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Free Communications of the Gulf Association of Endocrinology and Diabetes Clinical Congress, October 18–20, 2024, Abu Dhabi, United Arab Emirates

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J Diabetes Endocrine Practice

Abstract

These are the abstracts of the Clinical Congress of the Gulf Association of Endocrinology and Diabetes (GAED) held on October 18 to 20, 2024. The program included plenary lectures and clinical practice 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 journal's publication requirements. 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. We also hope to stimulate networking between parties of mutual research interests.

Keywords
- diabetes
- endocrinology
- cardiometabolic
- education
- research
- professionalism
- diabetes technology

Introduction

These are the advance abstracts of the free communications of the Clinical Congress of the Gulf Association of Endocrinology and Diabetes (GAED) held in Abu Dhabi, on October 18–20, 2024.

The declared educational objectives of these annual congresses are to give a "state of the art in endocrine practice."[1–4] These programs include plenary symposia delivered by international and regional key opinion leaders. Furthermore, free communications on current research and clinical practice within and beyond the Gulf region are presented as oral communication and posters.

Here, we produce the abstracts of the free communications after minimal restyling and editing to suit the journal's publication requirements. The contents remain only abstracts rather than fully peer-reviewed manuscripts. Yet, GAED is delighted to allow the authors to air their findings in its own journal keeping the same tradition it has done over

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the last 6 years since the launch of our journal.[5–9] Before that we have published our abstracts in the open access Ibnosina Journal of Medicine and Biomedical Sciences.[10–14] We aim to provide early dissemination of the work and extend the benefit to those who could not make it to the live presentations. We also hope to stimulate networking between parties of mutual research interests.

Congress Abstracts

A. Oral Communications

OC1. Prevalence of the Metabolically Healthy Obese Phenotype in an Arab Population

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Introduction: The metabolically healthy obesity (MHO) phenotype represents a complex and distinctive phenomenon whose prevalence remains unknown in the KSAn adult population. The present study aims to fill that gap.

Methods: A combined total of 10,220 Saudi adults from two independent cohorts (2008–2019, $N = 7,896$ [2,903 males and 4,993 females], and 2021–2023, $N = 2,324$ [830 males and 1,494 females]) aged 19 to 70 years old was screened, of whom 9,631 (3,428 males and 6,203 females) were included. Anthropometric data were measured, and fasting blood samples were collected to assess circulating glucose and lipids using routine methods. Obesity is a BMI ≥ 30 kg/m^2. Screening for MHO was done twice, using the empiric definition proposed by Zembic and colleagues and the criteria set by the National Cholesterol Education Program's Adult Treatment Panel III (NCEP ATPIII).

Results: Overall, 3,949 (41.0%) participants, classified as obese, were used to investigate the prevalence and trends of MHO; 37.3% (95% confidence interval, [CI]: 30.6–44.8%) of whom were considered MHO using the empiric definition, and 37.3% (95% CI: 30.8–44.8%) using NCEP-ATPIII. The overall age-adjusted prevalence of MHO in the Saudi adult population was 15.3% (95% CI: 12.3–19.1%) and 15.4% (12.9–18.3%) by the two definitions respectively. Females had a significantly higher age-adjusted prevalence of MHO than males (OR = 1.5 (95% CI: 1.1–2.0), $p = 0.009$).

Conclusion: MHO prevalence substantially increased from 2008 to 2023 ($p < 0.001$) for both definitions. In summary, the study highlights for the first time the prevalence and trends of the MHO phenotype among Saudi Arabian adults, opening new doors for obesity research in this homogenous ethnic group.

OC2. The Effects of Rituximab on Graves' Orbitopathy

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Introduction: The management of Graves' orbitopathy (GO) remains challenging. Previous research on Rituximab (RTX) in treating Graves' orbitopathy has yielded controversial findings over the past decade. This study aims to evaluate the effectiveness of Rituximab in patients with moderate to severe and active Graves' orbitopathy at Sultan Qaboos University Hospital (SQUH) and to assess associated adverse effects. Prior studies of this kind have yet to be conducted in the Middle East.

Methods: A retrospective study including 19 patients diagnosed with moderate to severe and active Graves' orbitopathy (GO) received intravenous Rituximab (RTX) as treatment (1000 mg i.v. twice at a 2-week interval). The primary endpoint was disease inactivation, measured as a decrease of the Clinical Activity Score (CAS) of at least two points or disease inactivation (clinical activity score < 3). Secondary endpoints were improvement of severity, proptosis, diplopia according to the Gorman score, and safety. The NOSPECS score (no physical signs or symptoms, only signs, soft tissue involvement, proptosis, extraocular muscle signs, corneal involvement, and sight loss) was utilized to assess severity. Improvement was defined as a decrease in any of the following: proptosis ≥ 2 mm, diplopia score from 3 or 2 to 0 or 1, and NOSPECS ≥ 2.

Results: The average baseline CAS was 5.53 ± 0.96 prior to rituximab administration and it dropped to 1.89 ± 0.65 24 weeks following treatment ($p = 0.0002$). More than 80% of patients had disease deactivation within 24 weeks. Severity improved in almost 75% of patients, with no relapses after 24 weeks. The average baseline NOSPECS was 5.05 ± 0.34 and dropped to 3 ± 0.57 after 24 weeks ($p = 0.0021$). However, diplopia did not significantly change. Among adverse events observed, the majority were mild infusion reactions. None of the patients experienced severe adverse effects.

Conclusion: Rituximab is a relatively safe alternative for treating GO. In active individuals with moderate to severe GO, it has the potential to alter the normal course of GO by shortening the active phase, hence reducing the damaging impact of inflammatory processes in the orbit.

OC3. The Effect of Levothyroxine Timing on Thyroid Function Patients Fasting Ramadan

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Introduction: Timing of levothyroxine administration is of significant importance and typically, patients with Hypothyroidism need to take their Levothyroxine dose on an empty stomach, to avoid the influence of food and medications that alter L-T4 absorption. It is common to advise such patients to take their Levothyroxine when fasting either 30 minutes before Iftar or 30 minutes before Suhoor, preceded by three hours of fasting. However, studies that compare the two methods are lacking. The aim was to compare the thyroid function tests at two different timings of L-T4 ingestion during Ramadan fasting to find out if there is a significant difference between them.

Methods: This is a prospective cohort study during the holy months of Ramadan from the year 2022 till 2024. Eighty-six patients with hypothyroidism who live in Riyadh were screened and completed the study. All hypothyroidism participants were eighteen years or older, known to be compliant with their Levothyroxine, on no interfering medications, and had no malabsorptive diseases. Furthermore, all participants completed a quality of life questionnaire at the beginning and

end of the study. In addition, they completed satisfaction and difficulty rates questionnaires at the end of the study.

Results: Patients were randomized into two groups: pre-Iftar group 1 ($N = 42$) and pre-Suhoor group 2 ($N = 44$), Mean age for both groups was 43.85 ± 11.1 years and 88.1% were female. At the start of the study, the median TSH level was (3.55) and (3.5) in group 1 and 2 respectively the mean free T4 levels were (14.36 ± 2.29) in group 1 and (14.66 ± 5.23) in group 2 with while T3 levels were (0.85) in group 1 and (1.13) in group 2. The mean follow-up durations, compliance rate, vitamin D, and thyroid antibodies levels were similar in both groups. At the end of the study, we measured the difference in TSH, free T4 and T3 levels between the start and the end of study duration in both groups, it showed change in the median of TSH level in pre-Iftar group by 2.71 (4.33 to –1.72) and 2.2 (3.58 to –1.6) in pre-Suhoor group. The change in mean free T4 level was 1.4 (2.85–0.28) in group 1 and 1.8 (2.7–0.48) in group 2. The change in T3 level was 10.9 (18.3–5.95) in group 1 and 10 (19.6–4.5) in group 2. The satisfaction and difficulty rates and quality of life questionnaire were statistically similar in both groups with no statistical difference between the two groups.

Conclusion: Our study revealed that there is no significant effect on thyroid function by either Levothyroxine ingestion timings during fasting in Ramadan, additionally, the satisfaction and difficulty rates were similar in both pre-Iftar and pre-Suhoor timings. However, larger studies are needed to further confirm our findings.

OC4. Thyroid Artery Embolization: A Promising Intervention for Thyroid Disorders

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Introduction: To investigate the safety and efficacy of thyroid artery embolization (TAE) in the treatment of nodular goiter (NG), Graves' disease (GD) and toxic multi-nodular goiter (TMNG). Also to review the literature of this innovative procedure.

Methods: During 6 months from January 2024 to June 2024, 5 patients with NG, GD and TMNG underwent TAE. In patients with nodular goiter (NG), there were two individuals who each had a single, dominant nodule measuring between 8-11 centimeters in size. Two patients with Graves' disease (GD), and 1 additional patient with toxic multi-nodular goiter (TMNG). In all patients, clinical and radiological evaluations were made at baseline and 6 months after TAE, and these parameters were statistically compared (details in videos and pictures will be shared).

Results: Thyroid arteries were successfully embolized using 2, 3, or 4 vessel protocols—no minor or major complications. Follow-up was done at 1, 3, and 6 months. Six months after the TAE, the mean nodule volume was reduced from 100 mL to 20 mL, the mean thyroid volume was decreased from 150 mL to 55 mL for NG. One nonsurgical GD became euthyroid and the other surgical GD, a preoperative TAE done which saved blood during and after thyroidectomy and decreased the operation time. Patient with TMNG became euthyroid. The thyroid-related patient-reported outcome is excellent and all of them declared that they would recommend TAE to other patients with NG, GD, or TMNG.

Conclusion: TAE is safe and effective for treating NG, GD, or TMNG, with a significant reduction in the nodule(s), thyroid gland volume, and hyperthyroidism.

OC5. A Prospective Randomized Clinical Trial Comparing Two Levothyroxine Therapy Regimens during Ramadan Fasting in Thyroidectomized Patients

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Introduction: In hypothyroidism, levothyroxine (L-T4) is recommended to be taken on an empty stomach and to abstain from food and fluids for about 60 minutes. This is not practical for Muslim patients (pts) on L-T4 during the fasting month of Ramadan. In this trial, our objective was to test two practical approaches for L-T4 intake during Ramadan.

Methods: We randomly assigned 69 thyroid cancer pts (21 males, 48 females, median age 44 years, range 21–75) who had total thyroidectomy and are on stable L-T4 doses to two arms. Pts in arm A (33 pts) took pre-Ramadan L-T4 dose at breakfast time (evening meal) and ate immediately. Pts in arm B (36 pts) increased their pre-Ramadan dose by 25 mcg if their regular L-T4 dose was $\leq$150 mcg/day or by 50 mcg if their pre-Ramadan dose is $>$150 mcg/day and also ate immediately.

Results: The initial characteristics of the two groups were comparable. TFT 5 to 7 days before Ramadan (baseline) showed: in arm A: 20 (60.6%), 8 (24.2%), and 5 (15.2%) pts were euthyroid, subclinically hyperthyroid (Shyper), or subclinically hypothyroid (Shypo), respectively. In arm B, the corresponding numbers were 18 (50%), 12 (33.3%), and 6 (16.7%) pts, respectively ($p = 0.65$). The mean $\pm$ SD TSH levels in arms A and B were 1.94 ± 2.0 mU/L and 2.37 ± 3.7 mU/L, respectively ($p = 0.69$). At the end of Ramadan, in arm A, 17 (51.5%), 3 (9.1%), 13 (39.4%) pts were euthyroid, Shyper, and Shypo compared with 17 (47.2%), 14 (38.9%), and 5 (13.9%) patients, respectively in arm B ($p = 0.005$). The mean $\pm$ SD TSH levels in arms A and B at the end of Ramadan were 5.6 ± 6.0 mU/L and 1.67 ± 2.6 mU/L, respectively ($p = 0.0001$).

Conclusion: Although no cases of overt thyroid dysfunction developed, there were more cases of Shypo in arm A and Shyper in arm B. Arm B achieved desirable levels of TSH (normal or slightly suppressed) in 86% of cases and might be a preferable approach, especially for patients who need TSH to remain in the low to suppressed levels (e.g., differentiated thyroid cancer).

B. Poster Presentations

P1. Hyperglycemic and Hypoglycemic Emergencies among Patients with Diabetes who Participate in Pilgrims of the 2019 Hajj Season

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Introduction: 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. Numerus 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 conducted on 153 patients with DM who were presented to one of the major health care-providing facilities during Hajj, which are "Arafat," "Muzdalifa," and "Mina" health care centers. The study was conducted from August 5th to 12th, 2019.

Results: More than 90% of the study participants were patients with T2D, while around 7% had T1D. DKA and 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 the hajj, especially those who use insulin and have longstanding diabetes. Further research of DM and initiatives creating guidelines for health providers and patients with diabetes during pilgrimages are important focuses for the future.

P2. Identifying and Addressing the Determinants That Affect Successful Control of Type 2 Diabetes

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Introduction: Various life variables are known not to be essential to the advancement of T2D, including weight, absence of adequate physical activity, terrible eating routine, anxiety, and urbanization. A number of dietary factors, such as excessive consumption of sugar-sweetened drinks and the type of fats in the diet, also appear to play a role.

Objectives: Estimating the prevalence of successful control of T2D and its determinants at Diabetic Centre, Prince Mansur Military Hospital for Community Medicine, Taif, KSA.

Methods: A cross-sectional study was adopted. It included adult DM type 2 patients (18–60 years), at PMFCH, Armed Forces Hospital, Taif region. Successful control of type 2 DM has been defined strictly by the achievement of targeted glycemic control glycated hemoglobin (HBA1C).

Results: Among 370 diabetic patients, 331 returned completed questionnaires, giving a response rate of 89.5%. More than one-quarter of them (27.2%) were 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.

P3. Technology for the Management of Type 1 Diabetes in KSA and MENA Region

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Background: Diabetes technology in the form of digital health or medical devices holds a promise for improving the quality of life and glycemic outcomes and decreasing the burden of diabetic care. A comprehensive insight into diabetes technology and its impact in the MENA region, particularly in KSA, may improve diabetes management and provide a better quality of life (QoL) for type1 diabetes mellitus (T1D) patients in that area. The study aimed to assess the impact of different diabetic-related technologies in terms of glycemic control and QoL among T1D patients in KSA and the MENA region.

Methods: A systematic literature search was performed in the electronic databases PubMed and Scopus from 2005 until August 2023. The search was based on PICO strategy, focusing on T1D patients (population), diabetes technology, such as insulin pumps, telemedicine, or continuous glucose monitoring system (intervention), and glycemic control and QoL (outcome). The inclusion criteria were studies illustrating the effect of the diabetes technologies on the glycemic control or quality of life or both among T1D patients. NIH quality assessment tool was used for the observational cohort and cross-sectional studies.

Results: A total of 101 articles were found. Eighteen studies were duplicated and 33 studies were excluded after reading the title and abstract. Of the 50 articles analyzed, 25 articles did not meet the inclusion criteria. Therefore, 25 articles involving a total of 3,088 participants were enrolled in the study. The majority of the studies were conducted in KSA. Meanwhile, only one study was conducted in each country: Egypt, the, Kuwait, and Lebanon. It was shown that a continuous glucose monitoring system and continuous subcutaneous insulin infusion significantly improved the glycemic control and the QoL of T1D patients.

Conclusion: The current review confirmed the positive impact of insulin pumps, GMS, and telemedicine in achieving optimal glucose control and better QoL in T1D patients, regardless of gender or age, especially in KSA, and in the MENA region. Further studies are recommended to strongly clarify the significant role of advanced diabetes technologies as digital health and medical devices.

P4. Euglycemic Diabetic Ketoacidosis after the Initiation of Dulaglutide: A Case Report.

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Introduction: Diabetic ketoacidosis is rarely observed when the blood glucose level is $<$250 mg/dL. This is referred to as euglycemic diabetic ketoacidosis (EDKA). EDKA can present diagnostic and management challenges for physicians, especially when dealing with unusual triggers such as glucagon-like peptide 1 (GLP1) receptor agonists and sodium-glucose co-transporter 2 inhibitors. With this case report, we wanted to raise the knowledge and understanding of EDKA and its triggering factors.

Case description: A 45-year-old man was admitted to hospital for epigastric pain, loss of appetite, and vomiting 3

days after the initiation of dulaglutide. The results of laboratory examination showed EDKA. In our patient, the Initiating treatment with GLP1 receptor agonists with extreme restriction in carbohydrate intake could have resulted in increased lipolysis, impaired insulin, and increase glucagon release, resulting in EDKA within days.

Conclusion: In conclusion, this case demonstrates that use of GLP1 receptor agonists along with sodium-glucose cotransporter 2 inhibitors in T2D patients whose extreme restriction of carbohydrate intake may have triggered EDKA. Therefore, physicians should use diabetes medications in a stepwise manner and advise their patients not to overrestrict their carbohydrate intake while they are being treated with GLP1 receptor agonists.

P5. An Unusual Presentation of Diabetic Ketoacidosis with Fungal Esophagitis

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Introduction: Diabetic ketoacidosis (DKA) is a life-threatening endocrine emergency that requiring admission to the intensive care unit. The development of DKA has been associated with several precipitating factors such as infection, ischemia, medications, and other medical-surgical conditions. The two extremely rare infections that cause DKA are ascariasis and candidiasis.

Case Description: Here, we report the case of a patient with T1D 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 KSA. 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 T1D. Therefore, physicians should be aware of fungal infections associated with T1D.

Conclusion: In conclusion, persistent nausea, vomiting, and dysphagia despite correction of metabolic acidosis could be a sign of esophagitis in patients with T1D. Therefore, physicians should be aware of fungal infections associated with T1D.

P6. Unexpected Cause of Recurrent Diabetic Ketoacidosis in Type 1 Diabetes

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Introduction: 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 A: patient with T1D who had been treated for DKA six times in the past year and was eventually diagnosed with CHS.

Results: 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 T1D with unusual presentations, such as unexpectedly high pH and bicarbonate levels, with hyperglycemic ketosis should be screened for illicit drug use, especially cannabis.

P7. Immune Checkpoint Inhibitor–Induced Endocrinopathies: Assessment, Management, and Monitoring in a Comprehensive Cancer Center

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Introduction: A high number of patients treated with PD-1/PD-L1 inhibitors for the management of solid tumors developed endocrinopathies. We aimed to determine the incidence, presentation, frequency, and management of immune checkpoint inhibitor (ICI)-related endocrinopathies in a comprehensive cancer center in Oman, particularly with program-death-1/program-death-ligand-1 (PD-1/PD-L1) inhibitors.

Methods: This is a retrospective study of patients admitted to Sultan Qaboos Comprehensive Cancer Care and Research Centre (SQCCCRC) from August 2021 to December 2022. All consecutive adolescents (13–18 years) and adults (>18 years of age) diagnosed with solid cancers and have received at least one dose of the following ICIs (atezolizumab, durvalumab, nivolumab, or pembrolizumab) were included. Patients with incomplete data were excluded from analysis. Data regarding the ICIs induced endocrinopathy were collected.

Results: A total of 139 patients were included in the study of which 58% were females. The median age of the cohort was 56 years. The incidence of endocrine-related adverse events was 28%. The mean time for the development of endocrine adverse events after treatment initiation was 4.1 ± 2.8 months (range 1–12 months). Of the patients who developed toxicity, 90% had hypothyroidism. Ten patients (7%) developed hyperthyroidism, two patients were diagnosed with secondary adrenal insufficiency/hypophysitis, and one patient developed T1D mellitus. Using univariable logistic regression weight and BMI significantly impacted the development of endocrine immune-related adverse events (irAEs).

Conclusion: This is the first study from Oman to assess PD-1/PDL-1 ICI-induced endocrinopathies. The most common endocrine adverse event is thyroid dysfunction, mainly hypothyroidism followed by hyperthyroidism. Hypophysitis, primary adrenal insufficiency and CIADM occur less frequently, but have a more significant effect on the patient's health. Treating physicians should be aware of ICI-induced endocrinopathies, screening, and treatment. Furthermore, our study showed that patients with a higher BMI have a greater risk of developing irAEs and a lower WBC and AST are associated

with a higher risk of developing ICI-related endocrinopathy. Further studies are needed to establish the predictors of endocrine irAEs.

P8. Acute Pancreatitis with Normal Amylase and Lipase: A Diagnostic Dilemma

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Introduction: Acute pancreatitis is a common and potentially life-threatening condition characterized by inflammation and destruction of the pancreas, often accompanied by elevated pancreatic enzymes, notably amylase and lipase. Typically, these enzymes are used as diagnostic markers. However, the diagnosis requires only two of three criteria: characteristic abdominal pain, serum amylase and/or lipase > three times the upper limit of normal, and characteristic findings on abdominal imaging. This case report presents an instance of hypertriglyceridemia-induced acute pancreatitis with normal amylase and lipase levels, highlighting the diagnostic challenges and the need for comprehensive clinical assessment.

Case Description: A 39-year-old male presented to the emergency department three times in 2 days with persistent, moderate to severe epigastric pain radiating to his back, worsened when lying flat and slightly relieved when sitting or standing. Despite two prior visits and over-the-counter paracetamol, his pain persisted and worsened. He had associated nausea and poor appetite but no vomiting, diarrhea, or constipation. He reported subjective fever without measurement and denied genitourinary or respiratory symptoms. His medical history included T2D managed with sitagliptin, metformin, and dapagliflozin, with no prior surgeries, gallstones, or alcohol use, but he was an active smoker. Physical examination revealed voluntary guarding and tenderness over the epigastrium, with normal vital signs. Laboratory investigations showed raised WBC count (16×10^9/L) with neutrophil predominance, high CRP (195 mg/L), normal serum amylase and lipase, and poorly controlled diabetes (HbA1c 11.9%). Ultrasound showed fatty liver infiltration but normal gall bladder and biliary tract. Initial diagnosis was euglycemic diabetic ketoacidosis (DKA) due to SGLT2 inhibitor use, managed with IV fluids, insulin, and dextrose. Persistent abdominal pain led to a CT scan revealing fat stranding around the pancreas, consistent with pancreatitis. The patient's serum was grossly lipemic, and a lipid panel showed markedly elevated triglycerides (TAG). Diagnosed with hypertriglyceridemia-induced acute pancreatitis, he was started on a fat-free diet, statins, and fibrates, with antiglycemics withheld. His TAG levels normalized, abdominal pain resolved, and he was discharged with follow-up for hypertriglyceridemia management.

Conclusion: This case underscores the importance of comprehensive clinical assessment, including imaging, in suspected acute pancreatitis with normal amylase and lipase levels. Traditional reliance on these enzymes may not be applicable in all cases. Early recognition and appropriate management are crucial to prevent complications and improve outcomes. Physicians should exercise caution when prescribing medications associated with pancreatitis, especially in patients with other risk factors like uncontrolled diabetes and hypertriglyceridemia.

P9. Betatrophin and FGF-21 Levels as Cardiometabolic Markers in Arab Adolescents

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Introduction: Betatrophin has been observed to play an important role in regulating lipid and glucose metabolism, at least in adults. FGF21 is one of the members of the endocrine arm of FGF family and its actions as a glucose and lipids metabolism regulator. FGF21 is rapidly emerging as an attractive target in treating metabolic syndrome and T2D. They may serve as both risk factors and biomarkers of chronic metabolic disorders. This study aimed to investigate the changes in betatrophin and FGF21 levels in Arab adolescents with varying levels of BMI and glycemia after a 12-month lifestyle modification program.

Methods: A total of 218 children and adolescents (male = 106, female = 112) aged 13 to 17 years were included and stratified based on baseline BMI [normal $N = 45$, overweight $N = 77$, and obese $N = 96$] before undergoing a 12-month intervention program. Anthropometric and fasting blood samples were taken at baseline and after 12 months of intervention. Glycemic and lipid profiles were measured routinely. Betatrophin and FGF21 were assessed using commercially available assays.

Results: At baseline, obese adolescents had a higher betatrophin level [0.7 ng/mL (0.4–1.3), $p = 0.032$]. Follow-up BMI was significantly lower in the obese ($p < 0.001$) and overweight ($p = 0.018$) groups. However, in obese adolescents, betatrophin levels and BMI were significantly lower after 12-month lifestyle intervention [0.5 ng/mL (0.1–1.1), $p = 0.032$; 33.1 ± 7.5), $p < 0.001$ respectively] and FGF21 was significantly higher in prediabetic and obesity subjects [194.4 (103.4–295.4), $p = 0.017$; 208.0 (115.8–362.0), $p = 0.003$ respectively]. Follow-up lipid profile and insulin were significantly higher in all obese participants ($p < 0.05$). Finally, betatrophin levels of those who achieved 5% weight loss ($N = 25$) showed no significant difference after follow-up ($p = 0.59$).

Conclusion: Changes significantly in FGF21 and betatrophin after lifestyle modification program. An increase in FGF21 and a decrease in betatrophin were associated with clinical characteristics related to the adrenergic and lipolytic responses to a healthy lifestyle.

P10. Knowledge, Beliefs, and Practices of Patients towards Diabetes

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Objectives: We evaluated the knowledge, beliefs, and practices regarding diabetes and its complications among Omani T2D patients. A cross-sectional study enrolled 150 participants from the Diabetes Clinic at Bausher Polyclinic, Muscat, Oman. Data were collected using questionnaires.

Results: Only 38% checked their feet regularly, and only 5.6% had diabetic feet. The practices regarding physical activity and blood glucose monitoring were found to be poor. The results were as follows: 84% do not know the cause of diabetes, 37.3% do not know the complications of the same, 55.3% do not know the cause of diabetic foot, and 50% do not know the symptoms of diabetic foot.

Conclusion: Educational interventions that approach the adoption of essential behavior with regard to foot care are

considered the ideal practices for this public, which should include daily foot examination and preventive care for skin, nails and callosity. Professionals should incorporate the practice of health-related education in their daily routines to better assist their patients. Furthermore, as those responsible for promoting, protecting and recovering health, they are expected to obtain desirable results with diabetics in preventing and delaying the onset of foot complications and help diabetics to improve their quality of life.

P11. The Outcome of Radioactive Iodine and Its Association with Various Parameters

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Introduction: Hyperthyroidism is a common disorder of the thyroid gland with multiple etiologies, and radioactive iodine (RAI) is one of the important modalities to treat it. The outcome after RAI treatment is unpredictable as many factors influence it. Successful treatment is determined by development of euthyroidism and/or hypothyroidism within 6 months of radioactive iodine treatment. The aim of this study was to find out the outcome of RAI treatment and its association with factors like age, gender, various etiologies of hyperthyroidism, and baseline TSH and FT4 in our population.

Methods: This retrospective case series study was conducted at Karachi Institute of Radiology and Nuclear Medicine (KIRAN) from January 2018 to June 2020. Among 537 who were given RAI for hyperthyroidism a total of 199 participants with complete data were recruited in study after IRB approval. Demographic details, including age, gender, and underlying cause of hyperthyroidism (Graves' disease, toxic multinodular goiter, solitary toxic nodule etc.), were obtained from medical records along with baseline FT4 and TSH. A fixed dose of 15 mci of radioactive iodine was given to all patients and TSH and FT4 were measured at 6 weeks 3, 6, and 12 months to evaluate the outcome of RAI treatment.

Results: A total of 199 participant's data were analyzed, 77.9% were females and 22.1% males with mean age of 41.32 ± 0.99 years. Seventy four 74.4% participants had diffuse toxic goiter (Graves' disease) and 15% had solitary toxic nodule or toxic multinodular goiter. Post RAI TSH target (with in normal range/or above) was achieved earlier at 6 weeks in comparison to FT4 (in normal range or below) that attained at 3months. Outcome of RAI treatment in patients with Graves' disease and toxic nodule revealed statistically significant and early result by normalization and or increased TSH at 6 weeks 3, 6 and 12 months (p-value < 0.05), while in MNG successful treatment outcome by obtaining TSH goal was noticed at 6 and 12 months. FT4 normalization was only seen in patients with Graves' disease at all point of measurement compared to other etiologies. Females revealed statistically significant improvement in both biochemical markers, i.e., normalization of TSH at 6 weeks, increased TSH and normalization of FT4 at 3, 6, and 12 months in comparison to males. Patients with aged greater than 40 years observed early response after RAI by normalization of FT4 at 6 weeks compared to those aged <40 years. The treatment failure rate was 24.5% at 6 and 12 months, whereas successful treatment was noticed in 35, 56, 75.6, and 75.6% at 6 weeks, 3, 6, and 12 months, respectively.

