence or absence of a metabolic syndrome as defined by the International Diabetes Federation in 2005.

Result: The mean age of the patients was 31.25 ± 10.3 years with a sex ratio (M/F) of 0.85. Metabolic syndrome was present in 30.7% of our patients, of whom 34.7% had severe

metabolic syndrome. Among the factors defining the metabolic syndrome, hypertension was in second place (47.8%). Mean systolic blood pressure was significantly higher in patients with metabolic syndrome ($p = 0.014$), while mean diastolic blood pressure was comparable for both groups. The severity of the metabolic syndrome was correlated with systolic blood pressure but not with diastolic blood pressure. Half of the patients with metabolic syndrome were hypertensive, and hypertension correlated with metabolic syndrome ($p = 0.001$). Hypertension was significantly more common in patients with severe metabolic syndrome ($p < 0.001$).

Conclusion: Our results reveal a high prevalence of metabolic syndrome in type 1 diabetic patients, often considered normo-weighted, and a positive correlation with hypertension. This highlights the interest of systematically searching for metabolic syndrome in these patients.

P4. The Effect of Liraglutide on Postprandial Hypoglycemia in Non-Bariatric Surgery

Jamillah Atallah Alatawi[1], Wesam Aljalal[1], Wael M. Almistehi[1]
[1]*Department of Adult Endocrinology, Obesity, Endocrine and Metabolism Center, King Fahad Medical City, Riyadh, Saudi Arabia*

Address for correspondence: japnea91@gmail.com

Background: Postprandial hypoglycemia is not an uncommon symptom with various causes and pathophysiology, including exaggerated insulin response related to rapid glucose absorption like in patients with dumping syndrome post-bariatric, impaired glucagon sensitivity, insulin resistant-related hyperinsulinemia, alcohol, and idiopathic. It affects the patient's quality of life, causing autonomic and neuroglycopenic symptoms. In extreme cases, it might be fatal as well. To our knowledge, there are no published studies on using Liraglutide in patients with postprandial hypoglycemia without a history of bariatric surgery.

Methods: This case series involved six patients who share a similar presentation to the endocrine clinic in the Obesity, Endocrine and Metabolism Center in King Fahad Medical City-Riyadh, Saudi Arabia. All patients with adrenergic symptoms and hypoglycemia documented less than 65 mg/dL, mainly post-meal, within 3– to 4 hours. We prescribed Liraglutide and other medical treatment regimens to improve their symptoms and follow them up for up to 2 years.

Result: There are six patients, five females and one male, aged between 22 and 55 years. They presented with adrenergic symptoms such as sweating, dizziness, hunger, shivering, and blurring of vision with documented hypoglycemia less than 65 mg/dL that improved with meal. Of the six patients, four had symptoms triggered by eating, one reported symptoms mainly after stress, and the last had no specific trigger factor. Two patients were started on acarbose and diazoxide at doses of 50 mg twice daily and 100 mg three times daily, respectively, with persistent adrenergic symptoms; those two patients started on liraglutide 0.6 mg with titration up for a dose of 3 mg daily. Both had significant improvement in symptoms with decreased frequency and severity of hypoglycemia during the 2-year follow-up. Another two patients had persistent symptoms while treated only with acarbose 50 mg thrice daily. The first patient started on liraglutide 0.6 mg daily and titrated to a dose of 1.8 mg daily for 2 years with no improvement of symptoms, but the patient was not compliant with the medication. The other patient reached 3 mg daily with partial improvement of symptoms at 2 years of follow-up. The last two patients started immediately on liraglutide. The first one takes 1.8 mg daily and has significantly improved his symptoms since starting the medication until 8 months of follow-up (up to date). The last case received 3 mg daily and showed improvement of his hypoglycemia up to 2 years of follow-up.

Conclusion: Liraglutide might be a good option for treating postprandial hypoglycemic patients with good clinical outcomes. However, more publications are needed to evaluate the efficacy and long-term follow-up in treating this group of patients.

P5. Is MODY in the UAE Underdiagnosed?

Mahdi Habib Alabboudi[1], Salah Abusnana[2,3], Bashair Mussa[2,3]
[1]*Family Medicine Dubai Academic and Health Corporation, Dubai, United Arab Emirates*
[2]*Diabetes and Endocrine Center, University of Sharjah, Sharjah, United Arab Emirates*
[3]*Clinical Science Department, University of Sharjah, Sharjah, United Arab Emirates*

Address for correspondence: mahdi.alabboudi@gmail.com

Background: Maturity onset diabetes of the young (MODY) features include childhood hyperglycemia, pancreatic bet cell loss in the absence of autoimmunity, and insulin resistance. The only way to diagnose MODY is through genetic testing and screening of those patients who have a high probability of having it. Internationally, there has been an increased effort into improved screening policies and guidelines to diagnose MODY.

Methods: This study aims to find out if MODY is being tested for in the UAE or not among patients who fit the criteria for testing, and whether we might be missing many cases of MODY. The study sample consisted of electronic medical records of diabetic patients who attended endocrine clinics and PHCs in both University Hospital of Sharjah and Dubai Academic and Health Corporation; inclusion criteria were diabetics, age between 15– and 35, and non-obese. Obese patients and those diagnosed with diabetes as a secondary disease were excluded from the study.

Result: Out of 651 cases, 56 were selected, females were 58.93%. 64.29% had their BMI in the range between 25– and 29.9. 3 had already been previously diagnosed with MODY; 53 were diagnosed as type 2 diabetes. Only 9 were tested for MODY including the 3 that were diagnosed with it. Apart from the previously diagnosed MODY cases, an additional 6 were previously screened, none of whom had been diagnosed MODY, the remaining 47 cases were not screened for MODY and had been diagnosed as type 2 and treated as so, with oral hypoglycemics, insulin, or both. In total, only 16.07% were tested for MODY while the remaining 83.93% were not.

Conclusion: Screening for MODY is very low, 16% of young diabetic patients who fit the criteria for MODY had been screened for it. This may lead to a less than appropriate management and treatment for them and may also lead to missing out on early detection and management of extra pancreatic complications. To better understand the exact impact of MODY in the population and it's prevalence, a second phase study is proposed to do a genetic test and screen for MODY for the remaining 47 cases, and find out whether any of them are actually MODY or type 2 diabetes.

P6. Overlap of Prolactin Levels among Patients with Different Causes of Hyperprolactinemia

Abeer Abdalrubb[1], Noora Al Thani[1], Zainab Dabbous[1], Zaina Rohani[1], Mohammed Bashir[1]
[1]*Department of Medicine, Endocrine Department, Qatar Metabolic Institute, Hamad Medical Corporation, Doha, Qatar*

Address for correspondence: a3alhag@gmail.com

Background: There is no clear threshold to differentiate between various causes of hyperprolactinemia based on a single prolactin measurement. We aimed to explore the threshold that identifies prolactinoma among patients with hyperprolactinemia referred to a tertiary clinic.

Methods: We collected data on 178 consecutive patients. Prolactin levels were re-measured in all patients. We used the ROC curve to define the diagnostic threshold for prolactinoma.

Result: The mean age (SD) of the patients was 29.7 (8.3) years, the mean BMI (SD) was 29.1 (7.0) kg/m^2, and 166 (93.2%) were females. As shown in Table 1, 5% (25/178) of the cohort had a prolactinoma. A cutoff level of 1,315 mIU/L had an 80% sensitivity and 82% specificity with a ROC of 0.81—indicating good accuracy. However, despite the good accuracy, only 42.5% of patients with prolactin levels >1,315 mIU/L had prolactinoma. Figure 1 is a BOX-plot curve of the initial prolactin levels showing the poor discriminatory value of a single prolactin measurement.

Conclusion: A single prolactin level has a limited ability to discriminate between various etiologies of hyperprolactinemia.

P7. Early Detection and Diagnosis of Diabetic Foot Ischemia in Hemodialysis Unit

Mahmoud Amer[1], Ahmed Atris Mahmoud Amer[1], Saghir Ahmed[1], Hana Masoud Al-Nahdi[1], Ashwaq Abdullah Al Dhakri[1], Said Al Mazrui[1]

[1]*The Department of Renal Medicine, Directorate General of Health Services, Muscat, Oman*

Address for correspondence: ahmedatris97@gmail.com

Background: Diabetic foot lesions remain a major cause of morbidity in patients with renal failure, especially those on dialysis. Ankle brachial index (ABI) may inaccurately assess lower extremity perfusion in patients with highly calcified, no compressible tibial arteries. Focused arterial duplex ultrasound (DUS) of the distal anterior and posterior tibial arteries at the ankle can be readily learnt by novices (nurse/physician) and performed rapidly and accurately for early diagnosis and referral. *Objectives*: The primary aim of this study is to determine the diagnostic accuracy of the DUS and ABI tests in detecting peripheral arterial disease (PAD) in diabetic patients on hemodialysis (HD) to improve early detection and diagnosis.

Methods: We conducted cross-section single-center experience –on 115 diabetic patients from 212 total patients on regular HD in the 2nd biggest dialysis center in Oman for six months (from February 1, 2023, to end of July 2023) and we will use ankle brachial index (ABI) and arterial duplex ultrasound (DUS) in early detection and early diagnosis of diabetic foot ischemia. We collected the data in three sheets: 1−—demographic data: age, gender, comorbidity, duration of DM, smoking, and vascular access of hemodialysis. 2—laboratory data: random blood sugar, HGB, PTH, phosphorus, lipid profile, and serum albumin. 3—physical foot examinations and image.

Result: The study was investigated about 115 diabetic patients who were undergoing regular hemodialysis from 212 total numbers of our hemodialysis unit. Only 52 patients had weak pulse which we will focus in our study; two of them expired before complete examination so excluded from the study. Mean age of patients was 59.6 ± 11.9 years, extremes (35–83 y), 50% equal male to female. All the target patients in the study (50 patients) are type 2 DM with duration >10 years. 8% had foot ulcer and 16% had partial or complete foot amputation. Referral to vascular consultation (due to DUS – PSV < 40) as suspected ischemia 27/50 = 54%, while ABI detects only 20% as suspected ischemia. Suspected cases of vascular insufficient to total diabetic patients in the unit 27/115 = 23.4%.

Conclusion: Physical examination and ankle brachial index (ABI) are disturbed by the presence of calcified and incompressible blood vessels. Point-of-care arterial duplex ultrasound (DUS) may provide an alternative solution to diagnosis of diabetic foot ischemia in HD patients. The results of this study will improve the diagnosis of PAD in diabetes and inform early referral pathways between HD units and vascular and intervention radiology in tertiary hospital.

P8. Incidence of Second Primary Malignancies Following Thyroid Cancer Treatment

Ali Alhabsi[1], Alhabsi Alfutaisi[1]

[1]*Department of Medicine, Sultan Qaboos University, Muscat, Oman*

Address for correspondence: alialhabsi.aa1@gmail.com

Background: The standard treatment for differentiated thyroid cancer (DTC) involves radioactive iodine (RAI). However, previous studies have suggested that RAI treatment may increase the risk of second primary malignancies (SPM). Despite the high incidence of thyroid cancer in Oman, to our knowledge, there are no published reports on the association between RAI treatment and the risk of SPM in Oman.

Methods: There is a lot of debate about the possibility of developing SPM in DTC patients after treatment with RAI. This research aimed to evaluate the incidence and estimate the risk of SPM in thyroid cancer patients treated with RAI. A retrospective cohort study was conducted at Sultan Qaboos University Hospital (SQUH) for 500 DTC patients who received RAI treatment between January 2007 and December 2017. We collected patients' information, including gender, age at diagnosis, thyroid cancer subtypes, site of SPM, cumulative RAI doses, and follow-up period. Descriptive statistics and logistic regression were used to analyze the data. SPM was defined as a new malignancy diagnosed at least 1 year after the first RAI dose.

Result: The mean follow-up period was 9.5 ± 3 years (range 5.1–15.8). During this period, four patients (0.8%) developed SPMs, all with the papillary subtype. The sites of the SPMs were the colon, bladder, breast, and liver. We found age at diagnosis to be a significant predictor of the occurrence of SPMs ($p = 0.02$).

Conclusion: The incidence of SPMs in patients with thyroid cancer treated with RAI is low, and age at diagnosis was found to be the only significant predictor of SPM occurrence. Further studies with larger sample sizes and extended follow-up periods are recommended to confirm these findings.

P9. Validity of the IDF-DAR Risk Stratification Score for Ramadan Fasting

Eman Alfadhli[1], Taif Alharbi[1], Asya Aljohani[1], Amal Qari[1], Bashaer Alsubhi[1], Abrar Alrotoie[1], Aram Alsaedi[1], Aram, Alaa Aljohani[1]

[1]*Taibha University, Saudi Arabia*

Address for correspondence: alfadhli2005@yahoo.com

Background: We aimed to assess the validity of the new International Diabetes Federation–Diabetes and Ramadan International Alliance (IDF-DAR) risk stratification tool for Ramadan fasting in predicting diabetic patients' ability to fast safely.

Methods: This is a prospective observational study conducted at Diabetes Center, Medina, Saudi Arabia, during Ramadan of 2022. The IDF-DAR risk stratification tool was used to calculate fasting risk for diabetic patients prior to Ramadan. The patients were divided into three categories based on their risk level: high, moderate, and low. Fasting was left up to the patients' choice and advice from their healthcare providers. Every day during Ramadan, participants were instructed to fill out a log sheet to show whether they completed the fast and why they broke it. Following Ramadan, participants were interviewed again to assess their fasting experience.

Result: A total of 466 patients with diabetes were included, 79.4% with T2DM and 20.6% with T1DM. A total of 265 (56.9%) patients were categorized as having high risk, 115 (24.7%) were moderate risk, and 86 (18.4%) were low risk based on the IDF-DAR score. There was a statistically significant association between the IDF-DAR risk stratification score and non-fasting the whole month of Ramadan. The prevalence of hypoglycemia was greater among individuals at high IDF-DAR risk than among those at moderate or low risk. Furthermore, those at high risk had more episodes of hyperglycemia than those at moderate risk or low risk. Nonetheless, 53.2% of patients at high risk and 70.4% of those at moderate risk fasted the entire month of Ramadan.

Conclusion: The new IDF-DAR scoring system has been found to be reliable and valid for predicting the risk of adverse events associated with fasting in diabetes patients. Nonetheless, it might overestimate the risk of fasting for some patients.

P10. Characteristics of Congenital Generalized Lipodystrophy in the MENA Region

Saif Al Yaarubi[1], Afaf Alsagheir[1], Majid Alfadhel[1], Azza Al Shidhani[1], Somaya Alzelaye[1], Nadia Alghazir[2], Imad Brema[3], Hussain Alsaffar[4], Oman, Mohammed Al Dubayee[5]
[1]*Al Qounfudhah General Hospital, Al Qunfudhah, Saudi Arabia*
[2]*Faculty of Medicine, University of Tripoli, Libya*
[3]*King Fahad Medical City, Riyadh, Saudi Arabia*
[4]*Oman Medical Specialty Board, Muscat, Oman*
[5]*King Saud Bin Abdulaziz University for Health Sciences (KSAU-HS), Riyadh, Saudi Arabia*

Address for correspondence: alyaarubica@gmail.com

Background: Congenital generalized lipodystrophy (CGL) is a rare, heterogeneous inherited disease characterized by a near-total absence of adipose tissue and is associated with leptin deficiency, organ system abnormalities, and severe metabolic complications. The objective of this analysis was to describe the disease characteristics of a cohort of leptin replacement-naive patients with CGL from the Middle East and North Africa (MENA) and Arab Society of Pediatric Endocrinology and Diabetes (ASPED) countries.

Methods: CGL was diagnosed clinically by treating physicians and was supported by genetic analysis, physical assessment, fat loss patterns, family history, and the presence of consanguinity. Statistical analysis was performed using available data and included the proportion of patients with physical and organ system characteristics associated with CGL. Metabolic parameters (fasting triglycerides [TG], glycated hemoglobin [HbA1c], alanine aminotransferase [ALT], and aspartate aminotransferase [AST] levels) were measured using standardized methods and are reported as mean (median) values.

Result: In total, data from 46 patients, comprising 45 patients with CGL and one patient with partial lipodystrophy (POLD1 genetic variant), were collected from centers located in eight countries. Analysis of the CGL cohort (37 females, 8 males) showed that the mean (median) age at diagnosis was 5.1 (1.0) years. Pathogenic genetic variants were detected in AGPAT2 ($n = 14$, 31%), BSCL2 ($n = 19$, 42%), CAVIN1/PTRF ($n = 10$, 22%), and LMNA ($n = 1$, 2%); a genetic diagnosis was unavailable for one patient (2%). 30/45 patients (67%) had a family history of lipodystrophy, and consanguinity was present in 41/45 (91%) patients. Collectively, skin, facial features, and limbs were affected in 38/44 (86%) patients, while 26/41 (63%) and 21/41 (51%) patients presented with acromegaloid features and acanthosis nigricans, respectively. At least one organ abnormality was recorded in 37/45 patients (82%); the most frequently affected organs were the liver and/or spleen ($n = 29/45$, 64%), the heart ($n = 17/43$, 40%), and the kidneys ($n = 7/43$, 16%). 13/30 (43%) patients were hyperglycemic (HbA1c $> 6.5\%$) and 24/35 (69%) had hypertriglyceridemia (TG > 1.69 mmol/L). The respective mean (median) levels for ALT and AST were 64.5 (45.5) U/L and 52.7 (44.2) U/L.

Conclusion: The results from this first comprehensive analysis of CGL in the MENA and ASPED region suggest that family history and high consanguinity allows the identification of young patients through family screening. Our findings reflect the early onset of severe metabolic disease in patients with CGL not receiving lipodystrophy-specific therapies.

P11. Diabetic Kidney Disease: Why Some Has It and Some Not?

Muhammad Muneer[1], Atya Rehman[1], Rasheed Ali[1]
[1]*Al-Salama International Medical Center, Burjeel Polyclinic, Al-Salama Polyclinic, Seeb, Oman*

Address for correspondence: genome2006@yahoo.ca

Background: Diabetic kidney disease (DKD) is a microvascular complication of long-standing poorly controlled diabetes and associated co–morbidities. It affects almost 40% patients with diabetes but other 60% are spared. The reason why it affects some and not others are still unclear, but many theories have been evolved. DKD has a multifactorial etiology and a heterogenous disorder.

Methods: We performed a review of the literature with Medline, Google Scholar, and Cochrane Library databases search for English language and human study articles registered from January 2020 to August 2023 by key words "diabetic nephropathy, diabetes kidney disease, biomarker, early diagnosis, "genetics of diabetic kidney disease." We found 78 articles and after exclusion we selected 12 articles to include in our review.

Result: We found many biomarkers, genetic links, and epigenetic factors responsible for DKD.

Conclusion: DKD can be delayed or even prevented in many cases if early diagnosis, appropriate dietary and medication, and regular monitoring can be done.

P12. A Very Rare Case of Galactocele in a Patient with Macroprolactinoma

Tarik Elhadd[1], Elabbass Abdelmahmuod[1], Haider Bustanji[1]
[1]*Department of Medicine, Endocrine Section, Hamad Medical Corporation, Police Polyclinic, Doha, Qatar*

Address for correspondence: tarikelhadd58@gmail.com

Case report: A 34-year-old man with type 2 diabetes mellitus (DM) presented with intermittent erectile dysfunction, dry ejaculation, and inability to achieve an erection despite sexual arousal. In addition, the patient reported an increase in the size of his breasts. On examination, bilateral stage V gynecomastia and marked galactorrhea were noted. Laboratory tests revealed hyperprolactinemia, and an MRI of the pituitary gland confirmed the presence of a pituitary macroadenoma (size of 2 cm). The patient was treated with cabergoline, which resulted in improvement of erectile dysfunction. Nevertheless, he discontinued the treatment for a while. At follow-up, he complained of a significant swelling in the right breast, which was 4 cm in size and firm in consistency and was initially diagnosed as breast cancer based on ultrasound findings.

Methods: The mass was successfully suctioned under ultrasound guidance, and milk fluid was obtained.

Conclusion: This case highlights the importance of considering hyperprolactinemia as an underlying cause of erectile dysfunction and gynecomastia in male patients, especially those with type 2 diabetes mellitus. Furthermore, the development of a galactocele should be recognized as a potential complication of hyperprolactinemia. Early diagnosis and appropriate management, such as cabergoline treatment, can lead to an improvement in symptoms and a successful resolution of related complications.

P13. Amelioration of Hyperthyroidism Unmask Hypersexuality Coexisting with FSHOMA

Tarik Elhadd[1], Elabbass Abdelmahmuod[1], A. Wajid Safi[1]
[1]*Department of Medicine, Endocrine Section, Hamad Medical Corporation, Doha, Qatar*

Address for correspondence: tarikelhadd58@gmail.com

Case Report: A 42-year-old Syrian male presented with palpitation and was diagnosed with hyperthyroidism in November 2021, likely of autoimmune nature as he had positive TRAb and anti-TPO. He had completed vaccination against COVID-19 in September of the same year. He did not achieve remission with carbimazole, and compliance remains poor. He was seen in the endocrine clinic with erectile dysfunction and loss of libido and was found to have very high level of gonadotrophins of 14 and 16 iu/L for LH and FSH, respectively, with a level of testosterone of 45 nmol/L (NRR: 10–30), confirmed on repeat testing. MRI pituitary showed a macroadenoma. He was referred to the pituitary clinic, where the integrity of the remaining pituitary function was confirmed. He was counseled regarding definitive therapy with radioactive iodine therapy which was offered as per poor compliance with carbimazole and persistent hyperthyroidism and erectile dysfunction. Treatment was given in May 2023, and by August 2023, his erectile dysfunction flipped to extreme hypersexuality, and excess libido that generated havoc in his marital life. By then he had achieved euthyroidism. Patient denied any aphrodisiac medicine intake and requested help with problem. He was referred to the neurosurgeon for pituitary surgery.

Conclusion: We report an intriguing case of excess sexual drive and desire in a male patient with a functioning gonadotroph adenoma that came to the fore when concomitant hyperthyroidism was treated effectively. In the absence of previous observations, the direct association in this case is only plausible.

P14. Pituitary Apoplexy as Presentation of Atypical Teratoid/Rhabdoid Tumor

Haneen Yasef Alkubedan[1], Saleha Ibrahim Babli[1], Mashair Mamoun Elhassan[1], Nujoud Mohammed Omar Ali[1]
[1]*Endocrine and Diabetes Department-Prince Sultan Military Medical City, Saudi Arabia*

Address for correspondence: drsb10@hotmail.com

Background: Although pituitary apoplexy usually occurs in a pituitary adenoma, it may also occur in other less common types of tumors. The atypical teratoid/rhabdoid tumor (ATRT) is a very aggressive malignant tumor of the central nervous system usually occurring in children under 3 years of age and has a poor prognosis despite chemotherapy and/or radiotherapy. It rarely occurs in adult and in the sellar region.

Case: Description: A 32-year-old medically free male presented to emergency room with 4 day-history of fever and headache, as well as 1-day history of vomiting and photophobia. In the ER. the patient was conscious but confused. His vital signs showed temperature of 39°C, BP of 120/80, HR of 110 beats per minute, and saturation of 95% in room air. Possibility of meningoencephalitis was raised and the patient was sent for brain CT (was suboptimal due to patient movement) which showed sellar and suprasellar mass with compression over the optic chiasma and invasion to the left cavernous sinus, with no CT finding of subarachnoid hemorrhage. The neuroradiologist asks to send the patient for another brain CT after sedation for better characterization of sellar mass. Patient suddenly developed generalize tonic–clonic convulsion, and become hypotensive. He received IV midazolam, and intubated then started on noradrenaline as well as hydrocortisone and was admitted to ICU as a case of meningoencephalitis and started on ceftriaxone, vancomycin, and acyclovir. Cerebrospinal fluid analysis showed RBC count of 175/cumm, WBC of 20/cumm Fr with 20% polymorph and 80% mononuclear cells, protein level of 1.38 g/L (0.24–0.49), glucose level of 7.9 mmol/L with plasma glucose of 10 mmol/L. Six hours later, patient examination showed bilateral papilledema; so, he was sent for brain CT which demonstrated again the sellar and suprasellar mass with compression over the optic chiasma and invasion to the left cavernous sinus and with minimal heterogenicity and increased density which is suggestive of hemorrhagic components. So both endocrine and neurosurgical teams were consulted. Endocrine history was taken from patient's father which was positive for weight gain with no history to suggest acromegaly, Cushing's syndrome, or hypogonadism with negative family history of pituitary tumours or hypercalcemia. *Examinations*: patient was intubated and sedated; BP was 90/60 on maximum inotropic support. There were signs of left oculomotor nerve palsy, bilateral papilledema, and he was having acanthosis nigricans with no signs of acromegaly, CS, or hypogonadism. *Laboratory investigations*: WBC: 17 with neutrophilia, Hgb: 14.7 g/dL, platelet: 360, Na: 140 mmol/L, creatinine: 180 mmol/L, FT4: 6.2, TSH: 0.015, prolactin: 22, serum IGF1: 29 ng/mL (41–246), free testosterone index: 2.13 (33–106), LH: 0.5, FSH: 0.3. Patient was evaluated by neurosurgeon but his condition was unstable for any intervention. Two weeks later, patient's condition stabilized and he was off inotropic support but still on mechanical ventilations and was taken for TTS and histopathology showed SMARCB1-deficient malignant neoplasm, consistent with sellar atypical teratoid rhabdoid tumor. Post TTS, patient developed DI. Patient has complicated course post-OP, he developed ventilator-associated pneumonia, recurrent attacks of seizures in spite of multiple antiepileptic medications. Patient was evaluated by oncologist as well as by

radiation oncologist, but due to patient's general condition the treatment was postponed. One month after TSS, while still in ICU he developed intractable seizure. New brain CT showed interventricular hemorrhage including third and lateral ventricles with hydrocephalus as well as marked enlargement of hyperdense pituitary lesion which suggests hemorrhage within the existing lesions. External ventricular drain was inserted but patient died.

Conclusion: In the literature review performed in adults, only nine cases have occurred in the sellar or suprasellar region. Survival is variable in the different cases reported in the literature, with a mean of 26 months (range, 2 weeks/17 years).

P15. Interesting Case of Pure Gonadal Dysgenesis 46 XX

Abdullah Albin Saad[1], Hussain Adel Alwesaibi[1], Malak Al-Khalifa[1], Abdullah Albin Saad[1], Hussain Adel Alwesaibi[1]
[1]Dammam Medical Complex, Internal Medicine Department, Diabetes and Endocrine Center, Dammam Medical Complex, Saudi Arabia

Address for correspondence: Dr.malkhalifa1@gmail.com

Background: Gonadal dysgenesis is an uncommon cause of primary amenorrhea (< 1:100,000) (1). A rare form of it is a 46,XX pure gonadal dysgenesis. Herein we report a case of new-onset hyperthyroidism with further evaluation diagnosed as pure gonadal dysgenesis 46,XX.

Case presentation: A 15-year-old female presented initially with hyperthyroidism symptoms but did not get her menstrual cycle and did not develop secondary sexual characteristics and breast enlargement. On physical examination, no features suggestive of Turner syndrome such as high arched palate, webbed neck, shield chest, wide spaced nipple, or skeletal deformity. Her height was 153 cm, her mother's height was 164 cm, and her father's height was 164 cm, MPH 153 cm. Further physical examination revealed palpable diffuse goiter, breast development was tanner stage I, pubic hair tanner stage II, and unambiguous female external genitalia. The hormonal profile and auto–immune profile showed pictures of primary hyperthyroidism and hypergonadotrophic hypogonadism (estradiol: 18.37 [pmol/L], progesterone 0.20 [nmol/L], LH 27.22 [IU/L], FSH 82.33 [IU/L]. Thyroid peroxidase autoantibodies and anti-thyroglobulin both were negative. Imaging studies revealed thyroid; ultrasound (US) showed heterogenous hypervascular thyroid gland parenchyma. Also, pelvis US showed rudimentary uterus/vaginal vault with no normal differentiation into body and cervix, no detectable ovarian tissue and normal appearance of the urinary bladder; no pelvic fluid. US features are suggestive of Mayer-Rokitansky-Kuster-Hauser syndrome for MRI of the pelvis as per report. MRI of the pelvis was done and showed that the uterus measured around 30 × 7.8 × 24.7 mm. The vaginal walls can be visualized. There is difficulty to identify the ovaries on the provided images. The rest of the organs were grossly unremarkable. Genetic study revealed karyotype 46,XX. Interphase FISH (fluorescent on situ hybridization) was also performed to look for deletion/loss or gain of these regions or chromosomes. A total of 200 interphase nuclei were examined; 100% of examined cells showed XX signals.

Clinical Course: Patients were diagnosed initially as new onset hyperthyroidism and started on carbimazole and beta-blocker to achieve euthyroid state. During follow-up based on previous listed hormonal, imaging, and chromosomal studies in our clinic, we diagnosed our patient as pure gonadal dysgenesis 46,XX; family explained about her condition and discussed about hormonal treatment and referral to gynecology clinic as part of multidisciplinary team. She was started on estradiol therapy titrated gradually on monthly basis. Three months after starting estradiol therapy, physical examination revealed her height become 157 cm; breast tanner stage III, pubic hair tanner stage III, and started to have two episodes of brownish vaginal discharge for the last 2 months. Repeated pelvis US 3 months from initiating medical management showed that the uterus is anteverted, with smooth outline. It measured 6.7 × 3.1 cm in its maximum anteroposterior and transverse dimensions, respectively. Endometrial thickness is 5 mm. No obvious sonographic evidence of focal lesions. The right ovary can't be visualized. The left ovarian volume is 3.2 mL with no obvious abnormality.

Conclusion: To conclude, we highlight in our case the importance of early diagnosis and intervention in patient with gonadal dysgenesis to avoid negative impact on bone mineral density and at same time importance of careful evaluation to differentiate between different types of gonadal dysgenesis and other causes such as MRKH. Also, to look for other associated condition with gonadal dysgenesis.

