LATE BREAKING

Abstract #1200

NEW ONSET DKA AS THE PRESENTING FEATURE OF A PHEOCHROMOCYTOMA

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Case Presentation: 50 year old obese female with a history of well controlled type 2 DM, hypertension, OSA, tobacco dependence and recurrent DVT and PE, presented with chest pain and was found to have DKA. Her troponins were elevated on admission and she was started on a heparin drip. A bedside 2D Echo showed diastolic dysfunction with preserved LVEF, and significant RV strain thought to be secondary to a recently diagnosed submassive PE. Cardiology determined that her Echo was consistent with takotsubo cardiomyopathy given distal septal and apical hypokinesis. During her hospital stay, she had intermittent episodes of hypertension and bradycardia with SBP in the 200s and HR in 30s-40s noted on telemetry. When questioned during these episodes, she noted experiencing pulsatile tinnitus, but denied headaches, palpitations or diaphoresis. She reported that these episodes happened several times a day and lasted a few seconds over the past few months. CTA thorax was performed to evaluate her PE and it showed a 2.4 cm left adrenal nodule incidentally. Plasma and urine catecholamine levels were measured and found to be significantly elevated, with a plasma norepinephrine level of 5128 pg/mL. She was started on prazosin and is currently awaiting surgical resection of the left adrenal nodule. Oral hypoglycemic agents were stopped and she is now on insulin for uncontrolled type 2 DM and coumadin for PE.

Pheochromocytoma is a rare endocrine neoplasm and very few cases of DKA as the presenting feature have been documented in the literature. It is unusual that our patient presented with DKA, takotsubo cardiomyopathy, episodic bradycardia/hypertension and submassive PE, instead of the well known triad of tachycardia, diaphoresis and headache. It is possible that DKA could be have been directly precipitated by the catecholamine surge. Catecholamines can inhibit insulin secretion medicated by alpha 2 receptors. Elevated epinephrine can cause insulin resistance, increase gluconeogenesis and increase lipolysis. In addition, elevated norepinephrine stimulates glycogenolysis, suppresses insulin secretion, increases glucagon levels and increases ketone body production.

Conclusion: New onset DKA in a patient with previously controlled diabetes, along with episodic hypertension, should raise the possibility of pheochromocytoma.

Abstract #1201

PHEOCHROMOCYTOMA INDUCED HYPERGLYCEMIA LEADING TO MISDIAGNOSIS OF TYPE 1 DIABETES MELLITUS

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Objective: Excess catecholamine release from a pheochromocytoma can lead to hyperglycemia by suppression of insulin release and increased glycogenolysis. There are few documented cases describing the effects of metyrosine treatment and surgical adrenalectomy on glucose levels with patients requiring insulin therapy preoperatively.

Case Presentation: A 31 y/o male with past medical history of Type 1 Diabetes Mellitus presented with symptoms of episodic headache, blurry vision, palpitations, and chest pain over a period of 3 weeks. His blood pressure was 220/120 mmHg. A 24 hour urine collection showed Epinephrine of 1754 mcg/24hr (2-24mcg/24hr), Norepinephrine: 1743 mcg/24hr (15-100mcg/24hr), Dopamine: 642 mcg/24hr (52-480mcg/24hr), Metanephrines: 51460 mcg/24hr (45-290mcg/24hr), and Normetanephrines: 17666 mcg/24hr (82-500mcg/24hr). MRI of abdomen/pelvis revealed bilateral adrenal masses (left side 6.5x6.0x5.7cm, right side 8.3x8.4x7.9cm) with characteristics consistent with pheochromocytoma. Other significant findings included hypercalcemia and nodular thyroid with cytology positive for medullary thyroid cancer. A positive RET proto-oncogene confirmed the diagnoses of MEN 2A syndrome. The patient gave a history of Type 1 Diabetes Mellitus diagnosed 3 years prior to admission. He was taking Novolin (70/30) 45 units with breakfast and dinner. His insulin regimen was changed to Lantus 45 units and Aspart 15 units with meals. GAD-65 autoantibody was negative. In preparation for bilateral adrenalectomy, the patient was started on alpha blockade with phenyoxybenzamine and metyrosine 250mg QID, uptitrated to 750mg QID over 2 weeks. His glucose levels began trending downward requiring significant dose reductions in his insulin after medication initiation. In the pre-operative period, his insulin requirements decreased by 50%. After bilateral adrenalectomy, glucose levels were observed hourly with the lowest reading of 58mg/dL, occurring 3 hours postoperatively. There were no further episodes of hypoglycemia. Despite being maintained on steroid replacement therapy postoperatively, the patient remained euglycemic and did not require any insulin treatment.