Conclusion: Female participants with Graves' disease of age greater than 40 years responds better and early to RAI treatment compared to elderly males with underlying diagnosis other than Graves for hyperthyroidism.

P12. Body Composition Patterns among Type 2 Diabetes Patients versus Nondiabetic Adults in Saudi Arabia.

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Introduction: We investigated the body composition variations between individuals with T2D and those without diabetes in KSA, considering gender and age factors.

Methods: A cross-sectional study of 630 adults with and without T2D was conducted in Medina, KSA, between July and September 2023. Body composition was assessed in the participants using a body composition analyzer and weight, BMI, total body fat, visceral fat (VF), muscle mass, and bone mass were documented. Participants were categorized into 3 groups: young (18–40 years), middle-aged (41–60 years), and elderly (>60 years) groups. Comparisons of body composition were made between the T2D and non-T2D groups, stratified by age and gender.

Results: Of 630 participants, 42.4% had T2D. At the young age group, women with T2D showed elevated levels of BMI, total body fat, VF, muscle mass, and bone mass, but exhibited lower percentages of muscle and bone mass. In the middle-aged group, no significant disparities in body composition were found. In elderly group, women with T2D had higher BMI and VF compared to nondiabetics. In contrast, across various age groups, men with T2D showed no significant differences compared to those without T2D, except for a decreased muscle mass percentage observed among younger individuals with diabetes.

Conclusion: Gender and age influenced body composition disparities between T2D and nondiabetic individuals. Understanding these patterns may enhance understanding of T2D pathogenesis.

P13. Alström Syndrome: A Challenging Case Study of a Female Saudi Patient with Type 2 Diabetes

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Introduction: Alström syndrome (AS; OMIM 203800) is an extremely rare autosomal recessive disease. An estimated one to nine cases of ALMS occur for every million people. Childhood obesity, sensorineural hearing loss, progressive cone-rod dystrophy resulting in blindness, adult low height with early onset rapid childhood linear growth are the hallmarks of AS. Early onset diabetes mellitus (usually developing in the second or third decade), hyperinsulinemia, hypothyroidism, infertility (hypergonadotropic hypogonadism), and hypertriglyceridemia are examples of endocrinologic complications.

Case Description: We describe a patient who developed poor vision, sensorineural deafness, CKD, diabetes mellitus, intellectual disability, metabolic acidosis, and micrognathia as a result of mutations in the ALMS1 gene. Whole-exome sequencing in conjunction with a urine analysis test has aided in establishing the diagnosis. Alström syndrome (OMIM 203800) is an autosomal recessive disorder

characterized by cone-rod dystrophy, obesity, progressive bilateral sensorineural hearing loss, and insulin resistance/T2D. Also, the disease presents with acute restrictive cardiomyopathy that is of adult-onset, infantile onset and/or adolescent cardiomyopathy, chronic progressive kidney disease, nonalcoholic fatty liver disease (NAFLD), all of which are hallmarks of AS. Cone-rod dystrophy typically first manifests as nystagmus, photophobia, and progressive visual impairment between the ages of one and 15 months. By the end of the second decade, many people have completely lost their sense of light, but some people can still read large print well into their third decade. Most babies are born with normal weights, but during the first year of life, they develop truncal obesity. Up to 70% of people have sensorineural hearing loss in their first decade, and by the end of their first or second decade, it may have progressed to severe or moderately severe with a range of (40–70 db). Acanthosis nigricans is commonly associated with insulin resistance, which progresses to T2D in most cases by the third decade. In our patient, we have been able to detect a homozygous mutation of ALMS1. The genetic foundation of AS patients from KSA has been documented in a small number of publications. Genetic linkage mapping and Sanger sequencing were used in the first study, which involved four Saudi AS patients. The results showed allelic heterogeneity of ALMS1 mutations, including c.5534 C>G (S908X) and c.5981delCAGA(1992X) in exon 8, c.8275C >T (R2720X) in exon 10, and IVS18-2 A>T in exon 18.

Conclusion: This study presents a Saudi female patient with Alström syndrome confirmed by genetic testing that verified the autosomal recessive inheritance of an extremely rare ALMS1 mutation. The disease's early-life complications are most likely brought on by malfunctioning cilia. Alström syndrome symptoms can impact a wide range of organ systems and vary greatly in presentation and severity. The following conditions can lead to complications that include hepatic, renal, sensory, endocrine, and renal. Alström syndrome does not currently have a specific treatment; instead, current care focuses only on managing the condition's complications. The effects of Alström syndrome are profound for those who are afflicted, and further study should be done in this area.

P14. Asymptomatic Left Ventricular Diastolic Dysfunction and Prediabetes

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Introduction: Prediabetes often precedes overt T2D. Prediabetes is defined as a fasting blood sugar of 100 to 125 mg/dL or a post-oral glucose tolerance blood glucose (post-OGTT) of 140 to 200 mg/dL. People with prediabetes are at increased risk of macrovascular disease.

Methods: This is a descriptive and analytical study which took place over 10 months between September 2021 and June 2022 at the EPSP Besbes-El-Tarf Internal Medicine consultation. The main data are the criteria for Prediabetes without proven heart disease. in whom a clinical examination is carried out, a blood pressure measurement, measurement of BMI, TT, a paraclinical assessment is carried out; HbA1c, OGTT, a lipidogram, a resting ECG, exercise test and an ETT.

Results: We identified 21 prediabetic people; 12 men including 7 smokers. Average BMI 31.5 kg/m^2, average BP: 134/83 mmHg. Average TT for men 97 cm and 89 cm for women, HbA1c: 6%, GAJ: 1.17 g/L, GPP2h: 1.46 g/L, TG: 2.04 g/L, HDL: 0.36 g/L, LDL: 1.39 g/L, Chol-T: 2.06 g/L. Resting ECG: no abnormality stress test: negative. 52% of people were in DD grade I including 38% male (E/A: 0.4 and VE: 45 cm/s) 43III including 28% female (E/A: 2) and 5% in DDII (E/A: 1.8, E/é: 16, Vmax IT 3.1 m/s VOGi: 38 mL/m^2.

Discussion: This work was able to show that asymptomatic diastolic dysfunction of the LV is linked to prediabetes.

Conclusion: Diabetic subjects are considered to be at very high risk; prediabetes can constitute a silent risk factor for heart failure up to asymptomatic and sometimes inaugural or even ischemic heart disease, the latter of which in most cases initiates diabetes sweet; is it an independent risk factor for heart disease, especially ischemic? Should we lower the glycemic thresholds in relation to macroangiopathic damage and give a new definition of glycemic disorders, particularly diabetes? Should we go far and imposed other means of screening for asymptomatic cardiac involvement in prediabetics who may perhaps express microcoronary disease preceding macroangiopathy. Should we act pharmacologically at the stage of Prediabetes outside of MHD?

P15. The Weight of Expectations: BMI and Cesarean Section Rates in Primigravidae

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Introduction: Research suggests a positive correlation between maternal BMI and cesarean section (C-section) rates in primigravidae. Women with higher BMIs, particularly obese and morbidly obese individuals, are more likely to undergo a C-section delivery. This increased risk may be attributed to difficulties during labor and delivery, such as shoulder dystocia and fetal macrosomia, as well as a higher likelihood of instrumental delivery and postpartum complications. Health care providers should be aware of this association to optimize pregnancy outcomes and encourage healthy weight management and monitoring for potential complications during labor and delivery.

Methods: A retrospective analysis of electronic medical records from January 2022 to October 2023 was conducted. Primigravida deliveries were categorized into two BMI classes: Class 2 (35.0–39.9) and Class 3 (morbid obesity, BMI ≥ 40). C-section rates were compared between the two groups using a Chi-square test.

Results: A total of 229 primigravidae deliveries were analyzed, with 176 women in Class 2 and 53 in Class 3. The C-section rate was 20.45% ($n = 36$) in Class 2 and 33.96% ($n = 18$) in Class 3. The Chi-square test revealed a statistically significant difference (p-value $= 0.0001$) in C-section rates between the two groups.

Conclusion: This study demonstrates a significant association between maternal BMI, particularly in the higher classes, and C-section rates in primigravidae at Al Wakra Hospital. The results suggest that morbid obesity may be associated with an increased risk of C-section delivery. Further research is needed to elucidate the underlying mechanisms and develop targeted interventions to optimize birthing outcomes and reduce C-section rates for primigravidae with higher BMI. These findings have important implications for obstetric care, highlighting the need for early identification and management of obesity in primigravidae to improve pregnancy outcomes and reduce the risk of C-section delivery.

P16. Assessing Automated Insulin Delivery against Multiple Daily Injections with Continuous Glucose Monitoring in Type 1 Diabetes Management during Ramadan Fasting: A Multicenter Prospective Study

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Objective: To evaluate differences in fasting experience and glycemic goals among individuals with T1D on automated insulin delivery system (AID) versus multiple daily injections with continuous glucose monitoring (MDI + CGM) during Ramadan fasting.

Methods: This is a multicenter prospective study involving 180 individuals with T1D [AID $N = 98$, 39 males and 59 females; MDI + CGM $N = 80$, 30 males and 50 females] who attempted fasting during the 2024 Ramadan. Clinical data and outcomes were recorded. Participants were also screened for risk using the International Diabetes Federation-Diabetes and Ramadan (IDF-DAR) risk calculator and composite endpoints (completed fasting >15 days, time in range, TIR ≥70% and time below range, TBR <4% during Ramadan) were noted. Significant predictors for composite endpoint were determined.

Results: The MDI + CGM group was significantly older than the AID group ($p < 0.049$) with no significant differences in mean BMI and T1D duration. No significant difference was seen in severity of IDF-DAR risk. The MDI + CGM group had significantly higher episodes of hypoglycemic unawareness ($p < 0.001$), multiple hypoglycemic episodes and episodes of hypoglycemia per week (p-values 0.002, <0.001, and <0.001, respectively) than the AID. More participants were able to complete Ramadan fasting beyond 15 days and even up to completion in the AID group (p-values 0.02 and 0.01, respectively) than the MDI + CGM group. Composite endpoint was achieved by 50% of participants in the AID group, significantly higher than the MDI + CGM group at only 8% ($p < 0.001$). Multinomial logistic regression analysis revealed that achieving the composite endpoint is nine times more likely to occur with AID (95% CI: 3.1–28.4) than MDI + CGM ($p < 0.001$).

Conclusion: Use of AID is superior to MDI + CGM in terms of achieving successful Ramadan fasting and composite endpoint among individuals with T1D.

P17. Detectable C-peptide and Its Association with Bone Health: Analysis of the Canadian Study of Longevity

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Introduction: Lower BMD and an increased risk of fragility fractures have been observed in long term TID. C-Peptide has been extensively studied in preclinical studies for its role in bone health and diabetes, even considered as a possible therapy. We aimed to determine the association between preserved C-peptide and bone health in people with long standing T1D for more than 50 years.

Methods: Data collected from the Canadian Study of Longevity were assessed for detectable fasted (unstimulated) C-peptide (both serum and urinary) as the exposure and normal bone density as the outcome. We used a highly sensitivity assay (Millipore-Sigma Human radioimmunoassay) with a lower limit of detection of 0.003 nmol/L for serum and 0.030 nmol/L for urinary C-peptide. "Detectable C-peptide" was defined as measurable in either urine or blood. BMD was measured at the lumbar spine (LS), total hip (TH) and femoral neck (FN) by DXA using a Hologic (Discovery QDR, model: Discovery A [S/N 85675]) bone densitometer. We explored the history of fragility fractures as a secondary outcome. We used linear and logistic regression.

Results: A total of 74 T1D participants had mean age 66 ± 8 years, duration of diabetes 54 [52–58] years, and HbA1C $7.4 \pm 0.8\%$ (56.8 ± 9.15 mmol/mol). Serum C-peptide was present in 30 (41%) with the mean 0.013 ± 0.022 nmol/L. Urinary C-peptide was present in 32 (43%), mean was 0.547 ± 2.078 nmol/L. Combined serum or urine measurable C-peptide ("Detectable C-Peptide") was observed in 48 (65%) of the population. The three BMD measures did not differ between those with detectable C-peptide and those without (for example, LS BMD 1.040 vs. 1.0405 units, $p = 0.92$). Fragility fractures were observed in 9.72% of those with detectable C-peptide and 5.56% of the undetectable C-peptide group ($p = 0.90$). We explored analyses for other definitions of C-peptide positivity, including only detectable serum or detectable urine C-peptide and found that FN and TH BMD was higher in those with detectable serum C-peptide, but these were not significant after adjustment for potential confounders (age, sex, total daily insulin dose, hypoglycemia worry, HDL cholesterol, current alcohol use). Higher A1c was strongly associated with higher adjusted odds of fragility fracture (OR 4.13 for every 1 percent higher A1c, $p = 0.006$).

Conclusion: Despite preclinical studies implying a relationship between C-peptide and bone health, we could not demonstrate this in those with longstanding T1D, in whom an association is most likely to be found. Rather, better glycemic control, whether from optimal endogenous or exogenous insulin, appears to be the key risk factor for better bone health.

P18. Glycemic Outcomes in Patients with Type 2 Diabetes During Ramadan Fasting

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Introduction: Over one billion Muslims worldwide fast during Ramadan, a significant lifestyle shift lasting a lunar month. This fasting may impact the biochemical parameters of diabetic patients. To date, little is known about the safety of Ramadan fasting in Patients with T2D not treated with an intensive insulin regimen. This study aimed at assessing the changes of glucometric derived metrics of individuals with T2D during and after Ramadan fasting using intermittently scanned continuous glucose monitoring system (iCGMS) (FreeStyle Libre 2 with real-time alarms).

Methods: This prospective comparative study was conducted in a tertiary diabetes treatment center in Prince Sultan Military Medical City (PSMMC), Riyadh, KSA. The study included T2D patients aged 30 to 70 who were treated with nonintensive insulin regimens and were able to fast during Ramadan in 2023. Besides the baseline characteristics, data related to glycemic profile, glycated hemoglobin (HbA1c), and Ambulatory Glucose Profile (AGP) derived metrics using an isCGM, were collected at three specific periods: pre-, during, and post-Ramadan. Furthermore, the self-care activities

during Ramadan were evaluated using the Diabetes Self-Management Questionnaire (DSMQ).

Results: A total of 93 T2D patients were enrolled in the study with a mean ±SD age of 47.9 ± 7.5 years and a mean diabetes duration of 7.1 ± 4.7 years. Most patients (90.3%) were on Biguanides. Compared with pre- and post-Ramadan, there was a significant decrease during Ramadan in HbA1c ($p < 0.001$, for both periods), average glucose level ($p = 0.001$, and $p = 0.026$, respectively), Glucose variability (GV) ($p = 0.043$ and $p = 0.005$, respectively), and % time above range (TAR) 181–250 mg/dL ($p < 0.001$, for both periods). In addition, there was a significant increase in % time in target (TIR) (70–180 mg/dL) during Ramadan compared to pre- ($p < 0.001$) and post-Ramadan ($p < 0.001$). However, the % time below range (TBR) below 54 mg/dL was slightly higher during Ramadan than both pre and post-Ramadan periods ($p < 0.001$, and $p = 0.002$, respectively), and TAR% (above 250 mg/dL) was higher during Ramadan than post-Ramadan ($p < 0.001$). Further, 32.3% of the participants reported inadequate self-care behaviors during Ramadan. There was a positive correlation between the physical activity and % TIR 70–180 mg/dL ($p = 0.039$).

Conclusion: Ramadan fasting is safe and could improve overall ambulatory glucose profile-derived metrics among T2D patients who were not treated with intensive insulin regimens with a relatively low incidence of hypoglycemia. However, a high proportion of patients reported inadequate self-care behaviors during Ramadan.

P19. Assessing Vitamin C Levels in Patients with Hypothyroidism on Levothyroxine

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Introduction: Vitamin C (ascorbic acid) is an essential water soluble vitamin that requires regular intake to avoid any deficiency. Recent studies indicate a possible role for vitamin C in genetic and epigenetic regulation as well as pleiotropic functions. The adequate saturation levels of Vitamin C in the body are 50 to 75 µmol/L, which requires a daily intake of 100 to 200 mg of vitamin C while levels below 28 µmol/L suggest hypovitaminosis C. Recent literature has shown improvement in thyroid function in patients with hypothyroidism by adding on vitamin C alongside their existing levothyroxine dose, suggesting a beneficial effect of Vitamin C on levothyroxine absorption. The aim of this study was to assess the serum vitamin C levels in patients with hypothyroidism on oral levothyroxine in comparison to healthy young population (without hypothyroidism).

Methods: The patients known to have hypothyroidism on ≥1.2 mcg/kg of levothyroxine for more than 6 months were selected from the Endocrine clinic in Tawam Hospital and included in the test group. Patients with evidence of secondary hypothyroidism (pituitary problems/surgery or thyroid surgery), coeliac disease or malabsorption syndrome, gastric/intestinal resection surgery or biochemically overt hypothyroidism with TSH >20 were excluded. For the control group, volunteer healthy students from the university participated and those known to have any medical problems or on any regular medications were excluded. Blood samples were taken from both groups and vitamin C levels were assessed.

Results: There were 26 patients in the hypothyroidism group (test group) and 14 patients in the control group ($n = 40$). 15.4% (4/26) of the patients in the hypothyroidism group had hypovitaminosis C while 11.5% (3/26) has insufficient vitamin C levels with only 19 patients (73%) having normal vitamin C levels. 14.3% (2/14) of the participants from control group also had hypovitaminosis, indicating a presence vitamin C insufficiency in both groups but especially higher in the hypothyroidism group (25.8 vs. 14.3% in the control group).

Conclusion: Vitamin C insufficiency seems to be frequent in our local population irrespective of the presence of hypothyroidism and further large-scale prospective studies may be required to further confirm these findings.

P20. Improved Cardiometabolism in Adolescents Post 12-Month Lifestyle Modification

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Introduction: The present 12-month interventional study aimed to investigate the effect of hybrid educational lifestyle modifications on cardiometabolic risk factors among Saudi school adolescents.

Methods: A total of 643 adolescents (300 boys and 343 girls) aged 12 to 18 years from different schools in Riyadh City participated in a 12-month lifestyle modification program that includes dietary changes and increased physical activity. Anthropometrics and lipid profile were measured pre- and post-intervention to improve diet and exercise behavior. Atherogenic dyslipidemia was assessed in all participants according to the NCEP Expert Panel on Cholesterol Levels in Children [triglycerides (TG) ≥ 1.4 mmol/L; high-density lipoprotein cholesterol (HDL-C) < 1.0 mmol/L; and low-density lipo-protein cholesterol (LDL-C) ≥ 3.4 mmol/L]. Hypertension was defined according to the 2017 clinical practice guidelines [systolic blood pressure (SBP) and/or diastolic blood pressure (DBP) ≥ 95th percentile for age, sex, and height].

Results: At baseline, 233 out of the 643 participants (36.2%) had high TG levels, 63 (10%) of whom became normal post-intervention, $p < 0.001$. Furthermore, out of the 556 (86.3%) with low HDL-C levels at baseline, 471 (84.7%) became normal post-intervention ($p < 0.001$). Similarly, HDL-C significantly increased after intervention (0.99 ± 0.2 vs. 1.68 ± 0.6, $p < 0.01$). Regarding hypertension, 114 (17.7%) participants were hypertensive at baseline, while post-intervention 104 (91.2%) of them turned normotensive ($p < 0.001$). In conclusion, the present lifestyle intervention program modestly improved the cardiometabolic profile (hypertension and dyslipidemia) of Saudi adolescents, post-lifestyle intervention.

Conclusion: Changes in other cardiometabolic indices will be presented. The challenge of sustaining interest in adopting lifestyle changes for a longer duration should be addressed in further studies in this population.

P21. Patients' Awareness of Thionamide-Induced Agranulocytosis

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Introduction: Hyperthyroidism is a clinical condition characterized by overproduction of thyroid hormones which is prevalent worldwide. These patients require anti-thyroid drugs (ATD) like Carbimazole and propylthiouracil (thionamides), which may cause serious side-effects like agranulocytosis. Agranulocytosis can be treated by prompt diagnosis and early management if the patient has been provided with the necessary education to self-identify agranulocytosis based on its presenting features. However, recent literature has shown that the patient on ATD therapy may not be fully aware of this risk nor of the presenting symptoms of agranulocytosis. Some studies have illustrated the usefulness of ATD-induced-agranulocytosis information cards in improvement in patient's awareness. The aim of our study was to assess the knowledge of patients with hyperthyroidism presenting to Tawam Hospital Endocrinology clinics over a period of 12 months on thionamide treatment regarding the awareness, presenting symptoms and necessary steps required for suspected agranulocytosis.

Methods: This was a questionnaire based cross-sectional study with prospective follow up. Adult patients who visited Tawam hospital Endocrine Clinic between March 2023 and March 2024 were asked to fill a standard questionnaire to assess their knowledge about the symptoms of agranulocytosis and the immediate steps required on observing these symptoms. These patients were then given thionamide-induced-agranulocytosis information cards (English and Arabic version) and given face to face/telephone-based education. The patients completed a follow-up questionnaire after 3 to 6 months' time to check for retention of information and improvement in their awareness.

Results: A total of 69 patients completed the initial as well as the follow-up survey with mean age of 43.7 (SD $+17.1$) years; 48 (69.6%) females, current carbimazole dose of 8.1 (SD ± 7.4) mg and 58 (84.1%) Emiratis. 59.4% (41/69) of the participants responded as receiving adequate information on the side effects of ATD on treatment initiation and this awareness improved to 97% (67/69) after providing with thionamide-induced-agranulocytosis information cards and education. Similarly, their self-reported confidence in identifying these side effects improved from 49.3% (34/69) to 98.6% (68/69).

Conclusion: Thionamide-induced-agranulocytosis information cards and patient education can improve the awareness in patients regarding identifying symptoms and steps required for suspected agranulocytosis.

P22. Thermographic Diagnosis of Diabetic Neuropathy

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Introduction: Diabetes is a public health problem, particularly due to its degenerative complications. Diabetic foot is the second leading cause of amputation worldwide. It therefore seems important to develop new diagnostic tools to detect these complications early and avoid their recurrence. The aim of this study was to investigate plantar thermographic changes in diabetic patients that can help in the early diagnosis of diabetic foot.

Methods: A descriptive, cross-sectional and observational study was carried out on a sample of 500 cases, having consulted in an outpatient setting (private medical practice), divided into three groups, 250 control cases, 250 diabetic patients including 131 neuropathic and 119 nonneuropathic. The average age is 50.4 years. The images were acquired with a thermal camera of a professional CAT S62 PRO Smartphone. The extraction of thermal data was possible thanks to the use of an application based on artificial intelligence, developed for the needs of the study, in collaboration with a computer science research laboratory.

Results: The pathological thermal model is the majority in diabetics complicated by neuropathy (83%), compared to 67% in uncomplicated diabetics and in only 17% of control cases. The thermal model makes it possible to distinguish both between a nondiabetic and a diabetic ($p < 0.001$) and between a neuropathic diabetic and a nonneuropathic ($p < 0.001$). The average foot temperature is higher only in the neuropathic group compared to that of nonneuropathic and control cases. Here too, the plantar temperature makes it possible to distinguish between a neuropathic and a nonneuropathic patient ($p < 0.001$). No significant temperature difference between the two feet was found in the control cases, unlike the diabetic group (Delta T of 0.55° and 1.15° respectively in the nonneuropathic and the neuropathic. The delta T is correlated to the duration of progression of diabetes (p: 0.047). Our study identified significant differences between the three groups studied and showed that the three plantar thermographic parameters studied make it possible to distinguish between these three groups.

Conclusion: The assessment of the diabetic foot can be improved by the analysis of plantar thermography which can allow early diagnosis of degenerative complications of diabetes mellitus, particularly neuropathy, and prevent the appearance of plantar lesions.

P23. Metabolic-Dysfunction-Associated Steatotic Liver Disease in Sleep Apnea Patients

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Introduction: Metabolic-dysfunction associated steatotic liver disease (MASLD) is estimated to affect nearly a quarter of world population and can lead to metabolic-dysfunction associated steatohepatitis (MASH) related cirrhosis which is a leading cause of liver transplantation. Obstructive sleep apnea (OSA) is defined by the presence of recurrent episodes of hypopnea and apnea with awakening from sleep secondary to airway narrowing. It has been shown that OSA can lead to oxidative stress and systemic effects leading to metabolic syndrome, insulin resistance, dyslipidemia, and hepatic steatosis. Continuous positive airway pressure (CPAP) therapy is the only treatment currently available. Although in theory obstructive sleep apnea mediates development of MASH, the CPAP treatment shows mixed results in terms of any improvement in MASH/MASLD despite improvement in OSA. This study aims to assess the frequency of MASLD in patient with OSA starting CPAP therapy.

Methods: All patients identified to have sleep apnea eligible for CPAP therapy as per American Academy of Sleep Disorders criteria, and willing to initiate CPAP, were selected

from sleep disorders specialized clinic in Al Ain, and assessed for presence of liver steatosis by measuring Controlled Attenuation Parameter (CAP score) in decibels per meter (dB/m) and presence of liver fibrosis by measuring liver stiffness in kilopascals (kPa) via Fibroscan machine (Echosens, Paris, France).

Results: There were 43 patients identified to have OSA and underwent fibroscan which indicates 79.9% (34/43) of the patients having MASLD with 46.5% (20/43) having advanced liver steatosis stage S3. 32.5% (14/43) of patients had presence of liver fibrosis with kPa score >7.

Conclusion: Liver steatosis and fibrosis is frequently seen in patients with OSA and further research into strategies to routinely identify these patients is suggested.

P24. Trends in Weight Change Pattern among Adults with Type 2 Diabetes Mellitus Using Dapagliflozin 10 mg and Semaglutide 1 mg in King Abdulaziz Medical City, Riyadh, KSA.

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Introduction: Diabetes is a common disease characterized by impaired glycemic control in the blood. Aim to assess the significance of the change in weight and HbA1C before and after using the medication.

Methods: This study implemented a retrospective, chart review study design and a nonprobability convenient sampling technique to collect the weight changes in patients using Dapagliflozin 10 mg and Semaglutide 1 mg subcutaneous injection in combination or alone before and after starting these medications. Wilcoxon rank-sum test was used to assess the association between changes in weight and demographic data of participants. A paired Wilcoxon rank-sum test was used to assess the significance of the change in weight before and after using the medication.

Results: The study included 107 participants with a median age of 57 years (interquartile range 48–64). Of these, 63% were female. Only 6.5% reported having side effects. In terms of medication, 53% were on Dapagliflozin 10 mg alone, 31% on Semaglutide 1 mg injection alone, and 16% were on a combination of Semaglutide 1 mg injection and Dapagliflozin 10 mg. The median weight before intervention was 90 kg (interquartile range 82– 109) and 90 kg after intervention (interquartile range 79–100). There is no significant association between change in weight among Semaglutide and Dapagliflozin combination group and age, gender and presence of complications of diabetes mellitus. Similarly, change in weight among Semaglutide alone group was not significantly associated with age, gender and presence of complications of diabetes mellitus. On the other hand, there was a significant decrease in weight among Dapagliflozin and Semaglutide combination group ($p < 0.001$) and Semaglutide alone group ($p < 0.001$), with a higher decrease seen in the Dapagliflozin and Semaglutide combination group.

Conclusion: Diabetes is a worldwide disease characterized by impaired glycemic control in the blood and related organs. Many diabetic medications are currently available for treatment. Among these medications are GLP-1 agonists and SGLT-2 inhibitors. These two classes have contrasting effect on weight as reported by previous literature. However, we have seen in our sample size that Dapagliflozin has significantly decreased the weight when added on Semaglutide monotherapy. This may suggest possible synergistic effect between the two medications

P25. Trends of HbA1c and Related Side Effects of Dapagliflozin and Semaglutide in T2D

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Introduction: Diabetes is a common disease characterized by impaired glycemic control in the blood. Aim to assess the significance of the change in weight and HbA1C before and after using the medication.

Methods: A retrospective, chart review study design to collect the A1c levels in patients using Dapagliflozin 10 mg and Semaglutide 1 mg SC injection in combination or alone. Included patients were those who started these medications from period of January 1, 2023 and reviewed their charts until January 1, 2024. Continuous variables were presented in median and interquartile ranges, while categorical were presented in numbers and percentages. Wilcoxon rank-sum test was used to assess the association between changes in A1c, and demographic data. A paired Wilcoxon rank-sum test was used to assess the significance of the change in weight and A1c.