P16. Double Unilateral Adrenal Adenomas in a Case of Primary Hyperaldosteronism

Maab Faisal Elmubarak Elhaj[1], Stephen F. Beer[1], Tarik Elhadd[1]
[1]Hamad Medical Corporation, Doha, Qatar

Address for correspondence: telhadd@hamad.qa

Background: Two-thirds of all cases of primary aldosteronism is caused by bilateral idiopathic hyperplasia, and only one-third is caused by an adenoma that produces aldosterone. CT scan of the adrenal is typically used to evaluate the adrenal glands. If surgery is considered, the most accurate method for distinguishing between unilateral and bilateral adrenal aldosterone production is through adrenal vein sampling.

Case Report: A 52-year-old woman was diagnosed with possible essential hypertension since 2016. She had a rather resistant course requiring three medications to control her BP. She had tests for secondary hypertension by the internist who saw her initially in 2016, but no tests for hyperaldosteronism were done. She was seen early in 2023 for palpitation by cardiology team, who felt her BP control is not yet optimal. Thiazide diuretic, indapamide, was added to her other antihypertensive agents, which resulted in significant drop in potassium levels. That dropped the penny for revisiting the issue of secondary HTN.

Result: Workup showed no evidence of pheochromocytoma or hypercortisolism, but indicated an aldosterone level of 283 pmol/L, renin of 0.26 ng/mL/hour, and a ratio of 39. A CT scan of the abdomen revealed two left adrenal lesions, measuring 14 and 15 mm in maximum diameter, which were consistent with adrenal adenomas. She was started on spironolactone in solo, and other antihypertensives were stopped. That resulted in significant improvement of her BP control. The patient went to Mayo Clinic for expert second opinion. She was assessed there and had an adrenal venous sampling which confirmed that the source of high aldosterone is coming from both adrenals. Decision was made there only to continue medical therapy with spironolactone 50 mg/day.

Conclusion: This is a very rare case of multiple unilateral adrenal adenomas concomitant with adrenal hyperplasia in a case of primary hyperaldosteronism. Only a handful number of cases have been reported in literature so far. A subset of patients with bilateral adrenal hyperplasia may

have propensity to develop nodules. The true nature of the multiple adrenal adenomas in such context may cause diagnostic difficulty. Here, adrenal venous sampling comes to the fore as the gold standard means to resolve such conundrum.

P17. Prevalence and Risk Factors of Diabetic Kidney Disease among Patients with T2DM

Hana Mohamed Hamad[1]
[1]Muharraq Health Centre, Supreme Council of Health, Manama, Bahrain

Address for correspondence: dr.hana517@gmail.com

Background: Diabetic kidney disease (DKD) is one of the microvascular complications of diabetes that has been increasing globally mirroring the epidemic of type 2 diabetes. *Objectives*: To estimate the prevalence, characteristics, and to assess the risk factors associated with the development of DKD among patients with type 2 diabetes attending the National Centre for Diabetes, Endocrinology, and Genetics (NCDEG).

Methods: A cross-sectional study was conducted at NCDEG in Amman, Jordan. A total of 980 patients with T2DM were included in this study during the period between January and June 2022. Data collected from patient's electronic health records (EHR) included demographic variables, anthropometric measurements, DM duration, presence of micro-macrovascular complications, presence of other comorbidities such as hypertension and dyslipidemia, as well as the type of oral antidiabetic drugs/antihypertensive and lipid lowering medications. Additionally, laboratory measurements included serum creatinine, calculated estimated glomerular filtration rate (eGFR) using CKD-EPI formula, and urinary albumin creatinine ratio (ACR). DKD was defined as low eGFR and/or high ACR. Other laboratory data were collected as hemoglobin A1c, and fasting lipid profile. The Statistical Package of Social Sciences (SPSS, version 21) was used to perform the statistical analysis, descriptive analyses, and multivariable regression analyses.

Result: Out of 980 patients, 470 (48%) had DKD with a mean age of 60.5 ± 10 years. Male gender ($p < 0.008$), systolic blood pressure (SBP) ‰¥140 mm Hg ($p = 0.002$), longer duration of diabetes ‰¥15 years ($p = 0.01$), high triglyceride level ‰¥150 mg/dL ($p = 0.02$), and the presence of retinopathy ($p = 0.02$) were significantly associated with DKD. Moreover, DKD was associated with increased use of diuretics and combined treatment of oral antidiabetic drugs and insulin ($p = 0.005$ and $p = 0.03$), respectively.

Conclusion: Almost half of patients with T2DM had DKD. High prevalence of DKD should prompt enhanced public interventional and preventive strategies such as implementing early screening programs through the establishment of a national DKD surveillance system and improvement in the management of risk factors such as diabetes, hypertension, and dyslipidemia in order to reduce the risk of development and progression of DKD. Further studies are needed to evaluate this high prevalence of DKD and its associated underlying risk factors.

P18. Thyroid Disorders in Saudi Patients with Acromegaly: A Tertiary-Care Center Experience

Moayad Abdullah Alsuraikh[1], Moayad Abdullah Al Suraikh[1], Musa Husain Almalki[1], Tuqa Bazuhair[1], Maram Alkhaldi[1]
[1]Department of Endocrinology, Diabetes and Metabolism, King Fahad Medical City, Riyadh, Saudi Arabia

Address for correspondence: malsuraikh@gmail.com

Background: Thyroid nodules and goiter are prevalent in the general population, with an age-related frequency of 30–50% in subjects over 50 years old, according to ultrasound studies. Thyroid enlargement is a common sign of acromegaly and has been the focus of numerous studies; yet its cause is not fully understood. The effect of thyroid-stimulating hormone (TSH) on goiter in acromegaly patients is complex. Several studies show an inverse correlation between thyroid volume and TSH concentration.

Methods: Patient selection: A retrospective case study and clinical review of all patients presenting with acromegaly at Obesity, Endocrine and Metabolism Center (OMEC) at King Fahad Medical City (KFMC), Riyadh, will be included. The study was approved by a research ethics committee of the KFMC research center. *Data collection procedure and tool*: The data will be extracted from the KFMC database's electronic medical record (EPIC) records. The data will be collected in a spreadsheet and will include patients who were diagnosed with acromegaly based on evidence of typical clinical features of GH hypersecretion, GH concentrations greater than 1.0 ng/mL during a glucose suppression test, and serum IGF-1 levels higher than the normal age and sex-matched range. Subjects' demographic, clinical, biochemical (serum TSH, total thyroxine levels, and autoimmune markers), and radiographic data will be collected, as well as thyroid ultrasound.

Result: This study included a cohort of 40 acromegalic patients (27 men and 13 women). The mean age was 46.78 ± 13.76 years. The estimated duration of disease was 8.08 ± 6.43 years. The diagnosis of acromegaly was established by observing the distinct clinical manifestations of excessive growth hormone secretion, along with elevated levels of serum IGF-1 and serum GH level greater than 1 ng/mL. In cases where serum IGF-1 levels were equivocal, a glucose suppression test (OGTT: 75-g oral glucose load) was conducted to further assess serum GH concentrations. In the entire cohort, the collective prevalence of diagnosed thyroid disease was found to be 77.5% ($n = 31$). Acromegaly is caused in all patients by an adenoma that produces growth hormone. On 37 (92.5% of patients), hypophysectomies were performed. Eleven (27.5%) of the patients received radiotherapy. Thirty-one (77.5%) of our patients received monthly octreotide (Sandostatin [LAR] either alone in 21 patients or in combination with pegvisomant [GH antagonist] in 9 patients). Twenty-seven of 39 (69.2%) had cured or controlled disease, while the remainder 12 (30.8%) had active disease. Out of the total, 16 patients (51.6%) exhibited primary hypothyroidism, while the remaining individuals had euthyroidism with normal thyroid function tests. Nine out of the 34 acromegalic patients (26.5%) showed elevated titers of thyroid antibodies (TPO). Among patients with positive autoimmunity, 55.6% were women, mean age 52.8 years, and 44.4% were men, mean age 53.2 years. Four out of the 16 patients (25%) with primary hypothyroidism accompanied by the presence of positive thyroid autoimmunity. It was observed that 11(27.5%) patients had diffuse goiter based on through palpation. Thyroid ultrasounds were conducted on a total of 37 (92.5%) patients. Among these individuals, 28 (75.6%) had abnormalities in thyroid morphology including those with abnormal thyroid on examination. Twenty patients (71.4%) were diagnosed with multinodular goiter, five patients (17.8%) were diagnosed with solitary thyroid nodule goiter, and four patients (14.3%) were diagnosed with thyroid cyst. Four patients (14.3%) with aberrant thyroid morphology on thyroid ultrasounds had positive autoimmunity; five patients (17.6%) with normal thyroid ultrasounds also had elevated thyroid antibodies. Considering the patients with abnormal thyroid morphology, thyroid volume was weakly correlated with age ($r = 0.42$, $p = 0.01$). There was no correlation

between thyroid volume and sex, acromegaly duration, and IGF-1 level.

Six of the 28 patients underwent a fine-needle aspiration biopsy, while the remaining 22 were not meeting the criteria for FNAB. The Bethesda classification system revealed five benign lesions (Bethesda II) and one follicular lesion with unknown significance (Bethesda III). Patients with follicular lesions of unknown significance refused to undergo additional testing.

Conclusion: Our study is the first study implemented in Saudi population which investigated the effect of acromegaly on thyroid disorders. We found multinodular goiter to be the dominant finding in thyroid ultrasonography, high prevalence of thyroid autoimmunity, and hypothyroidism. We did not establish any correlation between thyroid morphology and IGF-1, duration of the disease, or whether the disease is active or inactive. There is an association between age and development of thyroid nodules among these patients population. Therefore, our study indicated that early diagnosis and regular follow-up of thyroid ultrasound and functions are necessary in acromegaly patients even after surgery and radiotherapy to detect any thyroid abnormalities and to establish an approached treatment plan early in the course of the disease.

P19. Epidemiology of Aldosterone, Renin Serum Levels, and Role of CKD

Wessam Osman, Hayam Al Dohani, Al Shaima Al Hinai, Suad Hannawi, Faissal A. M. Shaheen, Issa Al Salmi
[1]*Department of Internal Medicine, The Royal Hospital, Oman, Muscat*
[2]*Department of Medicine, Ministry of Health and Prevention, Dubai, United Arab Emirates*

Address for correspondence: wes843@gmail.com

Background: As an integral component of metabolic syndrome, hypertension is increasing in prevalence throughout the world with variable percentages, but alarmingly more among developing nations. Aldosterone plays a significant role in the development of nephropathy. The aim of this paper is to evaluate the relationship between aldosterone renin ratio (ARR) and chronic kidney disease (CKD).

Methods: Variables drawn from the computerized hospital information database were all patients who had an aldosterone–renin ratio over 35 (if aldosterone reading was over 300 pmol/L), and CKD with eGFR <60 between 2006 and 2018.

Result: A total of 1,584 patients were included, of which 777 were males and 807 were females, with a mean (SD) of 43.3 (16.5) years. The mean ARR was 210.1 (SD: 246.4) and was 214.3 and 210.1 in male and female, respectively, $p = 0.51$. The eGFR mean was 50.2 (SD: 12.6) and was 49.99 (0.90) and 50.48 (0.92) in male and female, $p = 0.70$. In processing our primary outcome of investigating the relationship between ARR and CKD, our logistic regression models revealed a negative relationship between ARR and GFR with a coefficient of −–2.08, 95% confidence interval: −– 4.6, 0.21, P ¼ 0.07. Odds increase for ARR and CKD with a coefficient of 1.12, 95% confidence interval: 0.39–1.85, $p = 0.003$.

Conclusion: CKD population with hypertension tends to have inherently high ARR, with the advanced CKD harboring the highest figures. In view of the high prevalence of noncommunicable diseases in the CKD population, there is an important need to consider comprehensive management strategies that involve the blockage of high ARR and the use of mineral-corticosteroid receptor blockers.

P20. Adrenalectomies: Clinical Findings, Laboratory, and Histological Findings

Wessam Osman, Riaz Ahmed, Issa Al Salmi, Suad Hannawi
[1]*Department of Internal Medicine, Department of Endocrine Surgery, Department of Renal Medicine, The Royal Hospital, Muscat, Oman*
[2]*Department of Medicine, MOHAP, Dubai, United Arab Emirates*

Address for correspondence: wes843@gmail.com

Background: An increasing number of patients are considered for surgical removal of adrenal tumors, including pheochromocytomas (PCC). This study evaluated the presentation and surgical outcomes of individuals with adrenal tumors including PCC.

Methods: Data, including histological, radiological, and biochemical, were collected prospectively of all patients operated for adrenal tumors, via the computerized hospital information database, between 2006 and 2018. Statistical analysis was performed by STATA program, using the Student test or Kruskal–Wallis test being used for continuous variables. Chi-squared or Fisher's tests were used to compare categorized variables.

Result: In this study, there were 112 patients, of which 54 were males and 58 females: mean of 32 years, the minimum age of 23 days, and a maximum of 78 years. Hormonally active tumors accounted for 58.51% and inactive hormone was accounted for 41.49%. The mean values (SD) of the tumor dimensions were 6.00 (3.82), 5.31 (3.16), and 5.91 (2.93) mm for length, height, and width, respectively. The mean (SD) for the duration of surgery for males was 183 (98.8) and that for females was 188 (101.06) min, with a hospital stay of 9.9 (6.86) days for males and 7.11 (6.16) days for females. The most common etiology was neuroblastoma (29.5%), followed by adrenocortical adenoma (16.1%), and 7.1% were PCC.

Conclusion: Our population may have a slower recovery and more complications after resection of adrenal tumors including PCC. However, most complications may be minor, surgery was equally feasible, and may not result in mortality in this vulnerable group of patients. Meticulous preparation for surgery is crucial among our population and particular attention should be focused on maintaining balance between the adrenal disease and comorbidities.

P21. Clinical and Laboratory Findings of Patients with Diabetes Undergoing Kidney Biopsy

Ehab Mohammed[1], Ahmed Atris[1], Issa Al Salmi[1], Lubna Al-Menawi[1], Faisal Shaheen[1], Suad Hannawi[1]
[1]*The Royal Hospital, KSA, MOHAP, United Arab Emirates*

Address for correspondence: isa.al.salmi@gmail.com

Background: We described demographic –clinical – and –laboratory findings of DM –patients who underwent native –kidney –biopsy from 2010 to 20120.

Methods: The Royal Hospital has an internationally recognized electronic medical record system called AL SIFFA that uses the International Classification of Diseases. It is the only center where all cases undergo kidney biopsies from all hospitals and regions of the Ministry of Health in Oman. The pathology department at SQUH is the only center in the country to interpret and analyze all the histological specimens, in addition to the Royal Hospital. Data were described as frequencies and percentages for categorical variables. Continuous variables were reported as median and ranges or as mean and standard deviations. Age data are presented as mean and standard deviation (SD or 95% CI).

Result: Of the 51 patients, 54.9% were male and 45.1% were female. The mean age was 50.8(47.1–55.2) years, 86% were between 25 and 64 years old. Edema was the main clinical presentation––70.6% with clinical urine changes in 84.3%. Clinical diabetic retinopathy was present in 62.2% in ophthalmological examination of 44 patients. Majority –(67.5%) –of patients were in advanced CKD—Stages III, IV, and V. About one-quarter underwent hemodialysis at the time of admission. Majority –(76.9%)– were obese and hypertensive –(78.4%). Low hemoglobin –(51%), high triglyceride –(35.7%), high total cholesterol –(56.8%), low serum albumin –(78.4%), nephrotic range proteinuria –(75.6%), and microscopic hematuria –(77.1%)– were the main laboratory findings. IgA was the most common findings –(35.7%)– of serological investigations. A 24.4% had positive ANA, 20.8% had positive Anti-Ds DNA, and 23.3% had positive ENA, meanwhile P-ANCA was positive in 30% and C-ANCA was positive in 9.7%.

Conclusion: This study reported findings for more than 10 years for the whole country. It showed that small percentage of patients with DM undergo kidney –biopsy. These patients have many clinical –and –laboratory abnormalities including specific –immunological investigations. Progression of DM –nephropathy seems to be further increased by many co–existing risk factors of dyslipidemia and/or obesity. The prevalence of non-DKD is remarkably frequent in diabetics in whom nephrologists should consider kidney –biopsy as an appropriate measure to enable better management.

P22. Diabetes VESTS—Oman

Omer Hussein[1]
[1]*Ministry of Health, Muscat, Oman*

Address for correspondence: omar.elsharief@gmail.com

Background: Diabetes Virtual Education, Self-Management Training, and Support Integrating Cognitive Behavioral Therapy for Newly Diagnosed Type 2 Diabetes in Oman (Diabetes VESTS): A Study Protocol. Diabetes self-management education and support services provide people with type 2 diabetes the skills to effectively manage their condition, ultimately leading to favorable outcomes. It helps decision-making and problem-solving beyond what diabetes care providers offer during regular consultations. However, the continuum of psychological problems in diabetes that are sometimes not sufficiently addressed can negatively impact outcomes. Addressing those problems through cognitive behavioral therapy might be the key to improving and sustaining positive outcomes. This paper describes a protocol of a randomized control trial for a virtually delivered structured diabetes self-management education, training, and support service that integrates cognitive behavioral therapy. The components of the intervention will be delivered over 16 weeks.

Methods: The protocol is for a randomized, two-armed, parallel-group, superiority trial that will randomize 172 newly diagnosed type 2 diabetes patients to standard care or intervention arms. Participants in the intervention arm will be exposed to diabetes virtual education, self-management training, and support combined with cognitive behavioral therapy in addition to standard care. Enrollment will take place in four governorates in Oman. Data collection will take place at baseline (Time 0), post-intervention at 4 months (Time 1), 12 months (Time 2), 24 months (Time 3), and at 36 months (Time 4). The primary outcome is glycemic control measured through glycated hemoglobin (HbA1c%). Secondary outcomes measure changes in body weight, blood pressure, physical activity, diabetes self-care practices, illness coherence, depression, diabetes distress, and diabetes-related quality of life. Study results might provide insights into the role of cognitive-behavioral therapy in sustaining positive outcomes from diabetes self-management services.

Conclusion: This is a study protocol.

P23. Nondiabetic Kidney Disease in Type 2 Diabetes Mellitus

Ehab Mohammed[1], Issa Al Salmi[1], Dawood Al Riyami[1], Saif Khan[1], Marwa Al Riyami[1], Fatma Al Rahbi[1,2], Suad Hannawi[1,3]
[1]*The Royal Hospital, SQUH, St, Seeb, Oman*
[2]*MOH, Muscat, Oman*
[3]*MOHAP, United Arab Emirates*

Address for correspondence: isa.al.salmi@gmail.com

Background: Worldwide, diabetic nephropathy –(DN) is the leading cause of end-stage kidney disease –(ESKD), DN is a common cause of renal failure with a reported frequency of 10– to 15% in type –2 –diabetes –mellitus –(T2DM) patients; however, there is a great discrepancy between countries. The aim of the present study is to evaluate the findings of kidney biopsies performed on diabetic patients.

Methods: After obtaining approval from the medical ethics and research committee at both SQUH and the Royal Hospital (RH), located in Muscat, Oman, we included patients with type –2 DM who were submitted to a kidney biopsy for clinical suspicion of NDKD from January 2016 to December 2018. Patients had real-time ultrasound-guided biopsy by nephrologist at Royal Hospital. The RH-SQUH has an internationally recognized electronic medical record system called Al Shifaa that uses International Classification of Diseases which has a well internationally settled medical recording system called Al Shifaa. All kidney biopsies were seen by the pathologist at SQUH, Pathology Department, for the final report and diagnosis.

Result: A total of 82 DM patients, 50 males (61%) and 32 females (39%) with an age mean (95% CI) of 50.8 (47.1–55.2) years for all patients, ranged between 15 and 65 years. Histological findings showed that 57.3% of patients had DN. While focal –segmental –glomerulosclerosis –FSGS was present in 20.7%—primary in 8.6% and secondary in 12.1%. IgA represents 4.9%, while lupus nephritis, membranous, and drug-induced interstitial nephritis were each present in 3.7%. MCD was present in 2.4%. Lastly, diffuse proliferative GN, ANCA-associated glomerulonephritis, and hypertensive nephrosclerosis accounted for 1.2%.

Conclusion: The prevalence of NDKD is remarkably frequent in DM patients who underwent kidney biopsy and FSGS was the most frequent diagnosis. To get a proper histopathological diagnosis, an adequate tissue biopsy is needed with an adequate number of glomeruli. There is a great need for more consideration to biopsy diabetic patients, as the finding of NDKD requires a different therapeutic approach. This, hopefully, will help manage these patients better and, therefore, ameliorate the progression to ESKD over time and therefore delay the need for RRT.

P24. Oman-NODAT: New-Onset Diabetes Mellitus after Transplantations in Oman

Sara Al Rasbi[1], Issa Al Salmi[1], Ehab Mohammed[1]
[1]*OMSB, The Royal Hospital, Muscat, Oman*

Address for correspondence: isa.al.salmi@gmail.com

Background: Post–transplant diabetes mellitus (PTDM) is a common and serious metabolic complication

after a kidney transplant that contributes to death, major cardiovascular events, graft failure, and increased medical costs. This study aims to explore the epidemiology of glucose control among patients and examines the demography, clinical data, and investigatory tests for glucose control among transplant patients.

Methods: This is an observational study of all non-diabetic patients who underwent kidney transplants and followed –up at the Royal Hospital, a tertiary-care hospital in Muscat, Oman (2010–2020). All clinical, laboratory, and radiological data were collected from patients' electronic medical record system (Al Shifa) that uses the international classification of diseases. Patients who had DM before the kidney transplant were excluded. Proportions were compared using the chi-squared test and an independent *t*-test. Multivariant analysis was performed. All statistical tests were performed at a significance level of $p = 0.050$.

Result: During the study period, there were a total of 204 patients, 57.4% were male with a median age of 44.7 years (range: 15–82). The most common cause of chronic kidney disease was glomerulonephritis (38.2%). New-Onset-DM after Transplantation (NODAT) developed in 69 (33.8%) patients with a mean of diagnosis at 43.0 months from transplantation. Body mass index (BMI), family history of DM, age at transplantation, renal replacement therapy prior to transplant, and donor type were statistically significant risk factors for NODAT. In the multivariate analysis, older age (odd ratio [OR] = 1.046, confidence interval [CI]: 1.024–1.070), gender (OR = 1.797, CI: 0.999–2.231), and BMI (OR = 1.079, CI: 1.025–1.136) were significant risk factors for the development of NODAT. Death was observed in six patients; four patients were in the NODAT group. While graft rejection occurred in 18 patients and 6 of them were in the NODAT group. NODAT was treated differently and most of them were managed by oral hypoglycemic agents and insulin.

Conclusion: In the present study, NODAT is predicted by age, gender, and BMI. Almost one-third of the patients developed NODAT within 43 months from the time of kidney transplantation. Hence, an early (pre–transplant period) and onward healthy lifestyle modification including exercise, diet, and weight reduction may decrease the risk of development of NODAT.

P25. Effectiveness of Text Messages in Improving Glycemic Control among Patients with Diabetes

Aysha Sarwani[1], Husain Taha[1], Amani A.l. Arayedh[1], Fatema Mandeel[1], Zainab Abdulraheem[1], Amal Ghareeb[1], Fatema Al-Aradi[2], Zohour Rashwan[3]

[1]*SMC, Manama, Kingdom of Bahrain*

[2]*Advanced Practional Practitioner Nurse (ANP), Clinical Nurse Specialist, RN, ICU, Kingdom of Bahrain*

[3]*Nursing Department, College of Health and& Sport Sciences, University of Bahrain, Zallaq, Bahrain*

Address for correspondence: ayshasif@hotmail.com

Background: Text messages are an innovative way to provide increased support to patients with diabetes. It is a means of engaging with the medical services in an easy and approachable manner and can be a way to decrease waiting time and increase patient–physician engagement. In this study, we evaluated patients with type 1 and type 2 diabetes on insulin therapy over a 6-month period, provided text messaging service, and assessed for improved glycemic control, patient satisfaction with the service provided, and a decline in hypoglycemic episodes.

Methods: This retrospective experimental study recruited 101 patients, aged 14 years and older, diagnosed with diabetes, and receiving treatment at selective clinics in Salmaniya Medical Complex (SMC) from July 1, 2022, until December 5, 2022. The Wilcoxon signed rank test and marginal homogeneity test were used to evaluate the effectiveness of text messages in improving glycemic control.

Result: 49.5% of the patients had hypertension, and 53.5% had hypercholesterolemia. Nearly equal percentages of the patients had either type I or type II DM (49.5 and 51.5%, respectively). 58.4% of them are receiving both insulin and oral diabetic medications. Regarding diabetes complications, 17.8% had retinopathy, followed by renal complications and peripheral neuropathy. 40.6% of the patients had hypoglycemic episodes in the last 6 months. 84.2% of the patients attended the text message-based intervention program (TMBI) for 1 to 2 years. The majority of the patients reported that the program enabled them to control their sugar levels (86.1%), reduce the frequency of visiting emergency departments and diabetes clinics (50.5%), and save time and effort (93.1%). In addition, we demonstrated a significant reduction in HbA1c levels from 73,451,817 to 62,221,598 mmol/mol.

Conclusion: The findings indicate that those who were adhering and responding to the text message-based intervention program (TMBI) showed significant improvement in their glycemic control and, subsequently, their HbA1c.

P26. Dual-Secreting Pituitary Macroadenoma: A Case Report

Reema Khaled Ali Al-Horaibi[1]

[1]*Primary Health Center, Aden University, Aden, Yemen*

Address for correspondence: reema.alhoribi.dent@aden-univ.net

Background: Dual-secreting pituitary adenomas are rare.

Methods: The adult male patient came to the clinic with a case of hypothyroidism under regular treatment complaining of headache, breast enlargement (gynecomastia), and increased body weight which were unresponsive to diet and exercise.

Result: A blood investigation done for him revealed elevated prolactin and ACTH hormone; so, further investigation with pituitary magnetic resonance image (MRI) showed macroadenoma. The treatment regime starts with cabergoline and refers to operation (transsphenoidal adenomectomy).

Conclusion: This case highlights dual-secreting pituitary macroadenoma, a case with a rare combination of secreted hormones.

P27. Chronic Care Model Effectiveness in The Management of the Type 2 Diabetes in Primary Care

Yasir Mohammed Elradi[1]

[1]*Dhaman Company , Kuwait & Warwick University School of Medicine, Warwick, United Kingdom*

Address for correspondence: yasirzaroug8@gmail.com

Background: The chronic care model (CCM) improves glycemic management, blood pressure, lipid profile, and complication rate at a lower cost. People in the four Gulf nations with the greatest per-capita GDP (Qatar, Kuwait, the UAE, and Saudi Arabia) are predisposed to metabolic disorders, especially diabetes mellitus.

Methods: We conducted searches on various databases, including Medline Central, Embase, Science Direct, Cochrane, Scopus, and gray literature. Then we extracted

the data. The search covered the period from January 1999 to March 2023.

Result: The largest number of studies assessing the components of the collaborative CCM was conducted in Kuwait, while Oman only conducted one study. Two studies conducted in Gulf countries, specifically Qatar and Saudi Arabia, covered all elements of CCM. The United Arab Emirates (UAE) had the largest number of participants in its studies. Most of the studies focused on self-care management practices, while decision support received the least attention.

Conclusion: The impact of the chronic care model is significant, particularly if implemented properly with all its components. However, the impact of self-care management on glycemic control in patients with type 2 diabetes has been extensively studied. It has been found to have a significant positive effect by controlling HbA1c level, blood pressure, and lipid profile, and is considered an important aspect of managing type 2 diabetes in primary care settings. The effectiveness of self-care management is influenced by factors such as patient literacy and awareness of the symptoms and complications associated with type 2 diabetes.

P28. Unexpected Cause of Recurrent Diabetic Ketoacidosis in Type 1 Diabetes

Rabia Khalid Alduraibi[1], Yosef Fahad Altowayan[1], Bader Thaar Al Mharwal[1]

[1]Department of Internal Medicine, Department of Endocrine and Diabetes, King Fahad Specialist Hospital, Buraydah, Saudi Arabia

Address for correspondence: Ralduraibi@gmail.com

Background: Gastrointestinal (GI) symptoms are commonly observed in patients with diabetic ketoacidosis (DKA), which usually resolves completely with therapy. However, GI symptoms can persist after DKA resolves, which can pose diagnostic and management challenges for physicians, especially when dealing with an exceptional diagnosis such as cannabinoid hyperemesis syndrome (CHS).

Methods: In this case report, we present a patient with type 1 diabetes who had been treated for DKA six times in the past year and was eventually diagnosed with CHS.

Result: Treatment with intravenous fluid and insulin was initiated immediately. Her DKA responded within 24 hours of this medical management. CHS was diagnosed after a comprehensive review of the patient's medical history, physical examination, and a strong correlation between cyclic vomiting and cannabis use.

Conclusion: In conclusion, this case demonstrates that a presumptive and incorrect diagnosis can mislead physicians, especially when dealing with challenging diagnoses. Therefore, patients with type 1 diabetes with unusual presentations, such as unexpectedly high pH and bicarbonate levels, with hyperglycemic ketosis should be screened for illicit drug use, especially cannabis.

P29. An Unusual Presentation of Diabetic Ketoacid and with Fungal Esophagitis

Rabia Khalid Alduraibi[1], Elzaki Mohamed Elzaki[1], Ammar Alammari[1]

[1]Department of Endocrine and Diabetes, Department of Gastroenterology, King Fahad Specialist Hospital, Buraydah, Saudi Arabia

Address for correspondence: Ralduraibi@gmail.com

Background: Diabetic ketoacidosis (DKA) is a life-threatening endocrine emergency that requires admission to the intensive care unit.