Conclusion: This case shows the effect of medical and then surgical treatment of pheochromocytoma on glucose levels and insulin therapy. As metyrosine was uptitrated, the inhibition of catecholamine synthesis led to reduced insulin requirements.

After bilateral adrenalectomy, diabetes completely regressed. The critical features of this case are to recognize the misdiagnoses of Type 1 Diabetes Mellitus and to monitor patients closely during both pre-operative preparation and post pheochromocytoma resection for hypoglycemia.

Abstract #1202

A BENIGN CO-SECRETING UNILATERAL ADRENAL ADENOMA PRESENTING WITH PROFOUND HYPOKALEMIC HYPERTENSIVE CRISIS- AN ELECTROLYTE POTPOURRI

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Objective: Benign adrenal adenomas can functionally co-secrete excess cortisol and aldosterone affecting clinical presentation and management.This is a case of a patient presenting with acute diastolic heart failure (ADHF) secondary to uncontrolled hypertension,with hypokalemia and hypercortisolism from a functional adrenal adenoma,which was initially suspected based on an elevated trans tubular potassium gradient (TTKG).
Case Presentation: A 56 year old woman known to have uncontrolled hypertension and recently diagnosed diabetes mellitus was admitted for decompensated ADHF with preserved ejection fraction of 64%.She had uncontrolled hypertension despite being on lisinopril 40mg BID, amlodipine 10mg daily, metoprolol 50mg BID and Lasix 80 mg BID.She also had profound hypokalemia with a potassium level of 2-2.5 meq/L despite taking 80meq oral KCl/day.She had frequent admissions for ADHF secondary to hypertensive crisis. During this admission,her BP was at 190/100 mmhg and she needed 80 meq IV KCl/day to achieve normal potassium levels.The patient's TTKG was evaluated to gauge renal potassium secretion by the cortical collecting duct, indirectly assessing mineralocorticoid bioactivity in the setting of profound hypokalemia.TTKG value was >6, which indicated excessive aldosterone bioactivity in the distal nephron as the cause of the hypokalemia. The measured serum aldosterone concentration was also elevated, with low plasma renin activity.Early-morning serum cortisol level was 14 µg/dl. An abdominal CT scan was then performed, revealing a right adrenal nodule with calcification, measuring 4.6cm in diameter and a density of 18 Hounsfield units. Since BP was difficult to control, spironolactone 50 mg BID was added to her regimen, markedly improving her hypertension and hypokalemia, as well as her ADHF exacerbation.
Discussion: It is important to evaluate for co-secretions from benign functional adrenal adenomas to identify potential organ damage caused by the excess hormones secreted by the tumor. This patient had severe hypertension and hypokalemia from a functioning adrenal adenoma, with subclinical hypercortisolism confirmed by an elevated serum cortisol level.Subsequently she developed new onset diabetes and obesity from excess glucocorticoid production. Due to uncontrolled secondary hypertension and excessive cortisol production from the adrenal adenoma, the patient had recurrent bouts of ADHF.
Conclusion: In the setting of uncontrolled hypertension and hypokalemia suspected to be from a functional adrenal tumor, clinicians should be able to routinely utilize the TTKG as an index of potassium secretory activity in the distal tubule, so that the mineralocorticoid bioactivity can be indirectly assessed.