Results: The study included 107 participants with a median age of 57 years. 63% were females and 37% were males. Only 6.5% reported side effects. 53.7% were on Dapagliflozin, 31% on Semaglutide injection, and 16% on a combination of Semaglutide and Dapagliflozin. The median A1C level before intervention was 9.10%, which decreased to 7.80% after intervention. The median weight before intervention was 90 kg which did not change after intervention. Three participants reported GI side effects mainly nausea and bloating after starting Semaglutide injections. Out of the 4 participants who had side effects after using Dapagliflozin 10 mg, 2 of them had positive nitrates on urinalysis and urine dipstick but no reported symptoms and, hence, was not treated and improved with increased water intake on follow-ups, 1 of them had candida urinary tract infection and 1 participant had recurrent vaginal candidiasis. There was a statistically significant decrease in weight among participants using Dapagliflozin and Semaglutide combination (p-value $= 0.04$) compared to those using Semaglutide alone (p-value $= 0.005$), with a higher decrease seen in Dapagliflozin and Semaglutide group Similarly, there is a statistically significant decrease in HbA1C among participants using Dapagliflozin and Semaglutide (p-value < 0.05) and those using Dapagliflozin alone (p-value $= 0.03$), with higher decrease seen in Dapagliflozin and Semaglutide group. For age groups, participants aged 30 to 52 years ($n = 38$) had a median change in hemoglobin A1C of –5.20, which was statistically significant (p-value of 0.036). In contrast, participants aged 53 and above ($n = 69$) showed a smaller median difference of –1.40. Gender (p-value $= 0.5$) and presence of complications related to diabetes mellitus (p-value $= 0.8$) did not significantly influence the difference in HbA1C levels. However, females exhibited a median difference of –1.55 compared to males who had a median difference of –2.30. Similarly, those without complications having a median difference of –1.40 versus those with complications showing a median difference of –1.75.

Conclusion: Dapagliflozin has significantly decreased both A1c and weight especially among females either with or without Semaglutide combination.

P26. Exploring the Relationship between Maternal BMI and Emergency C-section Outcomes

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Introduction: The influence of maternal BMI on pregnancy outcomes, specifically in the context of emergency cesarean sections, is a subject of considerable interest in obstetrics and gynecology. This study aims to explore the association between maternal BMI categories and various key indicators of emergency cesarean section outcomes, including decision to delivery time, fetal arterial pH levels, neonatal intensive care unit (NICU) admissions, respiratory distress syndrome (RDS), transient tachypnea of the newborn (TTN), and 5-minute APGAR scores.

Methods: A retrospective cohort study was conducted on patients who underwent emergency cesarean sections for fetal distress between 2017 and 2020 after approval from medical research committee. Patients were stratified according to maternal BMI categories: normal BMI, overweight, obese, data on decision to delivery time, fetal arterial pH levels, NICU admissions, RDS, TTN, and 5-minute APGAR scores were collected and analyzed based on BMI categories.

Results: The results revealed notable trends in emergency cesarean section outcomes based on maternal BMI categories. The data suggest that there is a high prevalence of overweight and obesity in the population, with 69.97% of individuals having a BMI above 25. 21.68% of normal BMI individuals, 32.54% of overweight women, and 55.61% of obese individuals had a decision to delivery time greater than 30 minutes. A significant association between BMI and NICU admissions was noted, with overweight and obese women having a higher rate of NICU admissions (25.84%, p-value < 0.05) and (27.04%, p-value < 0.01) respectively. Obese women had a significantly higher rate of RDS (16.33%, p-value <0.05) compared to normal BMI women. Overweight women had a significantly higher rate of TTN (14.83%, p-value < 0.01) compared to normal BMI individuals (8.39%).

Conclusion: The findings of this study highlight the significance of maternal BMI in influencing emergency cesarean section outcomes. Overweight and obese women are at a higher risk of experiencing prolonged decision to delivery time, which may have implications for maternal and neonatal outcomes. Maternal BMI is significantly associated with neonatal outcomes, including NICU admissions, RDS, and TTN. Maternal BMI is a potential factor in predicting and managing outcomes of emergency cesarean sections, emphasizing the need for personalized care and tailored interventions based on BMI categories.

P27. Foot Care Knowledge and Practice among Diabetic Patients in Jeddah

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Introduction: Diabetic foot ulcers impose tremendous medical and financial burden on health care systems. Therefore, prophylactic foot care has been advocated to decrease patient's morbidity, and utilization of expensive resources, as well as minimizing the risk for amputations. We aimed to assess knowledge and practice of diabetic patients about their own foot care.

Methods: This study followed a cross-sectional design. It included 404 Saudi diabetic patients attending King Abdulaziz University Hospital, Jeddah City, KSA. The researchers designed and tested a study questionnaire and a patients' examination sheet for data collection, which included patients' characteristics, their knowledge and practices about foot self-care. The patients' examination sheet included items related to diabetic foot examination, and their HbA1c level.

Results: The majority of patients were type-2 diabetics (97%). Duration of diabetes was more than 10 years among 67.3% of patients. Feet numbness was complained by 48.3%, while feet tingling was complained by 37.9%. During walking, 38.4% experienced cramps and/or pain (31.7%). Almost half of patients (45.8%) had uncontrolled diabetes. Out of a maximum of 10, the mean for patients' total knowledge scores was $6.69 + 2.45$, while their mean total practice score was $6.04 + 1.9$. The most frequent abnormal findings of diabetic patients' feet inspection were: abnormal color of feet skin (14.9%), toe nails abnormality (11.6%) and presence of callus (10.1%). Knowledge scores were significantly lower among diabetics who are older ($p = 0.004$), females ($p < 0.001$); single ($p < 0.001$), illiterate ($p = 0.020$), unemployed ($p < 0.001$), type 2 ($p = 0.029$), in addition to those with shorter disease duration ($p < 0.001$) and uncontrolled diabetes ($p < 0.001$). Mean practice scores were significantly lower among older, single, illiterate, unemployed, T2Ds, with uncontrolled diabetes ($p < 0.001$ for all). In addition, mean practice scores were significantly lower among females ($p = 0.007$) and smokers ($p = 0.039$). Knowledge scores correlated both positively and significantly with their practice scores ($r = 0.457$, $p < 0.001$).

Conclusion: Knowledge and practices of diabetic patients about diabetic foot care are unsatisfactory. Diabetic patients who have the lowest knowledge scores on foot care are those older than 50 years, females, single, illiterate, unemployed, T2Ds, with duration of diabetes less than 10 years, and those with uncontrolled diabetes, while foot care practices are least among patients aged above 50 years, females, single, illiterate, unemployed, smokers, T2Ds, with uncontrolled diabetes. Patients' knowledge on foot care correlates significantly and positively with their practice.

P28. The Changeable Dynamics between Glycemic Control and Neuropathy Risk

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Introduction: Peripheral neuropathy is a common diabetic complication. It is linked to poor glycemic control and longer duration of diabetes. We explored the association between HbA1c and neuropathy risk considering the duration of diabetes in a sample of Saudi diabetic patients.

Methods: We conducted a monofilament test on 343 diabetic patients referred to our specialist diabetology center in KSA. We utilized a multiple generalized logistic regression model with a binary outcome related to neuropathy complications.

Results: We found that over four out of every five patients have peripheral neuropathy. The interaction between HbA1c and duration was significant (estimate $= -0.02802$,

$p = 0.00534$), a positive association between neuropathy and both HbA1c (increased risk by 46.2%, $p = 0.03222$) and DM duration (increased risk by 19.6%, $p = 0.04497$)

Conclusion: The shorter the duration of diabetes, the more positive the relationship between HbA1c and peripheral neuropathy. In patients living for over 40 years with diabetes, HbA1c was higher among those who did not have peripheral neuropathy. It could be argued that this is an artefact of survival as poorer glycemic control will likely result in higher mortality in earlier years of the diabetes career.

P29. Vitamin D Deficiency and Glycemic Control among Patients with Type 2 Diabetes

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Introduction: The prevalence of vitamin D deficiency (VDD) is predicted to be high in patients with T2D, but the exact figure is not known in Jazan, KSA. Emerging data suggest that VDD plays a role in glycemic control. The aim of this study was to measure the prevalence of VDD among T2D 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 T2D 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.

Results: The VDD prevalence was found to be 60.8% in patients with T2D. 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 KSAn population, VDD is highly prevalent in people with T2D and is associated with poor glycemic control. Health education targeting patients with T2D and national strategies regarding vitamin D fortification are needed to prevent VDD in KSA. Earlier VDD diagnosis by health care providers may help to improve the outcome for patients with T2D. Establishing the causal association between VDD and glycemic control and clarifying the biological role of vitamin D in T2D are important aims for future studies.

P30. Familial Hypoparathyroidism with Elevated Parathyroid Hormone due to PTH-Mutation

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Introduction: Apart from vitamin D disorders, causes of congenital/hereditary hypocalcemia include genetic defects causing familial hypoparathyroidism (FH), and defects in parathyroid hormone (PTH) receptor or its signaling pathway (PTH resistance). The former is typically characterized by low plasma PTH and the latter by elevated PTH levels. In this report, we describe a family with FH but with significant elevation of functionally inactive PTH due to a PTH mutation. We also show a positive subjective and biochemical response to recombinant human PTH (Teriparatide) therapy in one of the siblings who was not well controlled on calcitriol and calcium replacement.

Case Description: The proband is a 34-year-old lady who has a history of chronic hypocalcemia since birth with several admissions for severe hypocalcemia and recurrent seizures during childhood. She and her 3 brothers (32-year-old male twins and an 18-year-old male) were diagnosed to have pseudohypoparathyroidism type 1b based on the presence of chronic hypocalcemia (serum calcium 1.60–1.85 mmol/L) since birth associated with significantly elevated plasma PTH levels in the range of 310 to 564 pg/dL (normal range 10–65) and absence of sings of Albright hereditary osteodystrophy. Laboratory workup of the proband recently showed: PTH 514 ng/L, calcium 1.81 mmol/L (NR 2.1–2.6), phosphate 1.76 mmol/L (NR 0.8–1.4), magnesium 0.73 mmol/L (NR 0.7–1.0) albumin 38 g/L (NR 40–50), alkaline phosphatase 56 U/L, eGFR >60 mL/min/1.73 m^2, creatinine 78 µmol/L, and 25-hydroxyvitamin D 77 nmol/L (NR 50–120). Daily excretion of calcium was normal at 3.38 mmol and an ultrasound of the kidneys suggested nephrocalcinosis. Skeletal X-rays and bone mass densitometry were normal. Whole exome sequencing showed no pathogenic, likely pathogenic or variants of unknown significance in any known calcium disorder-associated gene but a homozygous variant in the PTH itself (PTH: ex.3: c.128G>A, p.Gly43Glu). This was confirmed by Sanger sequencing in the patient and two of her brothers. This variant was previously reported as pathogenic and assessed to be likely pathogenic or likely damaging by several in-silico analysis tools including Polyphen2, MutPred, PROVEAN, DEOGEN2. Because the patient's hypocalcemia was not controlled on large doses of calcitriol and calcium carbonate, a trial of teriparatide 20 mcg SC daily resulted in normalization of calcium and PTH levels. The patient reported significant improvement in her general wellbeing including numbness, tingling, muscle spasms and tetany of the fingers. She has been on teriparatide for the last year with excellent improvement in her quality of life.

Conclusion: High PTH in the presence of congenital hypocalcemia is not always due to receptor or post-receptor defect and can be due to a mutated biologically inactive PTH. In such cases, treatment with Teriparatide may result in stabilization of biochemical profile and improves quality of life.

P31. Nonadherence to Blood Glucose Monitoring Based on IDF-DAR Risk Categories

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Introduction: Self-blood glucose monitoring (SBGM) practice is one component for risk calculation during Ramadan fasting and an important tool for diabetes management. Recommended frequencies and timings for blood glucose checks depend on type of diabetes, individual risk

stratification score, dietary intake, physical activities, and medication. Despite religious and medical advice, high-risk patients may still choose to fast. This study aimed to evaluate adherence to SBGM based on IDF-DAR risk categories and assessed preferred monitoring times during Ramadan among diabetic patients.

Methods: This observational study was conducted in a private diabetes practice during Ramadan 2024. Patients who wished to fast and use a remote monitoring system Glyc via a glucometer-connected mobile app were included after providing electronic consent. Individualized SBGM schedules were based on prayer times. Data on glucose monitoring and synchronization (at least five times daily) during the first and last 10 days of Ramadan were analyzed retrospectively to evaluate the daily rates of glucose measurement and the timing and frequency of synchronization across the three risk categories. A structured questionnaire evaluated patients' preferred glucose monitoring times.

Results: Ninety-four patients participated: 4 with T1D (4.25%) and 90 with T2D (95.74%). Their mean age was 54.67 ± 10.55 years, and the mean duration of diabetes was 10.15 ± 7.21 years. Pre-Ramadan mean HbA1c was $7.74 \pm 1.16\%$ with mean glycemia 175.39 ± 32.22 mg/dL. IDF-DAR score was 4.3 ± 1.55. IDF-DAR score distribution: 16 patients (17.02%) scored 0–3, 68 patients (72.34%) scored 3.5–6, and 10 patients (10.63%) scored above 6. Treatment included 9 on oral medications, 57 on basal-bolus insulin, and 28 on basal insulin only. Mean daily glucose measurements for the first and last 10 days of Ramadan for each category were: low risk (3.14 ± 1.69 vs. 2.08 ± 1.72) ; moderate risk (3.23 ± 1.81 vs. 1.93 ± 1.72); high risk (3.22 ± 1.95 vs. 1.86 ± 1.53) ($p < 0.001$). Daily synchronization rates (in percentage) based on risk categories during the first and last 10 days were: low risk: 52.39 ± 28.09 vs. 34.68 ± 28.62; moderate risk: 54.92 ± 29.89 vs. 35.13 ± 28.22; high risk: 53.67 ± 32.44 vs. 31 ± 25.52. The preferred times for monitoring were in the morning after waking up, pre-iftar and Taraweeh prayer.

Conclusion: Nonadherence to SBGM was observed regardless of the risk category. The daily frequency of SBGM and synchronization rates, although higher in the first ten days, decreased significantly in the last days of Ramadan for all risk categories, suggesting challenges in maintaining consistent monitoring throughout Ramadan. Three preferred monitoring times were identified. A structured and individualized SBGM plan based on patient-specific timing preferences is warranted, with intensive support particularly for high-risk patients.

P32. Optimizing Glucocorticoid-Induced Osteoporosis Management

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Introduction: Despite the existence of effective treatments for glucocorticoid-induced osteoporosis (GIOP), the condition continues to be inadequately managed. This study was designed to evaluate health care providers' knowledge and their typical prescribing habits concerning the diagnosis and management of CIOP. Furthermore, we aimed to identify the primary obstacles to implementing preventive therapy in patients receiving long-term corticosteroid therapy.

Methods: A descriptive cross-sectional study was conducted from January 1, 2023 to September 20, 2023. Participants included consultants and residents from the Departments of Internal Medicine and Family Medicine who routinely prescribed systemic corticosteroids.

Results: The study included 98 participants with equal sex distribution. Findings showed a strong knowledge base among participants regarding glucocorticoid-induced osteoporosis. Overall, 58.2% correctly recognized the dose threshold for preventive treatment, and many identified lifestyle factors and criteria for high-risk groups. Barriers to antiresorptive therapy were patient concerns about adverse effects (53.1%), complex medication regimens (54.1%), and time constraints (41.8%). Knowledge levels and less frequent prescription of corticosteroids were positively correlated with experienced consultants.

Conclusion: Participants demonstrated strong knowledge, with opportunities to enhance consistent use of preventive guidelines and address barriers to antiresorptive therapy. Specialization within internal medicine subspecialties, years of experience, and knowledge levels influence glucocorticoid-induced osteoporosis management practices.

P33. Giant Prolactinoma and Bipolar Disorder: A Complex Management Challenge

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Introduction: Prolactinomas are the most prevalent pituitary neuroendocrine tumors (PitNETs) originating from prolactin-producing cells and accounting for up to 40% of all functioning pituitary adenomas. Giant prolactinomas, defined as a prolactinoma larger than 4 cm with secreted prolactin levels above 1000 µg/L, represent 1-5% of all prolactinomas and predominantly occur in males, can manifest with classic prolactinoma symptoms such as hypogonadism, infertility, mass effect signs and hypopituitarism. Aggressive prolactinomas with invasive growth into surrounding and distant structures result in significant therapeutic challenges.

Case Description: This case report describes a 47-year-old male with hypertension and bipolar disorder. At age 45, he presented to our hospital with worsening headaches, progressive right-sided weakness, and gait disturbance for 2 months. He also had gynecomastia but no other pituitary-related symptoms. Physical examination revealed right superior quadrantanopia and a generalized visual field depression in the left eye. Laboratory tests showed an elevated prolactin level (21200 mIU/L) (normal 86–324 mIU/L) with central hypogonadism and hypothyroidism. Magnetic resonance imaging confirmed a 4.4 cm pituitary macroadenoma extending suprasellarly, with associated hydrocephalus. Based on the findings, the patient was diagnosed with a giant prolactinoma causing extensive mass effects, central hypogonadism, and hypothyroidism. Despite initial improvement with dopamine agonist therapy, the patient experienced an exacerbation of his psychosis and was intolerant to higher doses of cabergoline (maximum dose of 2 mg per week). Despite eleven months of cabergoline treatment that failed to normalize prolactin levels, surgical intervention was attempted. Post-surgery, prolactin levels remained persistently high, necessitating resumption and titration of cabergoline 2 mg per week along with hormone replacement therapy. Follow-up image shows residual tumor extending into the hypothalamus and pituitary stalk (1.8 cm) and right cavernous sinus (1.4 cm) with left optic nerve atrophy. Despite ongoing

cabergoline treatment, prolactin levels remained elevated, and the tumor showed no signs of shrinkage after a year. A multidisciplinary team concluded that radiotherapy was unsuitable due to the patient's psychiatric condition and the requirement for patient cooperation.

Conclusion: This case highlights the complex management challenges associated with giant prolactinomas, particularly in the context of comorbid psychiatric disorders. Despite initial medical management with dopamine agonists and subsequent surgical intervention, persistent hyperprolactinemia and residual tumor burden were observed. The patient's bipolar disorder limited treatment options, highlighting the need for a multidisciplinary approach. Temozolomide could be a future option for this patient to reduce tumor size and prolactin levels.

P34. Diagnosis of Fatty Pancreas by Fibroscan: A Pilot Study

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Introduction: Fatty pancreas emerged as health problem related to metabolic syndrome and lipid metabolism disorders. Fatty pancreas has more complications than fatty liver with relentless mortality from cancer pancreas We aimed to diagnosis fatty pancreas by fibroscan as simple noninvasive method which is specific (digital), novel, and accurate.

Methods: Cross-sectional study to populations attending Center of Excellence at Benha University for evaluations of fatty liver by fibroscan 530. Age from 25 to 70 years old, both males and females. Subjects fasting for 3 hours. Patients state in the dorsal position the probe put at the epigastrium slightly to the left or to the right with some modulation sometimes needed and patient hold expiration. Physical examination for BMI calculation. Laboratory investigations: lipid profile, HbA1c, and liver function tests.

Results: Steatosis by Cap was staging as follow for fatty pancreas: S0 = 240 dB/m. S1 = 264 dB/m. S2 = 276 dB/m and S3 = 336 dB/m. Fibrosis F0 = 6 KPa, F1 = 9 KPa. F2 = 12 KPa, F3 = 15 KPa and F4 > 15 KPa and IQ = 36%. Fatty pancreas was found among 66% of the study group.

Conclusion: Fatty pancreas more prevalent than expected and could be diagnosed by fibroscan and grading of steatosis like liver plus the fibrosis too which considered a universal, novel, and unique method in pancreatic diseases.

P35. Clinically Silent Acromegaly in a Young Woman Masked by Polycystic Ovarian Syndrome Features

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Introduction: Acromegaly is a syndrome characterized by chronic hypersecretion of growth hormone (GH) and elevated levels of insulin-like growth factor 1 (IGF-1), typically caused by a pituitary adenoma, resulting in acral growth, coarse facial features, and soft tissue swelling with metabolic and mechanical complications, including diabetes mellitus, hypertension, sleep apnea, and osteoarthritis. We report the case of a 45-year-old female who presented with biochemical and immunohistochemical evidence of acromegaly without clinical features that were masked by a polycystic ovarian syndrome diagnosis.

Methods: We reported a 45-year-old woman presented with 9 months history of persistent frontal headache for which she had MRI brain that showed incidental pituitary microadenoma. She had history of T2D diagnosed at age of 30 and managed with oral hypoglycemic agent but still uncontrolled. She was diagnosed with polycystic ovarian syndrome 6 years ago based on her presentation at that time of hirsutism, acne and irregular menstrual cycle. Physical examination revealed signs of hyperandrogenism and insulin resistance without clinical features of acromegaly. As a part of pituitary incidentaloma workup, her IGF-I was elevated of 365 ng/mL (92–240) with central hypogonadism and all the other pituitary hormones are normal. She had OGTT for GH suppression and it was not suppressed with nadir level of 2.1 ng/mL. MRI imaging revealed a uniformly enlarged and homogeneously enhanced pituitary gland, with small focal lesion suggestive of pituitary microadenoma of 10 mm in size.

Results: In February 2023, the patient underwent a successful endoscopic transsphenoidal resection of the pituitary microadenoma, with minimal post-surgical complications. Histopathological examination showed diffuse GH reactivity. Mib-1 showed a low proliferative index. Postoperatively, her IGF-1 level continued to be within the normal range for her age, between 89 and 117 ng/mL, with normal prolactin, cortisol, and free T4 levels. Her diabetes mellitus resolved without any medication, and her menstrual cycle became regular with significant improvement in her acne and hirsutism.

Conclusion: The coexistence of a clinically silent somatotroph adenoma with PCOS features might overshadow the mild effects of the adenoma, making it difficult to diagnose solely based on symptoms. Treating or managing one condition (e.g., PCOS) may inadvertently impact the adenoma or vice versa, necessitating a coordinated approach by endocrinologists.

P36. Identifying Metabolic-Dysfunction–Associated Steatotic Liver Disease in Patients with Type 2 Diabetes

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Introduction: Metabolic-dysfunction associated steatotic liver disease (MASLD) can affect a significant portion of world population with prevalence higher in developed countries and can lead to metabolic-dysfunction associated steatohepatitis (MASH)-related cirrhosis. MASLD is now the commonest cause of chronic liver diseases worldwide and is growing in parallel with the obesity and T2D epidemic. It has one of the highest prevalence of all three conditions and it is expected to rise even further. There are no current studies on prevalence of MASLD in patients T2D who are overweight/obese. Regarding treatment for MASLD/MASH, while potent Glucagon-like peptide-1 receptor agonists (GLP-1RA) like semaglutide and tirzepatide have shown promise but still lack consensus for their recommendation for use in our local population. This study aims to assess the frequency of MASLD in patients with T2D who are starting any potent weekly GLP-1RA therapy.

Methods: All patients from diabetes clinic, Tawam hospital with T2D who were identified as suitable candidates for GLP-1RA initiation were offered to have a Fibroscan to assess for presence of liver steatosis by measuring Controlled Attenuation Parameter (CAP score) in decibels per meter (dB/

m) and presence of liver fibrosis by measuring liver stiffness in kilopascals (kPa) via Fibroscan machine (Echosens, Paris, France). All patients with other forms of diabetes and female patients who are either pregnant or planning for pregnancy were excluded. The study was approved by Tawam Hospital Research Ethics Committee.

Results: There were 38 patients (20 females; mean age 47.4 ± 15.1) selected who underwent Fibroscan after informed consent. Mean BMI of the patients was 33.9 ± 6.1 kg/m^2. 39.5% (15/38) of the patient had presence of liver fibrosis with kPa score >7 with 10.5% (4/38) having severe fibrosis (stage F4; kPa score > 14). 73.7% (28/38) of these patients had liver steatosis with 36.8%. (14/38) having advanced liver steatosis (stage S3; CAP score > 290 dB/m).

Conclusion: Liver steatosis and fibrosis is frequent in patients with T2D with raised BMI and further research into strategies to routinely identify patients with T2D with undiagnosed MASLD is suggested.

P37. Assessing Frequency of Thyroid Peroxidase Antibodies in Young Emirati Females

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Introduction: Anti-thyroid peroxidase antibody (TPO-Ab) is a known cause of autoimmune thyroid disease, also known as Hashimoto's thyroiditis (HT), but can also be present in 8 to 27% of in normal healthy individuals. Up to 95% of the patients with HT have TPO-Ab positive, and this affects females up to 10 times more than males and may lead to autoimmune hypothyroidism. Recently, other inflammatory conditions have been linked to TPO-Ab. There are no data available currently on the prevalence of TPO-Ab in the healthy female population. The aim of this study was to assess the presence of TPO-Ab and thyroid function status in healthy university going female medical students.

Methods: Participants from the medical college of University who did not have any known medical problems or on any medications, who volunteered to participate in this study after informed consent, were selected. Their demographics, anthropometric data and blood tests for thyroid stimulating hormone (TSH) and TPO-Ab were collected. The normal values for TPO-Ab and TSH were taken as 0 to 34 IU/mL and 0.27 to 4.20 uIU/mL respectively as per the kit specific recommendations.

Results: A total of 56 healthy female participants were selected (mean age 19.48 ± 1.43) and all of them had the blood test completed. 10.7% (6/56) of the participants had raised TPO-Ab with mean TPO-Ab in these six patients being 213.5 ± 220.4 IU/mL with maximum level being 600.0 IU/mL. The 50 patients having TPO-Ab within normal range had mean levels of 9.2 ± 5.3 IU/mL with maximum level being 29.48 IU/mL. The TSH was within normal range for all patients with mean TSH being 4.4 ± 1.0 uIU/mL except for one patient having just above normal range at 5.1 uIU/mL without any clinical signs and symptoms of hypothyroidism.

Conclusion: TPO-Ab is present in up to 10% of young healthy female Emirati population in this pilot study and further large scale studies are warranted to assess the prevalence of TPO-Ab in our region.

P38. Clinical Case of Insulin Autoimmune Syndrome in a 44-Year-Old Saudi Female

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Introduction: Insulin autoimmune syndrome (IAS) is a rare endocrine disease characterized by repeated fasting hypoglycemia or episodes of hypoglycemia late after meals, elevated serum insulin, and positivity for insulin autoantibody (IAA) or insulin receptor antibody (IRA).

Case Description: A 44-year-old female presented with recurrent fasting hypoglycemia and episodes of hypoglycemia after meals. The hypoglycemia episodes started 2 months prior to the presentation with frequent hypoglycemia events during the day associated with autonomic symptoms improved after the ingestion of food with a documented hypoglycemia during these episodes shows plasma glucose levels were approximately 50 – 60 mg/dL. She had never experienced similar symptoms previously. She had no personal medical history, but her mother had T2D. There was no family history of autoimmune disease. She was not taking any medication, including supplements. She also had never used the exogenous insulin previously. She neither smokes nor consumes alcohol. The patient was admitted for evaluation of hypoglycemia. A 72-hour fasting test revealed glucose level 2.9 mmol/L, plasma insulin levels 1000, C-peptide levels of 8, and proinsulin 269 pmol/L. Insulin receptor autoantibodies were positive (> 50 U/mL). Images investigations including CT abdomen, MRI abdomen, octreotide scan and EUS were normal. On physical examination, he was apparently healthy.

Conclusion: This clinical case presented with hypoglycemia diagnosed with Insulin autoimmune syndrome confirmed with positive insulin antibodies, high insulin level and high c peptide with negative images. IAS is frequently a self-remitting disease, its management mostly consists of supportive measures, such as dietary modifications, aimed at preventing the development of hypoglycemia. Pharmacological therapies may occasionally be necessary for patients presenting with severe manifestations of IAS. Therapy s may include drugs that reduce pancreatic insulin secretion (somatostatin analogues and diazoxide, for instance) and immunosuppressive agents (glucocorticoids, azathioprine and rituximab). The patient was started on acarbose and she felt better with no more episodes of hypoglycemia.