Case Report: Here, we report the case of a patient with type 1 diabetes who presented with epigastric pain and persistent vomiting and was finally diagnosed with ascariasis and fungal esophagitis complicated by DKA. To our knowledge, this is the first case report of multifactorial DKA in Saudi Arabia.

A 22-year-old female was admitted to the hospital for epigastric pain and persistent vomiting. The results of the laboratory examination showed fungal esophagitis complicated by DKA.

In this case, despite the correction of metabolic acidosis, persistent nausea, vomiting, and dysphagia can be a sign of esophagitis in patients with type 1 diabetes. Therefore, physicians should be aware of fungal infections associated with type 1 diabetes.

Conclusion: persistent nausea, vomiting, and dysphagia despite correction of metabolic acidosis could be a sign of esophagitis in patients with type 1 diabetes. Therefore, physicians should be aware of fungal infections associated with type 1 diabetes.

P30. Physical and Metabolic Characteristics of Adolescents with Severe Obesity

Reem Hassan-Beck[1], Imrana Afrooz[1], Muhamed Suhail[1], Rama Watad[1], Asma Deeb[1]

[1]Sheikh Shakhbout Medical City, Abu Dhabi, United Arab Emirates

Address for correspondence: rbeck@ssmc.ae

Background: Physical and metabolic characteristics of adolescents with severe obesity referred for bariatric surgery: an observational study from Abu Dhabi, United Arab Emirates (UAE). Bariatric surgery is becoming a modality of treatment of severe obesity in adolescents. ASMBS guidelines indicate consideration of surgery for adolescent with class II obesity and a co–morbidity or with class III obesity. Adolescents with severe obesity have multiple comorbidities including obstructive sleep apnea, hypertension, and poor quality of life. Referral of adolescents to bariatric surgery is governed by certain policies in different health authorities and countries. In the UAE, department of health mandates completion of puberty based on epiphyseal closure pertaining to age.

Methods: The study is an observational retrospective one. Adolescent patients between the age of 12 and 19 years referred to bariatric surgery are enrolled. The study period was between January 2020 and June 2022. All patients are recruited from the pediatric endocrine clinic prior to having bariatric surgery. Medical notes are examined for demographic details including sex and age at referral. History is recorded in relation to use of anti-obesity medication, family history of obesity, and history of bariatric surgery in a first-degree relative (parent or sibling). History of sleep apnea is recorded. Anthropometric measures of weight, height, and BMI are recorded. Weight and BMI Z scores and centiles are obtained by the embedded formula in the electronic medical records based on CDC growth charts. Systolic and diastolic blood pressures are recorded and interpreted as normal, elevated, stage 1, or stage 2 hypertension. Fasting lipid profile is recorded and interpretation for total cholesterol, low density lipoprotein (LDL), high density lipoprotein (HDL), and triglyceride are applied as per guidelines. HbA1c is recorded and patients are classified as having type 2 diabetes if HbA1c is over 6.5%, pre-diabetes between 5.8 and 6.5% and normal if below 5.8%.

Result: A total of 58 patients were enrolled in the study; 33 females. Age range was between 12.2 and 19 years

with a mean age of 15.9 years. Fifty-one patients (86.4%) had a family history of obesity in a first-degree relative (parent or sibling) and 41 (69.4%) had a family history of bariatric surgery. Nineteen subjects had mothers who had bariatric surgery, 9 had fathers, and 4 had both parents undergone bariatric surgery. Thirteen subjects had one to three siblings with history of bariatric surgery. Nine patients tried medications (15.5%); 3 liraglutide, 6 metformin. Two had a combination of both medications. Twenty-nine patients (49%) had history of obstructive sleep apnea. Average weight for the patients enrolled was 128.7 kg with an average weight Z score of 3.1. Average BMI Z score for the cohort was 2.8 with an average BMI centile of 99.6. Twenty-one patients (36%) had normal blood pressure; 8 (15%) had elevated blood pressure. Twenty-three (39%) and 6 (10%) had stage 1 and stage 2 hypertension, respectively. Two subjects (3.4%) had type 2 diabetes, 12 (20.6%) were in pre-diabetes stage, and 34 (58.6%) had a normal HbA1c. Liver transaminases were available in 53 patients of whom 11 (20.75%) had elevated ALT level ($N < 36$ IU/L). Four of them had a level of more than twofold upper limit of normal. Fifty-three patients had fasting lipid profile. Of those, 39 (73.58%) had normal total cholesterol levels; 12 (22.64%) and 2 (3.77% had borderline and high levels, respectively. As for the LDL, 51 (96.22%), 1 (1.88%), 1 (1.88%) had normal, borderline high, and high levels, respectively. HDL levels showed normal levels in 31 patients (58.49%), borderline low levels in 7 (13.2%), and low levels in 15 (28.3%). Thirty (56.6%) patients had normal triglyceride levels; 12 (22.64%) and 11 (20.75%) had borderline high and high levels, respectively.

Conclusion: Referral of adolescents with severe obesity to bariatric surgery is becoming a common practice. This is particularly the case in families with history of obesity and bariatric surgery. Sleep apnea is a common comorbidity among adolescents with severe obesity. Biochemical findings of elevated liver transaminases, dyslipidemia, and glucose intolerance might not be present in adolescents with severe obesity at the time of referral to bariatric surgery.

P31. Omani Family with Maturity-Onset Diabetes of the Young Type 5: A Multisystemic Disease

Lamees Al Sawafi[1], Maryam Al Badi[1]
[1]*National Diabetes and Endocrine Centre, The Royal Hospital, Muscat, Oman*

Address for correspondence: lameesomar20@gmail.com

Background: Maturity-onset diabetes of the young (MODY) is a type of monogenic diabetes that resulted from pancreatic beta-cell distraction. It is an autosomal dominant inheritance disease. There are at least 14 identified genes that have been involved in the etiology of MODY. Mutations of the *hnf1a*, *gck*, and *hnf4a* are the most commonly reported genes worldwide. This is a case report of a confirmed diagnosis of MODY type 5, who have a mutation of the hepatic nuclear factor 1B (*hnf1b*) gene.

Case Report: We reported a clinical case of 8-year-old patient, who presented with diabetic ketosis and late on developed chronic renal disease. He has a significant family history of diabetic mellitus and a classical MODY type 5 (MODY5). In this case, a familial targeted HNF1B variant of uncertain significance was identified in heterogeneous state. Two older siblings were diagnosed with chronic kidney disease and diabetic mellitus; whole-exome sequence study identified the presence of HNF1B mutation in one of the siblings.

Conclusion: Hnf1b gene mutation is associated with MODY5, which plays a role in many of the body organs, including the lungs, livers, intestines, pancreas, kidneys, reproductive system, and urinary tract. MODY5 should be questioned with unusual presentation of diabetes and multiorgan involvement unrelated to diabetes.

P32. Hyperphosphatemic Tumoral Calcinosis: Rare Medical Condition Case Report

Moayad Abdullah Al Suraikh, Mona Fouda, Ibrahim Ajwa
[1]*Department of Endocrinology, Diabetes and Metabolism, King Fahad Medical City, Saudi Arabia*
[2]*Department of Medicine, College of Medicine, King Saud University, Saudi Arabia*
[3]*Department of Endocrinology, Diabetes and Metabolism, King Abdulaziz Medical City, Riyadh, Saudi Arabia*

Address for correspondence: malsuraikh@gmail.com

Background: Tumoral calcinosis (TC) is a rare condition, characterized by subcutaneous deposition of calcium and phosphate in peri–articular area. Etiology is not fully understood. Treatment cardinally targets surgical removal of the masses and phosphate lowering therapy. *Case Report:* Our patient presented at the age of 13, with 3-month history of progressive, non-tender left elbow and right hip swellings increasing as time progresses and restricting his movement. His workup reveals an elevated serum phosphate with normal calcium level. A plain radiograph of the elbow and hip joints showed a cloud-like multi-lobulated calcified densities surrounding above-mentioned joints. TC was suspected; genetic mutation was detected in GLANT3 gene. After the confirmation of the diagnosis, the patient was treated with oral sevelamer and is under constant follow-up to detect recurrence, if any. Our case is being reported due to the rarity of the illness and to share the last discussed treatment pathways.

More details for our case review include tumoral calcinosis may arouse de novo (primary/idiopathic) or secondary to other conditions like renal failure, hyper–vitaminosis and hyperparathyroidism; primary disorder can be normophosphatemic or hyper–phosphatemic, sporadic, or familial inherited as autosomal recessive pattern. Hyper–phosphatemic tumoral calcinosis (HTC) is a rare, debilitating condition that affects primarily children and youth, with a progressive and recurrent behavior. It characterized by phosphate and calcium deposition in skin, subcutaneous, and peri-articular lesions—mainly around large joints due to inappropriately increased tubular reabsorption of phosphate and 1,25-dihydroxy vitamin D, leading to limitation in joint motions and disability. HTC has been associated with autosomal recessive pathogenic variants most commonly the gene encoding FGF23, GALNT3, and KLOTHO (FGF-23 co-factor) genes.

Conclusion: Early detection and surgical intervention are crucial steps to decrease disease burden. Multiple treatment strategies have attempted to manage blood phosphate, reduce pain and inflammation, and address calcifications and their complications. Unfortunately, efficacy data are limited to case reports and small cohorts, and no clearly effective therapies have been identified.

P33. The Prevalence of Depression in Diabetic Foot Ulcer Patient in Riyadh, Saudi Arabia

Mazen Barhoush[1], Alaa Aljamili[1], Lina Alyousef[1], Reema Almasoud[1]
[1]*Diabetes Center, King Khalid University Hospital, and King Saud University, College of Medicine, Riyadh, Saudi Arabia*

Address for correspondence: linalyousif@gmail.com

Background: Diabetic foot ulcers cause pain, distress, loss, and emotional load, particularly anxiety and depression; are also linked to DFUs; and have a negative impact on patients' living quality. *Objectives*: To assess the prevalence of depression among patients with diabetic foot ulcers at KKUH, Riyadh.

Methods: This is a cross-sectional study that was conducted using a structured questionnaire that is self-reported by patients with diabetic foot ulcer at the diabetic foot clinic, Diabetes Center, King Khalid University Hospital, King Saud University in Riyadh, Saudi Arabia. Adult patients aged 18 years and above of both gender were invited to participate in the study. The 9-item Patient Health Questionnaire was used to evaluate depressive symptoms (PHQ-9).

Result: The prevalence of moderate to severe depression among our patients was 24 (32.0%), while 44 (58.7%) had mild depression and 7 (9.3%) had no depression. Patients who had DFU for more than 1 year had higher proportion of moderate to severe depression ($p = 0.049$). There were no significant differences in the proportion of patients who had depression according to age groups ($p = 0.939$), gender ($p = 0.245$), level of education ($p = 0.690$), employment ($p = 0.939$), type of diabetes ($p = 0.924$), duration of diabetes ($p = 0.388$), level of HbA1c ($p = 0.931$), smoking history ($p = 0.151$), and previous history of DFU ($p = 0.479$). Logistic regression analysis showed that patients who had DFU for more than 1 year were 1.88 times more at risk to have moderate to severe depression ($p = 0.049$).

Conclusion: Regardless of age, gender, or other sociodemographic factors, patients with DFU have a high incidence of moderate to severe depression, with patients with long-standing DFU having over double the risk of depression as those with recently diagnosed DFU. To lessen this diabetes consequence, diabetic individuals should be rigorously examined, and prophylactic measures and patient education regarding DFU are essential. Due to their increased likelihood of developing the disease, patients who have had DFU should also undergo thorough screening and psychological evaluation for depression.

P34. GLP-1 RA and SGLT2i Utilization in T2DM Patients with or at High Risk of ASCVD

Tarik Elhadd[1], Ahmed Shalaby[1], Doaa Khalifa Hussein[1], Guruprasad Subbaro[1], Hessa Alkandari[1], Hisham Mohammedi[1], Jehan Abdullah[1], Naji Alamuddin[1], Rayaz A. Malik[1], Saeed Khalaf[1], Sara Alwazaq[1]

[1]Hamad Medical Corporation, Qatar, Novo Nordisk,Yarmouk Healthcare Centre, Kuwait,Dasman Diabetes Institute, Kuwait, Farwaniya Hospital, Kuwait,Mubarak Hospital, Kuwait 7BDF, Bahrain,KHUH/RCSI Bahrain, Salminiyah Medical Complex, Bahrain, and Jahra Hospital, Al Jahra, Kuwait

Address for correspondence: tarikelhadd58@gmail.com

Background: Increasing evidence shows that glucagon-like peptide-1 receptor agonists (GLP-1 RA) and sodium-glucose cotransporter 2 inhibitors (SGLT2i) have cardiovascular benefits for individuals with atherosclerotic cardiovascular disease (ASCVD) and type 2 diabetes mellitus (T2DM). The 2021 European Society of Cardiology (ESC) guideline on cardiovascular disease (CVD) prevention recommends using either GLP-1 RA or SGLT2i for T2DM patients who have established ASCVD (eASCVD) or are at high risk for ASCVD. However, limited information is available on the real-world use of GLP-1 RA or SGLT2i in the Gulf Region.

Methods: PACT-MEA is a noninterventional, cross-sectional, observational study conducted at 55 centers in 7 countries. The study included 3,726 individuals, of whom 1,062 (28%) were from Bahrain (366; 9.8%), Kuwait (350; 9.4%), and Qatar (346; 9.3%). Medical chart reviews were conducted to establish the presence of eASCVD in patients with T2DM and ASCVD risk, as per ESC 2021 guidelines. Medical history, demographics, clinical and laboratory data, and pharmacotherapy were extracted from participants' medical charts obtained at 13 centers between March and August 2022. Physician-reported factors in clinical decision-making in T2DM management were also assessed. The data were analyzed to determine GLP-1 RA and SGLT2i use in T2DM patients with eASCVD or at high risk of ASCVD across the 3 Gulf Region countries.

Result: Study participants across the three countries had T2DM for an average of 13.3 years. Many have concomitant conditions and risk factors for CVD, including obesity (50.7%), dyslipidemia (81.3%), and hypertension (67.3%). Of the 1,042 study participants taking antidiabetics, 56.3% (587) take a cardio-protective glucose-lowering drug, of whom 40.3% (416) take an SLGT2i and 16.5% (171) take a GLP-1 RA. By comparison, among participants with eASCVD (276), on average, 61.1% take either SGLT2i (47.8%; 114) or GLP-1 RA (13.3%; 29). Among participants classified as being at high risk of ASCVD (699), according to the 2021 ESC guidelines, 41.3% (288) take an SLGT2i, and 19% (132) a GLP-1 RA. By country, use was as follows for SLGT2i/GLP-1 RA: Bahrain 27%/14%, Kuwait 41%/26%, and Qatar 56%/17%.

Conclusion: In the countries investigated, the participants with T2DM and eASCVD/high risk were more likely to be prescribed an SGLT2i than a GLP-1 RA. Despite these agents being recommended by guidelines, the study findings suggest a suboptimal use of these cardioprotective agents.

P35. Declining Fertility Rates in Qatar and Its Association with Body Mass Index

Sufia Athar[1], Ayman Hamcho[1]

[1]Hamad Medical Corporation, Doha, Qatar

Address for correspondence: sathar1@hamad.qa

Background: Polycystic ovarian syndrome (PCOS) is known to cause subfertility. In the last two decades, there has been an increase in the prevalence of obesity worldwide. In Qatar, decreased fertility rate (5.7 in 1990 to 1.91 in 2016) has been observed with an increased prevalence of obesity. So the study was conducted at a secondary hospital in Qatar to look into the prevalence of obesity and PCOS and treatment outcomes in infertility patients.

Methods: A retrospective service evaluation was conducted. The total number of patients who had first visited the infertility clinic in the year 2017 was included. A total of 153 patients had new bookings to the clinic. A total of 143 patients were included and 10 patients were excluded due to tubal factors and male factor-associated infertility and incomplete documentation. These patients were followed up for 18 months to assess the results of treatment outcomes. They were divided on the basis of diagnostic criteria for PCOS in group A (with PCOS) and group B (non-PCOS). The prevalence of obesity and PCOS was assessed. The pregnancy rates were calculated in each group. The odds ratio and confidence interval were calculated using MedCalc online software.

Result: In the study population, the prevalence rates of obesity and PCOS were 31.47 and 29.37%, respectively. The average BMIs in PCOS and non-PCOS patients were 33.64 and 28.7 kg/m^2, respectively. The prevalence rates of obesity in PCOS and non-PCOS patients were 66.7 and 16.8%,

respectively. High prevalence of hyperprolactinemia, hypothyroidism, and type 2 diabetes was also noted in patients with PCOS. The overall pregnancy rate in patients with PCOS was 25% and that of in non-PCOS was 34%.

Conclusion: The increasing prevalence of obesity in Gulf countries is also leading to an increase in the prevalence of PCOS and hence subfertility and poor treatment outcomes.

P36. Steroid-Responsive Encephalopathy Associated with Autoimmune Thyroiditis

Hammad Hussain[1], Cynthia Salloum[1]
[1]*Cleveland Clinic Abu Dhabi, Abu Dhabi, United Arab Emirates*

Address for correspondence: hussaih2@ClevelandClinicAbuDhabi.ae

Background: Sixty-five-year-old woman with secondary progressive multiple sclerosis (MS) on ocrelizumab presented with acute alteration in mental status and decline in general condition, barely recognized family members, and had difficulty in communication and tremors.

Methods: She had no symptoms of infection. MRI of the brain and spinal cord reported no acute changes. Workup for infection was negative. Endocrinology team was consulted for the evaluation of slightly elevated TSH 6.98 with positive TPO Ab and normal FT4 and FT3. According to family, she had chronic high anti-TPO antibody, intermittent subclinical hypothyroidism, and was never treated with levothyroxine.

Acute ischemic stroke/MS exacerbation/encephalitis/meningitis was ruled out with MRI of the brain and CSF analysis. Since there was no other reason for acute deterioration, steroid-responsive encephalopathy associated with autoimmune thyroiditis (SREAT) or Hashimoto's encephalopathy was entertained as diagnosis and was started on short course of pulse steroid (Solu-Medrol 1 g daily). She responded very well to steroids and extubated on day 5. Later for persistent subclinical hypothyroidism, she was started on low-dose levothyroxine. As her neurological condition returned to baseline, steroid doses were gradually tapered.

Result: Presentation of HE is heterogeneous with fulminant, subacute, or chronic course of declining mental status, frequently accompanied by seizures and myoclonus, occasionally coma or isolated psychiatric features. Elevated antithyroid antibody and exclusion of other causes of encephalopathy support the diagnosis of HE.

Conclusion: While entity of HE is disputed, there is evidence to support checking antithyroid antibody levels in patients with unexplained encephalopathy, considering HE if levels are elevated. Initial trial of glucocorticoid therapy may be considered. Most patients have good outcome, but some have persistent cognitive deficits, particularly those with long-standing untreated disease. Relapses may require prolonged immunosuppressive therapy.

P37. Development of a Self-Care Program for Older People with Type 2 Diabetes

Mahmoud Werfalli[1], Dinky (Naomi) Levitt[2], Sebastiana Z. Kalula[2]
[1]*Family and Community Medicine, Faculty of Medicine, Family and Community Medicine, Benghazi, Libya*
[2]*Department of Medicine, University of Town, South Africa*

Address for correspondence: mahmoud.werfalli@yahoo.com

Background: Diabetes is a growing problem globally, with the major impact being experienced in low- and middle-income countries. In South Africa, diabetes is a major cause of morbidity and mortality and a burden to the overstretched health services, community, family, and people with the disease. Self-care management is a cornerstone of diabetes care.

Methods: This research study is based on the theoretical framework of the PRECEDE-PROCEED model (PPM). In the PPM, a complete needs assessment involving phases should be made before planning a health promotion intervention.

Result: This research study incorporates five interlinked studies. The first was a systematic review of studies that assessed the prevalence of type 2 diabetes mellitus among older people in African countries conducted between 2000 and 2015 with the objective of providing data for the monitoring of future trends. The overall prevalence of diabetes was 13.7% (95% CI: 11·3–16·3) and was twofold higher in studies based on the oral glucose tolerance test than in those using fasting plasma blood glucose. The second is a secondary analysis of the Study on Global AGEing and Adult Health (SAGE) South Africa Wave 1 data that examined the prevalence of self-reported diabetes and the association between diabetes and each health-related quality of life and disability among South Africa's older adults. The results were that diabetes was associated with lower quality of life and greater disability. The third, a cross-sectional survey, examines the knowledge of older people with diabetes attending primary care clinics. Its major finding is that there was a lack of knowledge about the complications of diabetes, suggesting that the available diabetes educational opportunities have not been effective. Importantly, however, social support was positively associated with both knowledge and a number of self-care aspects. The fourth is a qualitative study consisting of a documentary review. This found that generally older persons face numerous barriers in managing their condition. Furthermore, there are multiple efforts to re-orientate the healthcare system to focus more effectively on non-communicable diseases for the population which would benefit older patients with diabetes. Finally, the study includes a systematic review of peer and non-professional health worker-led diabetes self-management programs (COMP-DSMP) in low- and middle-income country primary health care settings and also examines the implementation strategies and associated diabetes-related health outcomes. This found equivocal evidence supporting the use of COMP-DSMP for people with diabetes in these countries and suggested that the models of a peer/CHW-led program need to be further explored, especially given the inevitability of a professional healthcare workforce shortage in LMICs.

Conclusion: This research study has described the extent of the need for developing and evaluating education programs that focus on older people with diabetes and emphasizes the role of family and friends. While there have been some significant policy interventions pertaining to the protection of the health and welfare of older persons, the needs of this vulnerable group remain relatively low on the list of priorities in terms of focus and resource allocation. In this context, older people, as a distinct group, are also not a strong focus in current health policy relating to the provision of NCD care. This study alerts policymakers and clinicians to some of the specific issues considered to be pertinent and important in the care and management of older persons with diabetes. Many of these would also be applicable to older individuals with other chronic conditions.

P38. Neonatal Outcomes in Type 1 Diabetes Pregnant Women at KFMMC–, Dhahran: A Single-Center Experience

Malak Al-Qarni[1], Moutaz Osman[1]
[1]Endocrinology Department, KFMMC, DahranDhahran, Saudi Arabia

Address for correspondence: malak-alqarni@hotmail.com

Background:

Maintaining optimal glycemic control is essential and necessary in pregnancy to reduce the risk of these adverse outcomes and good multidisciplinary care between endocrinologist or diabetologists, obstetricians, neonatologists, and allied health professional specialists is required. The management of type 1 diabetes mellitus (T1DM) in pregnancy is challenging because of the increased risk of fetal and maternal complications. The ultimate aim of treatments is to reduce maternal and fetal complications by achieving better glucose levels. Also, self-monitoring of blood glucose plays a significant role in the reduction of perinatal mortality and morbidity in pregnant women with type 1 diabetes mellitus (T1DM). Continuous follow-up blood glucose over the whole pregnancy has provided a vision into the effects of poor maternal glycemic control on various neonatal outcomes. In this study, we aimed to evaluate the neonatal outcomes in T1DM pregnant women and analyzed the variables that affect the maternal–fetal outcome to improve the effectiveness of interventions for the treatment of pregnant women with T1DM, also to compare the neonatal outcomes of T1DM pregnant women with nondiabetic healthy pregnant women.

Methods: This retrospective analysis study included 117 pregnant women (47 pregnant patients with T1DM and 70 nondiabetic healthy pregnant women) who underwent regular follow-up in the antenatal period and delivered at King Fahad Military Medial Complex (KMMC)—Dhahran between 2018 and 2023. The required data were obtained from KFMMC delivery room registry records and electronic database of our institution. Approval was obtained from the Ethics Committee of King Fahad Military Medial Complex (KMMC)—Dhahran. Exclusion criteria were: age below 18 years, patients without regular follow-up or delivery in our institution, or pre-gestational co–existing diseases (chronic hypertension, renal disease, systemic autoimmune disease, etc.) in the nondiabetic pregnant women group, no glycated hemoglobin (HbA1c) for T1DM pregnant women at the time of pregnancy. All T1DM pregnant women were on MDI regimen (basal bolus insulin therapy consisted of a minimum of 4 daily subcutaneous insulin doses, 3 of a short-acting analog before the main meals and 1 of a long-acting analog). History was extracted from electronic database for each patient, with particular attention to the obstetric history including age at pregnancy, number of pregnancy, gestational age at delivery, history of previous abortion and mode of delivery, the glycated hemoglobin (HbA1c) for T1DM, neonatal history. Patient follow-ups were performed by the obstetrician and endocrinology divisions of our institution. Worsening of blood sugar regulation was defined as increasing HbA1c. Cesarean section and preterm birth ratios are presented as gestational outcomes. Perinatal mortality is also defined as neonatal deaths before the 28th postpartum day. Neonatal hypoglycemia is defined as blood glucose levels below 40 mg/dL (9). Fetal macrosomia is defined by a newborn weight of 4 kg or above. Respiratory problems are defined as any problem necessitating invasive respiratory support at any duration. Admissions to the neonatal intensive care unit (NICU) right after the delivery and major congenital anomalies are also recorded. The obtained data were used for descriptive analysis of the whole cohort. Further analyses were performed to compare neonatal outcomes in T1DM pregnant women versus nondiabetic healthy pregnant women.

Result: A total of 117 pregnant women (47 with type-1 diabetes mellitus –[T1DM] and 70 healthy controls) were included in the study. Mean (SD) age of diabetic women was 29.38 ± 5.27 years and that of non–diabetic women was 31.23 ± 5.28 years. Age distribution was statistically similar in both groups ($p = 0.067$). Gestational age at pregnancy was significantly high in non–diabetic women 38.94 ± 1.81 weeks as compare to diabetic women 36.91 ± 1.94 weeks ($p = 0.025$). Distribution of gravidity and parity was statistically similar in both groups as p-values were greater than 0.05. Proportion of elective C-section was significantly high in women with T1DM 21 (44.7%) as compare to controls 13 (18.6%) ($p = 0.0024$), while proportion of normal vaginal delivery –(NVD) was significantly high in controls 45 (64.3%) ($p = 0.021$) and proportions of emergency C-section were similar in both groups. Comparison of neonatal outcomes between both groups is presented in Table –1. APGAR score at 1 min and APGAR score at 5 min < 7 were significantly associated with diabetic women 9 (19.1%) as compare to controls 3 (4.3%) ($p = 0.009$) and 5 (10.6%) as compare to controls 1 (1.4%) ($p = 0.027$), respectively. Proportion of NICU/SCBU admission was significantly high in diabetic women 23 (48.9%) as compare to controls 10 (14.3%) ($p < 0.0001$) and proportion of hypoglycemia was also significantly high in diabetic women 20 (42.6%) ($p < 0.0001$). All other outcomes were statistically similar in both groups. Odds ratios were also calculated to compare the outcomes between T1DM and controls. T1DM was significant risk factor of C-section (OR $= 2.4$, 95% CI: 1.1–5.2; $p = 0.02$), APGAR score < 7 at 1 (OR =5 .3, 95% CI 1.4–20.7; $p = 0.017$); T1DM was also significant risk factor of NICU/SCBU admission (OR $= 5.7$, 95% CI: 2.4–13.9; $p < 0.001$) and hypoglycemia (OR $= 53.1$, 95% CI: 5.96–473.17; $p < 0.0001$).

Conclusion: T1DM in pregnancy is a challenging problem in pregnancy in terms of having better maternal and neonatal outcomes. The high prevalence of unplanned pregnancy in T1DM women without optimal control of HbA1c and poor pre-pregnancy care, preconception counseling for all T1DM women who are wishing pregnancy must be improved on in order to improve outcomes whether maternal or fetal for this high-risk group. In this retrospective analysis, we demonstrate a significant high rate of C-section type of delivery in T1DM pregnant women and some unfavorable neonatal outcomes of T1DM pregnant women especially neonatal hypoglycemia which indicate the necessary need to address and improve the effectiveness of interventions for the treatment of pregnant women with T1DM and the future quality improvement measures will need to be implemented to reinforce strict follow-up of the patients by the endocrinology, high-risk pregnancy obstetrics, and perinatology divisions for better pregnancy outcomes.

P39. Wolfram Syndrome with Variable Presentation: A Case Series

Nagla Nassor[1], Hanan Al-Zkawi[1], Moza Al-Yahyai[1], Shaima Al Madhani[1]
[1]Pediatric Department/National Diabetes and Endocrine Center, Department of Child Health Royal Hospital, Muscat, Oman

Address for correspondence: tajoj14@gmail.com

Background: Wolfram syndrome (WS) is a rare genetic disorder causing multiple organ dysfunction. The classical WS features are childhood-onset diabetes mellitus, optic atrophy, deafness, diabetes insipidus, neurological signs, and other abnormalities. Two genes are responsible for

clinical features (WFS1 and WFS2). The disease is inherited as an autosomal recessive, but autosomal dominant mutations are also described as WS-related disorders. Clinical presentation is heterogeneous and sometimes misleading. In this poster, we aim to increase awareness about this syndrome by presenting a case series with genetically confirmed Wolfram syndrome who have variable phenotypic presentation.