Abstract #1203

CLASSIC CONGENITAL ADRENAL HYPERPLASIA IN ADULT WITH DISORDER OF SEXUAL DEVELOPMENT

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Objective: To present a case of Classic Congenital Adrenal Hyperplasia in Adult with Disorder of Sexual Development
Methods: Case Report
Case Presentation: This is a case of a 49 year old, phenotypically male, married, who presented with "penile bloody discharge". The episode was accompanied with hypogastric fullness and occasional colicky pain that is relieved after passage of blood. Physical examination showed male pattern hair distribution, no gynecomastia, with palpable hypogastric mass and circumcised genitalia with empty scrotal sac. Radiologic findings revealed hypogastric mass- resembling uterus with no identifiable gonads and hyperplastic adrenals. Hormonal assays done reported: normal cortisol levels (320.95pg/ml), high ACTH (314.37pg/ml), high aldosterone (44.21ng/dL), high DHEAS (19.44umol/L), normal testosterone (775.96ng/dL,male) and high 17-hydroxyprogesterone (303.10ng/mL). Luteinizing hormone (0.017 miU/ml) and Follicle Stimulating Hormone (0.045 miU/mL) were low. Exploratory laparotomy was done due to recurrent urethral bleeding. Mullerian structures, such as the ovaries, fallopian tube, vagina and uterus were identified intraoperatively. Neither prostate gland nor testes were found. Histopathology reported myoma uteri with bilateral ovotestis. Karyotyping done showed 46, XX.
Discussion: Congenital Adrenal Hyperplasia (CAH) is an autosomal recessive disorder affecting steroid biosynthesis.

Due to enzyme CYP21A2 deficiency, metabolic precursors are channeled preferentially to production of sex hormones which resulted to severe virilization. This is evidenced by hair distribution, phallus development and labioscrotal fusion as seen in the patient. Aside from elevated 17-Hydroxyprogesterone and ACTH, the hormonal assays did not report results typical for CAH. These results, which include normal Cortisol and high Aldosterone levels, can be explained by the different adrenal and extra adrenal mechanisms of hormone production. Gonadotropins were suppressed due raised adrenal sex hormones. The urethral bleeding was brought about by myoma uteri eroding the blood vessels. The presence of ovarian stroma adjacent to Leydig cells and epididymis lead to the diagnosis of disorder of sexual development, with the possibility of true hermaphroditism. 46, XX confirmed that the patient is a female however, such karyotype is also common in patients with ovotesticular disorders. He is currently being treated with Dexamethasone.

Conclusion: This a neglected case of simple virilizing Congenital Adrenal Hyperplasia in Adult due to elevated 17-hydroxyprogesterone resulting to his male phenotype. The patient elected to be a male while his genetic sex if female and his gonadal sex is uncertain.

Abstract #1204

TIP OF THE ICEBERG: POLYGLANDULAR AUTOIMMUNE SYNDROME

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Objective: Polyglandular Autoimmune Syndromes (PAS) are rare syndromes characterized by at least 2 endocrine insufficiencies.The different components of PAS are often preceded by an asymptomatic period of years with merely positive serology. We present a case of PAS to emphasize the necessity of early detection of the various components to prevent morbidity and mortality.

Case Presentation: 29 year old lady with no known comorbidities presented with 4 days of altered mental status and fever. She was tachycardic, hypotensive, had speech perseverance and disorientation to place and time.

She was treated presumptively for septic shock with empiric antibiotics, antiviral, intravenous fluids and inotropes. Her labs revealed sodium 123mEq/L, TSH 10.56µIU/ml, free T4 0.89ng/dL and random cortisol <0.4mcg/dL(4.46–22.7mcg/dL). She had elevated fasting blood glucose and HbA1c on admission. Hydrocortisone was emergently initiated. Her BP and mentation improved; empiric antibiotics, antivirals and inotropes were discontinued. Her CT abdomen demonstrated hypo-attenuated bilateral adrenal glands. Further work up revealed positive 21 hydroxylase antibody, islet cell antibody titer 1:80, islet antigen-2 antibody 16.5U/ml, glutamic acid decarboxylase-65 antibody >30U/ml and antithyroid peroxidase antibody 245 IU/ml suggestive of PAS II. The patient was discharged on hydrocortisone and insulin. At 2 months follow-up, she reported gaining weight and feeling better for the first time in a year.