P39. Characteristics of People with Diabetes in Dhank Province in the Sultanate of Oman

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Introduction: The aim of this study was to estimate the prevalence of registered diabetics and describe the clinical and epidemiological characteristics of patients with T2D mellitus (T2D) in three primary health care centers in the Dhank province of Oman.

Methods: This cross-sectional study included 567 individuals aged > 20 years old. Clinical data were obtained retrospectively from physical registers and electronic clinical records.

Results: Of the total 567 patients with T2D (age-stratified prevalence = 10.2%), 44.8% were men. The mean age of the patients was 55.8 ± 15.6, and they had a mean BMI of 29.7 ± 6.0. Diabetes duration was 5.9 ± 4.0 years. Overall, 28.4% of the patients had glycated hemoglobin values <7%. The percentages of patients who did not reach the recommended targets for high-density lipoprotein (HDL) (<1.0 mmol/L), low-density lipoprotein (LDL) (>2.59 mmol/L), and triglycerides (TG) (<1.69 mmol/L) were 63.3, 60.0, and 34.6%, respectively. Almost half of all patients (43.40%) had a BMI >30. Obesity and overweight were more prevalent in patients in the 30 to 59 age group compared to patients aged <30 or >60 years (<0.001). Almost all patients (93%) had an estimated glomerular filtration rate (eGFR) of more than 60 mL/min/1.73 m^2. The number of patients diagnosed with T2D aged <60 years has been increasing gradually from 2008 to 2015 compared to those >60 years ($p = 0.017$). Patients were managed by lifestyle measures (14.2%), oral hypoglycemic agents (one or two; 50%), and insulin therapy (35.7%).

Conclusion: The prevalence of registered T2D patients in Dhank is less than the national figure. This may be due to the location of Dhank as a border province. Further qualitative studies are recommended to elaborate on the factors that lead to poor glycemic control.

P40. Empagliflozin-Associated Acute Pancreatitis: A Case Report

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Introduction: Acute pancreatitis is a rapid onset inflammatory process of the pancreas which may have local and systemic manifestations involving multiple organ systems. The most common causes of acute pancreatitis are gallstones and significant alcohol use. Other causes include drug-induced, odium-glucose cotransporter-2 (SGLT2) inhibitors are a class of oral hypoglycemic agents which is approved by the FDA for treating diabetes and lately for treatment of heart failure.

Case Description: A 56-year-old, female with a history of T2D presented complaining from acute epigastric pain radiating to the back, moderate in severity, not relieved by analgesic associated with nausea and vomiting. She denied any history of alcohol use. She was on sitagliptin, metformin, gliclazide, and empagliflozin, which was started recently. Laboratory workup: elevated serum lipase and amylase. Abdominal CT scan suggesting acute pancreatitis. She was admitted and after 2 days her condition was improved and discharged on same preadmission antidiabetic medication. Three week later she presented to the ER complaining from acute epigastric pain radiating to the back and association of nausea and vomiting. With tenderness in epigastric area Laboratory workup shows 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 in OPD and there was no history of recurrence of pancreatitis.

Conclusion: Physicians must be aware about this rare side effect as a cause after exclusion of the common etiologies. Physician should inform their patient about the side effects and the symptoms of acute pancreatitis and advised them to stop it in case such symptoms occur.

P41. Persistent Primary Hyperparathyroidism due to Ectopic Parathyroid Adenoma

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Introduction: Primary Hyperparathyroidism (PHPT) is the abnormal secretion of Parathyroid hormone by parathyroid tissue resulting in hypercalcemia. It is most commonly caused by parathyroid adenomas, accounting for almost 80% of the cases while ectopic parathyroid adenomas account for merely 5 to 10% of cases of PHPT. Ectopic parathyroid glands can be found in various locations like the mediastinum, intrathymic or intrathyroidal, within the carotid sheath and a high undescended cervical position. This often necessitates multiple imaging methods for localization.

Case Description: An asymptomatic 67-year-old female referred for persistent hypercalcemia despite multiple previous parathyroidectomies. A CT neck showed an enhancing mass in the right tracheoesophageal groove with features not classic for an ectopic parathyroid gland. A sestamibi scan with SPECT-CT was then taken which showed features suggestive of the mass being a functioning adenoma. The patient subsequently underwent resection of the ectopic gland following which her hypercalcemia resolved and PTH levels dropped. She required a tracheostomy in the post-operative period due to a right recurrent laryngeal nerve palsy resulting in stridor and difficulty weaning from the ventilator. She is on regular follow up for monitoring of calcium levels and adjustment of calcium supplementation accordingly.

Conclusion: In cases of persistent hypercalcemia, especially post-parathyroidectomy, physicians should have a high index of suspicion for ectopic parathyroid glands. Multiple imaging techniques should be used, keeping in mind that the mediastinum is a common location for ectopic parathyroid glands. The combination of diagnostic techniques has been found to have better success rates of localization compared to the use of only one method alone. Accurate localization can prevent multiple exploratory surgeries and decrease morbidity and complications associated with surgical resection.

P42. Prevalence and Risk Factors for Urinary Incontinence among Women with Diabetes

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Introduction: Urinary incontinence is a detected complication of diabetes mellitus. Studies about UI among diabetic women in KSA are limited. The aim of this study was to assess the prevalence of UI in women with diabetes in Taif city, KSA and to determine its risk factors.

Methods: A cross-sectional study was done on 398 diabetic women who attended the diabetes clinic at Prince Mansour Military Hospital, Taif city, KSA. A checklist was used gathering data about socio-demographic characteristics, type and duration of diabetes, chronic diseases, parity, BMI, presence of neuropathy, retinopathy and nephropathy, level of HbA1c and fasting blood glucose (FBG).

Results: The prevalence of UI was 34%. In the last 4 weeks, 48.9, 25.9, 6,7, 12.6, and 34.1% of studied women had frequent urination, urine leakage drops, difficulty in urinating or emptying, pain or discomfort in lower abdomen,

leakage related to urgency, and leakage related to physical activity, respectively. Among them, 11.1, 11.9, 12.6. 19.3, 15.6, 19.3, and 20.7% suffered effects of UI on the ability to do household chores, physical recreation, entertaining activities, ability to travel in car or bus more than 30 minutes, participation in social activities outside, emotional health, and feeling frustrated, respectively. Participants with an age ≥ 50 year, and having DM type 2, UTI, ovarian cyst, and neuropathy higher levels of HbA1 and FBG, had a significantly higher percentage of those having UI. Participants' older age and high HbA1c level were independent predictors for UI.

Conclusion: There is a need for educating diabetic women about UI and methods of management.

P43. A Young Patient with HNF1A-MODY and an Unusually High HbA1c

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Background: Maturity-onset diabetes of the young (MODY) is the predominant form of monogenic diabetes, affecting 1 to 5% of diabetes patients, with autosomal dominant inheritance but occasional de novo mutations. Its clinical features encompass early-onset hyperglycemia, residual pancreatic function, and absence of insulin resistance or beta cell autoimmunity, managed primarily with glucose-lowering medications. Increasing awareness of MODY's clinical importance among health care professionals, researchers, and policymakers may enhance screening and diagnostic approaches.

Case Description: A 16 year old male patient presented for evaluation of polyuria and polydipsia. He had no past medical history. His father had diet controlled pre-diabetes, his maternal grandmother had mild T2D controlled on metformin and his paternal grandfather had longstanding insulin dependent T2D. In clinic, the patient's vitals were as follows: BP 130/80 mmHg, pulse 35 bpm, and BMI 24.22 kg/m^2. His point of care testing for glucose was 222 mg/dL. He was admitted to the hospital on the same day for investigation of his hyperglycemia. On investigation, no ketonuria was detected, 4+ glucose were present on urine dipstick, he had normal electrolytes and kidney function, TSH 0.5 mIU/L, HbA1c was 10.4%, and C-peptide was 0.9 ng/mL (N: 0.8–4.2) post breakfast. He was started on IV insulin and switched to basal bolus the next day, and was discharged on insulin Glargine 10 units at bedtime and insulin Aspart pre-meals around 2 to 4 units. Auto-antibody profile was negative: anti-GAD 2.3 U/mL ($N < 17$), anti-IA2 was <5 ($N < 5$), and zinc transporter 8 Ab <10 U/mL ($N < 15$). Patient was then referred to genetic testing to evaluate for MODY: results revealed heterozygous mutation in the HNF1A gene. He was then switched to Gliclazide 60 mg daily, with proper glycemic control. Follow-up HbA1c 3 months later was 5.3%. The patient's first degree relatives were also referred for MODY genetic testing.

Conclusion: In HNF1A–MODY, the glycemic profile typically presents with slight fasting hyperglycemia and notably elevated glucose levels post-glucose intake, accompanied by a gradual decline in insulin secretion and deteriorating glucose regulation over time, necessitating treatment. It is generally uncommon to have significant hyperglycemia and elevation of HbA1c in MODY patients, as seen in the case discussed. Clinicians need a comprehensive grasp of MODY's epidemiology and pathogenesis to precisely diagnose patients, tailor individualized treatment plans and monitoring, and screen relatives of those affected for diabetes mellitus

P44. Resistant Hypertension in A 43-Year-Old Man with Coarctation of Aorta

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Introduction: Aortic coarctation (AoC), is a congenital narrowing near the ligamentum arteriosum, is a rare cause of resistant hypertension in adults. This condition is usually diagnosed and addressed during childhood. It is an uncommon cause of secondary hypertension in adults, accounting for less than 1% of cases. We present a rare case of coarctation of the aorta discovered during a secondary workup for hypertension in a 43-year-old male.

Case Description: A 43-year-old male was referred for evaluation of resistant hypertension. The patient had been medically treated for hypertension since his late 30s but was otherwise healthy with no family history of cardiovascular disease. The patient's medical regimen at this time included valsartan 160 mg once daily, nifedipine extended release 120 mg and hydralazine 50 mg three times a day. On initial evaluation, the patient was complaining of anxiety, fatigue and exertional dyspnea. Review of systems was positive for a history of Amphetamine abuse for 15 years and he quit 1 year ago, and smoking quit 4 years ago. The patient's blood pressure was 150/81 mm Hg in bilateral upper extremities, 110/77 in bilateral lower extremities and heart rate was 77. Physical examination was notable for systolic murmur best heard in the back, positive for radio-femoral delay. Lungs were clear, and there was no lower extremities edema. Laboratory findings showing normal serum creatinine, high 24-hour urine normetanephrine level of 8.64 µmol/day (N: 0–4.25 µmol/day). Transthoracic echocardiography was unremarkable, except for a bicuspid aortic valve with mild eccentric regurgitation and a dilated aortic root (4 cm, 2.2 cm/m^2).

Given the patient had hypertension with high levels of urine normetanephrine, the initial differential diagnosis focused to rule out paragangliomas, CT chest done showing no paraganglioma; however, it showing a complete coarctation of the aortic arch 1.3 cm distal to the takeoff of left subclavian artery, with reconstitution of flow in the descending aorta by multiple collaterals arising from the intercostal arteries and bronchial arteries. Patient was referred to cardiology and cardiac surgery for percutaneous stent implantation.

Conclusion: We presented a case of coarctation of the aorta in an adult with resistant hypertension. Physicians should be aware that aortic coarctation can be a cause of resistant hypertension, emphasizing the need for comprehensive examinations in such patients. These examinations should include blood pressure measurements in the upper and lower extremities and cardiac MRI.

A45. A Case of Euglycemic DKA Induced by SGLT2 Inhibitor

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Introduction: Diabetic ketoacidosis (DKA) is an acute life-threatening complication of diabetes seen in patients with T1D and T2D. It is characterized by blood sugar level

more than 11 mmol, ketonemia more than 3 mmol and metabolic acidosis pH <7.30, bicarbonate <15 mmol. Euglycemic DKA is a subset of DKA defined as normal blood sugar level, ketosis, and metabolic acidosis. DKA associated with SGLT-2 inhibitor use occurs at an incidence of 0.5 per 1,000 T2D patient-years and accounts for about a third of all DKA cases. There is diagnostic dilemma of EDKA because of normal blood sugar level leads to worse outcomes compared with classic DKA.

Case Description: We report a case of a 39-year-old male known case of T2D on dapagliflozin admitted with complain of a vertigo headache and right sided weakness for 2 days diagnosed as acute stroke as CT scan brain revealed ischemic infarct. He was commenced on standard treatment of ischemic stroke. On the 3rd day of admission, he developed shortness of breath and the patient was intubated and placed on mechanical ventilator. Arterial blood gases were done which shows pH of 7.02, HCO_3 4.5 mmol/L, blood sugar 8 mmol. Initially it was thought that metabolic acidosis was because of sepsis as patient blood sugar was normal, but then plasma ketones were checked and found to be high 3.4 mmol/L blood sugars 8 mmol. So, diagnosis of euglycemic DKA was made. Standard DKA protocol was commenced, i.e., IV fluid dextrose, fixed dose insulin infusion. After 12 hours patient pH was normal, and ketone became negative. DKA protocol was discontinued, and patient was placed on basal and pre meal regimen.

Conclusion: Euglycemic DKA is a serious adverse effect of SGLT2 inhibitors. Due to increasing use by multiple specialties keeping in view its cardiorenal benefits, physicians should be vigilant of this challenging diagnosis. If a patient becomes acutely ill, then drug should be stopped. Not only physicians should be aware of sick day rules, but patients should also be educated accordingly. Failure to do so may lead patients to land in this acute life-threatening emergency as described in our case.

P46. Sarcopenia Knowledge and Awareness among Health Care Professionals in KSA

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Introduction: Sarcopenia is a musculoskeletal disease in which muscle mass, strength, and performance are significantly compromised with age. Sarcopenia most commonly affects elderly and sedentary populations and patients who have comorbidities that affect the musculoskeletal system or impair physical activity. Sarcopenia has significant negative consequences personally, socially, medically, and economically, including an increased risk of falls, fractures, frailty, and mortality. Since sarcopenia is a silent and asymptomatic initial stage, Therefore, early assessment and subsequent interventions are important. For this, awareness among health care professionals is a prerequisite that requires adequate knowledge regarding the concept, diagnostic criteria, and optimal interventions.

Methods: A cross-sectional study based on online self-administered questionnaire.

Results: A total of 189 health care professionals participated, more than 80% did not received any sarcopenia-related education in the past. Only 12% of participants were able to correctly identify the sarcopenia diagnostic criteria required for diagnosis.

Conclusion: The current study indicated that health care professionals had limited knowledge and awareness of sarcopenia, which could influence and impede the early diagnosis and treatment of sarcopenia in practice. Strategies to increase knowledge among health care professionals are crucial.

P47. A Case of a 22-Year-Old Young Man with Bardet–Biedl Syndrome and Chronic Kidney Disease

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Introduction: Bardet–Biedl syndrome is a rare, autosomal and recessive genetic disease, which presents a wide spectrum of clinical manifestations, associating retinal dystrophy, obesity, polydactyly, hypogonadism, mental retardation and whose renal involvement remains one of the most serious damage.

Case Description: A 22-year-old patient, from a first-degree consanguineous marriage, referred to us for exploration of chronic kidney disease. Observation In the patient's history, we find a notion of low vision since childhood, obesity (120 kg at 15 years old), school difficulties, operated polysyndactyly, operated cryptorchidism, hypertension. On examination We note an obese patient BP = 160/90 mmHg pain in the right hypochondrium. On abdominal-pelvic ultrasound, we find a dystrophic left kidney with a 90 mm cyst, a right kidney with a long axis of 120 mm with pelvic macrolithiasis. Renal assessment found elevated serum creatinine = 42 mg/L, urea = 0.78 mg/L. The association of general history, ophthalmological examination data and clinical and neurophysiological examinations; makes up Bardet–Biedl syndrome.

Conclusions: Bardet–Biedl syndrome is a ciliopathy leading to multiorgan damage. To date, 12 genes are implicated in this condition; they encode proteins involved in the development and function of primitive cilia. The absence or dysfunction of these proteins leads to damage to the cilia of certain organs such as the eye or the kidney. Bardet–Biedl syndrome must be recognized because it will allow family genetic counseling and possible antenatal diagnosis. Medical care is multidisciplinary. The visual prognosis, linked to pigmentary retinopathy, is unfavorable in the long term. The vital prognosis is linked to kidney damage. The small proportion of adult-onset severe renal disease may relate to comorbidities associated with BBS, such as urological complications, hypertension, obesity, and diabetes. These are potentially modifiable risk factors which should be managed appropriately. Guidelines for the management of BBS recommend that every patient should have a baseline renal ultrasound examination to assess for the presence of any structural abnormalities.

P48. Effects of Obesity and Diabetes on Cardiac Excitation-Contraction Coupling

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Introduction: The Zucker Rat model, developed via a missense mutation (fatty, fa) in the leptin receptor gene, allows us to separate the effects of obesity from the combined effects of obesity and T2D since the homozygous (fa/+) animals develop obesity without diabetes (Zucker Fatty rats, ZF), while the homozygous (fa/fa) develop both obesity and diabetes (Zucker Fatty Diabetic rats, ZFD). The Mendelian inheritance of the mutation affords an age-matched control group (Zucker Lean rats, ZL). The aim of our study was to investigate excitation-contraction coupling (ECC) in ventricular myocytes from these three groups of rats.

Methods: Experiments were performed in 16 ZDF, 16 ZF and 13 ZL male rats aged 25-30 weeks. Body weight and nonfasting blood glucose were measured immediately prior to experiments. Ventricular myocytes were isolated using standard collagenase/protease techniques. Video-edge microscopy and Fura-2 photometry were employed to measure cell shortening and cytoplasmic Ca^{2+} transients evoked by field stimulation. The following parameters of ECC were measured: time to peak (TPK) of contraction, time to half (THALF) relaxation and amplitude (AMP) of contraction. Resting Fura-2 ratio, TPK Ca^{2+} transient, THALF decay of the Ca^{2+} transient, and the AMP of Ca^{2+} transients were measured.

Results: The ZF and ZDF groups had increased body weight compared to ZL rats ($p < 0.05$). Blood glucose was high in ZDF (619.4 ± 41.8 mg/dL) rats compared to ZF (135.4 ± 5.5 mg/dL) and ZL (117.6 ± 4.7 mg/dL) groups. The TPK was significantly ($p < 0.05$) prolonged in ZDF compared to ZL myocytes. THALF and AMP were not significantly altered. The TPK of Ca^{2+} transient was prolonged in ZF ($p < 0.05$). THALF decay of the Ca^{2+} transient was prolonged in ZDF compared to ZF and ZL groups ($p < 0.05$). AMP of the Ca^{2+} transient was significantly ($p < 0.05$) increased in ZF compared to ZDF myocytes. The time course of Ca^{2+} responses to caffeine (applied to release the sarcoplasmic reticulum (SR) Ca^{2+}) was slower in ZDF rats than in ZL and ZF suggesting impaired SR Ca^{2+} transport.

Conclusion: The ECC mechanism is well preserved in myocytes from obese rats. Defects in the uptake and release of SR Ca^{2+} underlie the altered time course of the Ca^{2+} transient and shortening in ventricular myocytes from T2D rat. Further studies are required to investigate the Ca^{2+} uptake and release mechanisms of the SR in diabetic heart.

P49. Observational Study on Flash Glucose Monitoring in Omani Diabetes Patients

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Introduction: Diabetes mellitus (DM) is a health issue that has been growing globally and in Oman recently. Chronic hyperglycemia can lead to many complications and eventual organ dysfunction. A new flash glucose monitoring (FGM) method has advanced to manage DM. Various studies from different countries have shown the benefits of the frequency of FGM scanning. However, no previous study of this kind has been conducted in Oman.

Methods: A retrospective cross-sectional study was observed on 436 diabetes patients who used CGM using FreeStyle Libre from January 1, 2022 to August 31, 2023. This data included demographic characteristics such as age and gender. Additionally, time in range (TIR), daily scans, time below range (TBR), time above range (TAR), estimated A1c (eA1c) percentage, and glucose variability (coefficient of variation (CV)), standard deviation (SD)) were observed. The data defined associations between glucose metrics and all three groups separately.

Results: A total of 436 patients were categorized into different groups based on their scanning frequency, eA1c, and TIR. The highest scanning frequency group had (Scan ≥ 12, median 17.00 scans/day; TIR 52.44%, TAR 41.77%, eA1c 7.71%, SD 70.22 mg/dL) while the lowest scanning frequency group had (Scan ≤ 3, median 2 scans/day; TIR 34.75%, TAR 56.98%, eA1c 8.97%, SD 82.21 mg/dL). On the other hand, scanning frequency showed no association with TBR and CV of glucose variability with a *p*-value of more than 0.05. Furthermore, groups of eA1c and TIR demonstrated a significant association with all glycemic metrics ($p \leq 0.05$).

Conclusion: Patients in the highest scanning frequency group had greater TIR, lower TAR, lower eA1c, and lower SD glucose variation than those in the lowest scanning frequency group. However, no significant association was observed between TBR and CV of glucose variation. Moreover, the highest TIR group and Lowest eA1c group were associated with greater scanning frequency and decreased TBR, TAR, and glucose variability. These findings suggest that Frequent glucose monitoring has improved the glycemic profile of Omani diabetes patients.

P50. Bethesda III Thyroid Nodules Outcome and Malignancy Rate in the Eastern Province in KSA

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Introduction: Bethesda III thyroid nodules represent a diagnostic challenge due to their uncertain malignant potential, with reported malignancy rates ranging from 5 to 30%. This study aimed to determine the incidence of malignancy in Bethesda III nodules among patients in the Eastern Province in KSA as there is no study done in the area.

Methods: This retrospective study included 282 patients with Bethesda III thyroid nodules who underwent surgery. The primary outcome was the presence of malignancy on final pathology. Ultrasonographic features, including nodule size, shape, echogenicity, margins, and presence of calcifications, were analyzed for their association with malignancy.

Results: The malignancy rate in our study population was 36%, highlighting the significant risk associated with Bethesda III nodules. Among the ultrasonographic features evaluated, a taller-than-wide nodule shape was significantly associated with malignancy (<0.05). While other features such as hypoechogenicity, poorly defined margins, and the presence of calcifications have been linked to malignancy in previous studies, our findings suggest that nodule shape may be a particularly valuable predictor in this context.

Conclusion: This study confirms a significant malignancy rate in Bethesda III thyroid nodules, emphasizing the need for careful risk stratification. Our findings suggest that a taller-than-wide nodule shape on ultrasound is a simple yet potentially valuable predictor of malignancy in this patient population. Further research is needed to validate this finding and determine its clinical utility in guiding management decisions, potentially leading to more personalized treatment strategies for patients with Bethesda III thyroid nodules.

P51. Tolerability of Sodium-Glucose Co-transporter 2 Inhibitors in Patients with Type 2 Diabetes Mellitus: A Retrospective Cohort Study.

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Introduction: Sodium-glucose co-transporter 2 (SGLT-2) inhibitors has an emerging significant effect in T2D management. This medication effect and tolerability has been an area of ongoing research to identify specific related risk factors and susceptible population.

Methods: This is retrospective cohort study. A total of 275 participants (median age 64) were included. An electronic medical report for patients diagnosed with T2D and undergoing treatment with approved SGLT-2 inhibitors between January 2020 and December 2022 at KAMC in Jeddah, KSA were reviewed. Multiple variables were concluded to assess SGLT2 inhibitors' tolerability and factors associated with genitourinary infections.

Results: In our study, 13.1% of patients with T2D who took SGLT2 inhibitors developed genitourinary infections. This rate is lower than the reported incidence of UTIs among diabetics at both national and global levels. For example, a study in KSA found a UTI rate of 25.3% among T2Ds, while a systematic review reported a 14.4% incidence rate among diabetics overall, with a higher rate of 28.2% among those on SGLT2 inhibitors. Patients with a history of urinary tract infections were more likely to develop recurrent infections (HR: 3.32, 95% CI: 1.56–7.09). Higher pretreatment GFR was associated with a lower risk of urinary tract infections (HR: 0.98, 95% CI: 0.97–0.99).

Conclusion: The use of SGLT2 inhibitors in diabetic patients does not significantly increase the risk of urinary tract infections (UTIs) compared to the reported rates of UTIs among diabetics in general.

Differences in hygiene practices among the muslim community may be a possible explanation for the lower rates of SGLT-inhibitor-associated UTIs observed in our study and other local studies, as compared to the Western world.

P52. Case of Metastatic Papillary Thyroid Carcinoma and Crohn's Disease

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Introduction: Thyroid incidentaloma are defined as thyroid nodules found during routine screening and are asymptomatic and about 5 to 15% have turned clinical proven thyroid malignancies. Inflammatory bowel disease is a chronic inflammation of gastrointestinal tract (Chron's disease and ulcerative colitis), there are various studies in literature which has shown an increased risk of thyroid cancer in patients with specially with Chron's disease but not with ulcerative colitis. Different strategies in management of Chron's disease from immunomodulators like azathioprine, 6-mercaptopurine to the use of biological agents like infliximab in treatment of inflammatory bowel disease have also shown the increased risk of thyroid malignancies.

Case Description: We report a case of young 21-year-old male patient known case of Chron's disease on maintenance therapy with Azathioprine 100 mg daily. He presented with vague history of neck discomfort and swelling for 2 weeks following an upper respiratory tract infection and routine ultrasound neck was performed by the primary physician, no history of hoarseness of voice, cough, nausea, shortness of breath, dysphagia, or significant weight loss. On examination, there was no obvious thyromegaly or palpable thyroid nodule clinically except mild tenderness with discrete cervical lymph nodes. Other systemic examination was normal. Ultrasound features of thyroid nodule showed to have right upper pole hypoechoic thyroid nodule measures 1×0.6 cm, TI-RADS 5 (7 points) (highly suspicious), as per ATA guidelines a point of care ultrasound guided thyroid fine needle aspiration cytology (fnac) was performed from right upper thyroid nodule and suspicious right cervical lymph node in addition to TG (thyroglobulin) washout from right cervical lymph node. Comparison of ultrasound thyroid which was done 2 years back did not show any evidence of thyroid nodule. The FNA cytology of right thyroid nodule showed and was consistent with papillary thyroid carcinoma along with right cervical lymph node showed presence of malignant cells which was consistent with metastatic thyroid carcinoma and TG washout $>$4,500 ng/mL.

Conclusion: Since there is increasing incidence of papillary thyroid carcinoma and also many studies in literature has shown growing association of Chron's disease along with its treatment like use of immunomodulators and monoclonal antibodies and risk of thyroid malignancy. It is important to keep index of suspicion for patients who are at high risk and routine ultrasound thyroid screening can be ideal in high risk cases.

P53. Long-Term Folow-Up of Neonatal Diabetes: Experience from South Region of KSA.

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Introduction: Neonatal diabetes is very rare with incidence ranging from 1:400,000 to 1:500,000 neonates.

Methods: To study the incidence of neonatal diabetes in south region of KSA.

Results: In our area, the incidence seems to be higher as we had 13 cases in 14 years period (incidence rate of 1:37,000 neonates). They presented with irritability, excessive crying, fever, IUGR, poor weight gain. and excessive diaper change seizer disorder. Neonatal diabetes does exist as an isolated phenomenon or in association with the other defects. The associated defects included exocrine and endocrine pancreas insufficiency, methylmalonic acidemia, and Wolcott–Rallison syndrome. It is of interest to report the association between P.N.D.M. and central hypothyroidism, hemolytic anemia, microcephaly and brain dysgenesis. 80% of cases were products of consanguineous marriages. Familial trend is observed in seven of the cases. Cases 1 and 2 (sibs) had hemolytic anemia that needed blood transfusion without known cause. However, it could be in part explained by hyperglycemia possibly as a result of hyperosmolarity as the other sister did not have hemolytic anemia. However, other cases did not show this association despite hyperglycemia which might suggest other unrecognized cause. Case 4 was found to have central hypothyroidism. Cases 6 and 7 (sibs) had primary microcephaly with dysgenesis, seizure disorder, and hypsarrhythmias.

Conclusion: Neonatal diabetes mellitus (both transient and permanent) is very rare with an estimated incidence ranging from 1:400,000 to 1:500,000 neonates. It can be isolated, part of association or part of a syndrome (e.g., Wolcott–Rallison syndrome). In this study, we report whole exome sequencing analysis detected a homozygous frameshift variant in ZNF808 (NM_001321425.2:c.1448dupA,p.(Y483*)) in the three affected sibs. The association between permanent neonatal diabetes mellitus (PNDM) and central hypothyroidism, hemolytic anemia and microcephaly (with brain dysgenesis).