Methods: Case 1, currently a 12-year-old Omani female child, at the age of 4 years, presented with episodes of symptomatic hypoglycemia (2.0–3.0 mmol/L). The critical sample was not sent as the hypoglycemia episodes were treated before collecting the critical sample. She was admitted for a challenged controlled fasting test. However, she did not develop hypoglycemia, but the c-peptide and insulin levels were appropriate for fasting (151 and 20 pmol/L, respectively). The other hormonal profile and metabolic workup were not confirmed as she did not develop hypoglycemia during the test. At the age of 6 years, she was presented with gradual hyperglycemia, initially fasting hyperglycemia then post-prandial hyperglycemia. The investigations revealed high C-peptide and insulin levels (2,660 and 260.5 pmol/L), negative autoantibodies (anti-GAD and anti-islet cell antibodies), normal thyroid function test (FT4 and TSH), negative thyroid peroxidase antibodies, and negative anti-tissue transglutaminase antibodies for celiac disease. There is a positive family history of type 2 diabetes mellitus (T2DM) in grandparents. The parents are consanguineous. The father of the child has a history of episodes of high blood glucose, mainly post-prandial; however, it is not constant, and not on medication or regular medical checkups. Examination of the child revealed a well-thriving child. The weight and height are between the 25th and 50th percentile. She has no dysmorphic features. There is no goiter and no evidence of autoimmune disease. The systemic examination was unremarkable. The continuous glucose monitoring (CGM) showed a blood glucose range between 8– and 15 mmol/L, with an occasional reach of 20 mmol/L after the meal. The child started on subcutaneous insulin injection. She started with basal insulin initially as she had fasting hyperglycemia. With follow-up, she was noticed to have post-prandial hyperglycemia. Hence, she also started on a meal bolus subcutaneous insulin injection. During the follow-up she was noticed to have persistent ketonuria without sickness or hyperglycemia. Initially she was treated with intravenous fluid; however, later she was advised to drink plenty of water. She has normal renal function, normal electrolytes, and no metabolic acidosis. The glycemic control during the follow-up was good, as the glycated HB (HbA1c) was between 5.6 and– 6.5%. The mother later requested for insulin pump which commenced at the age of 8 years. The child requires very minimal insulin doses, she takes it as basal with very occasional meal bolus. It was not understood why the child had very good glycemic control with minimal insulin doses, while children of this age and in our culture usually have suboptimal glycemic control, as per our experience. On the other hand, the mother has good adherence to dietary control and the child is thriving well. We investigated for factors affecting the accuracy of glycated HB (HbA1c), for example, G6PD deficiency and hemoglobinopathy which are very common hemolytic diseases in our population leading to a reduction in red blood cell (RBC) life span affecting the accuracy of HbA1c. She has no G6PD deficiency, but she has hemoglobinopathy HbA/E (heterozygous). However, when we consulted the hematology team for the effect of the HBA/E on the RBC, they assured us that it usually doesn't cause hemolysis especially since she is heterozygous. We also confirmed that by sending fructose amine level which came within the normal range (216–240), reflecting the HbA1c. We also confirmed the accuracy of glycemic control by CGM which showed almost 97% of the blood glucose is within the target, $< 1\%$ is below the target, and 2% is $>$ the target, not exceeding 12 mmol/L. The child has normal annual checkups for diabetic-related complications, including a retinal check renal function, and microalbuminuria. The child has a genetic test as the diabetes presentation and progression suggestive of maturity onset diabetes of youth (MODY). It was reported as a heterozygous variant in the Wolfram syndrome 1 (WFS1) gene. Mutation in this gene is associated with an autosomal dominant nonclassical WFS1 spectrum disorder. Further recommendation for this case is to screen for associated morbidities (optic atrophy, diabetes insipidus, deafness, and neurological assessment). The parents will also be screened. The parents were counseled for the genetic test result of their child and further plan was discussed.

Case 2, currently is an 18-year-old Omani male, presented at the age of 5 years with a history of polyuria, weight loss, and hyperglycemia; his blood glucose was 28.8 mmol/L. He has no ketonuria and no acidosis. The HbA1c was 12.5%. The autoantibody markers are negative (anti-GAD and anti-islet cell antibodies). The parents are consanguineous and there is a family history of T2DM in the grandfather. Examination of the child revealed a well-thriving child, with no dysmorphic features. The growth parameters are within the 25th percentile for weight and height. He has a squint in the right eye. The other systemic examination was unremarkable.

The child was diagnosed with T1DM and started on subcutaneous insulin injection with multiple dose injections by basal and meal bolus regimen. During the follow-up, he was noticed to have poor glycemic control based on the self-monitoring of the blood glucose and CGM most of the time the blood glucose level is high. However, the HbA1c ranged between 6.8– and 7.5%. Hence, he was screened for factors affecting the HbA1c accuracy and found to have G6PD deficiency. The fructose amine level is high corresponding to HbA1c of 11 to –12%. At the age of 10 years, he started using insulin pump. He showed good compliance and a good response to the pump. The glycemic control improved. The genetic test was sent for this child at the age of 12 years suspecting WFS because he brought a report from an ophthalmologist who was following his sequent. The report stated that he has optic atrophy. The genetic test revealed a homozygous variant was identified in the *WFS1* gene. Pathogenic variants in this gene are associated with autosomal recessive Wolfram syndrome 1 mutation for wolfram syndrome. The parents were also tested and reported as a heterozygous variant in the *WFS1* gene. The parents were counseled for the genetic test result and further plan was discussed.

This case details were collected from the patient information system and records of his regular follow-up visits at the National Diabetes and Endocrine Center. He was followed up for a period exceeding 10 years with a pediatric diabetic clinic. The child had detailed screening for WFS-associated disorders. The optic atrophy was confirmed by MRI and was found to have a bilateral atrophied optic nerve. He was also referred for a hearing assessment and confirmed mild sensorineural hearing loss which progressed to moderate in subsequent follow-up. He has no diabetes insipidus (DI) and no neurological manifestations till the time of writing the abstract. This case developed diabetes at the age of 5 years. His visual acuity deteriorated during his early adolescent period at the age of 11 years and progressed to complete right-eye blindness by the age of 13 years. The annual screening done at the age of 17 years showed no retinopathy, or nephropathy, and no neurological manifestation. The patient is currently an 18-year-old under follow-up at the National Diabetes Center, adult diabetic clinic, and other

multi-specialty teams. The regular long-term follow-up and monitoring for this case will be very challenging.

Case 3, a 10-year-old Omani male child was diagnosed with diabetes with negative anti-islet cell antibodies and anti-GAD antibodies. He was presented with polyuria, hyperglycemia, and glycosylated hemoglobin was 8%. Examination of the child revealed a well-thriving child. The weight and height are between the 25th and 50th percentile. There is no goiter. The systemic examination was unremarkable. The investigation revealed negative autoantibodies (anti-GAD and anti-islet cell antibodies), normal thyroid function test (FT4 and TSH), negative thyroid peroxidase antibodies, and negative anti-tissue transglutaminase antibodies for celiac disease. The child has mild valvular pulmonary stenosis under follow-up with the pediatric cardiology team. The parents are consanguineous; they have three healthy children. There is a positive family history of T2DM in both maternal and paternal grandfathers. Since the diagnosis, the child has been running a mild course of hyperglycemia with correlating HbA1c for more than a year; hence, it was thought with the evidence of negative antibodies that he might have one type of MODY. For which, whole exome sequencing (WES) was sent to him. With time his continuous glucose monitoring (CGM) showed a blood glucose range between 7– and 14 mmol/L, and for that, he was started on a subcutaneous low dose of insulin injection (0.3–0.5 unit/kg/day), basal and meal bolus insulin regimen. Genetic testing was done and revealed a homozygous variant was identified in the *WFS1* gene. Pathogenic variants in this gene are associated with autosomal recessive Wolfram syndrome 1 mutation for wolfram syndrome. The parents were tested for the targeted *WFS1* gene, and the results are still awaited. The parents were counseled for the genetic test result of their child and further plan was discussed. The child was screened for the associated morbidities. He has no clinical or biochemical evidence of diabetes insipidus (DI). He was referred for a hearing assessment to look for evidence of sensorineural deafness which was excluded. He also was referred to an ophthalmologist, who excluded optic atrophy.

Conclusion: Wolfram syndrome (WS) is a rare genetic syndrome with progressive neurological deterioration. Therefore, genetic testing to identify mutations is crucial in the clinical management of the syndrome.

P40. Differences in Educational Attainment between Obese and Non–obese Kuwaiti Female

Hanouf H. Al Hammadi[1], Hamad A. Alaslawi[2], Allan Hewitt[1], John J. Reilly[1]

[1]*School of Psychological Sciences and Health, University of Strathclyde, Glasgow, United Kingdom*

[2]*Department of Sociology and Social Work, College of Social Sciences, Kuwait University, Kuwait*

Address for correspondence: dr.toon2004@gmail.com

Background: Individuals with obesity tend to perform less well than their non–obese peers in tertiary education, but there is little evidence from non-Western countries and recent studies. The present study aimed to test whether academic attainment differed between female undergraduates with obesity (defined by body mass index [BMI]), and those who were non–obese in Kuwait, a country with very high obesity prevalence.

Methods: The present study recruited a convenience sample of first- and second-year Kuwaiti University College of Social Science students between March and May 2019. Kuwaiti nationals, <20 years of age and did not have any condition or illness which would have altered their weight status (e.g., pregnancy and long bone fracture). Students were excluded if they were male, non-Kuwaiti nationals, 20 years or older, and had any condition or illness affecting their weight status, or reported any other chronic disease. The aim of these inclusion and exclusion criteria was to provide a relatively homogenous sample and one that was relatively free of a number of potential confounders (e.g., non-Kuwaiti nationality and age). Of the 2,169 students contacted, 525 expressed an interest and 400 of these were eligible and were entered into the study.

Result: A total of 525 students agreed to take part in the study, and 125 were excluded as they did not meet the inclusion criteria (age over 20 years, pregnancy, long bone fracture in cast, and presence of chronic diseases). Therefore, 400 actually took part, and all 400 provided data for all variables. Of 400 participants, 163 were defined as obese based on the BMI, and 247 were defined as excessively fat based on the bio-impedance measure.

Conclusion: This research suggests that obesity may impair academic attainment in Kuwaiti female students. Further studies will be needed to test the generalizability of these findings and to identify the underlying mechanisms of any effect of obesity on educational attainment.

P41. Ultrasound-Guided Thyroid Nodule Fine Needle Aspiration Outcome Over 7 Years of Experience in Qatif Central Hospital, Saudi Arabia

Zahra Al Ghareeb[1], Basem Abualsaud[1], Shatha Alfaraj[1], Ghada Alqudaihi[1], Hassan Al-Mubarak[1], Fatimah Alhamad[1], Zahra Al-Sahoo[1], Sanaa Al-Yousif[1]

[1]*Department of Radiology, Department of Histopathology, Department of Quality, Department of Medicine, Qatif Central Hospital, Eastern province, Saudi Arabia*

Address for correspondence: zaghareeb@gmail.com

Background: Our study aims to evaluate the outcome of U.S.-guided thyroid nodule FNA in our center through analyzing the radiology, cytology, and histopathological results.

Methods: This is a retrospective study, conducted in Qatif Central Hospital (QCH), the main secondary care center of Qatif city in the east of Saudi Arabia. The inclusion criteria were patients aged 14 years and above, who had performed U.S.-guided FNA for thyroid nodule followed by total- or hemithyroidectomy from January 2015 to December 2021. Data were collected from both patient soft- and hard-copy files, data then uploaded using SPSS version 21 software. A total of 76 nodule from 54 patients who met the inclusion criteria were analyzed looking at the radiology, cytology, and histopathology results. Variables like nodule size and ATA classification, number of samplings from each nodule, cytology in Bethesda scoring for the first sample taken, final histopathology diagnosis were performed using both frequencies and percentage and analyzed.

Result: Over 7-year period, 76 nodules were sampled from 54 patients in QCH who eventually had hemi- or total thyroidectomy (52 and 48% respectively), where more than 80% were young and middle-aged female. Total number of samples from the 76 nodules was 113 times; 38% of the nodules were sampled twice with no significant correlation between size of the nodule and the number of times sampled ($p = 0.116$). No significant correlation was found between nodule size and Bethesda score ($p = 0.491$), while there was significant correlation between number of sampling and the Bethesda score ($p = 0.004$). Final histopathology reports showed 40% benign and 38% PTC with significant correlation

between histopathology with ATA classification and Bethesda classification ($p < 0.001$ and 0.007, respectively).

Conclusion: At QCH, there is a significant statistical correlation between FNA using Bethesda score, ATA classification, and the final histopathological report. Although it is not a high-volume hospital, but the outcome in the management of thyroid nodule is keeping with the international standards, more studies are needed to compare our outcome with other centers in the Kingdom.

P42. Awareness of PHC Physicians about Diabetic Nutrition in Al-Madinah City

Areej Meshal Al-Jumaidi[1]
[1]*Department of Family Medicine, Prince Mohammad Bin Abdulaziz Hospital, Madinah, Saudi Arabia*

Address for correspondence: aroojah_m2020@hotmail.com

Background: Medical nutrient therapy (MNT) is a therapeutic approach to treating medical conditions and their associated symptoms via the use of a specifically tailored diet devised and monitored by a registered dietitian. MNT is a key complement to medical interventions in diabetes treatment. For that when improving the physicians knowledge, the patient health education will improve to provide the best management of DM.

Methods: The study was conducted in Al-Madinah Al-Munawwarah. Study design and population involved a cross-sectional study to evaluate the awareness of PHC physicians about diabetic's nutrition. The study included all PHC physicians (140 physicians—male and female) in Al-Madinah PHCC.

Result: The majority of the current study physicians were GPs and most of them in the age range of 41– to 50 years and maximum numbers of whom were working practice for more than 10 years. Very few of them took formal training or attended MNT therapy. Of the 140 primary care physicians, 101 replies were received giving a response rate of (72.14%). The study physicians exposed their weakness in identifying the correct glycemic indices of some of the diet which is very important in counseling the diabetes patients to adopt healthy and balanced diet. Only 37.5% of the study physicians answered correct regarding glycemic indices of the asked questions and they marked >50% correct answers. However, 60% of the physicians scored more than 50% to the diabetes-related diet questions. The best known item (answered correctly at the high estate) by physicians is the importance of nutritional therapy in the prevention of Type 2 diabetes (97.1%). "Healthy balanced diet" is a recommended diet for diabetic patients (87.1%).

Conclusion: This study results showed that physicians' mean correct answer score was 51.5% and it indicates that the physicians working in PHC setting did not have sufficient knowledge in nutrition which results in incapability of the PHC physicians in, education and counseling and recommendation of special nutrition supplements, in order to improve the patients' overall health status. The overall findings suggest that there are serious lacks in knowledge of nutrition among the physicians and they do not have enough knowledge of nutrition to properly advice the patient. The knowledge of nutrition varies from physician to physician. The present study indicates that physicians need more education in nutrition.

P43. Prevalence of Overweight and Obesity and Its Risk Factors in Adults Type 1 DM

Yara Mufareh Assiri, Lujain Bin Othman, Ali Alamri, Yara Assiri, Faris Alzahrani
[1]*Family Medicine at MOH, Jeddah, Saudi Arabia*
[2]*Family Medicine at MOH, Abha, Saudi Arabia*
[3]*Family Medicine at MOH, Sarat Obeida, Preventive Medicine, Abha, Saudi Arabia*

Address for correspondence: Yara.mm.aa@gmail.com

Background: Diabetes mellitus, a prevalent endocrine disorder worldwide, has seen an increasing global incidence in recent years, establishing it as a significant public health issue. Notably, individuals with Type 1 diabetes often have a higher body mass index (BMI) compared to the general population.

Methods: A descriptive, cross-sectional web-based study was conducted, collecting data through an online questionnaire. This tool, designed based on literature reviews and expert consultations, gathered information on demographics, medical history, BMI, diabetes details, dietary habits, and lifestyle.

Result: Out of 250 Type 1 diabetic patients aged between 18 and 45 years (mean age: 26.0 ± 11.8 years) who completed the survey, 187 (74.8%) were females. The study found that 29.2% were overweight and 19.6% were obese. Overweight/obesity was observed in 66.7% of smokers and the same percentage of those who exercised at the gym. Moreover, overweight and obesity rates were significantly higher among patients who did not adhere to a high-fiber diet compared to those who did (66.7 vs. 46.4%, respectively; $p = 0.049$).

Conclusion: The study highlighted that nearly half of the patients with diabetes were overweight or obese. Factors such as age, smoking, and unhealthy diet correlated significantly with the obesity rate among individuals with Type 1 diabetes.

P44. Emotional Stress-Induced Thyroid Storm: A Case Report

Ali Al Reesi, Salem Al Ghaithi, Mazin Al-Rudaini, Abdulrahman Al Yamani, Ali Al Reesi
[1]*Department of Medicine, Suhar Hospital, Suhar, Oman*
[2]*Department of Medicine, College of Medicine and Health Sciences, National University, Suhar, Oman*
[3]*Department of Medicine and ICU, Suhar Hospital, Suhar, Oman*

Address for correspondence: alialrisi28@yahoo.com

Background: Although rarely, emotional stress is reported as an isolated trigger without other precipitating triggers. In this report, we are reporting a 49-year-old female who was presented with a thyroid storm from emotional stress after the passing of her mother-in-law.

Case Report: A 49-year-old female presented to Suhar Hospital Emergency Department with acute severe shortness of breath. On examination, she was agitated with severe respiratory distress, and her oxygen saturation was 60% in room air. The blood pressure was 210/110 mm Hg, pulse rate was 150 beats per minute, temperature was 39.1 °C, and her chest was full of crepitation. The initial investigations revealed white blood cell count of 15.5 to 103/µL, electrocardiography: sinus tachycardia without any ischemic changes, chest X-ray: bilateral pulmonary congestion, and echocardiography: global hypokinesia with low ejection fraction (35–40%). A diagnosis of acute pulmonary edema was made. The patient was intubated immediately

and admitted to the intensive care unit, started her on glyceryl trinitrate infusion and furosemide infusion, and kept her under monitoring. This short presentation of the patient happened within the first 2 days after her mother-in-law passed away. The next day, the patient's chest crepitation almost disappeared. It was decided to stop the glyceryl trinitrate infusion and furosemide infusion, but noted that the patient still had sinus tachycardia (pulse rate: 157 beats per minute), and high-grade fever (temperature 39.1°C) in addition to agitated state. While reviewing the patient's records, it was found that she was diagnosed with thyrotoxicosis 9 months ago, with initial free thyroxine (free T4) 64 pmol/L, free triiodothyronine (free T3) 13 pmol/L, and thyroid-stimulating hormone (TSH) less than 0.005 uIU/mL and managed with carbimazole 10 mg/8 hour and propranolol 40 mg/12 hour, but unfortunately, the patient was not compliance to treatment and took carbimazole 10 mg once daily. In view of such a history of thyroid problem, a thyroid panel was sent, and the laboratory results showed free T4 48.59 pmol/L, free T3 19.64 pmol/L, and TSH less than 0.005 uIU/mL. Such an overall picture of acute pulmonary edema, agitation, severe tachycardia, high-grade fever with uncontrolled thyrotoxicosis raised the suspicion of thyroid storm. According to the Burch and Wartofsky scoring system, a score of 45 or more is highly suggestive of thyroid storm; thus, the patient met the criteria with a score of 80.

The management started immediately with propylthiouracil 200 mg/4 hour, propranolol 40 mg/6 hour, and hydrocortisone 200 mg as a stat, then 100 mg/6 hour. The Lugol iodine was not available to be given. Following 3 days of starting the therapy, there was significant improvement of the patient's condition, she became afebrile with normal pulse rate and clear chest. The repeated echocardiography showed improvement of the ejection fraction to 55%. The patient was extubated at that time. The serial thyroid panel showed significant improvement after 2 weeks of the therapy with free T4 26.23 pmol/L, free T3 6.49 pmol/L, while the TSH remained suppressed. Further laboratory results revealed a positive thyrotropin receptor antibodies (TRAb) (35.17 IU/L), and thyroid ultrasound showed multiple small non-suspicious hyperechoic round nodules, the largest at the right lobe measured 9—5.5 mm. After 3 weeks in the hospital, the patient was discharged. She was on carbimazole 10 mg/12 hour and propranolol 40 mg/12 hour and was given an appointment for thyroid uptake scintigraphy. Based on the result, we might proceed for radio–active iodine therapy.

Conclusion: In this case, we advise that the clinicians should be aware of the underlying emotional stress as an important risk for the development of thyroid storm in the absence of other precipitating factors, also aggressive treatment is very important to limit the mortality and morbidity related to the thyroid storm.

P45. Evaluation of the Clinical and Analytical Performance of the Blood Glucose Monitoring

Amar Tebaibia, Rachid Malek, Nassim Nouri, Ali El Mahdi Haddam, Anwar Cherrak, Lakhdar Griene, Karim Belkacem, Samia Abrouk, Mourad Semrouni, Kamel Gasmi, Said Gari
[1]*Algiers University, Algeria*
[2]*El Biar Hospital*
[3]*Setif University*
[4]*CHU Setif, Setif, Algeria*
[5]*Constantine University*
[6]*CHU Constantine, Algiers University, CHU Lamine Debaghine, Algeria*

Address for correspondence: amartebai@gmail.com

Background: Successful diabetes management, treatment decisions, and patient safety depend on the analytical and clinical performance of the capillary glucose monitoring system. These, carried out by the patients, show deviations regarding venous blood glucose levels, measured at the laboratory.

Methods: This is a national (Algeria), real-life, prospective, multicentric study. The objective of our study was to evaluate, in real life, the concordance between capillary glycemia and fasting venous glycemia, in adults with type 1 diabetes (T1D) and type 2 diabetes (T2D). The aim was thus to assess the concordance of results between capillary glucose levels measured by Vital Check MM1200 and fasting venous glucose levels in 462 diabetic patients from 6 centers, considering the analytical accuracy criteria and the ISO15197:2013 clinical performance.

Result: The overall analytical concordance was 79.9% (95% CI $= 0.799 \pm 0.036$) with a variation coefficient (CV) of 5.8% and a bias of −−1.5%. The clinical performance using the Parkes error grid founded 99.2% of values in zones A and B. Factors limiting the performance of the system, related to the patients, the environment, and its proper use have been identified.

Conclusion: Analytical concordance of capillary blood glucose measurement system was suboptimal. It was related to interfering factors. Therapeutic education, for the good practice of self-monitoring blood glucose (SMBG), is essential to limit exogenous factors influence on the relevance of measured values and its negative impact on clinical and therapeutic decisions.

P46. Prevalence of Metabolic Syndrome among Obese Children Seen in Sultan Qaboos University, Muscat, Oman

Shahad Al-Ghafri[1], Hussain Alsaffar[1,2], Hamza Al-Harthi[3], Osama Al-Lawati[3]
[1]*Child Health Department, Sultan Qaboos University, Muscat, Oman*
[2]*Pediatric Endocrine and Diabetes Unit, Sultan Qaboos University, Muscat, Oman*
[3]*College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman*

Address for correspondence: Shahadgh03@gmail.com

Background: Childhood obesity is multi–factorial disease, influenced by genetic, environmental, and behavioral factors. Metabolic syndrome is a growing concern in this population, which need to be addressed and taken in consideration to improve diagnostic and treatment options. This study aims to determine the prevalence of metabolic syndrome among children aged <13 years, who visited pediatrics outpatient clinic in 2021 at Sultan Qaboos University Hospital.

Methods: Data were collected through electronic medical records (TrakCare system). This is a cross-sectional retrospective study. Growth-XP software was used to calculate BMI SDS.

Result: Out of 3,000 patients included in the study, 286 (9.5%) patients were found to be obese. Out of those 11 (6.6%) were diabetic, 1 (0.35%) with impaired glucose tolerance, and 1 (0.35%) with insulin resistance. Among diabetic patients, seven patients were DM type 1, two were DM type 2, one was MODY, and 1 one was with DM due to recurrent pancreatitis. There were four males and seven female patients with diabetes. Along with diabetes, three patients suffered of hypothyroidism. Among obese children, four (1.75%) patients were found to have dyslipidemia, three had high cholesterol, and one had both high cholesterol and triglyceride. None of them was on statin. Females have higher rates than males: 3

and 1, respectively. Their ages ranges from 4– to 10 years. Along with dyslipidemia, one patient was found to have hypothyroidism and another one DM.

Conclusion: Our results were consistent with similar studies that show a link between childhood obesity and metabolic syndrome. Diabetes was found in 11 patients. According to studies conducted in GCC countries, females have more prevalence of diabetes in comparison to males which is similar to or study finding. Dyslipidemia was found in four patients. Out of those, one has hypothyroidism and one DM.

P47. Prevalence of Obstructive Sleep Apnea among Obese Children Attended Pediatric

Osama Al-lawati[1], Hussain Alsaffar[1], Hamza Al-Harthi[1], Shahad Al-Ghafri[1]
[1]*College of Medicine and Health Sciences, Sultan Qaboos University, and Child Health Department, Pediatric Endocrine and Diabetes Unit, Sultan Qaboos University Hospital, Muscat, Oman*

Address for correspondence: s131818@student.squ.edu.om

Background: Obstructive sleep apnea (OSA) is a condition where the patient has upper airway problems that may lead to decreased oxygen saturation and arousals during sleep. Pediatric obstructive sleep apnea (POSA) affects 1– to 3% of children worldwide; it is associated with many comorbidities including cardiovascular and neurological abnormalities. Evidence shows that there is a strong relationship between obesity and OSA in general, especially with the pediatric group.

Methods: This cross-sectional retrospective study reviewed medical records of 3,000 pediatric patients under 13 years old from various pediatric clinics in Sultan Qaboos University Hospital (SQUH) in Oman between January– and December 2021. Statistical Package for Social Science (SPSS) was used for descriptive analysis. SQUH electronic patient records (TrakCare) were used to collect data.

Result: This study reviewed 3,000 patients' records, revealing an obesity prevalence of 9.5% (286 patients). Out of these 286 patients with obesity, we found 10.14% (29 patients [M = 9, SD = 3.27]) were suffering from OSA and all were referred to either ENT department or referred for a sleep study. OSA was found higher in males than in females, in which 19 patients were males and 10 patients were females. Consistent with other studies, we found that most group with OSA was class 3 obese children, followed by class 2 and then class 1 with 18, 8, and 3 patients, respectively. Along with OSA, we found that 6 patients were suffering also from hypothyroidism, 4 patients with diabetes mellitus (DM), and 1 patient with dyslipidemia.

Conclusion: The prevalence of OSA in our center was consistent with other evidence that shows a relation between obesity and OSA. Male patients were more affected, and obesity class 3 was the group having prevalence of OSA. Management of OSA is important to reduce the burden on patients and the healthcare system, and prevent other complications.

P48. Effectiveness of DESMOND Program for People with Type 2 DM: Qatar Version

Manal Musallam Othman[1], Manal Musallam[1], Amani Ajina[1], Doha Sabbah[1], Tomader EL-Abd[1], Ragae Dughmosh[1]
[1]*Hamad Medical Corporation*

Address for correspondence: mothman@hamad.qa

Background: Diabetes self-management education and support is a critical element of care for all people with diabetes. Structured education is a proven method to enable supported self-care in diabetes. DESMOND (Diabetes Education and Self-Management for On-going and Newly Diagnosed) is an internationally recognized evidence-based self-management structured group education program for people with type 2 diabetes. In collaboration with Leicester Diabetes Center at the United Kingdom, DESMOND program has been adapted for Qatar population to meet their cultural and specific needs.

Methods: National Diabetes Center (NDC), Hamad Medical Corporation (HMC). Participants: 140 adults (78% male, mean age 49.1 years). *Intervention*: A structured group education program for 6 hours delivered in NDC by 2 CDE based on a formal curriculum, it is offered either as a 1-day or two half-day sessions of teaching, for six to ten patients at a time. Learning was elicited rather than taught, with the behavior of the educators promoting a non-didactic approach. *Main outcome measures*: A1C, blood pressure (BP) and lipids were measured at baseline, 6 and 12 months of attending DESMOND program.

Result: Primary outcome was change in HbA1c. Wilcoxon signed-rank tests were used to compare HbA1c percentages at 6 and 12 months to baseline. This test was used as the differences from baseline at 6 and 12 months which were negatively skewed, and a t-test requires them to be normally distributed. Median baseline HbA1c was 7.6% and median HbA1c at 6 months was 6.9% (Table 2). There were 112 participants (80%) with HbA1c measurements at both time points. The *p*-value comparing 6 months to baseline was 0.0001, suggesting a significant reduction in HbA1c at 6 months. There were 110 participants (79%) with HbA1c measurements at both time points. Median HbA1c at 12 months was 7.1%, and the *p*-value from comparing 12 months to baseline was 0.0648, suggesting there is a reduction in HbA1c at 12 months but that it is not statistically significant. *Secondary Outcomes*: There was a reduction from baseline to 6 months and to 12 months, and from 6 to 12 months, for every secondary outcome (LDL cholesterol, HDL cholesterol, total cholesterol, and systolic and diastolic BP) except the BMI. Only four of the comparisons were statistically significant; SBP and DBP both decreased at 12 months from baseline (decrease of 6.66 mm Hg (95% CI: 2.35–10.97) and 3.34 mm Hg (95% CI: 1.28–5.39), respectively). Additionally, both LDL and total cholesterol decreased significantly after 12 months from baseline (decrease of 0.232 mmol/L [95% CI: 0.065–0.399] and 0.351 mmol/L [95% CI: 0.096–0.606], respectively).

Conclusion: Implementing DESMOND Qatar showed significant improvement in A1C, BP, and lipids; the improvement in A1C was not sustained till 12 months. Further improvements/suggestions need to be studied to ensure the outcome improvements.

P49. Prevalence of Hypothyroidism among Obese Children Visited Pediatric Outpatient

Hamza Hamed Al-Harthi[1], Osama Al-Lawati[1], Shahad Al-Ghafri[1], Hussain Alsaffar[1]
[1]*Child Health Department, Sultan Qaboos University Hospital, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman*

Address for correspondence: hha_30000@yahoo.com

Background: Thyroid hormones play a crucial role in regulating metabolism, food intake, thermogenesis, and fat oxidation. Obese children commonly experience

abnormalities in their thyroid functions which can contribute to the challenges they face in managing their weight.

Methods: This study aims to identify the prevalence of hypothyroidism among obese children under the age of 13 years, who visited various pediatric outpatient clinics at Sultan Qaboos University Hospital at any time during 2021. This is a cross-sectional retrospective study. Data were collected from the electronic medical records of pediatric patients. BMI SDS was calculated using Growth-XP software.