Discussion: PAS is subclassified into type I and type II based on age of presentation, characteristic combination of diseases and mode of inheritance. PAS type II occurs in adulthood and is characterized by Addison's disease with thyroid autoimmunity and/or Type 1 diabetes(T1D). The most frequent combinations being T1D/thyroid(41%), thyroid/adrenal(14%),T1D/vitiligo(9.9%) and thyroid/vitligo(9.9%). Hypothyroidism or adrenal insufficiency delays the manifestations of T1D or reduces the insulin requirement significantly. Diagnosis of Addison's disease warrants checking for thyroperoxidase, thyroglobulin, glutamic acid decarboxylase-65 and islet cell antibodies and if negative, should be repeated every 2-3 years. Adrenal insufficiency needs to be ruled out prior to initiation of thyroid hormone supplementation in hypothyroid patients to prevent adrenal crisis. One in seven first degree relatives of patients with PAS have unrecognized endocrine disorders, therefore screening in these relatives is recommended.

Conclusion: The early and accurate diagnosis of PAS facilitates initiation of appropriate long-term management of the disease components.

Abstract #1205

AN UNUSUAL CASE OF PHEOCHROMOCYTOMA SECRETING ACTH RESULTING IN CUSHING SYNDROME.

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Case Presentation: Ectopic Cushing syndrome is caused by secretion of ACTH from a source other than the pituitary. Here, we are reporting a very unusual case of ectopic Cushing syndrome in which the source of ACTH secretion was from a pheochromocytoma.

A 51 year female presented with worsening hypertension and new onset of diabetes mellitus and of hirsutism. The patient had a severe worsening of her pre-existing anxiety symptoms with episodes of facial flushing, palpitations and tremors associated with the hypertensive episodes. She also had a 15 pound weight gain in last 4 months.

Physical examination showed recurring elevated systolic

blood pressures readings in the range of 200 mmHg. She had a Cushingoid appearance with thinning of facial skin and bruising on her upper extremities and exhibited hirsutism 4+. She also exhibited fine hand tremors. An echocardiogram showed concentric LVH with a normal LV ejection fraction. A working clinical diagnosis of Cushing syndrome was made and a 24 hour urinary cortisol level was performed which was elevated at 192 µg (normal=0 to 50 µg). In addition, on 1mg dexamethasone suppression test, the cortisol was not suppressed (level was 50.2 mcg/dl). An ACTH level was found to be elevated at 134 pg/ml(normal 10-60 pg/ml). Inferior petrosal sinus sampling showed no increase in left versus right and periphery and the source of ACTH production remained unidentified at that time.

Given the episodic worsening HTN and worsening anxiety symptoms, there was a suspicion for a coexisting pheochromocytoma. A 24 hour urine collection for metanephrines was done which was interestingly also elevated at 1776 mcg/dl(normal < 400 mcg/dl). Plasma norepinephrine was 934 pg/ml, plasma epinephrine was 586 pg/ml, dopamine level was 167 pg/ml, aldosterone level <1.0 ng/dl, PRA of 1.63 ng/ml/hour. These findings raised the suspicion of a pheochromocytoma and a CT scan of the abdomen was performed that showed a 3.2 x 2.6 cm left adrenal mass.

Patient underwent a left adrenalectomy with preoperative alpha blockade. Pathology showed that it was a pheochromocytoma. However, keeping in mind that she had had findings consistent with Cushing's syndrome and the source of ACTH still remained elusive, a special request was made to test the adrenal tissue for ACTH. An immunohistochemistry stain on the adrenal tissue was found to be positive for ACTH. Postoperatively, patient had a resolution of her hirsutism and diabetes. She also had significant improvement in her hypertension and her anxiety symptoms. She lost a significant amount of weight and her Cushingoid features, facial flushing, episodic palpitations and tremors improved.

Conclusion: Rare case of Cushing in a pheochromocytoma.

Abstract #1206

IMPROVED RESPONSE TO OCTREOTIDE LAR FOR ECTOPIC CUSHING'S SYNDROME DURING MIFEPRISTONE THERAPY: A CASE STUDY

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Objective: Ectopic ACTH syndrome (EAS) is often caused by a malignant neuroendocrine tumor expressing functional somatostatin receptors (sst). Medical therapies targeting these receptors are used to reduce ACTH secretion and control the hypercortisolism when the tumor is unresectable. However, glucocorticoid-induced down-regulation of sst can lead to lack of efficacy or loss of response.