P54. Dietary Knowledge Assessment among the Patients with Type 2 Diabetes in Madinah

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Introduction: There is a huge burden of nutrition-related noncommunicable diseases, and diabetes is one of the leading chronic nutrition-related, diseases affecting more than 500 million people globally. Collecting information regarding the awareness of dietary and nutrition knowledge among diabetic patients is the first step to developing a disease prevention program. Thus, this study primarily aims at assessing the dietary awareness of diabetes patients attending the diabetic center in Madinah governorate, KSA.

Methods: The study was started in November 2020 and ended in October 2021. The study participants (315) were T2D patients attending a diabetic center in Madinah, KSA. A self-prepared dietary knowledge questionnaire (DKQ) was used in this research. The variables include a balanced diet, food type, food choice, carbohydrate, protein, and fat. Knowledge score was and the total score were levelled or categorized into "good," "average," and "poor."

Results: The study results identified the current knowledge of T2D patients about different dietary items. The knowledge score of 62.2% of participants showed an average level of dietary knowledge, which is statistically significant. When we separately evaluated their understanding of different dietary components, we found that T2D patients had poor knowledge of carbohydrates (30.15%), fat, food choices (47.7%), and type (34.6%). However, they had acceptable knowledge of proteins (56.5%).

Conclusion: Our participants exhibited acceptable knowledge about proteins but poorer knowledge of other food groups. A healthy, well-balanced diet is essential for excellent glycemic control. Educating and arranging a health education program regarding dietary knowledge is recommended, specially designed for diabetic patients so that patients can opt for a healthier lifestyle

P55. The Role of the Mediterranean Diet in Treating Patients with Nonalcoholic Fatty Liver Disease and Its Effect in Reducing Weight, Liver Function, and Lipid Profile

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Introduction: Nonalcoholic fatty liver disease (NAFLD) is a relevant issue in public health because represents a major cause of chronic liver diseases worldwide. Approximately 20 to 30% of adult population have NAFLD, making it the most common liver disease in developed countries. The Mediterranean diet has the largest corpus of evidence on the prevention and treatment of non-communicable illnesses as well as mortality. However, the Mediterranean diet is rich in fruits, vegetables, nuts, fish, olive oil, and whole-grain products. The aim of this study was to determine the clinical effectiveness of the Mediterranean diet on weight, liver enzymes, cholesterol, and triglycerides in patients with NAFLD in Libya.

Methods: This observational study proposes a 6-month intervention for treating patients with NAFLD. Fifty adult patients who were recently diagnosed with NAFLD and who visited the liver clinic in the gastroenterology outpatient clinics at Tripoli University Hospital were studied between January and June 2023. In this study, we tested the effectiveness of nutritional counseling for patients with NAFLD. The approach is based on clinical and Mediterranean diet-based nutritional interventions that are carried out by a gastroenterologist and a Dietitian, respectively. The effect of the Mediterranean diet treatment was evaluated by monitoring liver enzymes, cholesterol, triglycerides, and weight loss.

Results: There were 50 cases of NAFLD, of which 33 adults received a 6-month clinical and dietary intervention (based on the Mediterranean diet). Out of 33 patients studied, 15 (45.5%) were males and 18 (54.5%) were females, with a mean age of 42.48 ± 8.19 years (range 31–59). The mean values of weight in NAFLD patients before and after Mediterranean diet treatment were 104.54 ± 24.96 and 76.42 ± 12.83, respectively. As far as the liver enzymes are concerned, all three liver enzymes significantly decreased after the Mediterranean diet treatment; the mean values of ALT, AST, and ALP were 25.69 ± 10.16 U/L, 27.57 ± 9.44 U/L, and 71.93 ± 30.55 U/L, respectively. Moreover, the Mediterranean diet-based nutritional intervention was also successful in decreasing cholesterol and triglycerides; the mean values were 111.51 ± 14.03 mg/dL and 122.36 ± 22.88 mg/dL, respectively. Parameters, i.e., AST, ALT, ALP, weight, cholesterol, and triglycerides, showed a significant improvement between baseline .

Conclusion: The findings of this study support the idea that adopting a Mediterranean diet and leading a more active lifestyle may be regarded as a secure treatment strategy for lowering the risk and severity of NAFLD and associated disease states. The suggested strategy may be put out as a legitimate and advised strategy for enhancing NAFLD patients' clinical profiles and end treatment.

P56. Gene Expression Profiling of Energy Metabolism Markers in Adipose Tissue: Identifying Early Biomarkers for Obesity and Associated Comorbidities

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Introduction: Understanding the molecular mechanism underlying energy homeostasis in obesity is essential to identifying new biomarkers and effective strategies for controlling obesity and related complications. Assessing the expression levels of genes involved in energy metabolism, such as fatty acid synthase (FASN), sterol-regulatory element binding protein-1c (SREBP-1c), uncoupling protein-2 (UCP-

2), and adenosine monophosphate-activated protein kinase (AMPK), in the adipose tissue of obese individuals and establishing their relevance as early biomarkers of obesity and its complications.

Methods: Subcutaneous fat tissue samples were collected from 20 healthy and normal-weight subjects as a control group and 70 obese individuals, divided into three groups: group I (obese individuals without diabetes), group II (obese individuals with hypertension), and group III (obese individuals with T2D). The mRNAs were isolated from these samples, and the gene expression levels were assessed using real-time PCR.

Results: This study found that expression levels of the investigated genes were significantly increased in all obese groups compared to the control group. The expression levels of UCP-2 and AMPK were significantly higher in the obese group III. The ROC curve indicated that the studied genes showed high accuracy in distinguishing obese group I from the control group. The FASN gene also showed good performance in discriminating obese subjects with hypertension from obese group I. On the other hand, the AMPK and UCP-2 genes showed good accuracy in differentiating obese participants with diabetes from obese group I.

Conclusion: The expression of the examined genes might play a significant role in obesity and could serve as early biomarkers for evaluating an individual's risk of obesity and related diseases like diabetes and hypertension.

P57. Amitriptyline-Induced Recurrent Hypoglycemia: A Case Report.

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Introduction: Amitriptyline is an antidepressant medication used for different diagnoses and has its side effects but it is not known to cause hypoglycemia in non-diabetic patients.

Case Description: A 32-year-old female with, a known case of migraine for 1 year and the patient treated with amitriptyline 50 mg at bed time. Since diagnosis, she has complained of recurrent postprandial and fasting hypoglycemia, she has a family history of T2D and she is overweight her history, she denied any exogenous hypoglycemic medication, and no drug history other than amitriptyline, she has normal oral intake, no dizziness or postural hypotension, not alcoholic, normal apatite and weight, no history of bariatric procedure. Blood withdrawn at the time of hypoglycemia $<$55 mg/dL, showed c-peptide and insulin suppressed, which is non-insulin mediated, and cortisol level was excluding adrenal insufficiency, all other hormones of adrenalin and nor adrenalin was normal so by exclusion we diagnosed that the cause of hypoglycemia is induced by amitriptyline. The patient has recurrent fasting and postprandial hypoglycemia which was not explained by any cause other than amitriptyline.

Conclusion: Amitriptyline has rare and not known side effects which is very significant as hypoglycemia and it is non-insulin medicated causing hypoglycemia.

P58. F18-Choline PET/CT for Preoperative Localization in Primary Hyperparathyroidism

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Introduction: Primary hyperparathyroidism (PHPT) is the most common cause of chronic hypercalcemia and is associated with several complications. The definitive treatment is surgery, preferably performed through a minimally invasive parathyroidectomy. Several imaging techniques are used for preoperative localization. This retrospective chart review aimed to describe the role of F18-choline PET/CT in primary hyperparathyroidism in our center.

Methods: An observational, retrospective study was conducted. Electronic medical records of adult patients with biochemically proven primary hyperparathyroidism who underwent F18-choline PET/CT after negative first-line imaging were reviewed. Baseline characteristics, clinical data, scan results, type of surgery and histopathological data were recorded.

Results: A total of 54 patients were included, 45 (83%) of whom were females. Prior localization studies were normal in 38 (70%) patients and indeterminate in 16 (30%) patients. F18-choline PET/CT localized the hyperfunctioning parathyroid gland in 43 (80%) patients and did not localize in 11 (20%) patients. 22/54 (41%) patients underwent parathyroidectomy, 16/22 (73%) of whom underwent unilateral parathyroidectomy. Only 4/22 (18%) had neck exploration surgery. F18-choline PET/CT findings correlated with surgical findings in 76% of patients. The sensitivity and positive predictive value (PPV) for F18-choline PET/CT in localizing hyperfunctioning parathyroid glands were found to be 94 and 89%, respectively. In the surgically treated group, 20 (91%) patients were considered cured after surgery.

Conclusion: F18-choline PET/CT is a promising new technique for preoperative localization in patients with PHPT when first-line imaging studies are indeterminate. This retrospective study shows high sensitivity and PPV for F18-choline PET/CT in parathyroid adenoma detection. It can successfully guide minimally invasive parathyroidectomy and reduce the need for neck exploration.

P59. Acute Coronary Syndrome in Adolescents with Uncontrolled Type 1 Diabetes

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Introduction: T1D is a prevalent chronic autoimmune disorder in pediatric populations, often leading to diabetic ketoacidosis (DKA) that necessitates emergency intervention. Acute coronary syndrome with silent infarcts is a common and dreaded complication of T2D; however, its incidence in long standing poorly controlled T1D in children is relatively unknown. Patients with DKA typically present with symptoms of vomiting and abdominal pain, which are often managed with antiemetics like ondansetron or its analogues. Reports of coronary complications like vasospasm secondary to these drugs though rare may mimic ACS and should be recognized.

Case Description: A case of a 13-year-old female with a background of uncontrolled T1D, attended the emergency department with a complaint of vomiting and hyperglycemia, diagnosed to have mild DKA. She continued complaining of nausea and vomiting, for which she was given IV granisetron 2 mg (a serotonin receptor [5HT-3 selective] antagonist). Soon after receiving the dose, she developed central chest pain radiating to the left side, and she felt lightheaded.

Subsequent evaluation revealed significantly elevated troponin levels (359 ng/L, normal < 14), and an ECG identified posterior STEMI features. Echocardiogram done a few hours later showed reduced ejection fraction of 35 to 40% with mitral and tricuspid valve regurgitation. The patient was managed in the intensive care unit, according to the ACS protocol, received aspirin, clopidogrel, and heparin. Few days later, the ejection fraction has improved and returned to normal with improvement of troponin level and normalizing of the ECG. Patient was discharged home on her usual insulin doses with emphasis on the importance of controlling the diabetes to avoid the complication. A week later she was seen in the ambulatory follow up clinic, and she remained asymptomatic with good adherence to the plan. Her echocardiogram had normalized. To our knowledge, this is the first reported case of ACS in the context of uncontrolled T1D in Oman among pediatric population.

Conclusion: For patients with uncontrolled T1D, diligent follow-up and precise adjustment of medication are critical. It remains challenging managing diabetes among adolescents. Although ACS is rare in pediatric population, the severity of potential complications necessitates heightened vigilance for ACS in similar cases. This case raises the awareness of possible side effect of serotonin receptor antagonist and reinforces the need for further research to clarify the interactions between T1D, DKA, and cardiovascular events. Early detection and appropriate management of ACS are essential for better prognosis and reducing both morbidity and mortality.

P60. Behavior Change Counseling Strategies as an Effective Treatment Approach Along with Insulin Regimens for Young Adult T1D Patients from a Busy Diabetic Clinic: A Randomized Nonblinded Controlled Trial (Pilot Study)

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Introduction: We assess the effects of Behavior Change Counselling (BCC) Motivational Interviewing sessions (MI) strategies in young adults aged 18 to 55 years with uncontrolled T1D in a busy diabetic clinic Bawshar, Oman compared to a control group receiving 'treatment as usual'

Methods: Participants were randomized to BCC/MI intervention group ($n = 25$), males ($n = 17$), females ($n = 8$), or control ($n = 25$). Males ($n = 16$) females ($n = 9$). At week 1, BCC/MI participants had brief MI sessions, controls received standard care as per current clinical practice of the existing health care facility. Assessments were repeated at baseline and 3 months. The data were analyzed using nonparametric statistics.

Results: Primary outcomes including glycosylated hemoglobin (HbA1c), low density lipoprotein (LDL) values were measured at baseline and at 3-month follow-up. Results showed a reduction in intervention group (BCC/MI) of median HBA1c by 1.2% and reduction in median LDL levels by 0.9 mmol/L. The p-value is <0.0001 (significant at <0.05.) The median HBA1C level in the control group increased by 1.3% and the median LDL level increased by 0.2 mmol/L after the standard level of care. The p-value is <0.0001 (significant at <0.05.)

Conclusion: This is the first study of this kind conducted as part of routine clinical care in Oman. The results highlight a significant reduction in HbA1c and LDL and benefit to patients. A larger study is needed to clarify the results and if confirmed, implementing BCC training to health care providers will reduce diabetes mellitus complications and the economic burden of Oman

P61. Cardiovascular Disease Incidence and Risk Factors in Thyroid Cancer Survivors

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Introduction: Although thyroid cancer generally has a favorable prognosis, there is increasing concern about cardiovascular risks among survivors. This study aimed to assess the incidence of cardiovascular events—including atrial fibrillation (AF), arterial events, and cardiac events—in thyroid cancer patients and to identify associated risk factors.

Methods: Between January 2021 and July 2022, we reviewed medical records and conducted interviews with patients diagnosed with thyroid cancer who were followed up in the endocrinology department. We collected baseline characteristics of patients and tumors. The primary outcome was the incidence of cardiovascular events (AF, arterial events, and cardiac events) during a 10-year follow-up period.

Results: Among 327 patients (mean age at diagnosis: 47.96 years ± 11.31 years; 89.9% female; 83.2% with papillary carcinoma), 55.0% received radioiodine therapy. Fourteen patients (4.3%; 95% CI: [2.07–6.50%]) developed cardiovascular disease after diagnosis. This included 4 patients (1.2%) each with coronary artery disease (CAD), atrial fibrillation (AF), and heart failure, and 2 patients (0.6%) with cerebrovascular disease (stroke). The estimated mean survival duration was 216 days (± 7.25 days; 95% CI: [201.54–229.96]), with most events occurring within the first 2 years. Univariate analysis showed that a Levothyroxine dose >175 µg/day and diabetes were associated with cardiovascular disease ($p = 0.049$ and $p = 0.001$, respectively). Multivariable analysis identified diabetes as the only significant risk factor for cardiovascular disease (odds ratio: 5.779; 95% CI: [1.930–17.241]).

Conclusion: The incidence of cardiovascular disease among thyroid cancer patients was 4.3% (95% CI: [3.8–7.7]), with pre-existing diabetes significantly associated with increased risk. These findings highlight the importance of preventive strategies for thyroid cancer survivors, particularly those with diabetes.

P62. Missed Diagnosis of Metformin-Associated Lactic Acidosis: A Case Report

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Introduction: Metformin-associated lactic acidosis (MALA) is rare but serious side effect of Metformin. Metformin-associated lactic acidosis (MALA) is characterized by lactic acidosis resulting from Metformin overdose or in conjunction with comorbidities such as kidney or liver dysfunction, or acute infections.

Case Description: A 63-year-old female with T2D and stage 3B chronic kidney disease. On admission, she presented with vomiting and diarrhea for a few days and was misdiagnosed in two private hospitals as gastroenteritis. Lab investigations revealed high anion gap metabolic acidosis and raised creatinine and lactate levels. The patient was on Metformin 1000 mg (BID) along with pre-meal insulin aspart and bedtime insulin glargine. A diagnosis of MALA was made, and management included intravenous fluid hydration and continuous renal replacement therapy. The patient responded well to treatment and was discharged on the same insulin regimen and Metformin was discontinued upon discharge

Conclusion: This case underscores the occurrence of metformin-associated lactic acidosis in a patient with T2D and CKD which was missed by other centers, emphasizing the importance of vigilant diagnosis, monitoring and follow-up in such patients.

P63. Wolfram Syndrome: A Case Report

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Introduction: Wolfram Syndrome is a neurodegenerative disorder involving the central nervous system, peripheral nerves, and neuroendocrine tissue. The major clinical presentation includes optic atrophy, diabetes, urinary tract problems, neurological difficulties, and central diabetes insipidus. This rare disease is associated with significant morbidity and mortality due to a lack of effective treatment to halt, delay, or reverse the progression of the disease. We present a case of Wolfram syndrome which presents different manifestations.

Case Description: A 25-year-old male patient with a history of diabetes before the age of 16 presented at our medical center. He was initially diagnosed with T1D but negative for islet autoantibodies. His morphotype and his history of diabetes instability let us suspect Wolfram syndrome. While searching for other manifestations of this syndrome, we found urinary tract malformation in imagery and optic atrophy without central diabetes insipidus. His clinical presentation confirms Wolfram syndrome including major criteria and two minor criteria. A genetic test was required, but the result is not yet available.

Conclusion: Clinicians should consider monogenic diabetes genetic testing, including the WFS1 gene, for patients with early-onset diabetes who are negative for islet autoantibodies and lean. Wolfram syndrome is a rare monogenic disorder characterized by juvenile-onset insulin-dependent diabetes and optic nerve atrophy. One of the commonalities of rare diseases is the extensive timeline to reach an accurate diagnosis. Although there is currently no treatment that can delay, halt, or reverse the progression of Wolfram syndrome, early diagnosis of this syndrome with genetic testing is essential to offer therapies aimed at treating each aspect of the disease.

P64. Validity of the New IDF-DAR Risk Stratification Score and Fasting Experience

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Introduction: Diabetes is a highly prevalent metabolic condition in KSA, with an increasing global incidence. Ramadan fasting, a significant religious practice for Muslims, poses substantial risks for diabetic patients, including hypoglycemia, hyperglycemia, diabetic ketoacidosis (DKA), and dehydration. The International Diabetes Federation-Diabetes and Ramadan Alliance (IDF-DAR) risk stratification tool was developed to guide health care professionals in assessing the risks associated with fasting in diabetic patients. However, the accuracy of this tool in predicting adverse outcomes in Saudi diabetic patients remains underexplored.

Methods: This study aims to validate the accuracy of the IDF-DAR risk stratification tool in predicting adverse outcomes among Saudi diabetic patients attending diabetes clinics at tertiary care centers in Riyadh, who intend to fast during Ramadan. A prospective observational study was conducted at two centers: Obesity, Endocrine and Metabolism center (OEMC) at King Fahad Medical City (KFMC) and diabetes clinics at King Abdulaziz Medical City (KAMC) in Riyadh, KSA. The study included adult patients suffering from both type 1 and 2 diabetes who have scheduled appointments at the diabetes clinics and underwent risk assessment starting 1 month before Ramadan and willing to participate in the study. We exclude patients with serious chronic conditions and pregnant women.

Results: Among the 303 participants, 12.9% were classified as low risk, 23.4% as moderate risk, and 63.7% as high risk. In the low-risk group, only 5% experienced hypoglycemia, with no significant hyperglycemia reported. The moderate-risk group showed a higher incidence, with 18.6% experiencing hypoglycemia and 12.8% developing hyperglycemia. In contrast, the high-risk group had the highest rates of complications, with 39% of T1DM and 48.9% of T2DM patients experiencing hypoglycemia, and 53.4% developing hyperglycemia, some requiring medical intervention. Despite being categorized as high risk, 51.3% of these patients completed fasting for the entire month. Overall, 62.7% of all participants were able to fast for the entire month of Ramadan.

Conclusion: The IDF-DAR risk stratification tool is a valuable resource for predicting adverse outcomes in Saudi diabetic patients fasting during Ramadan. However, further refinement may be needed to avoid overestimating risk in certain populations. This study underscores the importance of individualized patient assessment and education to mitigate the risks associated with Ramadan fasting in diabetic patients.

P65. Disparities in the Management of Patients with Empty Sella Based on Etiology

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Introduction: Empty sella (ES) is characterized by the replacement of pituitary tissue with cerebrospinal fluid in the

sella turcica. Several studies have shown that primary ES patients do not receive appropriate evaluation and management. The aim of this study is to examine this notion in across all etiologies of ES.

Methods: This is a retrospective cohort study that included all patients aged 14 years or older diagnosed with ES between February 2021 and December 2022 at King Fahad Medical City Hospital in Riyadh, KSA. Relevant data were extracted from electronic medical records and comparisons of hormonal assessment were made based on etiology and reason for endocrine referral.

Results: A total of 287 patients were identified, and all were eligible for final analysis. The majority were females (75.3%) with an average age of 49.7 years. Most participants had primary ES (84.6%), and 84 patients (29.9%) received appropriate referral to the endocrinology service, with half (52.4%) referred specifically to address ES and the other half (47.6%) for other endocrine disorders. Compared to patients with primary ES, secondary ES patients were more likely to be evaluated for all hormonal disturbances. Amongst the primary ES patients, those who were referred specifically for ES received a more comprehensive evaluation than those who were referred for other reasons.

Conclusion: Significant disparities in hormonal assessment and appropriate referral are common in ES patients. Improved awareness and standardized referral practices are necessary to enhance patient management and improve outcomes.

P66. Glycemic Variability as an Independent Predictor of Cardiovascular Events in Type 1 Diabetes

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Introduction: Cardiovascular disease remains the leading cause of morbidity and mortality in individuals with T1D. While glycated hemoglobin (HbA1c) is the standard measure of long-term glycemic control, it does not capture short-term fluctuations in blood glucose levels known as glycemic variability (GV). Emerging evidence suggests that GV may independently contribute to cardiovascular risk beyond mean glycemic control. We aimed to systematically evaluate the association between glycemic variability and the incidence of cardiovascular events, such as myocardial infarction and stroke, in patients with T1D.

Methods: A comprehensive literature search was conducted in PubMed and Embase databases for studies published from January 2000 to October 2023. Keywords included type 1 diabetes, glycemic variability, and cardiovascular events. Inclusion criteria encompassed observational studies and clinical trials involving T1D patients that assessed GV using validated metrics (e.g., standard deviation, coefficient of variation, mean amplitude of glycemic excursions) and reported on cardiovascular outcomes. Studies not meeting these criteria were excluded. Data extraction and quality assessment were independently performed by two reviewers, with discrepancies resolved through consensus.

Results: Twelve studies met the inclusion criteria, comprising a total sample size exceeding 5,000 T1D patients. The majority demonstrated a significant association between higher glycemic variability and an increased risk of cardiovascular events, such as myocardial infarction and stroke, independent of HbA1c levels. Several studies also found positive correlations between GV measures and markers of cardiovascular risk, including arterial stiffness and endothelial dysfunction. Effect sizes varied, with odds ratios ranging from 1.2 to 2.5, while some studies did not quantify the effect size. Notably, heterogeneity existed among studies regarding GV assessment methods, definitions of cardiovascular outcomes, and study designs, which included both cross-sectional and longitudinal approaches.

Conclusion: This systematic review indicates that increased glycemic variability is an independent predictor of cardiovascular events in patients with T1D. Monitoring and minimizing GV may be crucial components in reducing cardiovascular risk, alongside maintaining optimal HbA1c levels. Incorporating GV assessment and management into clinical practice could enhance cardiovascular risk stratification, inform personalized treatment strategies, and ultimately improve cardiovascular outcomes in T1D patients. Further standardized, large-scale prospective studies are warranted to establish definitive guidelines for GV assessment and intervention.

P67. Milkyway Towards the Diagnosis: An Unusual Case of Postpartum Amenorrhea

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Introduction: Prolactinomas comprise up to 40% of pituitary adenomas, predominantly affecting women aged 25 to 34. Key symptoms include oligomenorrhea, amenorrhea, infertility, loss of libido, and galactorrhea. Diagnosing prolactinoma during pregnancy and the postpartum period is difficult due to normal physiological increases in prolactin and galactorrhea, which can obscure the diagnosis and result in cases remaining undetected during lactation.

Methods: A 34-year-old female with a history of regular menstrual cycles and an uncomplicated full-term vaginal delivery presented with persistent amenorrhea and galactorrhea for over 9 months after cessation of breastfeeding. Clinical examination was unremarkable except for galactorrhea.

Results: Biochemical assessment revealed elevated serum prolactin (111 ng/mL), suppressed luteinizing hormone (LH $<$ 0.3 mIU/mL), and low follicle-stimulating hormone (FSH 2.34 mIU/mL). Thyroid function tests, ACTH, cortisol, and IGF-1 levels were normal. A pregnancy test was negative. Pelvic ultrasound showed an empty endometrial cavity with a thin endometrial lining, while breast ultrasound revealed bilateral duct ectasia. MRI of the pituitary demonstrated a 2.5 $\times$ 2.4 mm microadenoma in the right paramedian gland floor and partial empty sella. These findings, combined with elevated prolactin levels, were indicative of a micro-prolactinoma. The patient was treated with cabergoline, initially at 0.75 mg per week and later reduced to 0.5 mg per week due to intolerance. Prolactin levels decreased to 26 ng/mL, gonadotropin levels normalized (LH 2.04 mIU/mL, FSH 4.39 mIU/mL), and spontaneous menstrual cycles resumed thereafter.

Conclusion: This case highlights that despite overlapping clinical features, prolactinoma should be considered in the evaluation of cases with persistent postpartum amenorrhea and galactorrhea. It also demonstrates the effectiveness of cabergoline in managing elevated prolactin levels and restoring normal menstrual function.

P68. Primary Hyperparathyroidism in KSA: 40 Years of Experience in a Tertiary Care Hospital

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Introduction: Primary hyperparathyroidism (PHPT) is a relatively common disease worldwide, gaining international and local attention due to the availability of early screening and effective management. The situation is compounded in KSA similar to other countries in the region with high prevalence of Vit D deficiency, late symptomatic presentation, as well as underreporting of cases. With this article, we aim to highlight the common presentation in KSA and the changing trend over the last few decades, as well as advice for early screening and management.

Methods: From 2005 to 2022, a case series analysis was conducted at King Khalid University Hospital on all patients diagnosed with PHPT and admitted for parathyroid surgical excision who were over the age of 14 years. We included the characteristics of those patients in the form of clinical presentation, diagnostic workup, and management.

Results: Of the 184 included patients, 78.8% were women. The mean age was 54.3 years. 84% of the cohort were symptomatic while 16% were asymptomatic. The most prevalent presentation was hypertension (37%), followed by bone/muscle and joint pain (25% and 20% respectively), and constipation (23.9%). The biochemical analysis included PTH, corrected calcium, phosphorus and alkaline phosphatase, and vitamin D values. Radiological investigation included dual-energy X-ray absorptiometry (DXA) scan. Of the 184 patients, 74.5% had DXA scans, and of those above 50 years 51% were osteoporotic, 42% were osteopenic, and 5.5% were normal. A sestamibi scan was performed for 143 patients. Among these, the sensitivity and PPV for sestamibi scan versus histopathology diagnosis were 88.5 and 96.9%, respectively. A single parathyroid adenoma was the most common postoperative histological diagnosis, accounting for 81.5% of cases, followed by hyperplasia 6% and multiple adenomas 6%.

Conclusion: PHPT in KSA is still a symptomatic disease with a high prevalence of vitamin D deficiency/insufficiency. Since routine calcium screening will help in early detection of asymptomatic disease, we do recommend the wide spread implementation of calcium testing as well as following the international guidelines in screening for renal and skeletal health status upon initial assessment of PHPT. It is believed that such policies will help physicians and surgeons in assessing the true incidence and prevalence of the disease, and it will go a long way in the prevention of the complications.

P69. Outcomes of Bariatric Surgery on Glycemic Management in Patients with Diabetes

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Introduction: T2D is a metabolic syndrome characterized by hyperglycemia, either due to defective insulin action, insulin secretion, or both and is associated with multiple micro and macrovascular complications. Prevalence of diabetes in the UAE is high among the adult population, alongside obesity, making it one of the top ranked countries in terms of metabolic risks. Bariatric surgery remains the most effective treatment for sustained weight loss and has been attributed to other remarkable effects including improvements in glycemic levels and even diabetes remission as well as cardiometabolic amelioration to the point that new indications for bariatrics surgery for metabolic gains have been postulated. The aim of our study was to describe the long term effects of bariatric surgery on glycemic control and diabetes medication intake among Emirati patients with T2D in our outpatient diabetes center over a period of 1 to 5 years.