Result: A total of 3,000 patients were included, revealing an obesity prevalence of 9.5% (286 patients). Out of 286 obese patients, we found that 20 patients (6.9%) have hypothyroidism. The mean age of the patients is 10 years (+/− SD 3.01). Males had a higher hypothyroidism prevalence than females, in which 15 patients were males and 5 patients were females (75 and 25% respectively). Five out of the total 20 children with hypothyroidism also had diabetes and six children also had obstructive sleep apnea. The majority of hypothyroidism patients are on thyroxine with a percentage of 85% (17/20).

Conclusion: About 6.9% of obese children were found to have hypothyroidism. Five out of these 20 children with hypothyroidism also had diabetes. Hypothyroidism in obese children should be closely monitored while also evaluating metabolic risk factors.

P50. Precision Medicine in Diabetes and Beyond: A Mini Literature Review

Muhammad Muneer[1], Atya Rehman[1]
[1]*Starcare Hospital, Burjeel Hospital, Abu Dhabi, United Arab Emirates*

Address for correspondence: genome2006@yahoo.ca

Background: The continuous advancement of medical science, discoveries of molecular mechanisms of human biology, improved data interpretation, widespread use of artificial intelligence-based technologies, translating research into clinical practice by genome-wide association studies (GWAS), and the advent of newer therapeutic molecules have initiated the prospects of precision medicine in diabetes (PMD) starting from accurate diagnosis to every steps of the course of diabetes to its prevention.

Methods: We searched PubMed, Cochrane reviews, Embase, and Web of science for articles by keywords "Precision Medicine in Diabetes" and "Precision Diabetes" which yielded 102 articles and after excluding irrelevant topics found 26 articles relevant to our topic. As the topic is new only a fewer number of articles were found. We reviewed and assimilated key information related to precision diagnosis.

Result: We found in T1D, T2D, MODY, LADA, GDM, and NDM new diagnostic characteristics features. The Emma Ahlqvist et al and INSPIRED study novel clusters also added new diagnostic and disease outcomes features.

Conclusion: PMD will make balance between the P4 medicine: predictive, preventative, personalized, and participatory medicine as depicted by Hood et al and the O4 medicine: overtesting, overdiagnosis, overtreatment, and overcharging medicine as proposed by Fiala et al.

P51. Diabetic Cheiroarthropathy

Mohamed Mesli[1], Ghembaza Chemseddine[1]
[1]*Public Establishment of Health and Proximity Tlemcen Sub-Sector Sidi Chaker, Tlemcen, Algeria*

Address for correspondence: toobibmed@gmail.com

Background: Cheiroarthropathy is a degenerative complication of diabetes mellitus; its prevalence varies between 8 and 34%. It is manifested by a painless limitation of the flexion and especially the extension of the fingers responsible for a flexed attitude of the fingers.

Methods: A 74-year-old female patient with known diabetes for 20 years, currently on two premix insulin injections, who consulted for a deformity of both hands. The clinical examination showed a colorless limitation of the extension of the fingers, mainly of the proximal interphalangeal (IPP), metacarpophalangeal joints (MCP), giving the appearance of a prayer hand or pseudoscleroderma hand. The DN4 score was 6/10. Biologically, his last HbA1c was 10%, with normal renal function and a normal fundus.

Result: Diabetic cheiroarthropathy is a chronic complication of diabetes mellitus. It was initially described in type 1 diabetics, but it can be seen even in type 2 diabetics, as in our patient. The etiopathogenesis of this complication is multifactorial. The first mechanism is the glycosylation and proliferation of collagen fibers in the skin, subcutaneous tissue, tendons, muscles, and periarticular structures. These collagen abnormalities are associated with a micro angiopathy of the skin and subcutaneous tissues which leads to ischemia and fibrosis of these tissues. The diagnosis is most often clinical by the demonstration of the sign of the prayer; the ultrasound and sometimes the MRI show the thickening of the tendons. Therapeutic management is based on strict control of glycemic balance, which can completely regress this deformity. NSAIDs and functional rehabilitation are often necessary.

Conclusion: Cheiroarthropathy is a rare osteoarticular complication of diabetes mellitus. Its management requires good glycemic control and functional rehabilitation.

P52. Verneuil Disease and Diabetes: A Rare Association

Mohamed Mesli[1], Ghembaza Chemseddine[1]
[1]*Public Establishment of Health and Proximity Tlemcen Sub-Sector Sidi Chaker, Tlemcen, Algeria*

Address for correspondence: toobibmed@gmail.com

Background: Verneuil's disease or hidradenitis suppurativa is a chronic inflammatory disease of the pilosebaceous follicles with chronic evolution affecting the regions rich in apocrine glands, especially the axillary and inguinal regions. The evolution is toward suppuration, fistulization, and sclerosis. We report a case of a young diabetic woman.

Methods: The clinical examination revealed very painful arthritis of both knees with functional impotence. The clinical examination revealed nodular lesions in the axillary and inguinal regions, and the patient was obese with a BMI of 35 kg/m^2. The patient was treated with antibiotics and anti-inflammatory therapy with spectacular improvement of the joint involvement but no effect on the skin lesions. The patient was then transferred to the plastic surgery department for surgical treatment with possible skin grafting.

Result: Described by Velpeau in 1839, hidradenitis suppurativa is a chronic and disabling inflammatory disease with considerable psychological and social repercussions. It is characterized by the existence of deep painful nodules which tend to form abscesses and then fistulize, located electively in areas rich in apocrine glands, axillary, perineal, submammary, peri-umbilical regions. This pathology has been reported in association with several diseases, such as inflammatory colitis, SAPHO, ankylosing spondylitis; the association with diabetes was exceptionally reported in the literature. The most dangerous complication is carcinomatous transformation, which remains exceptional. Its

management requires a multidisciplinary approach, associating hygienic and dietary measures, antibiotic therapy, and surgery, which involves a complete removal of the inflammatory placard, including the entire hairy area, and which constitutes the only radical measure.

Conclusion: The association of hidradenitis suppurativa and diabetes is very rare; its management requires a multidisciplinary approach to avoid recurrence and ensure a cure of the disease.

P53. Heart Failure: A Rare Complication of Hypocalcemia

Mohamed Mesli[1], Ghembaza Chemseddine[1]
[1]Public Establishment of Health and Proximity Tlemcen Sub-Sector Sidi Chaker, Tlemcen, Algeria

Address for correspondence: toobibmed@gmail.com

Background: Calcium is an important factor that control myocardial contraction; 1-Hypocalcaemia is a rare cause of heart failure. We report the case of a young patient with reversible dilated cardiomyopathy and heart failure due to iatrogenic hypoparathyroidism.

Case Report: We report the case of a 23-year-old woman, with a history or thyroidectomy for papillary thyroid carcinoma 3 years ago, that came to the emergency department for progressive installation of dyspnea and lower leg edema. The clinical examination showed hypotension of 90/70 mm Hg, tachycardia of 102 bpm and ankles edema. The electrocardiogram revealed a sinus rhythm with prolonged corrected QT-interval (S20 ms). The chest X-ray (Fig. 2) showed a cardiomegaly. The echocardiography revealed a dilated cardiomyopathy with left and right ventricular dysfunction, an ejection fraction of 45%, moderate mitral regurgitation with restriction of the posterior leaflet, moderate tricuspid regurgitation, dilated inferior vena cava, and an estimated pulmonary artery pressure of 46 mm Hg.

The biological tests revealed severe hypocalcemia(38 mg/L) with normal albumin and thyroxin values, high levels or phosphoremia and thyroid stimulating hormone. The patient received calcium and vitamin D supplementation and was treated with beta-blockers, ACF-inhibitor and diuretics with a good evolution and a progressive normalization of cardiac function.

Conclusion: Hypocalcemic heart failure is a rare but reversible heart disease. A systematic follow-up of calcium levels is recommended after thyroid surgery for early diagnosis of hypoparathyroidism.

P54. Hypercalcemia Revealing a Parathyroid Carcinoma

Mohamed Mesli[1], Ghembaza Chemseddine[1]
[1]Public Establishment of Health and Proximity Tlemcen Sub-Sector Sidi Chaker, Tlemcen, Algeria

Address for correspondence: toobibmed@gmail.com

Background: Parathyroid carcinoma is a very rare tumor, representing 1% of the causes of primary hyperparathyroidism. The diagnosis of malignancy is difficult and is based on a number of histological arguments and/or the presence of metastases. Only a good resection of the tumor as well as the infiltrated structures can prevent recurrence. Effective treatment of hypercalcemia remains an important part of the management.

Case Report: A 41-year-old woman was admitted to the emergency room for recent onset epigastric pain with nausea, paresthesias in socks and gloves, and weight loss of 5 kg during the last 2 months. Clinical examination revealed epigastric tenderness with frank extra cellular dehydration. The first-line biological work-up showed hypercalcemia at 140 mg/L with hypophosphatemia and very high alkaline phosphatases. Pancreatic enzymeswere within normal limits as well as abdominal and pelvic ultrasound. Symptomatic treatment with high-dose loop diuretics was initiated in addition to rehydration, but the response was incomplete.

To support the diagnosis, a PTH level was requested which was 20 times the normal value. A cervical ultrasound showed a 2-cm-long parathyroid nodule without satellite adenopathy. MIBI scintigraphy showed a nodular left polar parathyroid hyperfixation. The diagnosis of parathyroid adenoma was then made and the patient was referred to the surgical service.

Conclusion: Parathyroid carcinoma is a rare tumor whose usual clinical presentation is acute hypercalcemic crisis. The prognosis depends on the extent of the tumor and the early diagnosis and surgical management. The tumor remains chemo-radio resistant.

P55. Prevalence of Pituitary Insufficiency in Omani Children and Adolescents

Khadija Salim Saif Al Wahaybi[1], Hussain Al Saffar[1]
[1]Ministry of Health, Sultan Qaboos University Hospital, Seeb, Oman

Address for correspondence: Khadijaalwahaybi@gmail.com

Background: Despite the recent advances in the management of brain tumours and the significant increase in the survival rates with a 5-year survival rates of 74% (1), mortality and morbidity including pituitary insufficiency associated with supratentorial tumours still persist. Prediction of factors associated with increasing the risk of pediatric patients with brain tumours to have pituitary insufficiency will help in early detection and management and a better quality of life for these patients. The goal of this study is to identify the characteristics, the predictive factors for pituitary insufficiency, and a comparative analysis following treatment for pediatric patients (below the age of 18 years) with supratentorial tumours who are treated at sultan Qaboos University Hospital (SQUH).

Methods: This is a retrospective study. Data will be collected from the electronic records. Sultan Qaboos University Hospital (SQUH) is a tertiary center in Oman that provides diagnosis and treatment facility for endocrinopathies in pediatric patients with supratentorial tumours. We included those who were diagnosed with supratentorial tumours in the past 10 years, from 2012 to 2022 below the age of 18 years. We excluded those with infratentorial tumors, older than 18 years at diagnosis, patients with pre-existing pituitary insufficiency prior to their initial presentation with STT, and patients with metastatic brain tumours. SPSS version 23.0 was used for the analysis.

Result: We analyzed the data of eight patients with supratentorial tumor between the period of 2012 till 2022 who were treated at Sultan Qaboos University Hospital under the age of 18 years. The mean age was 8.7 ± 3.4 years. The youngest was 3.7 years and the eldest was 15 years. Out of these patients, five were females (62%) and three were males (37.5%). Most of the patients presented initially to the outpatient department 5 (63%), while two of them presented to the emergency department (25%) and one was referred from local health center (13%). The reported duration of symptoms before admission was 31 weeks. However, the average time taken for the surgery to be done post admission was 25 days. One of these patients had a brain biopsy then the decision was not to proceed for the surgery because of the anticipated

complications and another patient presented post operation to our hospital. All the patients who were operated at Sultan Qaboos University Hospital were symptomatic at presentation. The most common complaint was visual disturbance in 63% of the patients followed by nausea and vomiting in 38% and seizure in 38% of the patients. Other complaints were abnormal gait in 25% and having papilledema on examination in 13% of the patients. Pre–operative investigations to look for pituitary insufficiency were done only for three patients out of the eight (38%). One of the eight patients was operated abroad, and no data of the pre–operative investigations were found. All three patients had cortisol deficiency, two of them had hypothyroidism, and one had diabetes insipidus. All these patients were not previously known to have hypothalamic pituitary dysfunction. One of the three patients who had pituitary insufficiency did not undergo surgery. Post–operatively, three patients had pituitary insufficiency (38%). Two of them are the same patients who had pre–operative pituitary insufficiency and the third patient is the one who was operated abroad. These three patients had cortisol deficiency and diabetes insipidus and one of them developed growth hormone deficiency post–operatively, his growth parameters were appropriate for his age. Only one patient had height and weight below the third percentile. This patient had both cortisol deficiency and diabetes insipidus. All patients had brain MRI as the initial diagnostic modality. Histopathological findings of brain lesions post–operatively showed that 50% of the patients had different types of glioma, while 25% had adamantinomatous craniopharyngioma and 25% had anaplastic astrocytoma. Four patients required additional treatment after the surgery including chemotherapy and radiotherapy. The most common post–operative complications were pituitary insufficiency and obstructive hydrocephalus in 38% of the patients. Seizure was noted in 25% of patients, while one patient had an arrhythmia and one patient had DVT. 25% of patients had residual lesions and 25% had recurrence of the tumor. Two out of these patients passed away. One of them had cortisol deficiency and central diabetes insipidus. The other patient was not referred to the endocrine team and he was not investigated for pituitary insufficiency.

Conclusion: Pituitary insufficiency in patients with supratentorial tumours is not uncommon. It is important to have a multidisciplinary team approach and clear pathway of care for the management of these patients to achieve the best outcome. It is essential to do preoperative surveillance as well as regular postoperative surveillance of endocrine sequela as pituitary insufficiency is one of the complications related to supratentorial tumors.

P56. Dysthyroidism Associated with Autoimmune Diseases: A Chart Review of 151 Cases

Melek Kechida[1], Imen Chaaben[1], Rim Klii[1], Syrine Daadaa[1], Ines Khochtali[1]

[1]*Internal medicine and Endocrinology Department, Fattouma Bourguiba University Hospital, Monastir, Tunisia*

Address for correspondence: kechidamelek@gmail.com

Background: Dysthyroidism is frequently associated with autoimmune diseases. Our objective is to study the prevalence of dysthyroidism during connective tissue disease as well as their particularities.

Methods: We retrospectively reviewed the charts of patients followed up for connective tissue. We limited ourselves to the study of files of systemic lupus erythematosus (SLE), rheumatoid arthritis (RA), and syndrome of Sjogren (SSj). Patients who presented with dysthyroidism during their follow-up were collected.

Result: We retained 151 patient files followed up for connective tissue disease: 85 (56.3%) patients with SLE, 61 (40.4%) with SSj, and 5 (3.3%) with RA. The average age of the patients was 44 years with a sex ratio F/M = 2.4. Dysthyroidism was diagnosed in 22.5% with overt hypothyroidism in 94.1%, gross hypothyroidism in 4.6%, and hyperthyroidism in 1.3%. The prevalence of antithyroid antibodies was 16%. These antibodies were associated in all cases with clinical dysthyroidism. In 11.5% of cases, dysthyroidism was associated with another autoimmune disease.

Conclusion: Dysthyroidism is frequently associated with connective tissue disease that may precede it or appear during its follow-up. Their biological and immunological screening must be systematic in order to improve patient care.

P57. Endocrine Manifestations in Sarcoidosis: About 3 Cases

Melek Kechida[1], Imen Chaaben[1], Rim Klii[1], Syrine Daadaa[1], Ines Khochtali[1]

[1]*Internal medicine and Endocrinology Department, Fattouma Bourguiba University Hospital, Monastir, Tunisia*

Address for correspondence: kechidamelek@gmail.com

Background: Sarcoidosis is a granulomatosis with essentially mediastinal-thoracic manifestations. Endocrine manifestations are relatively rare. Our objective is to describe the most frequent endocrine localizations during sarcoidosis.

Methods: This is a retrospective study of 35 files of patients hospitalized between 2005 and 2015 in the internal medicine and endocrinology department for the management of sarcoidosis. The diagnosis of sarcoidosis was retained on a bundle of clinical, biological, and histological arguments. Patients with an endocrine manifestation related to sarcoidosis were identified.

Result: We collected 3 patients (2 women and 1 man) with an average age of 54 years. Sarcoidosis was associated with pituitary damage in 2 cases discovered by polyuria polydipsia syndrome in one case and central hypothyroidism with damage to the other pituitary axes in the other. The MRI had confirmed the damage by showing a thickening of the pituitary stalk in the 2 cases with loss of the signal from the posterior pituitary in the first. The second endocrine attack was a parathyroid attack in front of hypercalcemia with increased PTH. The scintigraphy showed hyperfixation of a parathyroid gland whose ablation showed the histological appearance of a sarcoidosis granuloma. The treatment was based on corticosteroid therapy in all cases with favorable evolution.

Conclusion: Endocrine manifestations during sarcoidosis are linked to granulomatous infiltration of different organs. Sometimes asymptomatic they must be sought systematically.

P58. Myelodysplastic Syndrome Revealing Secondary Hemochromatosis

Melek Kechida[1], Imen Chaaben[1], Rim Klii[1], Syrine Daadaa[1], Ines Khochtali[1]

[1]*Internal Medicine and Endocrinology Department, Fattouma Bourguiba University Hospital, Monastir, Tunisia*

Address for correspondence: kechidamelek@gmail.com

Background: Hemochromatosis is an infiltrative pathology responsible for iron overload. Its occurrence during myelodysplastic syndromes apart from transfusions is scantly reported in the literature.

Case Report: A 58-year-old patient with no history was admitted for exploration of non-regenerative macrocytic anemia at 5 g/dL. He reported asthenia evolving for several months with NYHA stage II exertional dyspnea. The examination revealed cutaneous and mucosal pallor, slate stains in the oral cavity, hepatomegaly (HMG) at 13 cm with signs of right heart failure. A sternal puncture had concluded to a myelodysplastic syndrome. Cardiac ultrasound showed pulmonary arterial hypertension (PAH) at 70 mm Hg. Chest CT angiography showed no signs of proximal embolism. On the other hand, a thoracic scintigraphy had concluded in a distal embolism. Abdominal ultrasound confirmed HMG associated with splenomegaly with portal hypertension (PH). The iron balance was in favor of hemochromatosis with hyperferritinemia at 3561 µg/L associated with a transferrin saturation coefficient of 98%. The impact of hemochromatosis was negative. A liver MRI showed moderate iron overload. The diagnosis retained was hemochromatosis secondary to a myelodysplastic syndrome, complicated by PH which would be an added factor of PH.

Conclusion: Acquired hemochromatosis frequently complicates myelodysplastic syndromes due to repeated transfusions. Its occurrence without any transfusion would be explained by intestinal hyperabsorption secondary to ineffective erythropoiesis. It presents the same complications as hereditary hemochromatosis that must be screened.

P59. A Challenging Case of Neonatal Diabetes with Heterozygous BLK Gene Mutation

Hanan Al-Khatri[1], Shaima Al-Hinai[1], Irfan Ullah[1], Azza Al-Shidhani[1], Hussain Alsaffar[1]

[1]Sultan Qaboos University - College of Medicine and Health Sciences, Paediatric endocrine and diabetes unit - Child Health Department - Sultan Qaboos University Hospital, Paediatric endocrine and diabetes unit - Child Health Department - Sultan Qaboos University Hospital, Paediatric endocrine and diabetes unit - Child Health Department - Sultan Qaboos University Hospital

Address for correspondence: hussaina@squ.edu.om

Background: Neonatal diabetes mellitus, also known as congenital diabetes or diabetes of infancy, is a condition characterized by the onset of persistent high blood sugar levels within the first 6 months of life. This is primarily caused by impaired insulin function, which is often due to an underlying genetic defect affecting the function of pancreatic beta cells. The clinical presentation of this condition can vary, ranging from asymptomatic hyperglycemia that is incidentally detected to more severe symptoms such as dehydration and diabetic ketoacidosis (DKA). Diabetic ketoacidosis is a potentially life-threatening condition characterized by high blood sugar levels, dehydration, and the accumulation of ketones in the blood.

Case Report: We describe a case that was presented, diagnosed, treated, and is still under the care of the pediatric diabetes team. A newborn male was born at 36 weeks of gestation by crash cesarian section due to an abnormal antenatal cardiotocography (CTG). The mother had gestational diabetes mellitus in her first pregnancy after 15 years of trials to conceive. She is also known to have systemic lupus erythematosus (SLE), and hypothyroidism. She stopped all her regular medications during pregnancy on her own. Her son was delivered in good condition with a birth weight of 1.9 kg (<3rd centile), length of 49 cm (50–75th centile), and head circumference of 32.5 cm (10–25th centile). No resuscitation was required. However, soon later he developed signs of respiratory distress for which he got admitted to neonatal intensive care for further support. At 6 hours of age, he developed hyperglycemia with a blood glucose of 20 mmol/L with normal blood gas. As per neonatal protocol, his glucose was re-checked and when it remained persistently elevated, he was started on intravenous insulin infusion at 0.02 u/kg/hour, and the dose was titrated until it reached 0.05 u/kg/hr, to achieve normoglycemia within 12 hours. Insulin was stopped at this stage. Two hours later, he went hyperglycemic again with blood glucose of 13 mmol/L and blood ketone of 1.4 mmol/L. He continued intravenous fluids with close monitoring of blood glucose which rose up further to 17 mmol/L with blood ketone of 2.3 mmol/L. He was then restarted on insulin infusion at 0.05 u/kg/hr. After 5 hours from then, he achieved normal glucose and ketones levels. On day 3 of life, he was again off insulin, on full enteral feeds with normoglycemia. This situation remained variable as he could quickly develop hyperglycemia and then normalize despite the trials to titrate the amount of infused insulin. On day 7, he was started on long-acting insulin, Levemir 1 unit subcutaneously. A diagnosis of neonatal diabetes was established clinically. C-peptide was undetected (<0.05 pmol/L). A trial with glibenclamide 0.2 mg/kg in two divided doses was tried at the age of 17 days, increased gradually to 0.5 mg/kg, three times daily over 13 days as blood glucose was uncontrolled. Insulin was never stopped during this trial. On day 30 of life, oral hypoglycemia was stopped as it was proven ineffective. After 42 days he was discharged home on Glargine (Lantus) 2 units in the morning and 1 unit in the evening with a Novorapid when needed to correct hyperglycemia. At 6 months of age, he started on an insulin pump (Medtronic 640G). Since then, he had better glycemic control. Genetic testing was sent to Fulgent Laboratories in India which showed heterozygous mutation of unknown significance in BLK gene NM_001715.3:c.674C>A (p.Pro225Gln). Saying that autosomal dominant in the BLK gene is usually associated with maturity-onset diabetes of youth type 11. Currently, the patient is 2.75 years, on continuous subcutaneous insulin infusion (CSII), requiring a total daily dose of 12.6 units (0.84 unit/kg/day). The latest HbA1c is 6.6% (49 mmol/mol). His thyroid function and coeliac screen were negative.

Conclusion: We presented a case of a baby who developed hyperglycemia at an early age, which was found to have neonatal diabetes. We think that his heterozygous mutation of BLK gene is significant to cause him the current type of diabetes mellitus. It was very challenging to manage him using the MDI regimen, but much easier with an insulin pump, especially when it came to the very small correction doses of insulin. We would strongly recommend using CSII regimen in patients with neonatal diabetes if they failed the oral hypoglycemic agents.

P60. Diabetes Insipidus as a Presentation of Undiagnosed Lung Cancer: A Case Report

Ibrahim Alali[1], Alaa Al-Sarraj[1], Younes Kabalan[1]

[1]Endocrinology Department, Al-Assad University Hospital, Damascus University, Damascus, Syria

Address for correspondence: ibali2012@gmail.com

Background: Pituitary metastases (PM) are very rare, accounting for less than 1% of intracranial metastases. In recent decades, the development of several radiological imaging techniques has led to increased detection of PM. Breast and lung cancers are the most common primary cancers that result in pituitary metastases. Although most

cases are asymptomatic, diabetes insipidus (DI), headache, and visual disturbances are most commonly encountered symptoms.

Methods: In this case report, we present a patient who presented with fatigue, polyuria, polydipsia, and erectile dysfunction. We also review the approach and management of pituitary metastases. To the best of our knowledge, this is the first reported case of PM from Syria.

Result: A 60-year-old man was referred to the endocrine clinic for evaluation of polyuria, polydipsia, and erectile dysfunction. After a thorough workup for hypogonadism, polyuria, and polydipsia, the patient had central diabetes insipidus, hypogonadotropic hypogonadism. pituitary MRI revealed a hypothalamic lesion with pituitary stalk thickening that seems to be from a metastatic origin. A whole-body scan using CT revealed a 28-mm suspicious lung nodule in the upper pole of the left lung; it was biopsied and came with poorly differentiated non-small cell lung cancer.

Conclusion: We have described a unique case of occult lung cancer that was diagnosed through its metastases to the pituitary gland. We were keen to demonstrate the importance of processing available clinical data in a resource-constrained setting to establish the correct diagnosis in the absence of histologic confirmation.

P61. Could It Be Premature Ovarian Insufficiency (POI) and Not PCOS!

Sadia Malick Shumail Malick[1]

[1]*King Faisal Specialist Hospital and& Research Centre Riyadh KSA, County Durham and Darlington NHS Trust UK, Darlington, United Kingdom*

Address for correspondence: obsgyn1177@gmail.com

Background: Premature ovarian insufficiency (POI) is a condition where the ovarian follicles become depleted or dysfunctional in women younger than 40 years. There are many risk factors including family history, genetic abnormalities, smoking especially vamping, medical or surgical treatments that disrupt ovarian function, infections, environmental factors, and metabolic and autoimmune conditions. We also see that most cases remain idiopathic. Differential diagnosis for patients younger than 40 years presenting with oligomenorrhea or amenorrhea should include POI. Unfortunately the diagnosis is delayed as majority of them get diagnosed as polycystic ovarian syndrome (PCOS).

Methods: The Family Medicine Department at the King Faisal Specialist Hospital and Research Centre has a specialist gynecology service run by a consultant gynecologist. Review of all patient data through electronic records was done by the gynecologist and it was noted that in 3 months there were five patients less than 40 years of age who were diagnosed with premature ovarian insufficiency. We identified these women diagnosed as POI on the basis of the international diagnostic criteria. This criteria is 4 months of amenorrhea and 2 measurements of follicle-stimulating hormone greater than 40 IU/L, taken at least 1 month apart.

Result: Five patients were seen in a 3-month period with ages less than 40 and all suffering from symptoms ranging from irregular periods to oligomenorrhea, amenorrhea, and hypoestrogenic symptoms including hot flashes, vaginal dryness, or infertility. They were all incorrectly diagnosed as PCOS initially and were given different treatments. When the diagnosis was confirmed, none of these women were offered hormone replacement therapy. They did not receive vaginal estrogen despite reporting severe symptoms of genitourinary syndrome. None of these patients were referred for bone marrow density scans or orthopedic referral despite complaining of severe backache and joint pains.

Conclusion: A recent systematic review showed that the global overall prevalence of POI among women was 3.5%. By subgroup analysis, the prevalence of POI among women with iatrogenic etiology was 11.2%, followed by autoimmunity (10.5%); the prevalence of POI by region was 11.3% at the highest in North America followed by South America (5.4%); and the prevalence of POI was 5.3% in a developing country, higher than 3.1% in a developed country. The trend of prevalence of POI over the past 20 years was on the rise (although $p>0.05$). Patients typically present with menopause-like symptoms (i.e., oligomenorrhea or amenorrhea, and hypoestrogenic symptoms including hot flashes, vaginal dryness, or infertility). Pregnancy, polycystic ovarian syndrome, hypogonadotropic hypogonadism, thyroid dysfunction, and hyperprolactinemia should be ruled out in these patients. Unfortunately there is delayed diagnosis as both gynecologists and endocrinologists are keeping PCOS as the top diagnosis. These patients also do not have a lead consultant as they rotate between endocrinology and gynecology clinics. They must be seen by a specialist who is fully trained in prescribing hormone replacement therapy. They need special medications to prevent them from worsening genitourinary symptoms.

P61. Biermer's Disease and Associated Endocrinopathies

Melek Kechida[1], **M. Kechida**[1], **I. Chaaben**[1], **A. Sassi**[1], **Y. Belghith**[1], **S. Hammami**[1], **R. Klii**[1], **S. Daadaa**[1], **I. Khochtali**[1]

[1]*Internal and Endocrinology Department, Fattouma Bourguiba University Hospital, Monastir, Tunisia*

Address for correspondence: kechidamelek@gmail.com

Background: Biermer's disease (BD) is an autoimmune atrophic gastritis caused by vitamin B12 deficiency, which is frequently associated with other autoimmune diseases including endocrinopathies. We aimed to describe the different endocrinopathies associated with BD.

Methods: Monocentric, retrospective study conducted in an internal medicine department including 78 patients with BD whose diagnosis is retained in the face of vitamin B12 deficiency with positive anti-intrinsic factor (IF) and/or anti-parietal cell (CP) antibodies.

Result: Among 78 patients followed up for MB, 16 had an associated endocrinopathy (20%). They were 8 men and 8 women, with an average age at the time of diagnosis of 53 years (23– 64 years). A family history of endocrinopathy was found in 9 patients (56%): Hashimoto's thyroiditis ($n=9$) and type 1 diabetes ($n=1$). The circumstance of discovery of anemia was: anemic syndrome in 14 cases (87%), during follow-up of hypothyroidism in one case (6.2%), and fortuitous in one case (6.2%). Anti-CP parietal cell antibodies were positive in 9 cases (56%) and anti-FI intrinsic factor antibodies in 10 cases (62.5%). Gastric fibroscopy was performed in 9 cases (56%) showing gastric atrophy in all cases. Endocrinopathies associated with BD were: Hashimoto's thyroiditis in seven cases (43%), Addison's disease in six cases (37%), type 1 diabetes in three cases (18.7%), and of Basedow in two cases (12.5%). Multiple autoimmune syndrome was diagnosed in two patients (12.5%). It was an association of type 1 diabetes, Hashimoto's thyroiditis and BD in one patient and type 1 diabetes, Addison's disease and BD in the other patient. Treatment was based on vitamin B12 therapy in all cases.