We describe a patient with EAS poorly responsive to octreotide LAR (OCT) therapy, a potent sst agonist, prior to the addition of mifepristone (MIFE), a glucocorticoid receptor (GR) antagonist.

Case Presentation: A 30 YO man with EAS due to a metastatic pancreatic neuroendocrine tumor presented for enrollment in the 24-wk Phase III MIFE study (SEISMIC). OCT was initiated 3 mo prior to enrollment at 30 mg/mo, but ACTH fell only from 517 to 345 pg/mL, and cortisol production remained high (serum cortisol 46 µg/dL, urine cortisol (UFC) 2250 µg/d, late-night salivary 1.71 µg/dL). His severe cushingoid features (fat pads, moon facies, purple striae, muscle weakness) did not improve, and he enrolled in SEISMIC.

MIFE was initiated with continued 30 mg/mo OCT at 300 mg/d and eventually titrated to 1200 mg/d. As MIFE is a competitive GR antagonist, circulating cortisol and ACTH levels might rise during MIFE therapy in the EAS. In contrast, cortisol fell progressively as the dose was increased. The nadir occurred at wk 10 (900 mg/d MIFE), with UFC (104 µg/d) declining disproportionate to ACTH (188 pg/mL). MIFE was reduced to 600 mg/d at week 20 for withdrawal symptoms, and at week 24 (end of study), hypercortisolism had increased somewhat (ACTH 304 pg/mL, UFC 434 µg/d) but rose dramatically after stopping MIFE for 2 weeks (ACTH 652 pg/mL, UFC 4716 µg/d). Resumption of MIFE in the extension phase, however, only modestly, lowered ACTH and cortisol; OCT was discontinued 2 months later due to lack of efficacy. His Cushingoid features resolved and comorbidities improved during SEISMIC independent of ACTH and cortisol fluctuations

Discussion: Prior studies have found down-regulation of sst in tumors causing EAS and up-regulation during MIFE treatment, which enabled tumor localization with [111In]-pentotreotide scintigraphy. The marked reduction of cortisol when MIFE was added to OCT suggests that MIFE increased the efficacy of OCT by upregulating tumor sst receptors. We cannot exclude a delayed response to OCT alone; however, the abrupt rise in ACTH and cortisol 2 weeks after stopping MIFE is compelling evidence of a direct MIFE effect.

Conclusion: We suggest a potential synergistic effect of MIFE in combination with OCT in EAS through up-regulation of tumor sst. The ability of MIFE to augment OCT efficacy in EAS deserves further study.

Abstract #1207

GAS-FORMING PYOGENIC LIVER ABSCESS IN A SPLENECTOMIZED DIABETIC ADULT: A CASE STUDY

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Case Presentation: A 75 year old lady was hospitalized for intermittent fever, chills and rigors of 1 week duration. She had undergone a Whipple's procedure (pancreatectomy, duodenectomy and splenectomy) for IPMN 10 years ago, so had developed diabetes and was on CSII, with the most recent HbA1c being 9.3%. On presentation, she was febrile at 38.6ºC with conjunctival icterus and jaundice. She had neutrophilic leukocytosis, high transaminases and high bilirubin. Abdominal CT scan revealed a fluid and gas containing 6 cm hepatic collection, suggestive of a gas-forming pyogenic liver abscess (PLA). Empiric therapy with piperacillin/tazobactam was initiated and a pigtail catheter was inserted into the abscess cavity percutaneuously. Klebsiella pneumoniae and E.coli were isolated from blood, so antibiotic regimen was changed to ampicillin/sulbactam. Enterococcus fecalis and E.coli were isolated from the pus. Due to clinical and laboratory improvement over 2 weeks, she was transitioned to amoxicillin/clavulanate. However, she soon developed fever, leukocytosis and elevated alkaline phosphatase. Abdominal CT showed a change in appearance of the abscess to multi-loculated. A percutaneous biliary drain was placed; piperacillin/tazobactam and clindamycin were initiated. Her insulin requrements were higher than her usual. Blood cultures grew ESBL producing K. pneumoniae, so regimen was changed to ertapenem. Blood cultures drawn 2 and 7 days apart remained negative, laboratory tests normalized and jaundice resolved. She was discharged on ertapenem therapy for 6 weeks duration. The pitgtail catheter and biliary drain were soon removed. The patient remained asymptomatic on clinic follow up 3 months later. Her laboratory abnormalities normalized, HbA1c improved to 7.1% and CT showed near complete resolution of the PLA.