Methods: This was a retrospective medical chart review of the adult patients known to have T2D on glycemic control medications, who underwent bariatric surgery at Tawam Hospital from 2013 to 2019 and their records were reviewed for up to 5 years post-surgery. Patients with other forms of diabetes were excluded. We assessed the change in glycated hemoglobin (HbA1c) and medications required for glycemic control at baseline, 1 year, 3 years, and 5 years of bariatric surgery as well as any change in weight, lipid profile, and post-surgical complications.

Results: A total of 238 patients (161 female; 67.6%) with T2D on active treatment were identified who underwent bariatric surgery having mean age of 46.8 ± 11.6 years (217 Emirati; 91.1%). Majority of the patients (138; 60%) had laparoscopic gastric sleeve procedure done while others underwent gastric bypass procedure. The mean weight loss in kilograms and total body weight lost from baseline at 1 year, 3 years, and 5 years was 28.7 kg (26.2%), 32.5 kg (29.2%), and 30.8.7 kg (27.2%), respectively. Despite the decline in weight loss after 1-year post-surgery, the glycemic control continued to improve as indicated by mean improvement in individual HbA1c from baseline at 1 year, 3 years, and 5 years being 1.3, 1.5, and 1.7%, respectively. The medication requirement for glycemic control also improved with only 11 patients requiring medications at 5 year post-surgery (1 on insulin and 10 on oral agents) in comparison to prebariatric surgery (26 patients on insulin and 212 patients on oral agents).

Conclusion: Bariatric surgery can lead to persistent improvement in glycemic control as well as reduced requirement for diabetes medications over a period of 5 years.

P70. Impact of Multifactorial Interventions on Metabolic and Renal Outcomes for Type 2 Diabetes.

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Background: Clinical evidence on the protective effects of a balanced diet, exercise, and medication adherence along with intensive glucose-lowering therapies on diabetes progression is lacking, and interventions that are most effective in slowing cardiorenal metabolic complications in patients with diabetes remain unelucidated. We aimed to determine the effects of long-term multifactorial interventions on clinical outcomes in Emirati patients with diabetes attending ambulatory health care clinics.

Methods: We conducted a randomized controlled clinical trial at the Oud Al-Touba Clinic involving 192 participants with diabetes, who were blinded to the intervention and control groups, and followed up for 1 year. At the 3-, 6-, and

9-month visits, the intervention and control groups received multifactorial interventions and standard routine care, respectively. Glycated hemoglobin A1c (HbA1c) levels, estimated glomerular filtration rate (eGFR), blood pressure, electrolyte levels, diet, medication adherence, and other cardiovascular risk factors were assessed at study completion.

Results: During a mean follow-up of 11.9 years, 40.4% of the participants in the intervention group (31.6% in the control group) achieved diabetes control (HbA1c < 7%), with a significant mean difference of –0.63% in HbA1c levels between the groups (95% CI: –0.96 to –0.30, $p < 0.01$). Participants in the multifactorial group achieved a significant mean difference in systolic blood pressure (SBP) at study completion compared to those in the control group (–4.21%, 95% CI: –8.26 to –0.16, $p < 0.02$), low-density lipoprotein cholesterol levels (mean difference = –0.31, 95% CI: –063 to 0.02, $p < 0.03$), and eGFR levels (mean difference = 3.46 mL/min/1.73 m^2, 95% CI: 0.97–5.94, $p < 0.01$). BMI and serum electrolyte levels decreased in the intervention group compared to the control group at the end of the follow-up.

Conclusions: Implementing multifactorial interventions by a multidisciplinary team improved several clinical manifestations, including HbA1c, SBP, and eGFR, and decreased cardiovascular risk factors despite the decreased diabetes medication use.

P71. Acute Agranulocytosis Secondary to Carbimazole: An Illustrative Case Report

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Introduction: Agranulocytosis is defined as a decrease in the number of circulating neutrophil polynuclears (PNN) responsible for acute and severe neutropenia, below 0.5×109 /L, and an infectious state (naked fever, oropharyngeal lesions, localized infections). Synthetic antithyroid drugs (carbimazole, thiamazole, benzylthiouracil) are one of the drug classes most at risk of drug-induced agranulocytosis. Isolated, acute, profound neutropenia in patients treated with synthetic antithyroid drugs should, until proven otherwise, raise suspicion of drug-induced agranulocytosis.

Case Description: This is a 28-year-old patient known to have hyperthyroidism secondary to Graves' disease diagnosed on 06/08/2019 put on carbimazole 45 mg/d and avlocardyl 40 mg/d, with a family history of Graves' disease in the father. The diagnosis of acute febrile agranulocytosis secondary to carbimazole is made in the presence of the following: (1) carbimazole taken since 06/08/2019 with temporary interruption of 03 days due to influenza syndrome, then resumed after improvement in general condition. Treatment stopped on 08/24/2019 due to an infectious syndrome with deterioration of general condition. (2) Infectious syndrome: fever up to 41°C, chills and sweats with positive CRP at 76 mg/L. (3) ENT disorders: painful dysphagia, gingivitis, pultaceous angina, inflammation of the first tracheal rings. (4) Hematological disorders (agranulocytosis: [WBC: 1,300], NNP: 120, lymphocytes: 400, normochromic microcytic anemia [Hb: 9.9], platelets: 200,000, FSP: leukocyte lineage [PNN: 4%, lymphocytes: 84%; monocytes: 12%, myelogram: blockage at promyelocytic stage]).

Results: The patient was hospitalized with isolation and strict asepsis, with immediate discontinuation of carbimazole, and received double IV antibiotic therapy (Tienam and Amikacin), daily injections of hematopoietic growth factor, Perfalgan for fever, Lovenox SC and Fungizone/Aspegic/bicarbonated serum mouthwash. The evolution was favorable, with resolution of agranulocytosis after 6 days.

Conclusion: Although rare, the severity of agranulocytosis that can occur with carbimazole requires careful patient education, as well as clinical and blood count monitoring, particularly during the first 2 months of treatment. Infections are more severe the longer agranulocytosis persists, and the administration of hematopoietic growth factors appears to significantly reduce the duration of agranulocytosis.

P72. Assessing Baseline Cortisol Levels in Patients Admitted with Septic Shock

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Introduction: Critical illness-related corticosteroid insufficiency (CIRCI) is characterized by inflammation resulting from inadequate intracellular glucocorticoid-mediated anti-inflammatory activity leading to increased morbidity and mortality in intensive care unit (ICU) patients. Severe sepsis with shock is a common reason for admission to ICU/hospital and may require inotropic support. The current western guidelines suggest using random cortisol of <10 µg/dL (<276 nmol/L) to assess for the presence of CRCI and recommend the use of hydrocortisone in these patients. Other studies done to look at baseline cortisol in patients with severe pneumonia requiring ICU care found the cut-off cortisol level being <15 µg/dL (<414 nmol/L) to predict CIRCI. However, there is no study on assessment of cortisol levels in patients with septic shock in our local population. This study aimed to assess the available data of cortisol levels for patients treated as CIRCI in ICU and those who were not treated as CIRIC for creating local reference data range.

Methods: This was a retrospective observational study involving chart review of the patients admitted to ICU in Tawam hospital from 01/06/2012 to 01/06/2022 with the diagnosis of severe sepsis and who had cortisol levels done and/or had received hydrocortisone given for more than 12 hours. Their diagnoses of CIRCI as per consultant ICU ward rounds notes and serum cortisol level along with duration of treatment with hydrocortisone was recorded along with routine biochemical and clinical data.

Results: Over 10,000 medical records were screened and 154 patients with severe sepsis admitted to ICU with possible CIRCI who underwent initial dose of steroids were selected; of which only 87 patients continued to received hydrocortisone for more than 12 hours and were identified as CIRCI as per clinical decision. 20.69% (18/87) patients were discharged while 79.31% deceased during this admission indicating high mortality with total length of stay being $18.8 + 22.9$ days. 36.8% (32/87) patients treated as CIRCI had cortisol levels done prior to giving hydrocortisone with mean of $643 + 359$ nmol/L. Only 9.4% (3/32) and 34.4% (11/32) of these patients met the proposed criteria of CIRCI using cortisol cut-off levels of 276 and 414 nmol/L, respectively. For patients with severe sepsis in ICU not having CIRCI, 7 of them had cortisol levels done which was quite high with a mean of 1815 ± 757 nmol/L .

Conclusion: CIRCI is a clinical diagnosis in ICU setting but patients with severe sepsis without CIRCI can have significantly raised cortisol levels (in excess of 1,000 nmol/

L) while most patients 78.1% (25/32) with CIRCI have cortisol levels less than 700 nmol/L.

P73. Gestational Diabetes Mellitus Referral Practices among Doctors in the UAE

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Introduction: Gestational diabetes mellitus (GDM) is the leading metabolic disorder of pregnancy. Its burden is on the increase, mirroring the global epidemic of T2D. This is even more evident in the Gulf region following the rapid urbanization and obesity epidemic over the past few decades. According to the IDF Atlas, the standardized GDM prevalence in the region is up to 27.6%. In the UAE, GDM prevalence is up to 25%, and in some sub-groups of the population, more than one in three pregnancies are affected. One of the challenges of diabetes management in the Gulf region is not having a sound referral system. Adequate referral and a multidisciplinary approach are essential for optimal GDM management. Our study aimed to assess doctors' practices regarding GDM referral in the UAE.

Methods: A cross-sectional study was conducted among doctors attending to GDM patients. Doctors were recruited from Family Medicine, Obstetrics, and Endocrinology specialties at the SEHA facilities in Al Ain City. Data were collected from the doctors using a validated self-administered questionnaire.

Results: A total of 116 doctors were included in the study. 86% were females. 51% were from family medicine, 39% were from obstetrics, and 10% from endocrinology. Interestingly, most doctors (71%) either underestimated or were unsure of the prevalence of GDM in the UAE. Doctors' GDM referral rate following diagnosis was 87.9%. All the assessed specialties were involved in the referral. As expected, more family physicians referred GDM cases than obstetricians and endocrinologists (98% vs. 82% vs. 58%, $p = 0.0001$). Doctors practicing in primary facilities refer more (94% vs. 79%, $p = 0.015$). Those who specialized in the UAE/MENA (94%) referred patients more than those who specialized abroad (71%), $p = 0.001$. Doctors' experience, gender, and nationality were not significantly associated factors. Most (61%) referrals were to endocrinologists and the diabetic clinic. Other referrals included dieticians, diabetic educators, senior colleagues, and other specialties. The reasons for nonreferrals included being a consultant, an endocrinologist, or already working in the diabetic clinic.

Conclusion: Our study has shown optimal GDM referral practices among doctors in this setting. On the one hand, this multidisciplinary approach in GDM management could help reduce its burden in the UAE. On the other hand, constantly referring cases after diagnosis could be a concern that overwhelms the referral centers. GDM guidelines should clarify the roles of primary health care facilities and family physicians in GDM management and specify when to refer patients to increase balance and efficiency in the referral system.

P74. Pasireotide Use in Acromegaly: Clinical Experience from Five Patients

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Introduction: Acromegaly, a rare endocrine disorder characterized by excess growth hormone (GH) and insulin-like growth factor 1 (IGF-1), is often due to GH-secreting pituitary adenomas. Pasireotide, a second-generation somatostatin receptor ligand (SRL), binds to multiple somatostatin receptors and offers a promising alternative for patients unresponsive to first-generation SRLs like octreotide and lanreotide.

Case Series: We present five acromegaly patients treated with pasireotide in Qatar after the failure of a first-generation SRL to normalize IFG-1 levels. Patient 1, a 39-year-old male with hyperprolactinemia and acromegaly who underwent multiple therapies including surgery and radiotherapy, showed tumor size reduction and IGF-1 control with pasireotide. Patient 2, a 48-year-old male with a significant macroadenoma and prior cabergoline treatment, achieved partial biochemical control. He developed T2D, which was managed with metformin/sitagliptin. Patient 3, a 41-year-old male, experienced dramatic symptom resolution and weight loss after switching to pasireotide, significantly improving his quality of life, with a reduction in tumor size. Patient 4, a 52-year-old female, despite initial side effects on pasireotide, achieved normalization in IGF-1 levels and resolution of active symptoms, with a significant reduction in tumor size. Patient 5, a 38-year-old female, after persistent elevation of IGF-1 on octreotide, responded well to pasireotide with a significant reduction in IGF-1. In all five cases, switching to pasireotide demonstrated marked efficacy by normalizing IGF-1 and eliminating acromegaly symptoms within the first months of treatment. Four out of these five patients showed reduction in tumor size.

Conclusion: This case series corroborates the findings from previous studies. It underscores a single endocrine center experience with this second line SRL therapy in treatment of cases which remained active despite other treatment modalities including surgery and first-generation SRL. It adds insight into treatment challenges and benefits experienced by this heterogeneous group of patients on pasireotide.

P75. A Complex Case of MELAS: Lactic Acidosis and Multisystem Complications

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Introduction: Mitochondrial encephalopathy, lactic acidosis, and stroke-like episodes (MELAS) is a rare genetic disorder caused by mutations in mitochondrial DNA, leading to multisystem involvement, particularly in the nervous and cardiovascular systems.

Case Description: This case report presents a 55-year-old male with a confirmed MT-TL1 mutation, the most common mutation associated with MELAS. The patient experienced recurrent stroke-like episodes, severe cardiomyopathy, diabetes, and progressive cognitive decline, illustrating

the complex and debilitating nature of the disorder. Diagnostic imaging revealed significant brain infarcts and cardiac dysfunction, underscoring the need for comprehensive, multidisciplinary care. The findings from this case highlight the challenges in managing MELAS, emphasizing the importance of early diagnosis, regular monitoring, and individualized treatment to improve patient outcomes.

Conclusion: This case of a 55-year-old male with MELAS syndrome demonstrates the profound impact of recurrent stroke-like episodes, cardiomyopathy, and diabetes on patient health. The presence of the MT-TL1 mutation confirms the diagnosis, while the severe neurological and cardiac complications and recurrent lactic acidosis highlight the need for multidisciplinary management, given the involvement of multiple organ systems. Despite advancements in understanding MELAS, this case reveals the ongoing challenges in treatment, showing the importance of continued research to develop more effective therapies for this complex condition.

P76. SGLT2 Inhibitors and the Risk of Euglycemic DKA in Unsuspected Type 1 Diabetes: A Case Report

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Introduction: Sodium-glucose cotransporter 2 inhibitors (SGLT2I) are a class of antihyperglycemic drugs used for their highly effective glycemic control properties, and their ability to lower the risk of major cardiovascular and renal events in T2D patients with established cardiovascular and chronic kidney disease. Despite their benefits, SGLT2I increase the risk of euglycemic diabetic ketoacidosis (EDKA) by up to sevenfold in patients with T2D and have been reported to increase the risk of DKA in T1D. SGLT2I are contraindicated in patients with T1D due to the risk of DKA.

Case description: A 31-year-old male who presented 2 years earlier with asymptomatic prediabetes (hemoglobin A1C 6.0%) and was treated with lifestyle modifications. After 2 years, he represented with a 2-week history of clinical diabetes mellitus associated with weight loss, polyuria, and polydipsia. The patient was overweight (BMI 27) and had a history of metabolic dysfunction-associated steatotic liver disease [MASLD]. The patient's mother has a history of Hashimoto's thyroiditis, and his nephew has T1D. Fasting blood glucose was elevated at 17 mmol/L and hemoglobin A1C 10%. The patient was diagnosed with T2D and commenced on metformin and empagliflozin, an SGLT2 inhibitor. Two days later the patient presented to the emergency room with severe nausea, vomiting, and dehydration and was found to have EDKA with a blood glucose of 4 mmol/L. There was no history of alcohol ingestion, but he had decreased oral intake for 2 days prior to the EDKA. Anti-glutamic acid decarboxylase (GAD) antibodies were elevated, and C-peptide was in the low-normal range, in keeping with new-onset T1D. The clinical index of suspicion of autoimmune diabetes mellitus (ADM) is higher in patients with a personal or family history of autoimmune disorders, normal body weight, and age less than 50 years.

Conclusion: This case highlights the risk of SGLT2I-associated EDKA, and the importance of excluding ADM when clinically indicated before starting SGLT2I, especially because up to 15% of T2D patients may have undiagnosed latent autoimmune diabetes of adulthood (LADA) and are at an increased risk for DKA.

P77. Mediastinitis: A Rare Complication of Cervical Cellulitis in a Diabetic Patient

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Introduction: Cervico-facial cellulitis is an infection of the soft tissues of the neck and face. Their seriousness lies in the compression of the airways and the spread of infection to the endocranial region and mediastinum, with the risk of death.

Case Description: A 56-year-old male, known to be diabetic for 10 years, presented to the emergency department for a cervical swelling. On examination, the patient was febrile, asthenic and dyspneic, with acid-ketotic decompensation. A cervicothoracic CT scan showed infiltration and emphysema of the cervical and anterior thoracic soft tissues, associated with confluent subcutaneous cervical collections. Management consisted of surgical drainage with placement of Delbet blades, intravenous antibiotic therapy and intensified insulin therapy. The evolution was favorable with clinico-biological improvement.

Conclusion: Cervicofacial cellulitis is a rare condition affecting mainly young males. Mediastinitis is the most dreaded complication. Diabetes is one of the most common precipitating factors, due to impaired natural cellular immunity, humoral response and poor glycemic control. Odontogenic and upper airway infections are the main routes of entry. Cervico-mediastinal cellulitis is a diagnostic and therapeutic emergency, requiring early multidisciplinary management. We suggest that good glycemic control, oral hygiene, and appropriate treatment of ENT infections, far from self-medication, are the fundamental axes of prevention of these deep-seated infections and their serious and fatal complications.

P78. MiniMed 780G Insulin Pump in Pregnancy: Real-World Date

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Introduction: Attaining optimal glycemic control is imperative for pregnant women diagnosed with T1D, as it plays a pivotal role in mitigating the risk of adverse outcomes for both the mother and the developing fetus. The 2019 consensus guidelines on time in range for pregnant women with T1D were published by the International Consensus on Time in Range (ICTR) group. Their recommendations are glucose levels within 63 to 140 mg/dL for at least 70% of the day, above 140 mg/dL for less than 25% of the day, and glucose levels below 63 mg/dL for less than 5% of the day. Real-world data on pregnant women with T1D treated with AHCL are limited. Our study aims to provide real-world data regarding the use of the MiniMed 780G insulin pump during pregnancy, based on the experiences of two pregnant women with T1D.

Methods: All pregnant patients with T1D who received insulin therapy through a closed loop system MiniMEd 780G and have available reports through the Carelink system were identified. Patients who met the inclusion criteria were

included in the study. A structured data collection form was used to record information on demographics (age, weight, duration of insulin pump therapy), and a comprehensive description of glucose sensor data for every trimester was recorded. All patients were followed up throughout their pregnancy and postpartum.

Results: A total of five patients were eligible for inclusion. The average TIR at the end of week 12 was $65 \pm 11.2\%$, TBR $2.5 \pm 2.6\%$, and TAR $32.5 \pm 13.7\%$. The average TIR at the end of week 28 was $73.2 \pm 9.4\%$, TBR $3.4 \pm 1.5\%$, and TAR $23.4 \pm 10.2\%$ The average TIR at term was $82 \pm 8.4\%$, TBR $3.8 \pm 3.1\%$, and TAR $14.3 \pm 10.6\%$.

Conclusion: All five patients experienced significant improvements in glucose management during pregnancy with MiniMed 780G insulin pump, and were able to achieve pregnancy-specific TIR without any serious safety issues.

P79. Insulin Autoimmune Syndrome in Arab Populations: A Case Series.

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Introduction: Insulin autoimmune syndrome (IAS), or Hirata's disease, is rare cause of endogenous hyperinsulinemic hypoglycemia due to antibodies against endogenous insulin. Most cases were reported in East Asian population, often underrecognized in other ethnic groups. In this case series, we present three IAS cases from Middle Eastern/Arab patients who were evaluated for hypoglycemia and found to have endogenous hyperinsulinemic hypoglycemia with positive insulin antibodies.

Case Series: Case 1: a 38-year-old Saudi female presented with a 3-month history of recurrent postprandial hypoglycemic episodes reaching 50 mg/dL. She had a past medical history of primary hypothyroidism and no previous bariatric surgery. The patient was admitted for hypoglycemia evaluation. A mixed meal test revealed serum glucose of 3.7 mmol/L (~66 mg/dL), C-peptide of 6 ng/mL (reference range: 1.1–4.4 ng/mL), and insulin of 142 micro unit/mL (reference range: 2.6–24.9 micro unit/mL). Insulin antibodies were positive of 0.43 nmol/L (reference range: 0.00–0.02 nmol/L), confirming the diagnosis of insulin autoimmune syndrome (IAS). The patient was discharged on dietary management involving balanced, small, frequent meals, adding protein or fat food sources to main meals and snacks. She had complete resolution of symptoms upon follow-up 2 weeks post-discharge.

Case 2: a 64-year-old Egyptian male presented with a 2-week history of daily fasting and late post-prandial hypoglycemia, blood glucose during episodes was ranging between 40 and 60 mg/dL. He underwent a 72-hour fasting test, 2 hours after starting, his blood glucose was 2.27 mmol/L (~40 mg/dL), with insulin >1,000 micro unit/mL (normal 2.6–24.9), proinsulin >700 pmol/L (normal 3.6–22), and C-peptide of 15 ng/mL (normal 1.1–4.4). Glucagon response test was positive (>25 mg/dL increase in blood glucose), and beta-hydroxybutyrate was negative. MRI showed a small pancreatic cyst. The patient started on Octreotide 100 mcg every 6 hours, leading to partial improvement. Insulin antibodies were high at 8.9 nmol/L (normal: 0–0.02), confirming IAS. He was started on prednisone 30 mg daily for 3 months followed by tapering, achieving complete resolution of symptoms, and his insulin antibodies decreased to 0.08 nmol/L.

Case 3: A 49-year-old Egyptian female with a known history of pre-diabetes, hypothyroidism, and obesity presented with hypoglycemic symptoms over 1 year, primarily during fasting. A 72-hour fasting protocol was conducted, revealing blood glucose of 2.9 mmol/L (~52 mg/dL), with insulin >760 mcunit/mL and C-peptide levels of 13.1 ng/mL. Glucagon response test was positive, and beta-hydroxybutyrate was negative, indicating endogenous hyperinsulinemic hypoglycemia. Abdominal CT and endoscopic ultrasound showed no pancreatic lesions. Insulin antibodies were high at 16.2 nmol/L (normal: 0–0.02), confirming IAS. The patient started oral Prednisolone 40 mg daily and reported being symptom-free at the 1-month follow-up.

Conclusion: This case series highlights the significance of considering insulin autoimmune syndrome (IAS) in the differential diagnosis of endogenous hyperinsulinemic hypoglycemia, particularly in Arab populations where IAS may be underrecognized. Additionally, this series advocate for the prudence of postponing pancreatic imaging studies until insulin antibodies are requested. Most reported cases are self-limited or mild and can be effectively managed with dietary modification like small, frequent meals low in carbohydrates to avoid postprandial hyperglycemia and subsequent insulin spikes. Other treatment options may include acarbose to reduce carbohydrate absorption, diazoxide, and octreotide to restrict insulin release. More severe cases may require corticosteroids or occasionally steroid-sparing immunosuppressants.

P80. Specific Health-Related Quality of Life among Thyroid Cancer Survivors

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Introduction: Although thyroid cancer generally has a favorable prognosis, there is increasing concern about cardiovascular risks among survivors. We conducted this study to assess specific quality of life among an Algerian population of thyroid cancer survivors.

Methods: We conducted an observational study from January 2021 to July 2022, involving patients with thyroid cancer from eastern and southeastern Algeria. The Thyroid Cancer-specific Questionnaire (THY34) from the European Organization for Research and Treatment of Cancer (EORTC) was used to evaluate their quality of life.

Results: The study included 342 patients, with 88.9% being women. The average age was 48 years (range: 21–85). Papillary thyroid cancer was the most common type, accounting for 82% of cases. Most patients (93%) had TNM stage I or II. At the time of evaluation, the mean survival duration was 4 years (range: 6 months to 32 years), and 74.5% had an excellent response to therapy. Quality of life was notably affected, with significant levels of fatigue (40.72 ± 26.30) and anxiety (40.99 ± 25.82). Joint pain (39.09 ± 31.88) and temperature intolerance (37.68 ± 32.27) were also prevalent issues. There was a notable difference in quality of life between women and men. However, patients reported good social support, with a score of 81.87 ± 21.50.

Conclusion: The quality of life of thyroid cancer survivors is impacted across several domains, particularly in terms of fatigue, anxiety, joint pain, and temperature intolerance. Future research should include prospective longitudinal studies that assess quality of life at baseline and at follow-up intervals to gain deeper insights into these challenges.

P81. Successful Reduction/Stabilization in Volume of an Invasive Nonfunctioning Pituitary tumor with Pasireotide: A New Horizon for a Challenging Disease?

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Introduction: Invasive nonfunctioning pituitary neuroendocrine tumors (nfPitNETs) are a challenge to treat, with a high recurrence rate and a high morbidity. Treatment with somatostatin analogues (SSAs) has been attempted in subsequent line therapy in these tumors, but results have not previously been encouraging.

Case Description: This case report explores the use of pasireotide in a patient with nfPitNET. Pasireotide therapy resulted in tumor stabilization and significant clinical improvement in a patient with a challenging, treatment-resistant nfPitNET. In a patient with aggressive, recalcitrant nfPitNET, after 6 months of pasireotide treatment the tumor growth was arrested/tumor size was reduced, with a marked improvement in patient-reported symptoms and quality of life. This original case poses the intriguing possibility that pasireotide may prove to be beneficial in resistant, invasive nfPitNET.

Conclusion: We described a successful reduction/stabilization in volume of an invasive nonfunctioning pituitary tumor with pasireotide. This may present a new horizon for a challenging disease.

P82. Teprotumumab for Graves' Ophthalmopathy: A Review of Efficacy and Safety

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Introduction: Thyroid eye disease (TED), also known as Graves ophthalmopathy, is a debilitating autoimmune condition associated with Graves' disease. It affects the orbital tissues around the eyes, leading to inflammation, proptosis (eye bulging), diplopia (double vision), and, in severe cases, vision loss. TED is not only disfiguring but can severely impact the quality of life of affected individuals. Current treatment options for TED include corticosteroids, radiation therapy, and surgery. While these treatments can reduce inflammation and address certain symptoms, they often provide incomplete relief and are associated with significant side effects. Thus, there is a critical need for more effective and targeted therapies to manage the disease. The aim of this systematic review is to evaluate the efficacy and safety of teprotumumab in patients with thyroid eye disease. Specifically, this review will assess outcomes such as reductions in proptosis, improvements in diplopia, quality of life, and the incidence of adverse events associated with the use of teprotumumab.

Methods: A comprehensive literature search was conducted by searching electronic databases such as ResearchGate, PubMed, ScienceDirect, and Google Scholar using the terms "teprotumumab," "thyroid eye disease," "Graves' ophthalmopathy," "proptosis," "diplopia," and "quality of life." Inclusion criteria were: (1) randomized controlled trials (RCTs), cohort studies, and case–control studies; (2) studies evaluating teprotumumab for TED; (3) studies reporting outcomes on proptosis, diplopia, quality of life, and adverse events; (4) peer-reviewed publications in English. Exclusion criteria included: (1) studies not involving teprotumumab or TED; (2) studies with insufficient data; (3) case reports, editorials, or opinion pieces.

Results: A total of seven randomized, double-masked, placebo-controlled trials evaluating the efficacy and safety of teprotumumab in treating moderate-to-severe thyroid eye disease (TED) were included in this systematic review. The trials varied in design and follow-up periods but consistently demonstrated the efficacy of teprotumumab across different outcome measures.

Conclusion: In summary, this systematic review underscores the effectiveness of teprotumumab in reducing proptosis and improving the quality of life for patients with TED. The consistent results across multiple studies reinforce its role as a significant treatment option, though continued research is necessary to address existing knowledge gaps and ensure a comprehensive understanding of its long-term benefits and safety along with identifying optimal dosing regimens.

P83. A Case of Paget's Disease of Skull: Case Report and Literature Review

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Introduction: In Paget's disease of the bone, a metabolic bone disease with an unknown cause, an increased phase of resorption is followed by an aberrant osteoformation phase. Despite being rare in Africa, the Middle East, and Asia, the most prevalent occurrence is in Europe. The only way to accidentally detect it is with radiographic evidence or an elevated alkaline phosphatase level. The use of bisphosphonates encourages the control of bone turnover and aids in the prevention of issues like fractures.