Conclusion: Our series confirms the high frequency of endocrinopathy associated with BD, in particular

Hashimoto's thyroiditis. This frequent association encourages us to systematically screen during the follow-up of these patients.

P62. Monogenic Obesity in Omani Children: Sultan Qaboos University Experience

Irfan Ullah[1], Saif Al Yarrubi[1]
[1]*Department of Pediatric Endocrinology, Sultan Qaboos University Hospital, Muscat, Oman*

Address for correspondence: irfanullahdr@gmail.com

Background: Obesity is a common problem in children due to changes in life style. Obesity is polygenic in majority of obese children. Monogenic form of obesity is considered in early-onset syndromic/non syndromic obesity. Monogenic obesity is severe obesity in early childhood due to known mutations in leptin melanocortin pathway. Most of these genes are involved in the central nervous regulation of hunger and satiety where the leptin/leptin receptor system plays major role.

Methods: We investigated 10 children with morbid obesity since early infancy. Nutritional obesity was ruled out in these children. We did endocrine workup for underlying cause of obesity. We collaborated with Prof Sadaf Farooqi in center for genetics study, Wellcome Trust, University of Cambridge Metabolic Research Laboratories, UK, in 2015–2016. Clinical information of patients with blood samples was sent to them.

Result: All children with genetic defect were tall and developmentally normal. Endocrine workup was normal, leptin level was high in four children, and normal in one child. Four children had homozygous MC4R gene mutation and double heterozygous MC4R gene mutation was detected in one child. The monogenic leptin MC4R genetic pathway was normal in remaining five. All patients were given supportive management while two of them underwent bariatric surgery.

Conclusion: Monogenic form of childhood obesity is less common. MC4R gene mutation is the most common form monogenic obesity. There was no definite treatment available for MC4R 2016, but setmelanotide was approved by FDA in 2022. It is a promising step in the management of MC4R and some other monogenic obesity subtypes which we may in the management of *MC4R* gene mutations and other indications depending on its availability and safety profile in future.

P63. Utility of Fracture Risk Assessment Score among Postmenopausal Sudanese Women

Sufian Khalid Mohammed Noor, Sufian Khalid Mohammed Noor, Mawada S. Mohammed, Amro M. Farah, Sirelkhatim I. Farah, Fadul B. Mohammed, Sara O. Bushara
[1]*Department of Internal Medicine, Faculty of Medicine, Nile Valley University, Atbara, Sudan*
[2]*Department of Internal Medicine, Sudan Medical Specialization Board, Khartoum, Sudan*
[3]*Department of Internal Medicine, Al Ain Hospital, Abu Dhabi, United Arab Emirates*
[4]*Department of Internal Medicine, Jaber Abu Al-Ezz Diabetes Center, Khartoum, Sudan*

Address for correspondence: sufiankhalid@yahoo.com

Background: World Health Organization fracture risk assessment (FRAX) tool helps improve the prediction of fractures in women even before they develop osteoporosis. This study aimed to assess the risk of developing fractures in Sudanese women using the FRAX tool by studying clinical risk factors that lead to decreased bone strength.

Methods: A cross-sectional community-based study was conducted in the River Nile State, Sudan (January 2020 to June 2020). A questionnaire comprising demographic data and clinical risk factors of fragility fracture was used to determine whether these factors met the FRAX criteria.

Result: Participants were 350 postmenopausal women between the ages of 51 to 60 (36%), with a body mass index (BMI) >25 in 61.4%. In addition, 11% were exposed to oral glucocorticoids, and premature menopause occurred among 20.3%. The risk of major osteoporotic fracture was highest (>20%) in approximately 7% of the women, and 16.3% of them had a high risk of hip fracture (>3%). The risk for fractures increases with age, and a lower BMI is significantly associated with minimal trauma fractures. This study observed significant relationships among systemic glucocorticoid use, insulin-dependent diabetes mellitus, premature menopause, and osteoporotic fractures. All significant associations had $p < 0.05$.

Conclusion: This study observed that multiple risk factors significantly correlated with osteoporotic fractures. Therefore, the FRAX tool is useful in 10-year fracture risk predictions.

P64. Risk Assessment of Ramadan Fasting in Sudanese Population with Diabetes

Sufian Khalid Mohammed Noor[1], Sufian Khalid Mohammed Noor[1], Mo'min T. Alutol[1], FadAllah S. A. FadAllah[1], Ahmed A. Ahmed[1], Sohep A. Osman[1], Safaa Badi[1], Ahmed Ibrahim Fathelrahman[1], Musaab Ahmed[1], Mohamed H. Ahmed[1]
[1]*Department of Medicine, Faculty of Medicine, Nile Valley University, Atabara, Sudan*

Address for correspondence: sufiankhalid@yahoo.com

Background: The aim of this study was to assess risk associated with Ramadan fasting among Sudanese individuals with diabetes (high, moderate, and low risk) according to the International Diabetes Federation in collaboration with Diabetes and Ramadan International alliance (IDF-DAR) Practical Guidelines 2021 risk score.

Methods: This was a cross-sectional hospital-based study which recruited 300 individuals with diabetes (79% have type 2 diabetes) from diabetes centers in Atbara city, the River Nile state, Sudan.

Result: The risk score was distributed as low risk (13.7%), moderate risk (24%), and high risk (62.3%). T-test showed a significant difference in mean risk score by gender, duration, and type of diabetes (p-values = 0.004, 0.000, and 0.000, respectively). One-way ANOVA revealed a statistically significant difference in the risk score by age groups ($p = 0.000$). Logistic regression revealed that the odds of being in the 41- to 60-year-age group had lower probability to be categorized in the moderate risk group of fasting rather than low risk by 4.3 times than being in the age more than 60 years ($p = 0.008$), the odds of being in the age group 41- to 60-year lower probability to be categorized in the high risk of fasting rather than low risk by 8 times than being in the age more than 60 years ($p = 0.000$).

Conclusion: The majority of patients in this study have a high risk for Ramadan fasting. IDF-DAR risk score is of great significance in assessing individuals with diabetes for Ramadan fasting.

P65. Dietary Approach to Weight Loss

Abdulwahed Al-Saeed[1]
[1]Department of Internal Medicine, Anak General Hospital, Saudi Arabia

Address for correspondence: Email: wasaeed2004@yahoo.com

Background: Obesity is one of the most important public health problems worldwide. Obesity is a chronic metabolic disease affecting people worldwide, which is defined as body mass index more than 30 kg/m^2. BMI and waist circumference are used for determining risk in overweight and obese adult across diverse populations.

Methods: To discuss and investigate type of food eaten in detail which includes low fat diet, low carbohydrate diet, high protein diet, and Mediterranean diet.

Result: Weight reduction depends on food eaten, type of food eaten, timing of meals, and amount of food eaten. Low-calorie diet with a low fat or carbohydrate content, ketogenic diet, or high protein diet has been recommended for weight reduction, although the potential risks and long-term effectiveness remain unknown. Meal timing is also an important factor in weight management, and higher-calorie breakfasts in combination with overnight fasting may help to prevent obesity.

Conclusion: Weight loss likely similar to differing macronutrient percentages. During weight loss, low carb and low-fat diet with normal amounts of protein cause improvements in metabolic risk factors. High protein diet likely has negative effects on skeletal muscle insulin sensitivity. Mediterranean diet associated with decreased mortality.

P66. Vitamin D Deficiency and Glycemic Control among Patients with Type 2 Diabetes

Turki Kamal[1]
[1]Makkah Armed Forces Center, Mecca, Saudi Arabia

Address for correspondence: dr.turkikamal@gmail.com

Background: The prevalence of vitamin D deficiency (VDD) is predicted to be high in patients with type 2 diabetes mellitus (T2DM), but the exact figure is not known in Jazan, Saudi Arabia. Emerging data suggest that VDD plays a role in glycemic control. The aim of this study was to measure the prevalence of VDD among T2DM patients and to investigate its association with patients' characteristics and glycemic control in Jazan.

Methods: This is an analytical cross-sectional study which recruited 309 patients with T2DM randomly from primary health care centers in Jazan. Logistic regression analysis was conducted to determine the VDD predictors and to examine the association of VDD and glycemic control.

Result: The VDD prevalence was found to be 60.8% in patients with T2DM. Age, gender, diabetic retinopathy (DR), dyslipidemia, glycemic control, and obesity were significantly associated with VDD, and all except obesity were independent predictors of VDD. There was a significant negative correlation between 25-hydroxyvitamin D and HbA1c. VDD was a significant independent predictor of poor glycemic control after adjustment for hypertension, DR, diabetic neuropathy, type of diabetes medication, diabetes duration, and education level.

Conclusion: In this Saudi Arabian population, VDD is highly prevalent in people with T2DM and is associated with poor glycemic control. Health education targeting patients with T2DM and national strategies regarding vitamin D fortification are needed to prevent VDD in Saudi Arabia. Earlier VDD diagnosis by health care providers may help improve the outcome for patients with T2DM. Establishing the causal association between VDD and glycemic control and clarifying the biological role of vitamin D in T2DM are important aims for future studies.

P67. Therapeutic Plasma Exchange in Refractory Afib Secondary to TS: A Case Report

Marwah Salem Bafadel[1], Sara AlShehri[1], Marwah Bafadel[1], Naji Al-Johani[1]
[1]Department of Medicine, Division of Endocrinology, King Saud University, Obesity, Endocrine and Metabolism Center, King Fahad Medical City, College of Medicine, Alfaisal University, Riyadh, Saudi Arabia

Address for correspondence: Marwahbafadel@gmail.com

Background: Thyrotoxic crisis (thyroid storm) is a severe form of hyperthyroidism. It has a wide range of symptoms, including cardiovascular manifestations that can be life-threatening and require prompt management. Cardiac manifestations of thyroid storm include hypertension, tachycardia, congestive heart failure, cardiac ischemia, and atrial fibrillation. *Case Report:* Standard therapeutic approaches of thyroid storm are based on the use of thionamides, corticosteroids, and nonselective beta-blockers to inhibit thyroid hormone synthesis and release while also blocking thyroxin's peripheral effects. This approach is an effective measure in the management of these manifestations. However, when a patient fails to respond to conventional therapy or there is end organ damage and surgery is not feasible, therapeutic plasma exchange (TPE) is a life-saving measure. Here, we report a case of a 32-year-old female who is known to have hyperthyroidism, but she was not compliant with her medication. She presented with symptoms of hyperthyroidism and was found to have thyroid storm with refractory atrial fibrillation. Despite the effort to control her symptoms, she developed cardiac arrest, after 15 minutes of cardiopulmonary resuscitation she revived. Amiodarone, beta-blockers, and cardioversion have all failed to improve the patient's status, and her condition has deteriorated.

Methods: Therapeutic plasma exchange (TPE) was initiated. She received a total of 3 TPE sessions. During the first TPE session, 3 L of plasma was extracted over 2 hours and replaced with intravenous 5% albumin and fresh frozen plasma (1.5:1.5 ratio). She tolerated TPE well.

Result: After the first session of TPE, her rhythm converted to sinus rhythm, and her heart rate was controlled to less than 100 beats per minute. She showed dramatic improvement clinically and biochemically.

Conclusion: In conclusion, cardiac complication is a potentially lethal complication of thyroid storm. Prompt restoration of normal thyroid state can reverse these complications. When conventional therapy fails to ameliorate symptoms or organ deterioration is rapid and severe, TPE can be a safe and effective measure. Despite limitations of data, TPE has successfully reversed our patient's severe cardiac dysfunction, providing a rescue treatment.

P68. Single-Point Insulin Sensitivity Estimator Is Inversely Associated with Low Bone

Nasser M. Al-Daghri[1], Kaiser Wani[1], Malak N.K. Khattak[1], Abdullah M. Alnaami[1], Yousef Al-Saleh[1], Shaun Sabico[1]
[1]CBCD, College of Science, King Saud University, Saudi Arabia

Address for correspondence: aldaghri2011@gmail.com

Background: The present observational study investigated the association between bone mineral density (BMD) and insulin sensitivity in a total of 1,270 Arab adults (mean age 56.7 ± 8.1 years) with one or more risks associated with bone loss.

Methods: Lumbar BMD scan was performed using dual-energy X-ray absorptiometry (DXA). T-Scores and an index for insulin sensitivity called Single Point Insulin Sensitivity Estimator (SPISE) were calculated.

Result: The average SPISE values were significantly higher among those with low BMD (T-score < -1.0) (4.6 ± 1.3 vs. 4.3 ± 1.2, $p < 0.001$) and a significant inverse correlation ($r = -0.21$, $p < 0.001$) was found between SPISE index and T-score. A multivariate linear regression analysis revealed that this inverse association was significant only in participants having hyperglycemia (>7 mmol/L) alone (adjusted $\hat{I}^2 = -0.29$, $p < 0.001$) and ones with hyperglycemia and low BMD (adjusted $\hat{I}^2 = -0.11$, $p = 0.03$) suggesting that this association is largely influenced by hyperglycemia status.

Conclusion: The findings maybe clinically useful in assessing the bone health of T2DM patients in areas where healthcare resources are scarce (e.g., no DXA) since SPISE is inversely associated with BMD independent of age and status of menopause and that it can be calculated in the absence of known glycemic parameters.

P69. Hyperprolactinemia in Asymptomatic Patients

Abeer Abdalrubb[1], Noora Al Thani[1], Zainab Dabbous[1], Zaina Rohani[1], Mohammed Bashir[1]

[1]Department of Medicine, Endocrine Department, Qatar Metabolic Institute, Hamad Medical Corporation, Doha, Qatar

Address for correspondence: a3alhag@gmail.com

Background: Hyperprolactinemia has been associated with many etiologies, including pituitary tumors. Furthermore, transient hyperprolactinemia can result from stress. Persistently elevated prolactin levels result in abnormal sexual function in both genders. Hence, prolactin levels should always be re-measured in the absence of symptoms suggestive of persistent hyperprolactinemia. We aim to examine the final diagnosis of patients referred with elevated prolactin levels based on presenting symptoms and persistently elevated prolactin levels.

Methods: We collected data on 178 consecutive patients. Prolactin levels were re-measured in all patients. An MRI scan was ordered accordingly.

Result: The mean age (SD) of the patients was 29.7 (8.3) years, the mean BMI (SD) was 29.1 (7.0) kg/m^2, and 166 (93.2%) were females. Most of the females had no symptoms 55/166 (33.1%), while 45 (27.1%) of them presented with irregular menses, and 23 (13.9%) presented with infertility. Repeated prolactin levels were back to normal in 90/177 (50.6%) patients, decreased to < 1,000 mIU/L in 58/177 (16.8%) and increased in 30/177 (16.8%) patients. On the second measurement, 36/61 (59.0%) and 18/61 (29.5%) had normal or reduced prolactin levels among asymptotic patients. While among those with headaches, 7/13(53.8%) had increased prolactin levels. Among those with no symptoms, only 4/61 (6.6%) had prolactinoma, all of which had increased prolactin levels. Among those with persistently elevated prolactin levels, 23/30 (76.6%) had prolactinoma, 3/30 (10%) had idiopathic hyperprolactinemia, and 2/30 (6.6%) were on antipsychotics medications while 2/30 (6.6%) had PCOS and normal pituitary MRI scan.

Conclusion: Among patients referred with elevated prolactin levels, it is critical to repeat the test before proceeding with further workup. This is particularly important in patients with no symptoms of hyperprolactinemia.

P70. Metabolic and Renal Outcomes of Empagliflozin in Patients with type 2 Diabetes

Ali Ayidh Alshahrani[1], Ali A. Alshahrani[1], Saad S. Al Qahtani[1], Abrar S. Al Qahtani[1], Saeed M. Mashhour[1], Zayed S. Alkhtani[1], Yahya M. Alragea[1]

[1]AFHSR Armed Forces Health Sciences Research, Saudi Arabia

Address for correspondence: aly.alshahrani@gmail.com

Background: To explore the effects of empagliflozin (25 mg) on metabolic and renal parameters in patients with type 2 diabetes mellitus (T2DM).

Methods: This retrospective observational comparative study was conducted at a military hospital in southern Saudi Arabia. All adults (aged >18 years) with T2DM who attended diabetic clinics between October 2021 to March 2022 (6 months), with or without insulin treatment, were eligible for inclusion in the study.

Result: Following the initiation of empagliflozin treatment, statistically significant reductions in patient weight (kg) were observed at 1, 3–5, and 6 months. In addition, low-density lipoprotein levels significantly decreased 3– to 5 months post-treatment initiation ($p = 0.011$). However, serum creatinine level decreased gradually with time during the treatment with empagliflozin, from 87.45 ± 31.78 (0.105) to 78.39 ± 27.43 (0.033). Furthermore, after empagliflozin treatment, the urinary albumin-to-creatinine ratio significantly decreased at 3–5 and 6 months. Moreover, HbA1c levels exhibited statistically significant decreases at 3– to 5 months ($p < 0.001$) and at 6 months ($p < 0.001$) following the initiation of empagliflozin treatment. Notably, systolic and diastolic blood pressure significantly reduced 6 months after empagliflozin treatment.

Conclusion: In the current study, empagliflozin has demonstrated efficacy in controlling blood pressure and body weight, and improving renal function, short-term dyslipidemia, and glycemic control in patients with T2DM.

P71. Dietary Habits in Thyroid Cancer Survivors

Nadjib Kaouache[1], Mohamed-Zineddine Kouachi[1], Abdelhak Lakehal[1], Islem Ababsa[1], Nassim Nouri[1]

[1]Medical School of B©jaia, Medical School of Constantine,

Address for correspondence: nadjib18k@yahoo.fr

Background: Thyroid cancer, once considered rare, has witnessed a threefold increase in its incidence over the past three decades, consequently leading to a rise in the number of thyroid cancer (TC) survivors. The primary objective of this study is to assess the adherence of thyroid cancer survivors to the healthy dietary guidelines set forth by the World Health Organization (WHO).

Methods: An observational study was conducted between January 2021 and July 2022, focusing on individuals who had undergone treatment for thyroid cancer and were residing in various provinces of Eastern and Southeastern Algeria. The WHO's STEPS methodology was employed to comprehensively evaluate risk factors.

Result: The study encompassed 342 participants, with females constituting 88.9% of the cohort. The average age was 48 years (ranging from 21 to 85). Papillary carcinoma was the

predominant cancer subtype, accounting for 82% of cases. Notably, 93% of patients were classified under TNM stages I or II. During the assessment period, the mean survival duration stood at 4 years (spanning from 6 months to 32 years), and a remarkable 74.5% displayed an excellent therapeutic response. Of all participants, 306 (89.9%) provided responses pertaining to dietary hygiene. The mean daily intake of vegetables was measured at 160 g/day, while fruit consumption averaged 72 g/day. The median daily portions of fruits, vegetables, and combined fruits and vegetables were 1 [0–5], 1 [0–7], and 2 [0–11], respectively. Surprisingly, only 0.3% of patients consumed five or more portions of fruits per day, 2.0% consumed a similar quantity of vegetables, and 7.8% met the threshold for both fruits and vegetables.

Conclusion: In the context of our thyroid cancer survivor population, the consumption of fruits and vegetables remains suboptimal, indicating a disparity from the WHO's recommended dietary guidelines.

P72. Peritoneal Dialysis for Neonatal Diabetes Presenting with Severe DKA

Fatma Al Mukhaini[1], Fatma Saeed A.L. Mukhaini[1], Sara Abd Al Hameed Al Senani[1], Aisha Al Senani[1]
[1]*Peadiatric Endocrinology Department, Oman Medical College, Sultan Qaboos University, NDEC, Royal Hospital, Muscat, Oman*

Address for correspondence: mukhaini.fatma@gmail.com

Background: Neonatal diabetes is a rare genetic disease characterized by severe, persistent hyperglycemia requiring treatment. It commonly occurs between the neonatal period and infancy, and rarely between 6 months and 1 year. presentation happens before 6 months of age. The mode of presentation can vary widely, ranging from simple incidental hyperglycemia to full on dehydration and diabetic ketoacidosis (DKA).

*Methods:*We report the case of a 7-month-old Omani male, born to consagous young parents, who is clinically and biochemically healthy, previously investigated for stress related hyperglycemia and all his investigations was normal, presented to the private clinic with high grade fever, reduced activity and poor oral intake of and found to have Diabetic ketoacidosis and subsequently referred to Royal hospital as an emergency case for further management .on arrival to Emergency room the patient appeared tachypneic, with subcostal and suprasternal recession and grunting in keeping with Kussmaul breathing with SMBG 38 mmol/dL and severe metabolic acidosis (pH 6.9, bicarbonate 3.7 mEq/L, lactate 3.2, sodium 152, potassium 5.7. Management of DKA initiated as per protocol in ER, but patient did not respond and he subsequently developed respiratory and cardiovascular compromise warranting admission to pediatric intensive care unit (PICU). As such, he was intubated and started on adrenaline 0.05 mcg/kg/min . Blood gas continued to show persistent metabolic acidosis PH 6.9 and HCO_3 4 mEq/L, not responding to fluid and insulin dose increased from 0.1 unit/kg/hr reaching 0.7 IU/kg/hr (which consider to be a high dose with a dextrose fluid of 20% to avoid rapid drop in blood glucose). After 12 HRS of resistant to DKA measures, peritoneal dialysis initiated. After starting peritoneal dialysis, the acidosis improved and insulin dose weaned to gradually reached 0.1 iu/kg/hour. He was also initially started on ceftriaxone, later kept on Tazocin, vancomycin, and Tamiflu for continuous spikes of fever.

Result: After 3 days we are able to stop peritoneal dialysis and the baby out of DKA with normal fine and motor function. He was then shifted to the high dependency unit for further care and was transferred to the ward under the endocrine team. All cultures, including blood, urine cultures came as no growth and subsequently antibiotics stopped and baby able to take orally well and started on subcutaneous insulin. Genetic test confirmed a heterozygous for a likely pathogenic INS missense variant (monoallelic pathogenic variants in INS cause permanent neonatal diabetes).

Conclusion: Neonatal diabetes mellitus is a rare disease and requires urgent medical intervention. Intravenous insulin infusion is the standard of care in infants with hyperglycemia and DKA. Peritoneal dialysis is previously not reported in literature to manage DKA in neonatal diabetes .. In this particular case of severe and resistance to IV insulin diabetic ketoacidosis, was successfully managed with peritoneal dialysis.

P73. Nonsecretory Macroprolactinoma Response to Dopamine Agonist Therapy

Abdulaziz Alfaifi[1], Ohoud Alzaedi[1]
[1]*Dept of Internal Medicine King Abdul Aziz Specialist hospital, Taif, KSA*

Address for correspondence: oalzaedi@hotmail.com, dr_abdulaziz@hotmail.com

Background: Pituitary adenoma most likely is benign neoplasm. it can be classified according to its secretory hormone product. The most secretory pituitary tumor is prolactinoma and can be macroadenoma mostly in the male patient. prolactinoma should be diagnosed before sending the patient to transsphenoidal surgery as it responds very well to medical therapy.

Case Report: of a rare pituitary macro-prolactinoma with normal prolactin level and response to cabergoline.

Some prolactinoma is a nonactive tumor with normal plasma hormone level but responds to cabergoline even if clinically not hormonal secreting tumor and cabergoline can reduce tumor size.

Conclusion: In rare cases, some prolactinoma is a nonactive tumor but responds to cabergoline even clinically not hormonal secreting tumor and cabergoline can reduce size of tumor.

P74. Prevalence of Abdominal Obesity and Its Associated Comorbidities in adults

Mohammed Ahmed Bamashmos[1]
[1]*Department of internal medicine and endocrinology Faculty of medicine and Health sciences Sanaa university, Sanaa, Yemen*

Address for correspondence: mohbamashmoos@yahoo.com

Background: Abdominal obesity is a metabolic problem that has become increasingly common worldwide over the past several decades. Its prev–alence is increased in both advanced and devel–oping countries including Yemen.

Methods: A sample of 1,118 adult Yemeni people equal to or over 18 years was randomly chosen to represent the population living in Sanaa City during a period of 2 years from April 2016 to April 2018. All the study groups underwent full clinical history and examination which included measurement of BP and waist circumference and the following laboratory investigations (FBS, serum TG, HDL, and LDL).

Result: The prevalence of abdominal obesity in this study was 24.5% (7.9% male and 44.2% female). Central obesity was significantly correlated with age and sex. The highest prevalent comorbidity in patients with abdominal

obesity was high BP (41.3%), followed by high serum TG (40%), higher prevalence of MS (40%), low serum HDL (37.8%) high LDL (20.1%) raised fasting blood glucose (22.1%) than those without abdominal obesity (5.5%, 31.3%, 16.6%).

Conclusion: Hypertension, diabetes, dyslipidemia, and MS are strongly correlated with abdominal obesity.

P75. Prevalence of Hyperuricemia and Its Association with Other Cardiovascular Risk

Mohammed Ahmed Bamashmos[1], Khaled Al-Aghbari[1]
[1]*Department of internal medicine and endocrinology Faculty of medicine and Health sciences Sanaa university, Sanaa, Yemen*

Address for correspondence: mohbamashmoos@yahoo.com

Background: Hyperuricemia is a metabolic problem that has become increasingly common worldwide over the past several decades. Its prevalence is increased in both advanced and developing countries including Yemen. The aim of this cross sectional study was to investigate the prevalence of hyperuricemia in sample of Yemeni adult individual and its relationship to certain cardiovascular risk factors, namely, obesity, hypertension, serum glucose, total cholesterol, high serum triglyceride, low high density lipoprotein (HDL-C) and high low density lipoprotein (LDL-C).

Methods: A sample of 600 adult Yemeni people aged equal or over 18 years was randomly chosen to represent the population living in Sanaa City during a period of 16 months from April 2017 to August 2018. All the study groups undergo full clinical history and examination includes measurement of BP and BMI, WC, and the following laboratory investigation (FBS, Basal serum uric acid level, total cholesterol, serum TG, HDL, LDL).

Result: The prevalence of hyperuricemia in this study was 8.8% (11.6% male and 6.4% female). The serum uric acid level in this study was significantly correlated with age, waist circumference (WC), SBP, DBP, FBS, T-cholesterol, TG, and LDL but not with HDL.

Conclusion: There is strong relationship between serum uric acid level and other cardiovascular risk factors.

P76. The Health and Nutritional Benefits of Fruits and Vegetables to Reduce the Risk

Mahfouth Ahmed Almansory[1], Mohamed Ahmed Qazit[1], Ahmed Ali Khalaf[1]
[1]*Aspetar Hospital, Misurata, Libya*

Address for correspondence: mahfouz19911991@gmail.com

Background: Vegetables and fruits are an important part of a healthy diet and help with growth and support body functions and physical, mental, and social well-being at all ages. They can also help prevent all forms of malnutrition, such as undernutrition, micronutrient deficiencies, obesity, and overweight, and reduce the risk of non-communicable diseases. World Health Organization consumption of at least 400 g of fruits and vegetables per day, or five servings of 80 g each, and the reasons for the sad fact that most people do not eat enough of them to maintain a healthy life for the sake of obesity treatment and weight reduction.

Methods: This a descriptive cross-sectional study, 160 obese women underwent to Aspetar Hospital in Misurata city during the period (October–December 2022) and they were divided into two groups of 80 women per group. The first group was presented with a weight-loss diet devoid of vegetables and fruits. The second group was given a weight-loss diet rich in vegetables, including cucumber, lettuce, tomato, and fruits (kiwi, apple, and orange). For three consecutive months.

Result: There was a decrease in weight with an average of 8 kg per woman for the first group and 15 kg per woman for the second group, and the average cholesterol and triglycerides were 280 mg/100 dL of blood and 230 mg/100 dL of blood, respectively, for the women of the first group. While it was 150 mg/100 dL blood and 90 mg/100 dL blood for the women of the second group, with some daily light exercise for all women in the two groups.

Conclusion: This study indicates that consumption of three to five portions/day of fruit and vegetables is highly associated with prevention and a low risk of obesity, high blood fat, cholesterol, and cardiovascular disease. Therefore, we recommend relying on eating vegetables and fruits daily to reduce weight and blood fats, improve health, and nourish the body.

Conclusion: This study indicates that consumption of three to five portions/day of fruit and vegetables is highly associated with prevention and a low risk of obesity, high blood fat, cholesterol, and cardiovascular disease. These findings support public health recommendations that people are at risk of developing obesity, blood fat, and cardiovascular disease; they need to eat more fruit and vegetables for more than the nine rations/day recommended by international organizations, which requires further research.

P77. Reviving Beta Cells with DPP-4 Inhibitors and Dietary Modifications in LADA

Dalal Alromaihi[1]
[1]*Awali Hospital, Royal College of Surgeons in Ireland, Bahrain*

Address for correspondence: 117357@bapco.net

Background: Patients with LADA represent a heterogenous group with variation in phenotype including BMI, antibodies titer, and rate of progression of the disease. The need to start insulin has been widely debated in the medical literature, and when patients have low beta cell function, the use of insulin is recommended. However, there is a role for other antidiabetic medications and lifestyle intervention to delay the progression of the disease as demonstrated in this case.