Discussion: Thomsen et al reported that persons with diabetes had a 3.6-fold increased risk of experiencing PLA and a higher 30-day post discharge mortality rate, compared with those without diabetes. Poor glycemic control is linked to a higher likelihood of gas-forming PLA and metastatic infection due to K. pneumoniae. Diabetes causes gastroparesis and impaired neutrophil phagocytic function, and this can ultimately lead to hepatic bacterial seeding and abscess formation.

Conclusion: Gas-forming PLA is an uncommon condition in North America. Diabetics are particularly at risk and may have atypical presentation. Due to significantly increased mortality and morbidity from a gas-forming PLA, empiric antibiotic therapy should be started without waiting for culture results. Improved glycemic control is essential because sustained hyperglycemia has been linked to poor outcomes in gas-forming PLA.

Abstract #1208

ABSTRACT WITHDRAWN

Abstract #1209

THE EFFECT OF MEDICAL NUTRITION THERAPY BY A REGISTERED DIETITIAN NUTRITIONIST IN PATIENTS WITH PRE-DIABETES PARTICIPATING IN A RANDOMIZED CONTROLLED CLINICAL RESEARCH TRIAL

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Objective: Medical Nutrition Therapy (MNT) is an integral component of diabetes management. However, the Centers for Medicare and Medicaid Services currently does not cover pre-diabetes. The effectiveness of MNT in patients with pre-diabetes has not been studied using the three hours of therapy approved by the Centers for Medicare and Medicaid Services for persons with type 2 diabetes. The purpose of this pilot study was to investigate the effect of MNT in overweight or obese adults with pre-diabetes as compared to usual care, on fasting plasma glucose values, HbA1c, serum lipid levels, and diabetes risk score, from baseline to the end of a 12 week intervention.

Methods: Prospective, randomized, parallel group study of 76 adults with impaired fasting plasma glucose or an HbA1c of 5.7% to 6.4%, recruited between April 2010 and May 2011 who completed a 12-week intervention period. Subjects were randomized to MNT or usual care. The primary outcome measure was fasting plasma glucose. Secondary outcome measures were HbA1c, serum lipid levels, and diabetes risk score. A factorial repeated measures analysis of variance was used to make comparisons between the two groups (the MNT and usual care groups) and two measures of time (baseline and 12 weeks postintervention).

Results: There was a significant interaction for group assignment and HbA1c ($p=0.01$), with the MNT group experiencing significantly lower hba1c levels than the usual care group (5.79% vs 6.01%) after the 12-week intervention. There was a significant interaction for group

assignment and diabetes risk score (p=0.001). Diabetes risk score for the MNT group decreased from 17.54 +/- 3.69 to 15.31 +/- 3.79 compared with the usual care group score which went from 17.23 +/- 4.69 to 16.83 +/- 4.73. Regardless of group assignment, both groups experienced a reduction in total cholesterol (p= 0.01) and low-density lipoprotein cholesterol (p = 0.04).

Discussion: Methods to translate the diabetes prevention program have been investigated. Both MNT and usual care participants demonstrated improvements in fpg levels over time, although this was not statistically significant. The MNT group achieved a greater magnitude of change in HbA1c levels compared with the usual care group. Our investigation reported that mean HbA1c in the MNT group decreased from 5.99% to 5.79%, whereas the usual care group had an increase in HbA1c to 6.01%. These findings are significant as the HbA1c assay is the gold-standard measurement of chronic glycemia, reflecting average glycemia over the preceding 3 months.

Conclusion: The results demonstrate that individualized MNT is effective in decreasing hba1c level in patients diagnosed with prediabetes.