Case Description: Case presentation: a 60-year-old male presents to clinic with complaints of bone pain mainly neck, back, and hip which increased the suspicious of Paget disease versus multiple myeloma. After further investigation by laboratory and radiological analyses, the diagnosis of Paget disease was confirmed and patient started on bisphosphonate. A rare presentation of Paget disease of skull. Patient started on bisphosphate and was followed up using bone-specific serum alkaline phosphatase and symptoms after treatment.

Conclusion: Potential problems including pathological fractures, arthritis, hearing loss, and other neurological disorders can be avoided with the aid of an early diagnosis. A bone illness called Paget disease may initially show no symptoms. It can be identified by its recognizable radiologic characteristics. Many powerful bisphosphonate compounds are now readily available as a result of treatment advancements, and the majority of patients have normal or almost normal bone turnover indices.

P84. A Case of Hürthle Cell Adenoma of Thyroid: Case Report and Literature Review

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Introduction: Both benign (Hürthle cell adenoma) and malignant (Hürthle cell carcinoma) Hürthle cell neoplasms are possible. Hürthle cell carcinoma, which makes up 5% of all differentiated thyroid carcinomas, is an uncommon tumor. Due to cytomorphologic characteristics that overlap with other follicular-patterned lesions, thyroid follicular adenoma and carcinoma as well as Hürthle cell adenoma and carcinoma can be difficult to diagnose cytologically. As a result, it is exceedingly challenging to distinguish between these two entities before surgery, and this is only made feasible by the pathohistological analysis of the removed thyroid tumor.

Case Description: A 39-year-old female presented to our clinic with thyroid nodule since 7 years with suspicious follicular neoplasm in FNA biopsy, in March 2022 she underwent total thyroidectomy. The sample of pathology showed Hürthle cell adenoma. Hürthle cell adenoma is a rare thyroid tumor diagnosed by pathohistology and completion the treatment by total thyroidectomy.

Conclusion: Only a histological assessment could clearly distinguish between Hürthle cell adenomas and Hürthle cell carcinomas. Patients with cytologically confirmed Hürthle cell tumors should proceed with total thyroidectomy especially if the tumor is greater than 1 cm.

P85. A 3-M Syndrome Presentation from Oman

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Introduction: 3-M syndrome is an extremely rare autosomal recessive genetic disorder, and is characterized by severe intrauterine and postnatal growth retardation. The diagnosis is primarily based on clinical and radiological findings which further confirmed through genetic analysis. We aimed to present an extremely rare genetic disorder presenting with typical features of 3-M syndrome which confirmed through genetic analysis.

Case description: A 3-year-old female child was referred to the endocrine clinic in the National Diabetes and Endocrine Centre, for short stature assessment. She presented with disproportionate short stature. She was noted in antenatal screening to have femur length less than 1%. Her birth weight was 2.1 kg. Family history: consanguineous parents and positive family history of short stature. Other aspects in history are unremarkable. On physical examination: weight was 8.5 kg (<3rd centile), height was 76.3 cm (<3rd centile). Upper limb 41 cm, lower limb 35 (UL:LL 1.2). Ribs were prominent; bilateral equal air entry, no added sound; distended abdomen with no tenderness. The musculoskeletal system revealed disproportionate short stature, short proximal segment of upper limb, lordosis, and scoliosis. Normal development and intelligence. Her whole exome sequencing confirmed a homozygous pathogenic variant in the CUL7 gene. The result is consistent with a genetic diagnosis of autosomal recessive 3-M syndrome.

Conclusion: 3-M syndrome is an extremely rare autosomal recessive genetic disorder, characterized by low birth weight, short stature (dwarfism), characteristic abnormalities of the head and facial area, distinctive skeletal malformations, and/or other physical abnormalities. The intellectual and endocrine functions are unaffected. The prevalence of 3-M syndrome is unknown. About 100 individuals worldwide with this disorder have been described in the medical literature. The diagnosis of 3-M syndrome is primarily based on clinical and radiological findings which are further confirmed through genetic analysis. Three pathogenic genes associated with 3MS have been identified: *CUL7* on chromosome 6p21.1, *OBSL1* on chromosome 2q35-36.1, and *CCDC8* on chromosome 19q13.2-q13.32. The treatment of 3-M syndrome is directed toward the specific symptoms that are apparent in each individual. Treatment may require the coordinated efforts of a team of specialists. Pediatricians, physicians who specialize in treating skeletal disorders (orthopedists), dental specialists, and/or other health care professionals may need to systematically and comprehensively plan an affected child's treatment. Genetic counseling will be of benefit for affected individuals and their families.

P86. Prevalence of Thyroid Nodules and Cancer in Acromegaly

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Introduction: Patients with acromegaly have special preponderance for thyroid nodules and cancer, due to proliferative and anti-apoptotic properties of GH and IGF-1. No studies from the Arabian Gulf have been reported till recently.

Methods: A cross-sectional cohort study of patients with acromegaly who are attending our endocrine service at Hamad Medical Corporation utilizing our electronic database patient records (Cerner). Clinical, morphological, cytological, and histological data were assessed from the patients who underwent high-resolution thyroid ultrasonography. A group of patients without acromegaly who were sent to the Thyroid FNA Clinic were included as control.

Results: A total of 20 patients with acromegaly were found to have thyroid nodules, of whom only 10 patients satisfied the ATA criteria for FNA. A group of 60 nonacromegalic patients who underwent FNA for suspicious thyroid nodules matched for the study group for age and sex were included as control. Of the acromegalic patients, 5 were found to have papillary thyroid carcinoma (PTC), 4 were benign, and 1 case showed atypia of unknown significance (AUS). Of the control group, 12 cases were found to have thyroid carcinoma, of whom 9 had PTC, 1 patient had follicular variant of PTC, 1 patient had follicular thyroid carcinoma, and 1 patient had medullary thyroid carcinoma, 35 were benign, 8 had AUS, 1 FLUS, and 1 case unknown.

Conclusion: The topic of excess cancer risk in patients with acromegaly is debatable. Recent studies reported some excess risk of thyroid cancer and nodules, especially with active disease. Even compared with a highly selected group for risk of thyroid cancer, our cohort from Qatar showed a very high prevalence of thyroid cancer, exclusively of differentiated papillary type. This is the first from the Gulf region which shows rather high prevalence. This finding call for more screening and more multi-center studies from the Gulf to gain more insight.

P87. Prolactinomas (Lactotroph PitNET Tumors) in Qatar: A Prima Fascie Analysis

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Introduction: Pituitary tumors despite being rare, but their clinical presentation and morbidities could be diverse and challenging. Among pituitary tumors, lactotroph tumors represent the majority, with an incidence rate of 2.2 per 100,000 population, and a prevalence rate of 44.4 per 100,000 population. Data from the Arabian Gulf are sparse. We aimed to assess the epidemiology of these tumors in Qatar using an electronic database of the leading health institution in Qatar, and to map out its various characteristics, morbidities, and clinical outcome.

Methods: This is a cross-sectional study. A full electronic database of patients labelled as suffering from prolactin secreting pituitary adenoma in the period from 2015 to 2024 were identified. Here we present a preliminary analysis of the first 70 patients identified from this cohort.

Results: Data were available for analysis from 68 patients, mean age $\pm$ SD of 42 ± 13 years, of them 53 are females, an average tumor size of 107 mm $\pm$ 10 mm, of these 66% were microadenoma, and 34% macroadenomas. The majority of patients were non-Qatari Arabs, who represents 41.2%, with Asians at 25%, while indigenous Qataris were 17.7%, while 6% were Africans, and 85 from other ethnic background. Galactorrhea was an issue in 11% of patients, menstrual irregularity was a presentation in 28 of 42 female patients, and infertility was an issue in 52% of patients. Hypertension was present in 19% of patients, diabetes in 11.7%, and obesity in 72%. All patients were treated medically with dopamine agonist therapy (cabergoline used in 93%), and only 5 patients underwent pituitary surgery.

Conclusion: This is the first report from Qatar, a rapidly developing and a young nation in the Arabian Gulf, that examined prolactin secreting pituitary tumors. The soon available full data will add to the expanding literature, from a region which hitherto has meagre data on such an important disease.

P88. Acromegaly Case Supports Hypercoagulability Theory: Acute Stroke and Embolism

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Introduction: Acromegaly is an uncommon condition with an occurrence rate of 2.8 to 13.7 cases per 100,000 individuals. It arises from excessive release of growth hormone. Most patients are diagnosed at a later stage, experiencing an average delay of 4.5 to 5 years in diagnosis due to the gradual progression of the condition. Typical clinical features of acromegaly include acral enlargement (86% of cases), changes in facial appearance (74%), excessive sweating (48%), joint pains (46%), and headaches (40%). Additional symptoms include hypogonadism, fatigue, weight gain, and galactorrhea. Acute ischemic stroke (AIS) is a prevalent cardiovascular complication, ranking second to ischemic heart disease (IHD) in terms of its impact on disability and mortality in high-income countries worldwide. Pulmonary embolism (PE) represents a significant contributor to mortality, morbidity, and the need for hospitalization on a global scale. In the year 2004, venous thromboembolism was responsible for the deaths of more than 317,000 individuals in six European nations, which collectively had a population of 454.4 million. Rarely, acromegaly has been reported to present with pulmonary embolism. Here, we add weight to the theory they advocated that acromegaly may be a hypercoagulable state as we report a case from our pituitary clinic who presented with pulmonary embolism, which led to him being diagnosed with acromegaly.

Case Description: A 52-year-old man with T2D and hypertension presented with sudden shortness of breath and chest pain. He was diagnosed with a pulmonary embolism after elevated D-dimer levels and a CT pulmonary angiography. He received anticoagulation therapy and was noted to have signs of acromegaly, confirmed by elevated serum IGF-1 and growth hormone levels and a brain MRI showing a pituitary macroadenoma, leading to surgery. Two years later, he experienced right-sided weakness due to a stroke, managed with thrombolytic therapy, and follow-up indicated some regression of the stroke lesion but residual pituitary tissue remained.

Conclusion: Hypercoagulability is a significant and often overlooked complication of acromegaly, potentially leading to serious outcomes. Future research in acromegaly should address this issue, aiming to determine its prevalence, underlying pathophysiological mechanisms, and effective preventive measures

P89. Assessment of Factors of Poor Glycemic Control among Diabetics, Atbara Sudan

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Introduction: Poor glycemic control among individuals with diabetes is influenced by various factors. These include inadequate self-management practices, lack of proper education and awareness about diabetes management, limited access to health care services, nonadherence to medication and dietary recommendations, and comorbidities such as stress. Understanding these factors is crucial for developing effective interventions to improve glycemic control in this population. We aimed to determine the poor glycemic control in patients with Type 2 diabetes in Atbara diabetes centers in 2023.

Methods: An observational, descriptive cross-sectional multicenter-based study was conducted in diabetes care centers in Atbara from June to December 2023 and included Sudanese patients with Type 2 diabetes attending the care centers.

Results: The majority of the participants were aged between 40 and 60 years (47.3%), females (56.4%), married (74.3%), and from urban areas (74.8%). Patient-related factors showed that many participants had habits and lifestyles that negatively impacted their health, such as obesity (20.8%) and sedentary lifestyles (15.1%). However, most participants had good medication adherence and awareness of diabetes control (68.6 and 53%, respectively). Oral hypoglycemic agents were the most common form of treatment (55.6%). A significant portion of participants reported experiencing a stressful lifestyle (52.5%), and hypertension was a commonly reported chronic disease. The study also examined service-related factors, including counseling for diabetes care and accessibility of health care services. Only 51.9% of participants had well-controlled diabetes. The analysis found that age, medication adherence, and awareness of diabetes were significantly associated with glycemic control. Participants above 60 had a higher proportion of poor glycemic control compared to those below 40. Receiving counseling and undergoing regular monitoring and testing were also associated with better glycemic control. Predictors of poor glycemic control included age above 60, poor medication adherence, poor

awareness of diabetes, and not undergoing regular monitoring and testing.

Conclusion: Just over half of the participants had well-controlled diabetes. Factors that contribute to poor glycemic control include inadequate self-management practices, lack of proper education and awareness about diabetes management, limited access to health care services, nonadherence to medication and dietary recommendations, and comorbidities such as stress.

P90. Assessment of People at Risk to Develop Prediabetes Using the American Diabetes Association Risk Score in Sudan

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Introduction: Prediabetes is a major public health problem, often leading to T2D worldwide. It presents a challenge for the health care system now and in the future. It is crucial to develop a robust way to early detection and hence effective interventions. The American Diabetes Association (ADA) risk score offers a rapid way to screen for diabetes.

Objective: We aim to develop a valid and reliable self-assessment for identifying individuals at risk of pre-diabetes.

Methods: We conducted a national cross-sectional community-based study, using multi-stage cluster-random sampling technique, we targeted Sudanese adult citizens aged 18 years across various states, between April and May 2023. The study was adopted a self-administered online questionnaire as a collection tool, implementing the American Diabetic Association score as a reference.

Results: A total of 2,058 persons participated in the study across many states in Sudan. 77% of them are under 40 years old and 64% are females. 52% had a first-degree relative with diabetes, and 14% had hypertension. Physical activity was reported by 49% of the participants and most individuals (61%) had a BMI under 25. Considering ADA risk categories, 14% were classified as high risk. However, this percentages vary between states with the high-risk group accounting for 38% of participants from Kassala state. Chi-squared test for association revealed that hyperlipidemia and atherosclerosis are more prevalent in the high-risk group (<0.001). Also, female participants with a history of gestational diabetes were more likely to be in the high-risk group (<0.001). Finally, regression analysis revealed that a history of diabetes (OR: 4.55, <0.001), hyperlipidemia (OR: 3.57, <0.001), and atherosclerosis (OR: 2.09, $p = 0.035$) significantly increased the odds of being categorized as high risk.

Conclusion: The study revealed that a notable portion of Sudanese population particularly those with family history of diabetes are at increased risk, hence, highlighting targeted public health initiatives for early detection and intervention to mitigate the burden of diabetes on health care.

P91. Impact of Inflammatory Bowel Disease on the Linear Growth among Omani Children

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Introduction: The inflammatory bowel diseases (IBDs) are chronic inflammatory disorders of the gastrointestinal tract. IBD usually common in adolescence and young adulthood, with a rising incidence in pediatric populations. No previous studies have been conducted in Oman examining the impact of IBD on linear growth in pediatric population. Hence, we aim to look for this impact to provide us with a strong basis for those children with IBD to clarify the risk factors, the importance of close growth monitoring, and early intervention to maximize their normal growth to improve the quality of life.

Methods: A retrospective cohort study including Omani children and adolescents under the age of 18 years who were diagnosed to have IBD either in SQUH or RH were included. The growth parameters were analyzed using GrowthXP software.

Results: A total of 35 patients, 18 males (51.4%) and 17 females (48.6%), with a median age of 9.9 years and a mean of 9.1 years $\pm$ standard deviation of 4.4 years were included. Twenty-two patients had Crohn's disease (62.9%), while 13 had ulcerative colitis (37.1%). There were five patients (14.3%) who were initially short at time of diagnosis (height < -2 SDS). After 3 years of follow-up, four patients (11.4%) found to be short, two of them were initially short to start with, three of them had flare-up during the 3 years of follow-up. Elevated CRP and ESR were found in 50 and 75% respectively of patients with IBD and short stature. However, patients with normal stature also had elevated CRP and ESR.

Conclusion: IBD is a rare disease among pediatric population with predominant CD. IBD could have an impact on the linear growth either at time of diagnosis or after treatment initiation if relapses occur. More studies are needed to have further understanding of other contributing factors or to identify other biochemical markers that could help to predict the impact on the linear growth, as this study showed inflammatory markers such as CRP and ESR are not necessarily good markers to reflect on the impact of IBD on the linear growth.

P92. Audit of the Management of Subclinical Hypothyroidism in Al-Madina Primary Health Care Center

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Introduction: Subclinical hypothyroidism (SCH) is a laboratory diagnosis that is often misinterpreted by primary health care physicians and results in unnecessary referrals, anxiety, and dissatisfaction of the patients. The aims of this project are to improve quality of care in managing cases of SCH and to decrease the unnecessary referrals to endocrinology department.

Methods: Data collected retrospectively by the author for 12 months duration from patients' electronic files and analyzed by Excel sheet. List obtained by administration, searching for patients' visits with the codes: subclinical hypothyroidism, high thyroid stimulating hormone level, elevated TSH, with a final total number of patients $n = 48$. Audit criteria (set according to the ATA/AACE and ETA recommendations): (1) ordering thyroid function test (TFT) after 2 to 3 months for patients who presented with elevated thyroid stimulating hormone (TSH) and normal free thyroxine (FT4), ordering TPOAB for evaluating patients with subclinical hypothyroidism, giving the correct diagnosis for patients presented with an elevated TSH level with normal

FT4 after repeating TFT, starting levothyroxine for patients who have SCH with TSH above 10 mIU/L and to find out the percentage of referrals to endocrinology clinic and whether it is indicated or not. .

Results: Among 48 patients, doctors ordered to repeat TFT after 2 to 3 months for 46% of patients who presented with elevated TSH and normal FT4, on the other hand the percentage of ordering TPOAB for evaluating patients with elevated TSH and normal FT4 is 48%. The diagnosis of SCH was given to 92% of patients who have elevated TSH levels with normal FT4 after repeating TFT, levothyroxine was started for 100% of patients who have SCH with TSH above 10 mIU/L, and the percentage of referrals to endocrinology is 19% with 78% of referrals are unindicated.

Conclusion: The results showed pitfalls in the quality of care and unnecessary referrals for cases of subclinical hypothyroidism in Al-Madina PHC, in which the action to make a change was taken.

P93. Differential Cardiovascular Risks among Two Elderly Women

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Introduction: Both the management of hyperglycemia and avoidance of hypoglycemia are important considerations in the management of elderly people with T2D. The following two cases of uncontrolled diabetes and cardiovascular risks were managed virtually, on Whatsapp.

Case Series: Case 1: a 64-year-old Indian housewife with T2D (2 years) had polyuria, polydipsia, weight loss, and fasting blood glucose levels up to 300 mg/dL and RBG up to 495 mg/dL, for 6 months. Unremarkable past and family history. Vitally stable. BMI 35 kg/m^2, HbA1c 10.6%. Urinalysis: pyuria. Urine C/S: no growth. Other labs unremarkable. SMBG reaching max. up to 467 mg/dL. The patient's ADA blood glucose targets were of a healthy person (HbA1c < 7–7.5%, fasting glucose 80–130 mg/dL, bed-time glucose 80–180 mg/dL). Her 10-year ASCVD risk was 9.5%. Initially, the patient was put on Metformin, a sulfonylurea (stopped later), a statin, and an oral antibiotic for suspected UTI. Later on, Glargine (300 units) and weekly Semaglutide were added. She was also put on intermittent, subcutaneous, flash glucose monitoring. AGP metrics—latest value (06.06.2023) and the older value in brackets (21.03.2023): time in range 90% (60), time above 180 mg/dL 0% (32), time below 70 mg/dL 2% (0), Glucose management indicator 5.9% (7.5). (On May 18, 2023) BMI 33 kg/m^2 and HbA1c 7.5%. A DPP-4 inhibitor replaced Semaglutide and Glargine. *Case 2*: an 86-year-old Indian bed-bound housewife had type 2DM (15years), HTN, primary hypothyroidism, vitamin D deficiency, depressive illness and chronic urinary symptoms, and bacteriuria. On thyroxine, antidepressants, B-blocker, calcium channel blocker, and a statin. Vitals: stable. BMI 31.33 kg/m^2. On February 14, 2023, FBG 387 mg/dL, 2 hour postprandial BG 426 mg/dL. HbA1c 13.8%, S. creatinine 1.30 µmol/L (eGFR 40 mL/min). LFTs (ALP 278 IU/L, GGT 162 IU/L). Urinalysis: pyuria + *E. coli* + on urine C/S. ASCVD risk could not be calculated. Her ADA blood glucose targets were complex (HbA1c < 8%, fasting blood glucose 90–150 mg/dL, bed-time glucose 100–180 mg/dL).

Conclusion: The ASCVD risk assessments in old age with diabetes are variable and are only possible up to 79 years, and this is one of the drawbacks of this risk engine. SCORE2-Diabetes risk calculator is meant for European people with diabetes, and it does not apply to other populations.

P94. Two Sides of the Same Coin

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Introduction: Besides the advantages of the incretins in obesity, diabetes, and cardio-renal benefits, they can also prove hazardous, e.g., acute kidney injury, diabetic retinopathy, cholelithiasis, and hypersensitivity reactions.

Case description: A 48-year-old Saudi housewife presented to the emergency room on July 19, 2023, with dyspnea, chest tightness, swollen lips, peri-oral numbness, nausea, and vomiting for an hour before arriving in the ER. She had received a shot of Inj. Tirzepatide about 12 hours before the onset of her symptoms. Previously, she had been receiving Tb Citalopram, 10 mg/d, from outside, supposedly for the depressive illness. The patient had previously been on weekly Liraglutide for obesity from elsewhere and was tolerating it well. Recently, she had switched over to Tirzepatide. No known allergies before. No other co-morbidities. Past and family history unremarkable. Vitals: BP 122/86 mmHg, pulse 133/m, regular, RR 26/m, O_2 sat. 100% on room air, temp. 36.7 F. BMI 28.2 kg/m^2. Apprehensive, distressed, and using accessory muscles of respiration. JVP not raised. Thyroid not enlarged. Rest: normal. The patient was diagnosed with delayed anaphylaxis to Tirzepatide and had high anion-gap metabolic acidosis (pH 7.38, PCO_2 25 mmHg, HCO_3 19.4 mmol/L, anion gap 15.6 mmol/L, serum lactate 8.9 [0.5–1.9 mmol/L]), which was associated with hypokalemia 2.6 (3.5–5.1 mmol/L) and hypophosphatemia 0.77 (0.81–1.45 mmol/L). Her renal, liver, and thyroid functions were normal, random blood glucose 7.94 [4.1–5.89 mmol/L], and D-dimer 0.6 [0.22–0.45 µg/mL]. ECG: sinus tachycardia. CXR unremarkable. She was managed with oxygen, epinephrine, steroids, H1 blocker, potassium and phosphate replacement. Ultimately, the patient got improved and was discharged on an oral steroid and anti-histamine for further 3 days.

Conclusion: Therefore, Tirzepatide usage can result in both IgE-mediated immediate (within 1–6 hours) or T-cell-mediated delayed (1–45 days) hypersensitivity reactions. Cross-reactivity between GLP-1 receptor agonists is unknown, so caution should be exercised in using them.

P95. Prevalence and Associated Factors of Vitamin D Deficiency in Type 2 Diabetes Patients

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Introduction: Among all metabolic noncontagious diseases, the frequency of diabetes DM is considerably higher, contributing to morbidity, mortality, and the costs of health provisions. Globally, more than 1.5 million deaths are attributed to DM, making it the 9th largest mortality cause. The major functions of vitamin D are to keep blood calcium and phosphorous at supersaturating concentrations, which are necessary for the development and maintenance of the skeletal system, its deficiency can cause skeletal impairments, with osteomalacia and osteoporosis being more common among adults and rickets among children. Vitamin D adjusts the intracellular calcium levels, exerting an indirect effect on insulin secretion. Various cross-sectional studies conducted during the last 50 years mention in the "National Health and

Nutrition Examination Survey (NHANES)" database that vitamin D3 has a significant association with insulin resistance. A regional study indicated that vitamin D deficiency (VDD) was noted among 74.1% of T2D patients. Researchers from KSA revealed that 93.8% of T2D patients had VDD. Variations exist regarding the burden of VDD among T2D patients, and not much data from South Punjab, Pakistan, are available exploring the subject; hence, it motivated us to plan this study. This research aimed to determine the prevalence and associated factors of VDD in T2D patients.

Methods: This cross-sectional study was conducted at the Outpatient Department of Aleena Hospital, Bahawalpur, Pakistan, from January 1, 2023 to June 30, 2023. We analyzed patients of either gender aged above 18 years and diagnosed cases of T2D for a minimum duration of 6 months. At the time of enrollment, demographic, and clinical characteristics were noted. VDD was described as serum vitamin D levels below 20 ng/mL, and insufficiency between 20 and 29 ng/mL, whereas sufficiency or normal vitamin D levels were declared >30 ng/mL.

Results: In 90 patients, 62 (68.9%) were females. The mean age and BMI were 51.52 ± 10.64 years and 27.51 ± 5.23 kg/m^2, respectively. The mean HbA1c was 9.01 ± 1.87. The mean vitamin D levels were 19.07 ± 8.4 ng/mL. VDD was observed in 55 (61.1%) and insufficiency in 26 (28.9%), whereas normal levels were found in 9 (10.0%) patients. Relatively younger age ($p = 0.029$), rising duration of diabetes ($p = 0.026$), higher HbA1c ($p = 0.034$), and hypertension were noted to have statistically significant association with VDD.

Conclusion: Evaluation of vitamin D status in type-2 diabetes revealed that vast majority of these patients were having inadequate levels of vitamin D. Relatively younger age, duration of diabetes, higher HbA1c, and hypertension were having significant association with vitamin D inadequacy.

P96. Risk of Diabetic Foot Ulcer in Patients of Diabetes Visiting a Private Clinic

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Introduction: In the recent decades, diabetes (DM) has become a global health issue affecting both developing and developed countries. Global estimates have shown that more than 422 million adult population accompany DM while these figures are estimated to escalate around 642 million by year 2040. As the burden of DM is increasing, the prevalence of both short-term and long-term DM-related complications is expected to rise. Diabetic foot ulcer (DFU) is considered to be a frequent and important complication of DM and represents a serious health care issue impacting a significant amount of morbidity and mortality. In Pakistan, little is known about the risk of DFU in patients visiting diabetes clinics, while it seems important to estimate the risk and possible factors associated with DFU. We aimed this research to evaluate the risk of DFU among DM patients visiting the outpatient department of a private health care setting.

Methods: A cross-sectional study was performed at the outpatient medicine department, Aleena Hospital, Bahawalpur, Pakistan, from July 1, 2021 to June 30, 2022. We included patients of both genders aged above 18 years and known cases of DM with disease duration of ≥6 months. Medical records were checked, clinical history was taken, and foot examination was performed.

Results: In a total of 781 patients, 394 (50.4%) were female. The mean age, weight, height, and BMI were 50.19 ± 12.21 years, 74.08 ± 16.41 kg, 5.52 ± 0.31 feet, and 30.80 ± 7.07 kg/m^2, respectively. Residential status of 498 (63.8%) patients was rural. There were 778 (99.6%) cases with T2D. There were 443 (56.7%) patients who had no risk for DFU, while neuropathy, PAD/foot deformity, and neuropathy + PAD/foot deformity were identified among 205 (26.2%), 97 (12.4%), and 36 (4.6%) patients, respectively. Increasing age ($p < 0.001$), residential status as rural ($p = 0.025$), higher BMI ($p = 0.006$), increased disease duration of DM ($p = 0.002$), hypertension ($p = 0.050$), and smoking ($p = 0.006$) were found to have a significant association with risk of DFU.

Conclusion: A high proportion of DM patients were at risk of DFU. Increasing age, rural residential status, higher BMI, increased disease duration of DM, hypertension, and smoking had significant associations with the risk of DFU.

P97. Clinical Utilization of NT-proBNP in Asymptomatic Diabetic Patients

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Introduction: An audit of diabetes management targets and clinical utilization of NT-proBNP in asymptomatic diabetic patients. T2D is a global epidemic, projected to affect over 592 million people worldwide by 2035. Patients with diabetes have twice the risk of developing heart failure. The prevalence of heart failure in diabetes is up to 22% and may occur even in the absence of hypertension, coronary artery disease, or valvular heart disease. Measurement of a natriuretic peptide in diabetic patients on at least a yearly basis is recommended to identify the presence of stage B heart failure.

Methods: Prospective data of 110 patients were reviewed electronically and processed manually from January to March 2024.