Case Report: A 37-year-old Bahraini woman presented for evaluation of hyperglycemia. She had history of gestational diabetes two years prior to presentation that resolved after delivery as documented with a 75-g oral glucose tolerance test. She developed COVID infection a month prior to presentation and her evaluation at that time revealed hyperglycemia with random capillary glucose reaching 200 mg/dL and a hemoglobin A1c of 11%. She reported weight loss and reduced appetite since her diagnosis and denied polyuria, polydipsia, nausea, or abdominal pain. She decided to stop carbohydrates consumption and random glucose improved to an average of 162 mg/dL and her weight stabilized at 46 kg. Past medical history included cesarean section and she was not on medications at time of presentation. She worked an office job, did not smoke, or consume alcohol and she was not engaging in regular exercise. She had two children without intention for pregnancy in the short term and family history was significant for a brother with type 1 diabetes. On examination, she appeared well and had a BMI of 18.2 kg/m^2. She did not have acanthosis nigricans. The rest of the examination was noncontributory. Laboratory evaluation showed a repeated hemoglobin A1c of 10.5% and normal lipid profile, complete blood count, thyroid, renal, and hepatic function test were all

normal. She had positive GAD antibodies of 51.8 U/mL (reference range < 1 U/mL). Fasting insulin level was 2.8 mIU/mL (reference range 3–25 mIU/mL), c-peptide 0.19 nmol/L (reference range 0.26–1.2), and fasting glucose 97 mg/dL. Based on the above data, the patient had stage 2 of latent autoimmune diabetes of adults (LADA). Since her glucose profile has been improving on very low carb diet, she deferred starting insulin. The patient was therefore prescribed Sitagliptin 100 mg daily and advised to use flash glucose monitoring and was instructed to proceed to the emergency room in case abdominal pain, polyuria or polydipsia. On follow up visits, she was still adherent with very low carbohydrate diet (less than 60 grams per day) and her weight improved by gaining 3 kg, hemoglobin A1c improved to 6.2% and fasting insulin and c-peptide improved to 3.5 mIU/mL and 0.3 nmol/L, respectively. Time in range was 99% with 1% of hypoglycemia. Although the use of insulin was indicated in this case, this patient has been able to restore some beta cell function by resorting to very low carbohydrate diet and the use of Sitagliptin. Several oral antidiabetic medications can be used based on the clinical phenotype and individualization of therapy is needed. While the use of sulfonylureas has been discouraged, there is a role for Metformin in patients with evidence of insulin resistance. The potential for of DPP4 –inhibitors and GLP-1 agonists to preserve beta cell function is promising and further prospective studies are needed to confirm their long term impact, as well as the role of SGLT-2 inhibitors in this cohort of patients.

Conclusion: LADA is a unique disorder with heterogenous severity and phenotypes, and insulin use maybe delayed with very low carbohydrate diet and DPP4 –inhibitors in a well-educated and adherent patient. Caution and close follow-up remain essential to monitor disease progression and to introduce insulin when needed.

P78. Diabetic Emergencies among Patients with Diabetes Mellitus in Hajj

Afnan Almajnouni[1], Abdulaziz Alfadhly[1]
[1]*Makkah Armed Forces Military Center, Diabetic Center, Prince Mansour Military Hospital, Taif, Saudi Arabia*

Address for correspondence: asmajnouni35@gmail.com

Background: Diabetic emergencies are diabetic ketoacidosis (DKA), hyperglycemic hyperosmolar state (HHS) and hypoglycemia. They are serious acute life-threatening complications of diabetes mellitus (DM). Thus, diabetic emergencies need rapid recognition, diagnosis and treatment. Numerous studies had explored the prevalence and risk factors of diabetic emergencies. This study aimed to explore the frequency and associated factors of diabetic emergencies among pilgrims' patients with DM during Hajj, Mecca 2019.

Methods: This is a prospective study which is conducted on 153 patients with DM, who were presented to one of the major health care-providing facilities during Hajj, which are Arafat, Muzdalifah, and Mina Healthcare centers. The study was conducted during the period from 5th to 12th of Aug. 2019.

Result: More than 90% of the study participants were patients with type 2 diabetes mellitus (T2DM), while around 7% had type 1 diabetes mellitus (T1DM). DKA, HHS, and hypoglycemia were presented in 7.2, 12.4, and 18%, respectively, of the participants. Moreover, the study found that "Younger Age" and "Type of Medication" are significantly associated with DKA. Furthermore, older Age, "type of medication," "having CVD," and "diabetes duration" were found to have a significant association with HHS.

Conclusion: This study aims to shed light on possible associated factors with diabetic emergencies among patients with DM who participated in Hajj 2019. As a primary prevention measure, further efforts are needed for health education about diabetic emergencies for pilgrims with DM who intend to do hajj, especially those who use insulin and had longstanding diabetes. Further research of DM and initiatives creating guidelines for health provider and patients with diabetes during pilgrims are important focuses for future.

P79. Glycemic Control among Type 2 Diabetic Patients in the First Visit after COVID-19

Abdulaziz Alfadhly[1]
[1]*Family Medicine, Diabetic Center, Prince Mansour Military Hospital, Taif, Saudi Arabia*

Address for correspondence: drazouz2007@windowslive.com

Background: COVID-19 pandemic causes significant morbidities and mortalities. Lockdown is applied worldwide to counteract the spread of disease. These circumstances limit diabetic patient from hospital visit and follow up. We aimed evaluate glycemic control for type 2 diabetic patients in the first visit after COVID-19 lockdown and to study the effect of COVID-19 lockdown on glycemic control.

Methods: A cross-sectional study was conducted at Prince Mansour Military Hospital, Taif city, Western Saudi Arabia. It included 374 type II diabetic patients of both genders, aged over 20 years that were assigned to follow-up in diabetic center. Data were collected from patient's medical records using simple random technique. It included patients` gender, age group, body mass index and three glycosylated hemoglobin (HbA1c) readings for each year (2018–2019) and one HbA1c reading upon first visit after COVID-19 lockdown. HbA1c level was treated as continuous variable.

Result: The study included 420 diabetic patients. Females represent 51% of them and more than a third (39.8%) aged 60 years and over. Majority of them either overweight (29.3%) or obese (61.2%). There was an increase in the overall level of HbA1c after curfew (8.7 ± 1.7) than before it (8.6 ± 1.7). However, the difference did not reach a statistically significant level, $p = 0.056$. Among females, the level of HbA1c% was statistically significant higher after curfew than before it (8.7 ± 1.8 vs. 8.4 ± 1.7), $p = 0.005$. Also, among obsess subjects, the level of HbA1c% was statistically significant higher after curfew than before it (8.6 ± 1.7 vs. 8.3 ± 1.6; $p = 0.034$).

Conclusion: There was a relative increase in the level of HbA1c% after the lockdown during COVID-19, indicating poorer glycemic control; this impact was more obvious among female and obese type 2 diabetic patients.

P80. Identifying the Determinants that Affect Successful Control of Diabetes Control

Abdulaziz Alfadhly, Sultan Abdullah Almalki
[1]*Family Medicine Military Center, Makkah, Saudi Arabia*
[2]*Department of Family Medicine, National Guard Health Affairs Primary Health Care Center, Taif, Saudi Arabia*

Address for correspondence: drazouz2007@windowslive.com

Background: A number of dietary factors such as consumption of sugar-sweetened drinks in excess and the

type of fats in the diet also appear to play a role. We estimate the prevalence of successful control of type 2 diabetes mellitus (DM) and its determinants at Diabetic Centre, Prince Mansur Military Hospital for Community Medicine, Taif, Saudi Arabia.

Methods: A cross-sectional study was adopted. It included adult DM type 2 patients (18–60 years), at (PMFCH), Armed Forces Hospital, Taif, Saudi Arabia. Successful control of type 2 DM has been defined strictly by achievement of targeted glycemic control glycated hemoglobin (HbA1c).

Result: Among 370 diabetic patients, 331 returned completed questionnaire giving a response rate of 89.5%. More than one-quarter of them (27.2%) aged over 60 and 48.4% aged between 40 and 60 years. DM was controlled among only 27.5% of the diabetic patients (HbA1c).

Conclusion: The patients with poor glycemic control were high, which is nearly comparable to that reported from many countries. Longer duration of diabetes, and not adherent to diabetes self-care management behaviors, obesity, combination therapy, and lack of family support were associated with poor glycemic control.

P81. A Nasty Infection!

Muhammad Shoaib Zaidi[1]
[1]*King Saud University Medical City, Riyadh, Saudi Arabia*

Address for correspondence: zaidimuh@gmail.com

Background: Emphysematous urinary tract infections usually occur in people having diabetes or urinary tract obstruction.

Case Report: A 78-year-old Saudi man, a chronic smoker (40 pack years) had Type 2 diabetes, hypertension, dyslipidemia, ischemic heart disease (status post CABG and PCI in 2000), HFpEF, proliferative DM retinopathy (S/P acute right retinal necrosis and detachment in 2022), benign prostatic hypertrophy (BPH), chronic bleeding hemorrhoids, and iron deficiency anemia. On aspirin, SGLT-2 inhibitor, frusemide, selective B1 blocker, Ca++ channel blocker, angiotensin receptor blocker, statin, metformin, tamsulosin, a proton pump inhibitor, and an iron supplement. The patient was admitted at our facility on 25.02.2023 with 3 days history of dysuria and suprapubic discomfort, followed by urinary retention (S/P Foley's). Systemic review– was unremarkable. Had 2 episodes of urinary tract infection –1 month back. A day prior to the admission, the patient had visited a private hospital and was found to have a horse-shoe kidney, bilateral ureteric stones causing hydroureteronephrosis on CT scan.

Hemodynamically stable. General and systemic exams– were unremarkable. Repeat CT scan –emphysematous cystitis, bilateral ureteric calculi(1.5 cm right, 1 cm left) and moderate to severe hydroureteronephrosis, CT urography ruled out bladder perforation and revealed multiple bladder diverticula. Other significant investigations (HbA1c 9.3%, CBC –(Hb% 7.5 g/dL, MCV 92.2 fl, PLTs 428,000/mm^3), BUN 11.6 mmol/L, S. creatinine 110 µmol/L, CRP 60 mg/L. Urinalysis-sterile pyuria. ECG-sinus arrhythmia+ RBBB. The patient received broad-spectrum antibiotics, along with intravenous fluids and insulin. The urology service was consulted and they advised for conservative management. He was reluctant for further hospitalization and so was discharged on the antibiotic and advised to follow-up with urology.

Conclusion: Our patient had all the risk factors for a complicated urinary tract infection i.e. emphysematous cystitis and pyelitis. He was elderly, having a horse-shoe kidney, large ureteric calculi causing severe hydroureteronephrosis, and uncontrolled Type 2 diabetes. Emphysematous infections of the urinary tract are usually caused by *E. coli* and *Klebsiella pneumoniae* in 65 to –100% organisms, as shown in different retrospective studies.

P82. Metabolic Control, Adherence to the Gluten-Free Diet, and Quality of Life among Saudi Arabian Patients with Type 1 Diabetes and Celiac Disease

Ayman Al Hayek[1], **Mohamed A. Al Dawish**[1]
[1]*PSMMC, Riyadh, Saudi Arabia*

Address for correspondence: ayman.alhayek@yahoo.com

Background: Children and adolescents with type 1 diabetes mellitus (T1DM) are more likely to acquire autoimmune disorders, including celiac disease (CD). In this study, we aimed to assess the level of metabolic control, adherence to a gluten-free diet (GFD), and quality of life (QoL) among individuals with T1DM and CD.

Methods: We conducted a cross-sectional study on individuals with T1DM and CD who presented to our center at a major tertiary hospital in Riyadh, Saudi Arabia. Data were gathered retrospectively from the medical records of the targeted individuals before the study objectives were assessed prospectively. The level of glycemic control was assessed based on glycated hemoglobin (HbA1c) and ambulatory glucose profile metrics. The extent to which the participants adhered to a GFD was evaluated using Celiac Dietary Adherence Test (CDAT), while the Celiac Disease Quality of Life survey (CD-QoL) was used to assess the QoL.

Result: Out of the 1,095 screened patients with T1DM attending our diabetes treatment center, 48 patients (4.38%) met the inclusion criteria. The mean age was 21.3 years ($\pm$6.6), and the mean HbA1c was 8.3% ($\pm$ 0.8%). Time in range (TIR)% ranged from 24 to 68, with a median value of 38.5, while the mean time above range (TAR)% was 29.6 ($\pm$7.4). The median values of level 1 hypoglycemia (54–69 mg/dL), level 2 hypoglycemia (<54 mg/dL), and level 2 hyperglycemia (>250 mg/dL) were 4, 1, and 9. The median hypoglycemic events/per month and median duration were 8 and 80 minutes. The median overall CDAT and CD-QoL scores were 20.5 and 54. We observed insignificant correlations between glucose management indicator (GMI) as well as % in target (glucose 70–180 mg/dL) and CDAT total score and CD-QoL scale (all $p < 0.05$).

Conclusion: None of the favorable or adverse effects of a GFD on QoL or glycemic control were established in the current study. Further studies with large sample sizes are warranted to establish solid evidence of the effects of adherence to GFD in children with T1DM and CD and its actual impact on QoL.

P83. Glycemic Control in Patients with T1D: Comparison of Holidays versus Schooldays

Ayman Al Hayek[1], **Mohamed Abdulaziz Al Dawish**[1]
[1]*PSMMC, Riyadh, Saudi Arabia*

Address for correspondence: ayman.alhayek@yahoo.com

Background: To investigate the impact of school life by comparing the glycemic control and ambulatory glucose profile (AGP) between holidays and schooldays in children and adolescents with type 1 diabetes (T1D).

Methods: This retrospective study done using 147 patients with T1D (14–19 years) who self-tested their glucose levels by intermittently scanned continuous glucose monitoring (isCGM) system during school and holidays periods.

Continuous glucose monitoring (CGM) metrics were gathered during school and holidays, i.e., glucose variability (GV) (%), mean time in range (TIR), time above range (TAR), time below range (TBR), and average duration of hypoglycemic events.

Result: Significant differences were observed between holidays and schooldays on % in target 70– to 180 mg/dL (38.2 vs. 49.5; $p = 0.039$), mean glucose (194 vs. 185; $p = 0.048$), frequency of low glucose events (9.2 vs. 5.1; $p = 0.036$), mean duration of low glucose level (117 vs. 65; $p = 0.021$), % below 70 mg/dL (2.9 vs. 1.45; $p = 0.023$), % below 54 mg/dL (1.1 vs. 0.51; $p = 0.031$), TAR 181–250 mg/dL (21.1 vs. 16.5; $p = 0.037$) and TAR >250 mg/dL (8.9 vs. 6.5; $p = 0.043$). Compared to holidays (8.34%), school days (8.13%) HbA1c level was lower among the study population; however, no significant changes between holidays and school days on HbA1c level. Compared to holidays ($n = 6.2$), the FreeStyle Libre (FSL) scanning frequency was significantly higher during the school days ($n = 9.5$) ($p = 0.042$).

Conclusion: children with T1D appear to have good diabetes control during the schooldays compared to the holidays. These individuals may need more attention and guidance to improve their glucose control during holidays.

P84. Unexpected Cause of Recurrent Diabetic Ketoacidosis in Type 1 Diabetes

Rabia K. Alduraibi[1], Yosef F. Altowayan[1], Bader T. AlMharwal[1]
[1]*Department of Endocrine and Diabetes, Department of Internal Medicine, King Fahad Specialist Hospital, Buraydah, Saudi Arabia*

Address for correspondence: ralduraibi@gmail.com

Background: Gastrointestinal (GI) symptoms are commonly observed in patients with diabetic ketoacidosis (DKA), which usually resolves completely with therapy. However, GI symptoms can persist after DKA resolves, which can pose diagnostic and management challenges for physicians, especially when dealing with an exceptional diagnosis such as cannabinoid hyperemesis syndrome (CHS).

Methods: In this case report, we present a patient with type 1 diabetes who had been treated for DKA 6 times in the past year. All DKA episodes started with sudden onset of nausea, vomiting, and abdominal pain that worsened over time, eventually leading to dehydration and ketosis. There was no apparent cause for any of the episodes of DKA, either in her history or in extensive investigations. On the last admission, she presented with abdominal pain, nausea, and vomiting. initial laboratory test revealed DKA. Treatment with intravenous fluid and insulin was initiated immediately. Her DKA responded within 24 h of this medical management. Enhanced abdominal and pelvis computed tomography (CT) was performed to rule out celiac artery compression syndrome (CACS), which was unremarkable. Furthermore, she underwent an abdominal ultrasound, and the upper GI endoscopy was normal. Toxicology screening revealed positivity for urinary cannabinoids. the patient was a regular cannabis user with no history of other recreational drug use. After taking a thorough history, it was found that her vomiting had been triggered by more cannabis use than usual. CHS was diagnosed after a comprehensive review of the patient's medical history, physical examination, and a strong correlation between cyclic vomiting and cannabis use.

Conclusion: In conclusion, this case demonstrates that a presumptive and incorrect diagnosis can mislead physicians, especially when dealing with challenging diagnoses. Therefore, patients with type 1 diabetes with unusual presentations, such as unexpectedly high pH and bicarbonate levels, with hyperglycemic ketosis should be screened for illicit drug use, especially cannabis.

P85. Metabolic and Renal Outcomes of Empagliflozin in Patients with Type 2 Diabetes

Ali A. Alshahrani[1], Ali A. Alshahrani[1], Saad S. Al Qahtani[1], Abrar S. Al Qahtani[1], Saeed M. Mashhour[1]
[1]*Family Medicine Department, Armed Forces Hospital, Southern Region, Saudi Arabia*

Address for correspondence: aly.alshahrani@gmail.com

Background: We aimed to explore the effects of empagliflozin (25 mg) on metabolic and renal parameters in patients with type 2 diabetes mellitus.

Methods: This retrospective observational comparative study was conducted at a military hospital in southern Saudi Arabia. All adults (aged >18 years) with T2DM who attended diabetic clinics throughout the period of 1st October, 2021 till March 31, 2022 (6 months), with or without insulin treatment, were eligible for inclusion in the study

Result: A total of 308 patients diagnosed with T2DM were included in this study. Following the initiation of empagliflozin treatment, statistically significant reductions in patient weight (kg) were observed at 1, 3–5, and 6 months ($p = 0.01$, $p < 0.001$, $p < 0.001$, respectively). In addition, low-density lipoprotein levels significantly decreased 3–5 months post-treatment initiation ($p = 0.011$). However, serum creatinine level decreased gradually with time during the treatment with empagliflozin, from 87.45 ± 31.78 (0.105) to 78.39 ± 27.43 (0.033). Furthermore, after empagliflozin treatment, the urinary albumin-to-creatinine ratio significantly decreased at 3– to 5 and 6 months ($p = 0.043$ and $p = 0.022$, respectively). Moreover, HbA1c levels exhibited statistically significant decreases at 3– to 5 months ($p < 0.001$) and at 6 months ($p < 0.001$) following the initiation of empagliflozin treatment. Notably, systolic and diastolic blood pressure significantly reduced 6 months after empagliflozin treatment ($p = 0.045$ and $p = 0.002$, respectively).

Conclusion: In the current study, empagliflozin has demonstrated efficacy in controlling blood pressure and body weight and improving renal function, short-term dyslipidemia, and glycemic control in patients with T2DM.

P86. Factors Associated with Food Delivery to Inpatient in Teaching Hospitals

Nahla Mohamed Hamid Adam[1], Mouncaila Noma[1]
[1]*Khartoum, Sudan*

Address for correspondence: 7neenhola@gmail.com

Background: Food safety is a worldwide public concern as over two hundred diseases are spread through foods leading to one out 10 people falling ill every year from eating contaminated food with a yearly death of 240,000 people. This research assessed the factors associated with food delivery to inpatients in Khartoum State Teaching hospitals as at 2021.

Methods: A multicenter facility-based cross-sectional study was implemented in eight hospitals on sample of 101 study participants. The data collected were the sociodemographic characteristics of the study participants (hospital, gender, age, occupation, and year of working experience); the number of inpatients, the menu served to inpatients, the preparation of food, the hygiene and sanitation related food preparation and delivery; the awareness towards food hygiene, health problems related to food delivered to inpatients and the WASH practices by the staff in charge of the nutrition of inpatients. The data were entered in Epi Info 7 and analyzed with SPSS through descriptive statistics.

Result: The participants were aged 22 years to 70 years with a median age 45 years. They were predominately females (89.0%) and 11.0% were males. More than half of the participants were married (67.3%). 67.3% (68/101) of participants had a reported good knowledge on transmission of foodborne disease and 32.7% did not. 55.4% (56/101) of the participants had good knowledge on contamination/cross contamination and the remaining 44.6% (45/101) had poor knowledge on contamination/cross contamination. Regarding personal hygiene and sanitation, the proportion of those with good practice was high ranging from 70.6% to 97.6%. However, the sanitary conditions needed to be improved with the availability of functional toilets of 24.8%.

Conclusion: This study revealed that the need for the safety of food delivery to inpatients to increase the knowledge and skills of food handlers towards contamination and cross contamination included the use of personnel protectives equipment. Hence, on-going training of the food handlers in hospitals is crucial.

P87. Is Fatty Pancreas Prediabetic Pathological Step?

Reda Elbadawy[1], Marwa Sayed Matboli[2], Ghader Mohamed Masoud[1]

[1]*Department of Medicine, Faculty of Medicine, Benha University, Benha, Egypt*

[2]*Department of Medicine, FacukltyFaculty of Medicine, Ain Shams University, Cairo, Egypt*

Address for correspondence: reda.albadawy@fmed.bu.edu.eg

Background: Non-alcoholic fatty pancreatic disease (NAFPD) or fatty pancreas emerged as a health problem parallel to obesity. NAFPD can lead to diabetes mellitus, chronic pancreatitis, pancreatic insufficiency and lastly adenocarcinoma of the pancreas. We aimed to explore the role of fatty pancreas as pathologic step in the development of DM

Methods: Eighty eight patients with NAFPD recruited were divided into 4 groups, group (1) diabetics with normal body mass index (BMI), group (2) diabetics with BMI over 25 kg/m^2, group(3) non diabetics with normal BMI, group (4) non diabetics with BMI over 25 kg/m^2

Result: All routine investigations were done including lipid profile, liver functions. NAFPD was diagnosed by abdominal ultrasound, Toshiba using convex probe compared with right kidney and liver (grades from 0–3). Statistical analysis SPSS version 22 was used. *Results*: Mean age was $44.08 \pm .41$ years for all subjects. Body mass index (BMI) was 29.73 ± 8.15 kg/m^2. Males was 73%, while females 27%. NAFPD was present in nonobese, non-DM as follows: grades 1, 2, 3 (22.7, 27.3, and 22.7% consequently) while NAFPD was present in DM, nonobese as follows: grades 1, 2, 3 (22.7, 31.8, and 45.5) means that there was increase in % of DM development especially grades 2, 3. NAFPD was present in obese non DM as follows: grades 2, 3(31.8%, 68.2%) and in DM, obese as follows (18.2%, 81.2%) consequently means that there was increase in % of DM development.

Conclusion: NAFPD is the first step in the development of DM. It is an alert sign for health institute to prevent the development of DM.

P88. Neutrophil–Lymphocyte Ratio and Its Relation to Microvascular Complication in Elderly Patients with Type 2 Diabetes

Marwa S. Eissa[1], Sahar Abou El-Ezz[1], Samar Mohsen Kanzel[1], M. Mady[1]

[1]*Department of Internal Medicine and Endocrinology, Cairo University, Cairo, Egypt*

Address for correspondence: marwa.eassa@kasralainy.edu.eg, meramar_s@hotmail.com

Background: The neutrophil-to-lymphocyte ratio (NLR) is a novel, simple, and inexpensive marker of subclinical inflammation We aimed to evaluate the possibility that NLR could be used as a predictor of microvascular complications during follow-up of elderly patients with type 2 diabetes

Methods: Sixty elderly diabetes patients >65 years old, diagnosed 16 according to ADA criteria, were collected from the endocrine clinic in Kasr El-Ainy Hospital. For every patient, full history and examination were done (including 18 neurological and fundus examinations). Labs (CBC with a differential in blood and 19 albumin/creatinine ratio in urine) were done and the neutrophil/lymphocyte ratio.

Result: We found that NLR has a statistically significant difference in the detection of nephropathy and retinopathy. There is a significant correlation between nephropathy and NL ratio in all patients ($r = 0.44$, $p < 0.001$). Elderly diabetic patients (with or without hypertension) with microvascular complications had a higher NLR value than those without complications.

Conclusion: NLR value can be used as a non-invasive simple marker for predicting microvascular complications in elderly diabetics with/without hypertension.

P89. Obesity and Waist Circumference Are Possible Risk Factors for Thyroid Cancer

Marwa Sayed, Marwa Sayed Eissa, Mona Sayed Abdel-Latif, Yasmine F. Elesawy, Sabry Shaarawy, Ula M. Al-Jarhi

[1]*Department of Internal Medicine and& Endocrinology, Cairo University, Cairo, Egypt*

[2]*Medical Biochemistry and Molecular Biology, Cancer Biology Department, National Cancer Institute*

[3]*Faculty of Medicine, Cairo University, Cairo, Egypt*

Address for correspondence: marwa.eassa@kasralainy.edu.eg/meramar_s@hotmail.com

Background: Obesity has an important role in the pathogenesis of cancer; however, there are no clear mechanisms explaining the association between obesity and risk of thyroid cancer (TC).

Methods: It is a cross-sectional study including 184 patients with benign thyroid nodules (BN) and 19 patients with TC. Body mass index (BMI), waist circumference (WC), hip circumference (HC), waist/hip (W/H) ratio were assessed and correlated to relevant clinico–pathological features of the patients, different ultra-sonographic (U/S) criteria and risk of malignancy.

Result: There was a significant increase in BMI, WC, and W/H ratio in TC patients compared to BN group ($p = 0.001$, 0.011, and 0.003). Increased BMI, WC, and HC were associated significantly with solid nodules ($p < 0.05$). WC increased in hypoechoic (103.1 ± 15.4 cm) and heterogeneous (103.8 ± 16.7 cm) nodules, compared to isoechoic (97.3 ± 15.5 cm) and hyperechoic (96.1 ± 10 cm) nodules (p= 0.046). It also increased with lymph nodes enlargement ($p = 0.04$). There was a significant association between WC and TIRADS classification ($p = 0.032$), as it increased with TR4b (118.5 ± 12.9 cm) and TR5 (117.3 ± 13.9 cm) compared to TR2 (114.1 ± 15.7 cm, $p = 0.025$ and 0.008, respectively). WC is an independent predictor for TC [OR: 1.092, CI: 1.020–1.170, $p = 0.012$]. It achieved sensitivity, specificity, and AUC (71.4, 68.7, and 0.750, respectively), at a cutoff value of 108.5

cm ($p = 0.003$), and when combined with BMI at a cutoff value of 32.59 (77.8 and 68.4%, respectively, AUC: 0.780, $p < 0.001$).

Conclusion: Central adiposity is strongly associated with the risk of TC. WC is more superior to BMI when correlated with TIRADS classification and also is an independent predictor for TC.

P90. Registered Nurses' Perceptions about Diabetes Patients' Education: A Cross-Section

Hanan Hameed Dakheel Alanezi[1], Eman Altawash[1]
[1]*Department of Nursing Royal College of Surgeons in Ireland, University of Bahrain, Manama, Bagrain.*

Address for correspondence: h.h7700@hotmail.com

Background: This study aimed to assess the perceptions of nurses working in pediatric departments in a government hospital in Bahrain about diabetes patients' education provided to children with diabetes and their parents. Patients' education provided by nurses is vital to increase patients' knowledge and understanding of their health condition and enhance their self-care.

Methods: A quantitative cross-sectional design was used to conduct the study. A convenience sample of fifty registered nurses with more than three months' experience working in pediatric departments in the study hospital and who are directly involved in patients' care and education were included in this study. The participants completed an anonymous self-administered questionnaire comprising 23 items assessing nurses' perceptions about diabetes patient education (DPE) that was developed by Bergh (2012).

Result: The participants had positive perceptions about DPE. In particular, the participants gave high ratings for perceived self-competency and perceived importance of DPE. They reported moderate levels of support received from the environment, their colleagues and managers. Half of the participants reported having access to and using diabetes teaching materials. There was a significant relationship between the perceived importance of DPE in the workplace and participants' area of practice with more nurses working in the pediatric inpatient ward perceiving DPE as important compared with their counterparts in other pediatric areas.

Conclusion: This study indicated that nurses in pediatric departments generally have positive perceptions of diabetes patients' education.

P91. Post-Kidney Transplant Diabetes (PTDM) in Batna Algeria: Incidence and Profile

Athmane Chinar[1,2], Soumia Missoum[2], Ahmed Bougroura[2], Saadia Berrou[2], Sara Ameziane[2]
[1]*Internal Medicine Department, Faculty of Medicine of Batna, Batna, Algeria*
[2]*Dialysis and Kidney, Transplant Nephrology Department, Faculty of Medicine of Batna, Batna, Algeria*

Address for correspondence: chinarathmane@yahoo.fr

Background: Post-transplant diabetes (PTDM) is a frequent complication after organ transplantation and is burdened with increased morbidity and mortality, particularly at the cardiovascular level. Recognition of pre- and post–transplant risk factors is essential for early and individualized management. Treatment should be tailored to the clinical presentation.

Methods: This is a single-center analytical descriptive prospective study of a cohort of 667 kidney transplants from ABO compatible related living donors, at the Chu Batna nephrology, dialysis and kidney transplant department (2014 to 2023), the diagnostic analysis of the PTDM was retrospective (according to the 2014 recommendations: exclusion of prior diabetes and transient hyperglycemia in the first 3 months post-transplant). Data analysis, anamnestic, clinical, paraclinical, and therapeutic.

Result: During this period we found 59 cases of patients with confirmed NODAT, a sex ratio of: 3.33, an average age of 36 ± 5 years. Family relationship: the mother 32%, the sister, 26.2%, the gift between the spouses 14.6%, then the father 8.7%. Immunology: The presence of anti-HLA antibodies was found in 50.48%. Hepatitis HCV 14.56% and HBS 3.9%. Hypertension was in 80%, diabetes 2.9% (of those whose initial nephropathy was independent of diabetes), dyslipidemia 46.66%, obesity: 58.3%, tobacco consumption 29.1%. Immunosuppression was using tacrolimus in 58.8%, cyclosporine in 41.2% and corticosteroids 99%. Treatment was with oral antidiabetics in 91%.

Conclusion: Risk factors for PTDM including obesity, glucose intolerance, hypertriglyceridemia should be managed early before transplantation to avoid the occurrence of diabetes. The risk of PTDM should be communicated to the patient before transplantation, the immunosuppressive treatment must be individualized according to the patient and their risk of developing PTDM, while prioritizing the outcome of the graft. Although tacrolimus is diabetogenic, it often remains in the first line. The diagnosis of PTDM should not be based on an HbA1c in the first year post-transplant. The management other cardiovascular risk factors (hypertension, dyslipidemia, smoking) remains essential to reduce cardiovascular mortality in transplant patients

P92. Post-COVID-19 Autoimmune Hypoglycemia: A Case Report

Majid Alabbood[1], Michael Chamberlain[1], Annah Penner[1]
[1]*Mackay Base Hospital, Basrah, Iraq*

Address for correspondence: majid.alabbood@uobasrah.edu.iq

Background: COVID-19 is associated with multiple long-term complications affecting various body systems and organs via diverse mechanisms including triggering an autoimmune response 1. Insulin autoimmune hypoglycemia is characterized by insulin autoantibodies causing initially hyperglycemia followed by hypoglycemia and was first described in 1970. The authors here describe a case report of a patient who presented with recurrent episodes of severe hypoglycemia 1 month after acquiring COVID-19 infection.

Methods: The index case is a 83-year-old male without a previous history of diabetes who was admitted at Mackay Base Hospital for recurrent severe hypoglycemia ranging between 1– and 2 mmol/L. These hypoglycemia episodes mainly occur during night time. Blood glucose monitoring during admission revealed postprandial hyperglycemia ranging from 15– to 18 mmol/L followed by severe hypoglycemic episodes despite not giving any treatment. The patient has a background of vascular dementia, paroxysmal atrial fibrillation, hypertension and ischemic heart disease. The patient had mild COVID-19 in February 2023 and hypoglycemic episodes started in March 2023. None of his regular medications is known to cause hypoglycemia. There was no significant family history of autoimmune disorders. Vital signs and physical examination were unremarkable. Blood tests revealed normal FBC, eGFR 85 and normal liver function test. His insulin at the time of hypoglycemia (BGL 1.5 mmol/L) was 255 mU/L (3–25 mU/L). C peptide was 3.3 nmol/L (0.3–

1.4 nmol/L). B-hydroxybutyric acid 0.06 mmol/L (<0.27 mmol/L) and insulin like growth factor 18 nmol/L (2.1–23 nmol/L). Anti-insulin antibodies level was elevated at 50 U/ml (<0.4 U/mL). Urine sulphonylurea screen was negative. Thyroid function and cortisol level were normal. CT scan abdomen was unremarkable. A diagnosis of post-COVID-19 autoimmune hypoglycemia was made and patient was started on high dose prednisolone 60 mg/day with gradual tapering over three months. Metformin and acarbose also started to treat hyperglycemia. Patient was advised to follow low carb/low glycemic index diet. On follow-up after glucocorticoid cessation, blood glucose profile stabilized with no hypo- or hyperglycemia. Metformin and acarbose were stopped subsequently.

Conclusion: The authors present here an interesting case of post COVID-19 autoimmune hypoglycemia. Up to our knowledge, this is the fourth case report written in literature. In autoimmune hypoglycemia, antibodies attached to insulin secreted postprandially rendering it inactive and causing hyperglycemia. The pancreas will respond by secreting more insulin. Few hours later, the dissociation of this complex will result in the release of large quantity in the circulation leading to severe hypoglycemia. This autoimmune process can be triggered by various mechanisms such as genetic, drug induced, viral or malignant. One of the key features that characterize autoimmune hypoglycemia is the insulin to C peptide molar ratio and insulin level 1. An insulin C peptide molar ratio > 0.25 and serum insulin level >100 mU/L is highly suggestive of autoimmune hypoglycemia. In the index case insulin level was 255 mU/L and the ratio was 77.2. In conclusion, autoimmune hypoglycemia may complicate COVID-19 infection and should be suspected in patients with unexplained hypoglycemia and recent COVID-19 infection.

P93. An Omani Family with Pseudohypoparathyroidism Type 1A (PHP1A)

Wafaa Abdallah[1], Mariam Al Badi[1], Aisha Al Sinani[1]
[1]National Diabetes and Endocrine Center, Royal Hospital, Muscat, Oman

Address for correspondence: Wafatnah.5@gmail.com

Background: Pseudohypoparathyroidism (PHP) is a heterogeneous group of rare endocrine disorders characterized by resistance to the action of parathyroid hormone (PTH), manifesting with hypocalcemia, hyperphosphatemia, and increased serum concentration of PTH, along with an unusual constellation of developmental and skeletal defects. There are 5 variants of pseudohypoparathyroidism, PHP- type 1A is the most common subtype and represents 70% of cases, caused by a genetic variation mutation in the GANS gene and is inherited in an autosomal dominant pattern. We reported an Omani family with a confirmed diagnosis of sibling with Pseudohypoparathyroidism type 1A (PHP1A), who has a heterozygous pathogenic variant in the GANS gene. Plus other two siblings with similar clinical features but still awaiting for genetic study result.

Methods: The data of patients were collected from Alshifa system in National Diabetes and Endocrine Centre. Muscat. Oman. The biochemical investigation and molecular genetic study for the 3 affected siblings.

Result: We reported a clinical cases of a family with three siblings with PHP-type 1A, the index case was 6 years old girl who presented at age of 2 years with a multiple hard painless bony swelling over the scalp, right clavicle and left ankle along with some cognitive deficit, found to have higher side serum phosphorous, high PTH with normal serum calcium, normal vitamin D25 and normal vitamin D1, 25, she also has multiple soft tissue calcifications in skeletal survey, genetic study confirmed the diagnosis of PHP-type 1A. Other two siblings, a boy who presented at the age of 2 years who has similar phenotypic and biochemical features; however, the youngest sibling a 2-year-old girl who presented at 1 year of age with soft tissue swelling, has a high serum phosphorous, normal calcium and PTH. Genetic counseling and analysis for a familial targeted GANS gene were offered to the affected siblings and the parent after signing informed consent.

Conclusion: PHP is usually absent at birth and evolves over time, the first biochemical abnormalities to appear are increased serum PTH and phosphorous levels, whereas hypocalcemia develops gradually 4– to 5 years later. PHP-IA patients also display resistance to hormones other than PTH that act via Gs-coupled receptors, such as TSH, gonadotropins and GHRH. So, should be screened and treated for associated endocrinopathies, particularly hypothyroidism and hypogonadism.

P94. Clinical and Biochemical Course of 2 Omani Children with Juvenile Paget Disease

Ahmed Qoura[1], Ahmed Qoura[1], Maryam AlBadi[1], Aaisha AlBalushi[1], Aisha AlSinani[1]
[1]Pediatric Department, Pediatric Endocrinology, National Diabetes and Endocrine Center, Royal Hospital, Clinical Biochemical Genetics, Pediatric Endocrinologist, Royal Hospital, Muscat, Oman

Address for correspondence: aqoura14@gmail.com

Background: Infantile juvenile Paget's disease (JPD), it is an autosomal recessive disease, caused by mutations in the gene TNFRSF11B which encodes osteoprotegerin. It is a progressive genetic disease of the bone, and it is characterized clinically and biochemically by increase in bone resorption which led eventually to disorganized and excessive formation of the bone, painful swelling of the limbs, and deformities, marked elevated ALP with normal level of calcium and phosphate.

Case Report: Here we present 2 Omani children with severe infantile juvenile Paget's disease, from a single center in Oman, in the National Center of Diabetes and Endocrine, Royal hospital, and was diagnosed clinically, biochemically and genetically to have juvenile Paget's disease. The patient had been started on Pamidronate and showed impressive improvement in his condition.

Patient 1: A 2-year-old child, who was diagnosed with juvenile Paget's disease, who have presented at the age of 5 months old. Clinically and biochemically, he was started on pamidronate, and showed improvement. He was born preterm 32 + 6 weeks to first cousin parents, and he has one more sibling younger than him, who is normal and healthy. At 2 months old, he presented to the emergency with excessive crying and swelling of long bone. The systemic review history was negative for infections or trauma. Physical examination revealed pigeon chest, rosary, and Harrison sulcus. Musculoskeletal exam demonstrates swollen long bone of the lower limbs, tender, erythematous skin hyperextensibility of the joint, fusiform long bone of lower limbs, no wide epiphysis identified. Biochemical investigation revealed elevated levels of alkaline phosphatase, with normal level of phosphate and calcium. Furthermore, ophthalmological and hearing examinations were initially normal, however, he developed conductive hearing loss identified at age of 1 year and 6 months old. In view of patient phenotype suspected to have infantile cortical hyperostosis syndrome. Whole exome sequence revealed that he harbors a homozygous likely pathogenic

deletion encompassing exon 1-4 in the TNFRSF11B gene. A genetic diagnosis of autosomal recessive juvenile Paget disease of bone type 5 is confirmed. Patient had been started on pamidronate infusion 2 mg/kg every 3 months. There is a dramatic improvement observed and they symptoms completely resolved after 5 doses of the medication. Currently, he is 2 years old with normal development. But as the disease has progressed before starting the medication, patient developed conductive hearing loss, needing cochlear implants.

Patient 2: This is a 16-year-old female, presented at age of 3 months old, with same clinical phenotype and same biochemical findings. Patient was started on medications at age of 4 years old. Whole exome sequence was sent and showed missense homozygous likely pathogenic in the TNFRSF11B gene causing an amino acid change from Cys to Phe at position 65. A genetic diagnosis of autosomal recessive juvenile Paget disease of bone type 5. Patient showed same response to the medication, but as patient have already developed hearing impairment, aphonia, and severe decrease in visual equity.

Methods: It is a retrospective study reviewing the patient's charts in Al-Shifa system and consent taken from the patient's guardian to publish and use the patient's medical history and photos.

Case Report: The 2 patients in this study are affected with a severe form of juvenile Paget's disease type 5. Due to different mutations in the TNFRSF11B gene. Our first patient is having a deletion, and the second patient is having a missense translocation (OMIM: 239000). This disease is resulted from osteoprotegerin deficiency caused by homozygous or compound heterozygous pathogenic variant in the TNFRSF11B gene, causing abnormal bone resorption and formation. It causes a debilitating bone pain, short stature, progressive long bone deformities, fractures, vertebral collapse, skull enlargement, and hyperostosis, with progressive deafness. Here we show the developmental and the improvement for both patients after receiving Pamidronate.

After giving the first dose of the medication, both patients pain was relieved, and they started moving their limbs freely, and the patients started having normal motor development, after being delayed for a long time. Moreover, the number of fractures in patient 2 decreased, and disappeared completely with the continuation of the medication. But unfortunately, both patients are suffering from deafness, and for our first patient he will undergo cochlear implant which will help him, but for our second patient as the medication was started late and she got sensorineural deafness she will not be able to undergo the surgery. For the social and mental development, both patients are able to understand, learn, but again it is confined as both patients cannot speak and cannot communicate properly. Moreover, by comparing our 2 patients and other patients with the same phenotype and genotype, we can see that the patients responding to the treatment with the same efficacy, and the need to early recognize and diagnose patients to avoid the complications associated with the disease.

Conclusion: Juvenile Paget's disease can present in the infancy period and early recognition and treatment of the cases is highly important to prevent the major consequences including hearing, visual impairment and developmental delay.

P95. Graves' Disease Post-SARS-CoV-2 mRNA Vaccination

Nouf Aboalsamh[1], Naji AlJohani[1], Bakhita AlEid[1], Sultan AlMawash[1]

[1]*Department of Endocrinology, King Fahad Medical City, Riyadh, Saudi Arabia*

Address for correspondence: N.Aboalsamh431@gmail.com

Background: SARS-CoV-2 vaccinations have been associated with the development and exacerbation of various autoimmune diseases, including thyroid autoimmune disorders.

We report the new onset of Graves' disease post mRNA COVID vaccine in a patient with a background history of spontaneously recovered primary hypothyroidism and a prior COVID-19 infection.

Case Report: A 40-year-old woman is known to have recovered primary hypothyroidism after 7 years of treatment, thyroxine replacement was withdrawn because she maintained clinical and biochemical euthyroidism. Thyroid function had been normal without thyroxine supplementation for the past eight years until she developed thyrotoxicosis after the first dose of the COVID-19 vaccination. She contracted COVID-19 infection on March 30th, 2021, not necessitating hospitalization and recovered without complications. She received the first dose of the COVID-19 vaccine, namely the BNT162b2 mRNA vaccine, on August 5, 2021. Four weeks later, she presented with a seven-day history of sudden onset palpitation, goiter, proptosis, sweating, heat intolerance, diarrhea, and unexplained weight loss.

Result: Systemic examination was unremarkable apart from a palpable, non-tender goiter. The eye examination showed exophthalmos without other features of Graves' orbitopathy. The thyroid function test showed evidence of thyrotoxicosis where FT4 was measured at 30 pmol/l and TSH was suppressed to an undetectable level. Initially, she was managed conservatively with propranolol for symptomatic control given the impression of possible thyroiditis until further work–up was completed. No evidence of adrenal crisis was established. TSH receptor antibody (TRAb) levels became positive. Both anti-thyroid peroxidase and anti-thyroglobulin antibodies are positive. Thyroid ultrasound showed an enlarged thyroid gland with heterogeneous echotexture and hypervascularity. Tc-99m thyroid scintigraphy showed a diffuse, homogenous increase in tracer uptake of 4.2% (normal 0.3–3.5%) compatible with Graves' disease. Thyrotoxicosis resolved seven months after treatment with carbimazole. The patient continues to follow up in the clinic every 6 months with the latest laboratory tests showing a TSH: 0.338 mIU/L, free T4: 8.3 pmol/L and TRAb remained positive.

Conclusion: The temporal association between vaccine administration and the onset of autoimmune thyroid diseases, including GD, highlights the importance of evaluation of thyroid function in patients presenting with suggestive symptoms post-COVID-19 vaccination. It is postulated that vaccination could shift the balance of thyroid-blocking antibodies (TBAb) towards thyroid-stimulating antibodies (TSAb) in susceptible individuals, thereby inducing GD.

P96. Study on the Cancer Development in RAI Treated Hyperthyroid Patients at SQUH

Jihad Said Khalfan Al-Wardi[1], Jihad Said Khalfan Al-wardi[1], Abdulla Alfutaisi[1]

[1]*College of Health and Medical Sciences, Sultan Qaboos University, Muscat, Oman*

Address for correspondence: s125852@student.squ.edu.om

Background: Radioactive iodine I-131 (RAI) therapy is the one of the method to treat the hyperthyroidism which raises the concern of risk of cancer development. To the best of

our knowledge no studies has been conducted on the incidence of cancer development in the Omani patient treated with RAI. This study aim to establish a relationship between the emergences of cancer with the RAI therapy in the Hyperthyroid patients treated for hyperthyroidism in Sultan Qaboos University Hospital.

Methods: This retrospective cohort study was conducted on the data of 958 patients diagnosed with grave disease, thyroid toxic nodular goitre, or benign toxic neoplasm of thyroid and treated with radioactive iodine I-131 (RAI) from January 2007 to January 2020. The data was collected using SQUH TrakCare system. The data was analyzed using IBM SPSS, version 26.0, New York, United States. The result was evaluated with the use of Z-test and a p-value of < 0.05 will be considered as significant.

Result: Eight out of 958 patients (0.8%) showed the emergence of cancer ($p = 0.078$). None of the patients who received two doses of RAI showed any development of cancer.

Conclusion: We have observed that RAI treatment is safe for the treatment of hyperthyroidism. There is no significant risk associated with the use of RAI in the hyperthyroid patients.

P97. Impact of COVID-19 on Glycemic Control of Type II Diabetes Patients

Sana Alali[1], Hessa AlKandari[1], Ozayr Mahomed[1], Doaa Khalifa[1]
[1]*Department of Population Health, Dasman Diabetes Institute, Kuwait City, Kuwait*

Address for correspondence: sana.alali@dasmaninstitute.org

Background: Optimal diabetes control is essential to reduce and prevent microvascular and macrovascular complications associated with diabetes. The introduction of lockdowns, social distancing, and quarantine to mitigate the risk of the COVID-19 pandemic have affected access to healthcare and medication. The aim of this study was to assess the impact of COVID-19 on glycemic control of Type II Diabetes patients at primary healthcare centers in Kuwait.

Methods: The last available glycosylated hemoglobin (HbA1c) results for adult Type II Diabetes patients was retrieved for the period 1st January 2019 to 31st December 2021 from the Primary Healthcare electronic information for all primary care centers (85) in Kuwait.

Result: The number of HbA1c tests conducted across the facilities declined by 28.96% from 2019 to 2020 but then subsequently increased by 33.40% between 2020 and 2021. Most of the patients (70.67%) were poorly controlled in 2019 and this worsened to 72.77% in 2020 but then returned to baseline levels of 70.47% in 2022. The proportion of patients with HbA1c > 9 mmol/L increased from 26.14% in 2019 to 28.75% in 2020 and declined slightly to 27.49% in 2022.

Conclusion: Most patients attending primary healthcare clinics in Kuwait have poor control and the proportion with poor controlled worsened during the COVID pandemic. This requires a detailed assessment of patient and health services factors related to blood glucose control in Kuwait.

P98. An Audit into the Management of Primary Hyperparathyroidism

Hussain Muhammad[1], Sajjad Akhter[1], Probal Moulik[1]
[1]*Department of Endocrinology, Royal Shrewsbury Hospital, Shrewsbury, United Kingdom and Department of Vacular Vascular surgerySurgery, Royal Shrewsbury Hospital, Shrewsbury, United Kingdom*

Address for correspondence: drtanvirch@gmail.com

Background: Primary hyperparathyroidism (PHPT) is a commonly encountered endocrine disorder which has evolved in its clinical presentation and now mostly diagnosed at an asymptomatic stage. Parathyroidectomy is the only definite treatment option. NICE Guidelines (NG132 May 2019) on PHPT recommend to measure vitamin D, 24 hours urinary calcium excretion/ random renal calcium: creatinine excretion ratio, eGFR, USG parathyroid and renal, Sestamibi scan and DEXA scan of lumbar spine, distal radius and hip. Nice guidelines recommend surgery in all symptomatic and asymptomatic patients with adjusted calcium 2.85 mmol/L or above, end organ disease such as renal stones, fragility fractures or osteoporosis.

Methods: This audit is to learn whether management of PHPT is in line with NICE guidelines. Clinical Audit Aims and Standards: *Aim*: To review practice against the NICE guidelines. *Standards*: Biochemical tests to diagnose PHPT, end-organ damage screening with DEXA scan, renal functions, localization scans, referral criteria for surgery, and postoperative follow-up. The data were collected retrospectively from operation theatre database and electronic medical records between January 2022 and December 2022.

Result: A total of 48 patients (males: 27%, females: 73%) were identified with mean age was 61.1 years (ranged from 32 to 82). Majority (79.1%) were above 50 years of age of which only 29% ($n = 14$) patients were symptomatic. 24 hours urinary calcium excretion and DEXA scan were done in 39.6 and 83%, respectively, with confirmed osteoporosis in half of the patients. However, only 4% patient had history of fracture. Moreover, 19% had history of renal stones with nearly similar number of patients (14%) had eGFR < 60. Majority of the patients had either one or more indication for surgery except in 7 patients, there was no clear indication was available. Nearly 70% had corrected calcium above 2.85 nmol/L. A one quarter of patients (24%) had vitamin D deficiency (<30 nmol/L). *Imaging*: Both USG parathyroid and Sestamibi scan was done in just over 95% of patients ($n = 46$ and 47, respectively). Right-sided adenoma was more common. Radiologically adenoma was found both on USG and Sestamibi scan in 70% patients of which 31% ($n = 15$) had discordant results. Bilateral exploration was required in 13 patients. 94% had histologically confirmed adenomas except one patient had hyperplastic glands likely secondary to lithium therapy. Post–operatively eucalcemia was achieved in 96% ($n = 46$) of patients.

Conclusion: Surgical success rate ($>95\%$) is in line with the best centers results (93–95%). Sensitivity of USG is equal to sestamibi scan which raises question of whether second modality imaging should only be considered where USG result is equivocal. Although urinary calcium was measured in only 40% of patients, it did not add in doubtful PHPT with clear surgical indication.

P99. Empagliflozin Induced Acute Pancreatitis

Khaled Alqurashe[1]
[1]*Makkah Health Cluster, Makkah, Saudi Arabia*

Address for correspondence: kalqurashe@makkahhc.sa

Background: Acute pancreatitis is a rapid onset inflammatory process of the pancreas which may have local and systemic manifestations. The most common causes of acute pancreatitis are gallstones and alcohol use. Other causes include drug-induced. Sodium-glucose cotransporter-2 (SGLT2) inhibitors are a class of oral hypoglycemic

agents which is approved by the FDA for treating diabetes and for heart failure

Methods: A 56-year-old female patient known to have uncontrolled type 2 diabetes. Presented with a complaint of acute epigastric pain radiating to the back and then become a generalized abdominal pain, moderate in severity, not relieved by analgesic, associated with nausea and vomiting. The patient denied any history of alcohol, smoking use. A review of her medication list included sitagliptin 100 mg, metformin 2 g, gliclazide 60 mg and more recently, empagliflozin 10 mg which was started seven weeks prior to symptoms onset. Physical examination was significant for tenderness in epigastric area. Laboratory workup revealed an elevated serum lipase 3,851 units/L, serum amylase 3,755 units\L abdominal CT scan shows mild

fatty atrophy and mild peri–pancreatic fat stranding and free fluid adjacent to the tale and body suggesting evidence of acute pancreatitis. Abdominal ultrasound shows the gall bladder was without stones. The patient was admitted with diagnosis of mild acute pancreatitis and underwent conservative management. Patient condition was improved and discharged on same pre-admission antidiabetic medication with OPD follow-up. Three weeks later, she presented to the emergency department complaining from acute epigastric pain radiating to the back and association of nausea and vomiting. With tenderness in epigastric area laboratory workup revealed an elevated serum lipase and amylase. Abdominal CT scan confirmed acute interstitial pancreatitis. After 3 days of conservative management she was improved and discharged but this time her diabetologist discontinue empagliflozin and she was started on insulin. She was following up with her diabetologist in outpatient.

Conclusion: This case report emphasized the possible association between SGLT2 inhibitors and acute pancreatitis. Physicians must be aware about this side effect as a possible cause of acute pancreatitis after exclusion of most common etiologies. Also, physician should inform the patient about the side effects of SGLT2 and the symptoms of acute pancreatitis and advised them to stop SGLT-2 inhibitors use in case such symptoms occur. Further studies are required to investigate this association.

P100. An Omani family with Maturity-Onset Diabetes of the Young Type 5 (MODY5)

Lamees Al Sawafi[1], Maryam Albadi[1], Thuriaya Ahmed Al-Sulaimi[1]

[1]*Paediatric Endocrinologist NDEC/Royal Hospital, Paediatric Endocrinology Clinic*

Address for correspondence: Lamees.s19@resident.omsb.org

Background: Maturity-onset diabetes of the young (MODY) is a type of monogenic diabetes that resulted from pancreatic beta-cell distraction . It is an autosomal dominant inheritance disease . There are at least 14 identified genes that have been involved in the etiology of MODY.

Methods: We reported a clinical cases of a family with four siblings with MODY type 5; the index case was a 17-year-old girl who presented with diabetes mellitus with negative autoimmune markers at age of 7 years in which found to have some elements of diabetic nephropathy. Her genetic study was confirmed the diagnosis of MODY type 5. Then her sibling .a boy who presented also at age of 8 years with Diabetes mellitus and found to have impaired renal function test and confirmed genetically to have MODY type 5. So parents and other siblings were investigated. Another sibling, a 21-year-old male, is under adult care has diabetes mellitus and diabetic nephropathy. One more girl sibling around 4 years old who found to have some renal function impairment with no diabetes mellitus. Other siblings were screened biochemically and radiologically and all results came normal .Mother was investigated and came normal, however father is not screen yet . In this family with affected siblings, a familial targeted HNF1B was planned to be done for affected siblings . Moreover, the affected siblings will be investigated for any evidence of multisystem involvements.

Conclusion: HNF1B gene mutation is associated with MODY5, which plays a role in many of the body organs, including the lungs, livers, intestines, pancreas, kidneys, reproductive system, and urinary tract . MODY5 should be questioned with unusual presentation of diabetes and multi-organ involvement unrelated to diabetes .

P101. To Identify the Importance of Telemedicine in Diabetes and Its Impact on HbA1c

Sania Bashir[1]

[1]*Diabetes TeleCare Sindh, Pakistan*

Address for correspondence: drsania786@gmail.com

Background: A promising approach to healthcare delivery, telemedicine makes use of communication technology to reach out to remote regions of the world, allowing for beneficial interactions between diabetic patients and healthcare professionals as well as the provision of affordable and easily accessible medical care.

Methods: The goal of this study is to assess how well telemedicine works for diabetic patients and how it impacts their HbA1c levels. A questionnaire-based survey of 300 person with diabetes included 150 patients in each of the groups receiving usual care and via telemedicine. A descriptive and observational study that lasted from September 2021 to May 2022 was conducted. HbA1c has been gathered for both categories every three months. A remote monitoring tool has been used to assess the efficacy of telemedicine and continuing therapy instead of the customary three monthly meetings like in-person consultations.

Result: The patients were (42.3) 18.3 years old on average. A total of 128 men were outnumbered by 172 women (57.3% of the total). 200 patients (66.6%) have type 2 diabetes, compared to over 100 (33.3%) candidates for type 1. Despite the average baseline BMI being within normal ranges at 23.4 kg/m^2, the mean baseline HbA1c (9.45 1.20) indicates that glycemic treatment is not well-controlled at the time of registration. While patients who use telemedicine experienced a mean percentage change of 10.5, those who visit the clinic experienced a mean percentage change of 3.9. Changes in HbA1c are dependent on several factors, including improvements in BMI (61%) after 9 months of research and compliance with healthy lifestyle recommendations for diet and activity. More compliance was achieved by the telemedicine group.

Conclusion: It is an undeniable reality that patient–physician communication is crucial for enhancing health outcomes and avoiding long-term issues. Telemedicine has shown its value in the management of diabetes and holds promise as a novel technique for improved clinical-patient communication in the twenty-first century.

P102. A Novel GnHRH1 Gene Mutation in Four Omani Male Siblings

Hala Al Shaikh[1]

[1]*Endocrinology Clinic, Muscat Private Hospital, Muscat, Oman*

Address for correspondence: hal_doc@yahoo.com

Background: Hypogonadotropic hypogonadism results from a defect of GnHRH and or gonadotropins, causing sex-organ malformation, reduced or absent male secondary sexual characteristics, and infertility. This could result from genetic mutations.

Methods: To describe the clinical features of four Omani male siblings with hypogonadotropic hypogonadism carrying a novel mutation in the GnHRH1 gene. Clinical information was obtained from the hospital computerized system with the consent of the parents.

Result: Case 1A 15-year-old was born with micropenis of 1.8 cm and bilateral undescended testes. At 2½ years, he underwent laparoscopic exploration and was found to have bilateral atrophic testes, which were surgically removed. Pubertal induction started at 12½ years with testosterone injections. Currently his penile stretched length reached up to 6 cm. Genetic analysis: Homozygous mutation in the GNRH1 gene c.85C>G (p.His 29 to ASP).

Case 2 A 6-year-old had PSL of 2.6 cm and bilateral retractile testes. He was circumcised at 2 months. At 2½ years, he had revision of his circumcision, preceded by HCG injections, which made his testes descended in the scrotal sac. This was followed by testosterone injections, and his PSL improved to 4.5 cm. Genetic analysis: Heterozygous of the above mutation.

Case 3 A 5-year-old had micropenis of 1.6 cm and bilateral small undescended testes felt in the inguinal canals. At 4½ months, he was given, HCG. The PSL increased to 2.4 cm and the testes descended in the scrotal sac. Testosterone injections were then given and the PSL improved to 3.4 cm. He was circumcised with bilateral orchidopexy at 2 years. At 2 years and 9 months, testosterone and FSH injections were given for 6 months. The PSL increased to 4.2 cm and the testes increased to 1 ml bilaterally. Genetic analysis: Homozygous of the above mutation.

Case 4 A 2½-years-old had a PSL of 3.4 cm, and bilateral undescended testes. U/S at one month showed the right testes in the mid-inguinal canal, while the left testes could not be visualized. At 1 year and 8 months, he was given HCG. The penile size increased to 4.8 cm but a repeat U/S did not show the testes. Another U/S at 2 years and 2 months still revealed absence of the testes, advised a laparoscopic exploration. Genetic analysis: Heterozygous of the above mutation. The parents are cousins and carriers of the above mutation. There is positive family history of infertility.

Conclusion: GNHRH1 gene c.85C>G (p. His 29 to ASP) is a novel mutation that can result in micropenis, undescended, or atrophic testes and infertility. Treatment with testosterone, HCG and FSH injections was given depending on the clinical findings. Further follow-up is required to understand the course of this condition.

Authors' Contributions

The conference abstracts books were compiled by the scientific committee acting as the guest editors. The GAED mandates that all named authors on submitted abstracts comply with the ICMJE4 criteria of authorship.

Compliance with Ethical Principles

The abstracts are accepted on the provision that all human research was conducted according to the appropriate ethical principles, with prior ethical approvals and patient informed consent.

Financial Support and Sponsorship

Unconditional educational grants from several government and pharmaceutical agents support the GAED Annual Conference. Individual abstract submissions included any relevant sponsorship information that are kept on file by the GAED.

Conflict of Interest

None declared.