Results: In this cross-sectional study, 110 random patients with a mean age of 58 years were included, of which 60% ($n = 66$) were men. The average duration of diabetes was 10.6 years. Data from seven care processes were analyzed. The overall mean glycated hemoglobin level was 8%, with 30.4% achieving HbA1c <7.0% and 64.5% achieving HbA1c <8.5%. Just over half (52.7%) were hypertensive, with nearly the same proportion achieving a target blood pressure of <140/90 mmHg. Although 59% of patients were on statins, the target LDL level of <2.6 mmol/L was achieved in only 60%. Established coronary artery disease was present in 10% of patients. The smoking rate was extremely low at 0.9%. One-third of patients (35%) had microalbuminuria. 10% had chronic kidney disease (eGFR < 60 mL/min/1.73 m^2). To assess for stage B heart failure, NT-proBNP >125 pg/mL was raised in only 8.2% ($n = 9$). In terms of treatment options, 54% were on SGLT2 inhibitors. Metformin, DPP-4 inhibitors, insulin, TZDs, and sulfonylureas were used by 92, 45, 20, 17, and 54% of inhibitors or ARBs.

Conclusion: The results of this audit were overall positive. However, they emphasized the plausibility of improving the current practice. Our individualized approach has helped us achieve better targets in the care process. Additionally, it supports the use of biomarkers such as NT-proBNP in a personalized manner for screening asymptomatic heart failure, as the positive screening rate is very low.

P98. A DPP4i-Induced Bullous Pemphigoid: Case Report

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Introduction: Bullous pemphigoid (BP) is the most common autoimmune bullous disease. It usually affects the elderly, and the etiology for what triggers the disease is not entirely clear. However, it has been associated with various medications, most commonly the dipeptidyl peptidase-4 inhibitors (DPP4i), and has an increased risk for mortality as well as long-term morbidity. We report the first case of DPP4i-induced BP report in KSA, discuss DPP-4i-associated BP, and highlight the current knowledge regarding the predictors of DDP-4i-associated bullous pemphigoid.

Case Description: A 71-year-old male with good functional status known to have hypertension on thiazide, diagnosed around 2014 with T2D, without any established complications, started initially on metformin and later, after maximizing metformin, had suboptimal control of his glycemic where Hba1c was around 8.5%, later he was started on Linagliptin in January 2024. On July 1, 2024, he presented to the emergency department with multiple fluid-filled bullae in his abdomen and limbs for 1 month, with numerous erythematous urticarial plaques with few targetoid appearances associated with pruritus with mucous membrane involvement. A skin biopsy from his thighs was performed, and the diagnosis of BP was confirmed by histologic findings showing a subepidermal blister containing eosinophils and direct immunofluorescence analysis (DIF) showing a linear deposit of IgG and C3 at the basement membrane. The patient was started on systemic corticosteroids and had significant improvement of the rash after 2 to 3 days, and he was discharged on prednisone. For the patient's diabetes, he was continued on his metformin as well as initiated on subcutaneous insulin.

Conclusion: There is an increased risk of BP in patients using DPP-4 inhibitor treatment, which is a widely used drug in the treatment of T2D. The exact mechanism of DPP-4i-associated BP is still unclear but is believed to be multifactorial, affecting the immune system. Further studies are required to understand the precise pathogenesis and characterize the association between DPP-4i and the development of BP, phenotype, and prognosis, and notably about the importance of replacing DPP-4i with other glucose-lowering agents in patients with BP.

P99. Adherence to Guideline Recommendations and Treatment Goals in Patients with Type 2 Diabetes in Kuwait

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Background: The prevalence of diabetes among adults in Kuwait is 24.9%, highlighting a critical public health issue. Despite established guidelines, many patients with T2D fail to achieve target glycemic and lipid levels and be placed on therapy to reduce cardiovascular (CVD) and renal complications. This study aimed to evaluate the achievement of American Diabetes Association (ADA) targets for HbA1c and low-density lipoprotein cholesterol (LDL-C) control and the use of SGLT2 inhibitors, GLP-1 receptor agonists (GLP-1 RA), and statins in indicated patients with T2D in Kuwait.

Methods: This is a cross-sectional retrospective study with chart reviews of patients with T2D attending internal medicine or diabetes clinics at Adan, Mubarak Al-Kabeer, and Jahra hospitals in Kuwait. Inclusion criteria include Kuwaiti patients aged 40 to 75 with T2D. Exclusion criteria are T1D, non-Kuwaitis, age 75, end-stage kidney disease on dialysis, chronic kidney disease with eGFR <20, and pregnant or breastfeeding women. Data collected were on demographics, anthropometrics, diabetes history, complications, LDL-C therapy, smoking, and laboratory tests.

Results: In this study, 362 patients with T2D were reviewed. Mean HbA1c was 7.8% (SD 1.8), and mean LDL-C was 2.35 mmol/L (SD 1.12). Only 35.6% of patients achieved the target HbA1c of $<7\%$. Older age, use of sulfonylureas, SGLT-2 inhibitors, and insulin were significantly associated with lower odds of achieving the HbA1c target. Atherosclerotic cardiovascular disease (ASCVD) was observed in 61% of the patients, while renal impairment was observed in 29.3% of them (eGFR < 60 mL/min/1.73 m^2) and albuminuria (albumin-to-creatinine ratio ≥ 30 mg/g) in 35.4%. Among patients with ASCVD, 46.6% were prescribed SGLT-2 inhibitors, while only 4.5% were prescribed GLP-1 RA. In patients with an eGFR <60, 34.6% were prescribed SGLT-2 inhibitors, and 7.7% were prescribed GLP-1 RA. Among patients with albuminuria (ACR ≥ 30 mg/g), 41.9% were prescribed SGLT-2 inhibitors, while 3.2% were prescribed GLP-1 RA. Among patients with T2D aged 40 to 75 years, 44.6% were on moderate-intensity statins, while 34.7% were prescribed high-intensity statins. In a subgroup of patients with ASCVD, 25% had LDL-C <1.4 mmol/L with 45% on high-intensity statins, while ezetimibe and PCSK9 inhibitors were prescribed to 19 and 2.3% of patients, respectively.

Conclusion: This study reveals suboptimal glycemic and lipid control in many Kuwaiti patients with T2D. The most common complications were ASCVD and albuminuria. Despite guideline recommendations, SGLT-2 inhibitors, GLP-1 receptor agonists, and high-intensity statins were insufficient in high-risk groups, highlighting the need for improved adherence to evidence-based therapies to enhance patient outcomes.

P100. Bone Modifying Agents: Patterns of Use, Incidence and Risk Factors of Adverse Effects.

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Introduction: One of the common sites of metastatic disease in solid tumors is the skeleton, and it usually originates from the breast, prostate, and other advanced cancers. The use of bone-targeted agents is essential in the prevention of SREs in bone metastasis. In Sultan Qaboos Comprehensive Cancer Care and Research Centre (SQCCCRC), both zoledronic acid (ZA) and denosumab (DE) are used in the treatment of SREs. ZA and DE have similar adverse reaction profiles, such as ONJ, electrolyte disturbance (calcium, phosphate,

magnesium, and potassium), nephrotoxicity, and osteonecrosis of the jaw.

Methods: An observational retrospective cohort study was conducted for 2 years (1.8.2021 to 31.7.2023). Patients' EHR (electronic health records), laboratory results, and medication charts were reviewed. We included all adult cancer patients who were diagnosed with bone metastasis secondary to a solid tumor and who were receiving bone-modifying agents (ZA and DE). Patients with bone-related diseases such as osteoporosis and taking bone-targeted agents for a different indication other than bone metastasis were excluded from the study.

Results: A total of 250 patients were included (ZA = 125, DE = 125). Apart from calcium disturbances, our findings showed a higher incidence of adverse events (AEs) among ZA versus DE group. Risk factors were associated with AEs like comorbidity in a univariate analysis (<0.001).

Conclusion: The use of BMAs was based on established guidelines. DE patients developed fewer AEs than ZA, indicating a better safety profile. Certain risk factors associated with AEs were identified, emphasizing the necessity of preventive measures such as electrolyte monitoring, calcium and vitamin D supplementation, and dental check-ups.

P101. Impact of the Diabetes Self-Care Management Educational Program among Patients with Type 2 Diabetes Attending Diabetic and Endocrine Center in Sulaimani City

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Introduction: Self-care behaviors can significantly reduce complications and control blood glucose. The DSME has been established to reduce complications of the disease, provide glycemic control, and improve overall health. The main objective of this study is to assess the effectiveness of the diabetes self-management education program for patients with T2D.

Methods: A quasi-experimental study was conducted on 196 patients. They were divided into two groups: experimental and control groups. Data collection started in September and October 2020, and the program was implemented from October 2020 to December 2020. A self-care questionnaire was developed to assess the patients' self-care behaviors, and HbA1c% and fasting blood glucose were used to observe patients' glycemic control. The clinical data were observed in both groups, before and after the intervention.

Results: The baseline data for the experimental group detected mostly poor and moderate self-care levels and after implementation of the program; they significantly progressed to good and moderate self-care levels <0.05. The number of patients with poor self-care levels was 81 after the program and decreased to 62. Targeted glycemic control doubled by the end of the program, $p = 0.001$. Hence, in the control group, the self-care levels, and targeted HbA1c declined after 3 months of follow-up.

Conclusion: The study explores a mean reduction in HbA1c, FBG, and BMI and improvements in self-care scores in the studied population. It indicates that the DSME program can positively affect diabetes control among patients.

P102. The Effect of Noncaloric Restricted, Low-Carbohydrate Diet in Reversing Type 2 Diabetes

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Introduction: Growing evidence shows that a low-carbohydrate diet can improve glycemic index in patients with T2D. This study examined the effectiveness of a noncaloric restricted, low-carbohydrate diet (NCRLCD) in improving glycemic control over 24 weeks in active Omani diabetic patients attending primary care settings at North Mawaleh Health Centre, Muscat.

Methods: This is a prospective, descriptive study with longitudinal follow-up and pre-test, as well as post-test comparison. Eighty-three patients were recruited. Blood was collected at baseline, 12 weeks, and 24 weeks. Each patient was advised to follow an NCRLCD (<80 grams of carbohydrate per day) and exercise recommendations. The primary outcome was glycated hemoglobin (HbA1c).

Results: Seventy-one patients were able to complete the study. Noncaloric restrictive low-carbohydrate diet showed a significant reduction in glycated hemoglobin in 24 weeks by 11.58%, from 7.12% (SD = 1.07) at week 0 to 6.28% (SD = 1.07) at week 24, p-value < 0.05. This reduction was noticed along with the adjustment of diabetic medications, with more than three-quarters of patients reaching optimal glycemic levels at the end of the study period. The mean weight showed a significant reduction from 82.63 (SD = 14.3) kg to 76.67 (SD = 14.90) kg, $p < 0.005$. However, linear regression failed to show any correlation between HbA1c and weight changes. Diabetic medication was stopped in 18 (25.4%) patients, reduced in 7 (9.8%) patients, increased in 2 (2.8%) patients, and remained unchanged in 44 (62.0%) patients.

Conclusion: In this study, a noncaloric restricted low-carbohydrate diet improved glycemic control in patients with type 2 DM. Further controlled studies are warranted.

P103. Transforming Diabetes Care: A Year-Long AI and Telemedicine Study

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Introduction: AI-driven digital health tools have integrated diabetes management, providing persistent involvement through mobile apps. These include features like personalized messages, pop-up alerts, auto-response systems, and digital logbook maintenance that enhance communication and save time for intervention. It is necessary to obtain real-world data on the effectiveness of these tools in improving patient outcomes. To evaluate whether AI-based remote monitoring tools such as personalized messaging, pop-ups, auto-feedback systems, digital logbook maintenance, and telemedicine can improve glycemic control, compliance, and adherence among patients registered on the Diabetes TeleCare mobile app within 1 year.

Methods: From January 2023 to December 2023, a prospective observational study was conducted involving 500 patients with T2D registered on the Diabetes TeleCare mobile app. Patients were given AI-enabled tools consisting of customized messages, pop-up alerts, automatic feedback, and digital logbooks. Bimonthly telemedicine consultations were also offered. Clinical outcomes, including HbA1c levels, blood pressure, treatment adherence, and lifestyle

modifications, were assessed at baseline (0 months), 6 months, and 12 months. Data were analyzed using paired *t*-tests and multivariate regression models.

Results: The trial had participation from all 450 of the total patients under observation. Mean HbA1c level improved significantly from a baseline value of 8.5 to 7.0% over 12 months (<0.001). The application's AI-driven notifications facilitated adherence rates, by increasing them by 40%, which constituted a substantial part, treatment, and lifestyle changes. User satisfaction was also very high with 93% of users having positive experiences with the app's features.

Conclusion: AI-powered remote monitoring tools, combined with telemedicine, dramatically improve diabetes management by improving compliance, adherence, and glycemic control. These tools provide a perspective which is valuable in terms of diabetes care, especially in resource-limited settings

P104. Outcome of Radiotherapy for Pituitary Macroadenomas: Tertiary Center Experience

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Introduction: Pituitary adenomas are common brain tumors, but only a few grow into macroadenomas, which can present with signs and symptoms of hypopituitarism and/or visual field defects secondary to direct pressure effects from enlarging adenoma, and this may require surgical removal and/or radiation therapy for postsurgical remnants. Although the impact of radiotherapy on pituitary function and size has been studied in the West, the data in the Arabian Gulf are limited. We aimed to assess the clinical, radiological, and hormonal functional status of patients who underwent radiotherapy at Tawam Hospital, over a follow-up of up to 5 years.

Methods: This was a retrospective observational study involving medical record review of all the patients receiving radiotherapy with the primary diagnosis of pituitary macroadenoma between January 1, 2012 and January 1, 2023. After reviewing over 600 pituitary adenoma patients, we included 16 patients in our study who had any form of pituitary radiotherapy (including gamma knife, beam, or stereotactic radiosurgery).

Results: A total of 16 patients (13 males) with macroadenoma who underwent radiotherapy modality were identified, with mean age of 41.8 ± 16.7 years, with the commonest clinical symptom at diagnosis being headache (37.5%, 6/16). Nonfunctioning pituitary adenomas (43.75%, 7/16), and growth hormone-secreting adenomas (43.75%, 7/16) were the commonest types of macroadenomas undergoing radiotherapy, and 93.75% (15/16) of the patient did not have pituitary hormone deficiency at the time of diagnosis. In addition, 93.75% (15/16) of patients had secondary radiotherapy post-surgery, while 1 had primary radiotherapy. Furthermore, 31.25% (5/16) and 50% (8/16) of patients developed new hormonal deficiencies post-radiotherapy at 1 and 5-year period, respectively. No adenoma progression was noted over 5 years post-radiotherapy.

Conclusion: Post-surgery secondary radiotherapy for pituitary macroadenoma can be a useful treatment option; however, it is associated with a 50% increased risk of developing a new hormonal deficiency over a 5-year period.

P105. Effects of Sodium-Glucose Transporter 2 (SGLT2) Inhibitors on Renal and Cardiovascular Function in People with Type 2 Diabetes

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Introduction: Sodium-glucose co-transporter type 2 inhibitors are the new class of glucose-lowering agents that have the potential role in reducing the risk of major adverse cardiovascular events and improving renal function outcomes. This review was designed to provide a deeper insight into the role of SGLT2 inhibitors in protecting the cardiac and renal functions among T2D patients by reviewing the recent literature that shed new light on the therapeutic potential of SGLT2 inhibitors and the involved reno-protective as well as cardio-protective mechanisms.

Methods: Systematic reviews and meta-analysis included 126 recent studies in the last 10 years. This systematic review was designed, conducted, and reported using the methods proposed in the Preferred Reporting Items for Systematic Reviews and Meta-Analysis statement (PRISMA) for evaluating the effects of SGLT2 inhibitors on renal functions and cardiac output in individuals with T2D patients. All the studies except clinical trials, which were published in English during the selected time frame from January 1, 2011 up to January 30, 2021 were included in this review. All the randomized controlled trials and systematic reviews regarding information on any SGLT2 inhibitor versus placebo or active control on human adults with T2D and animal studies were analyzed after the risk of bias assessment using the Cochrane Risk of Bias Tool. After completion of the initial search of the literature, a total of 23,087 hits for the term "SGLT2 inhibitors" were retrieved after the initial search. While narrowing the search to the phrase "SGLT2 protective effects," 10,486 hits were retrieved. After further narrowing down our search, a total of 126 publications that are potentially relevant were identified in PubMed, Google Scholar, and Cochrane Central Register. Of these studies, 35 original articles, 47 clinical trials, and 44 systematic reviews that met the inclusion criteria were selected for the systematic review.

Results: SGLT2 inhibitors produce effective hypoglycemic effects without causing any associated augmented risk of hypoglycemia among T2Ds. SGLT2 inhibitors decrease the adverse effects of renal events and mortality. Empagliflozin significantly declined in cardiovascular-related deaths and hospitalization due to heart failure (HF), i.e., both events decreased by 38% (cardiac-linked deaths) and 35% (hospitalization due to HF).

Conclusion: A total of 126 recent studies in the last 10 years were included in this systemic review to come to the following conclusion. SGLT2 inhibitors, a recent glucose-lowering drug class, lower the plasma glucose levels primarily by increasing glucose excretion from the body via urine. SGLT2 inhibitors provide significant protective effects on the cardiovascular and renal systems. SGLT2 inhibitors should be considered not only a viable but also a potent second-line treatment option for diabetic individuals with an accompanying risk of a cardiovascular event or those suffering from an underlying renal disease. These drugs also carry the risk of potential side effects such as increased frequency of urination, urinary tract infections, and acute kidney injury. Close monitoring is required, especially in patients who are already at risk of developing the above complications.

P106. Burden and Associated Factors of Overweight and Obesity among Type-2 Diabetes

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Introduction: Burden and associated factors of overweight and obesity among T2D attending a private health care facility in South Punjab, Pakistan were analyzed.

Methods: This cross-sectional study was performed at the outpatient medicine department, Aleena Hospital, Bahawalpur, Pakistan, from January 1, 2021 to November 30, 2022. We included 3,030 known cases of T2D with disease duration of $\geq$6 months. At enrollment, medical history was taken and clinical examination was performed. Demographic characteristics and BMI were noted while the blood sample was sent to institutional laboratory for HbA1c evaluation.

Results: In 3,030 patients with T2D, 1,528 (50.4%) were females, whereas the mean age was 50.09 ± 11.98 years. The mean duration of diabetes was 5.94 ± 5.89 years, while the mean HbA1c was 9.63 ± 2.29%. The mean BMI was noted to be 26.42 ± 5.65 kg/m^2, while 149 (57.7%) patents were obese, 462 (15.2%) were overweight, and 819 (27.0%) had normal BMI. It was observed that age ($p < 0.001$) and hypertension ($p < 0.001$) were having significant association with BMI categories. Multiple logistic regression model showed that obesity had a significant relationship with age between 31 and 45 years ($p = 0.029$) with adjusted OR of 1.5 (95% CI: 1.05–2.27) and hypertension ($p < 0.001$) with adjusted OR of 1.8 (95% CI: 1.49–2.14).

Conclusion: The burden of overweight and obesity was very high among T2D. Age between 31 and 45 years and hypertension were having a significant relationship with obesity.

P107. Clinical Management of Metabolic Syndrome in a Geriatric Outpatient Clinic in Qatar

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Introduction: Research on the clinical management of metabolic syndrome (metabolic syndrome) among older individuals in Qatar is limited. This study aimed to determine the clinical management of metabolic syndrome and associated risk factors.

Methods: A retrospective study was conducted to examine the risk factors for MetS (hypertension, diabetes, obesity, and hyperlipidemia) among patients aged $\geq$60 years who visited medical outpatient clinics in Rumailah Hospital, Doha, Qatar between November 1, 2016 and November 1, 2018.

Results: The mean age of the patients was 70.1 years, and 50% were male. Of the study population, 97% had metabolic syndrome with a 95% confidence interval (95.3–98.7). In addition, 46% of the patients were obese, 98% had diabetes, and 98% had hypertension. The most commonly prescribed medications for treatment included amlodipine for hypertension, metformin for diabetes, rosuvastatin for lipid-lowering, and bisoprolol for cardiovascular medicine.

Conclusion: This study found that metabolic syndrome (MetS) is common among the population attending geriatric outpatient clinics in Qatar. The majority of these individuals had high rates of diabetes, hypertension, and dyslipidemia. The early identification of at-risk patients through exercise programs may also delay or reverse the risks associated with MetS. More research, especially prospective and population-based studies, is required to improve preventative efforts and optimize metabolic syndrome treatment options in Qatar's older persons.

P108. EPAS1 Mutations Have Been Rarely Described in Patients (pts) with Paragangliomas: Three Cases

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Introduction: EPAS1 mutations have been rarely described in patients (pts) with paragangliomas (PGL) in association with cyanotic congenital heart disease (CHD), polycythemia, and some additional tumors. Here, we present three cases of PGL with closely located EPAS1 mutations. Despite the common gene location, their manifestations are different.

Case series: Case 1: a 14-year-old girl was found at age 9 years (years) to have polycythemia (Hb 177–195 g/L) and hypertension. At age 14 years, she was diagnosed to have multiple mid-abdominal and urinary bladder PGLs. U. normetanephrine was 35.8 µmol/day (Reference range: 0–3.43). No evidence of somatostatinoma so far. Family hx is negative for PGL. Whole exome sequencing (WES) revealed no germline mutations in PGL-associated genes. Tumor testing revealed a novel heterozygous EPAS1 variant (c.1589C>T, p.A530V). *Case 2:* a 32-year-old woman has a complex cyanotic CHD diagnosed since birth. She underwent five cardiac surgeries between 1993 and 2015. In 2011, she was diagnosed with two abdominal PGLs. She underwent surgery and remained free of disease until 2019, when she developed a recurrence with metastases (mets) to the liver and spine. She received external beam radiotherapy to the spine. Currently, PGL mets remained stable. WES was negative for any germline mutation, but tumor testing revealed a heterozygous EPAS1 mutation (c.1591C>T, p.P531S). *Case 3:* a 55-year-old man diagnosed to have an upper abdominal PGL with lung and bone mets at the age of 9 years. Biopsy from a right femoral met confirmed the diagnosis of bone PGL mets. He underwent four abdominal surgeries between 1978 and 2008 and received MIBG therapies six times with a cumulative dose is 586 mCi. His last surgery in 2008 revealed PGLs but also a nonfunctioning pancreatic neuroendocrine tumor (pNET). PGL mets remained stable in the previous 15 years. WES revealed no germline mutation in any of the known PGL genes, but tumor testing revealed an EPAS1 mutation (c.1592C>A, p.P531H).

Conclusion: EPAS1 mutations are very rare. In this series, we present three patients (pts) with EPAS1 mutations in three adjacent nucleotides (c.1589, 1591, 1592) in two adjacent codons (p.530–531). These mutations are located in a domain that is important for recognition by propyl hydroxylases that normally lead to inactivation and proteasomal degradation of HIF2a (EPAS1). Despite the common location, the manifestations are quite different. Although all of them developed PGL at a young age, Pt #1 had severe polycythemia, Pt #2 had complex CHD, and pt #3 had pNET. The first two patients had extensive mets but these mets have a smoldering course, especially in pt #3 who has been living with these mets for 44 years! Since EPAS1 mutations are usually postzygotic, as suggested by its involvement of more than one

organ, it is possible that the variable presentations of these same domain adjacently located mutations are related to the timing of their post-zygotic development. Another possibility is possible variable expression of the mutated EPAS1 in different tissues.

P109. High-Density Lipoprotein Co-localizes with Insulin in Pancreatic Islets

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Introduction: Very low-density lipoproteins and low-density lipoproteins play a in the development of DM. On the other hand, high-density lipoprotein (HDL) plays a part in maintaining the structural, biochemical, and functional integrity of insulin-producing pancreatic beta cells. Our project investigated whether HDL has any morphological relations with the hormone-producing cells of the endocrine pancreas of normal and diabetic rats.

Methods: Samples of the pancreas of normal and diabetic rats were removed, fixed in Zamboni solution, embedded in paraffin wax, and sectioned with a microtome. To determine the exact location of HDL molecules in the cytoplasm of islet cells, pancreatic tissue fragments of normal and diabetic rats were fixed in McDowell solution, dehydrated, embedded in LR White, and processed for transmission immune-electron microscopy.

Results: DM induced a large and significant (<0.05) reduction in the number of HDL-immuno-reactive cells. Immunohistochemistry showed HDL molecules in the cytoplasm of insulin-secreting beta cells of the pancreas.

Conclusion: The findings suggest that HDL may play a role in insulin development and/or metabolism in the β-cells.

P110. The Oldest Webb–Dattani Syndrome: A Case Report

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Introduction: Webb–Dattani syndrome (WEDAS) is an uncommon autosomal recessive disorder described in 2013 by Webb et al. This rare condition results from mutations in the ARNT2 gene and is characterized by multiple pituitary hormone deficiencies, postnatal microcephaly, and visual and renal anomalies. The prevalence of WEDAS is currently unknown, with only a handful of cases reported in the medical literature. Subsequent reports have also predominantly involved patients from consanguineous families of KSAn descent, suggesting a possible founder effect in this population.

Case description: A 14-year-old girl was referred to the endocrine clinic with a diagnosis of Webb–Dattani syndrome. Her past medical history was significant for global developmental delay, blindness, seizure disorders, a small left kidney with neurogenic bladder, and spastic quadriplegia. Family history revealed that her brother died at age 2, her sister at 2 months, and several cousins were affected by the same gene mutation. At her initial visit on March 2021, the patient aged 14 years and 10 months. Laboratory results indicated elevated sodium (154 mmol/L) and chloride (119 mmol/L) levels. An X-ray for bone age showed a delay, with a bone age of 8 years against her chronological age of 14 years and 9 months. The patient was following up for panhypopituitarism (ACTH, TSH, and ADH deficiency). Management of endocrinopathy includes: hydrocortisone (5 mg morning and 2.5 mg evening = 7.5 mg/M2), levothyroxine (37.5 mcg p.o. daily), and desmopressin (15 cg sublingual intermittently if she has breakthrough). The care plan included consideration of growth hormone and gonadal hormone replacement therapy. However, it has been discussed with parents the puberty issues and the risk of osteoporosis, and they agreed not to start pubertal induction at that time. The patient's clinical course was marked by persistent endocrine abnormalities and challenges in management. She missed several appointments, but laboratory results consistently showed hypernatremia and other hormonal imbalances. Of particular concern was the gradual worsening of her fluid balance, with sodium levels and plasma osmolality continuing to rise despite treatment. There was persistence and challenging adipsic diabetes insipidus noticed at many follow-up visits. These abnormalities underscored the ongoing challenges in managing the patient's complex endocrine disorders. The patient's condition was further complicated by recurrent infections and respiratory issues with multiple admission. In August 2024, the patient's father was called for a scheduled virtual appointment and unfortunately, he informed us that she passed away.

Conclusion: This case expands the phenotypic spectrum of Webb–Dattani syndrome and reinforces the critical role of ARNT2 in hypothalamo-pituitary development and function. Early recognition of this syndrome is crucial for appropriate management of hormone deficiencies and associated complications. Genetic testing for ARNT2 mutations should be considered in patients presenting with this constellation of features, particularly those from consanguineous backgrounds. Our case also underscores the importance of a multidisciplinary approach in managing patients with WEDAS. The complex endocrine dysfunction requires careful hormone replacement and monitoring, while the neurological, visual, and gastrointestinal issues necessitate input from various specialties

Final Remarks

The abstracts of the free communications represent the current research interests of practicing endocrinologists in the Gulf and MENA regions. Although the majority are descriptive accounts, many clinical cases depict features of endocrine disorders in the region. They may help reassure clinicians of similarities to disease patterns in the West or highlight some peculiarities of endocrine conditions in the area. Either way, it should help implement or modify international guidelines as needed. This year, we added the e-mails of the corresponding authors to encourage networking. We look forward to seeing all of these abstracts in full format soon.

Abbreviations

Commonly used terms are abbreviated without the need to define them in article: BMI: body mass index; KSA: Kingdom of Saudi Arabia; MENA: Middle East and North Africa; NAFLD: nonalcoholic fatty liver disease; T1D: type 1 diabetes; T2D: type 2 diabetes; UAE: United Arab Emirates. Other terms well established in endocrinology literature were not necessarily expanded (e.g., T4, T3, TSH, ACTH, etc.).

Author Contributions

All authors contributed equally.

Compliance with Ethical Principles

The GAED Scientific Committee considered the abstracts involving human subjects on the understanding that all necessary ethical approvals were secured for the

research work and that informed consent was obtained when required.

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Conflict of Interest
None declared.

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