Abstract #1210

RISK FACTORS FOR RECURRENT DKA ADMISSIONS: COMPARING AN URBAN AND SUBURBAN HOSPITAL

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Objective: This study was designed to identify the cohort of patients with multiple admissions for diabetic ketoacidosis (DKA) and determine the risk factors in our institution for recurrent DKA. We sought to examine differences in the characteristics of patients with recurrent DKA admitted to the two main hospitals in our health system, one urban (URB) and one suburban (SUB).

Methods: A retrospective chart review was performed based on discharge billing data. Charts with a primary or secondary diagnosis of DKA admitted to URB and SUB from January 2012 through December 2013 were included. The chi-square test or Fisher's exact test as deemed appropriate was used to compare groups for categorical variables. The Mann-Whitney test was used to compare groups for continuous variables. Categorical data are reported as percentages and continuous data are reported as medians.

Results: In 2012 there were 123 admissions for DKA to URB and 75 admissions to SUB, in 2013 there were 147 admissions to URB and 92 to SUB. Patients age 18 – 30 years had the highest number of DKA admissions with a median of 2 (p<0.0001). The 18-30 year old patients also had a significantly higher unemployment rate with 27.95% unemployed, compared to 17.6% of patients 31 years and older (P<0.0248). Regarding differences between the two hospitals, at SUB, there were more admissions for new onset diabetes (p<0.0361). The patient population was significantly older at SUB and there was a significant racial difference with more Caucasian patients at SUB (68.42%) compared to URB (24.72%) (p<0.0001). Patients with DKA at URB had a higher average hemoglobin A1c with a mean of 12.7% vs 10.4% at SUB (P<0.0001). There was no difference in rates of mental illness between the two hospitals but there were a significantly higher percentage of current smokers at SUB 22.73% compared to 12.69% at URB (P<0.0073) and a higher amount of alcohol use-25.48% at SUB with 14.55% at URB (p<0.0052).

Conclusion: DKA remains a significant issue for patients with diabetes at both urban and suburban hospitals, particularly for patients in the 18-30 year old age range. Of interest, unlike prior studies of DKA in inner city populations, we found that substance use was higher in our suburban hospital and there was no significant difference in mental illness. Identification of risk factors for recurrent DKA has triggered targeted interventions at our institution, including a young adult support group and a transitions of care protocol from pediatric to adult endocrinology. Further studies to determine whether these programs can reduce recurrent DKA admissions are warranted.

Abstract #1211

COMPARISON OF CLINICAL CHARACTERISTICS AND HOSPITAL OUTCOMES BETWEEN TYPE 1 AND TYPE 2 DIABETES IN THE INPATIENT SETTING

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Objective: Few studies have reported on the prevalence, management and clinical outcome of patients with type 1 diabetes (T1D) in the inpatient setting. This study reports differences in demographics, glycemic control and clinical outcome between age-matched patients with T1D and type 2 diabetes (T2D) admitted to 4 university-affiliated hospitals between 2012 -2013.

Methods: Comorbidities and hospital complications were indentified in 13,992 patients with T1D and T2D using

ICD-9 codes. In patients with multiple admissions, only the first admission was included and outcomes were analyzed after 1:1 age-matching.

Results: Among 13,992 patients with diabetes, 327 (2.3%) had T1D and 13,595 (97.7%) had T2D. Overall, patients with T1D were younger (44±17 vs 61±19 years, p<0.001), had lower BMI (26.3±6 vs 31.0±8, p<0.001), and had multiple admissions (9% vs 5%, p=0.001) compared to patients with T2D. After 1:1 age-matching, there were no differences in number of admissions to medicine services (67% vs 67%, p=1.00), non-ICU wards (99% vs 98%, p=0.75), or in median length of stay (4 [0-65] vs 4 [0-41], p=0.78) between T1D and T2D. Prevalence of chronic kidney disease was higher in T1D (34% vs 22%, p<0.001), but hypertension (28% vs. 42%, p<0.001) and hyperlipidemia (20% vs 42%, <0.001) were lower in T1D than T2D. Most patients with T1D were admitted for metabolic decompensation (27%) while patients with T2D were admitted for cardiovascular disease (21%). The admission glucose (BG, 239±195 vs 169±106 mg/dl, p<0.001) and the mean daily BG (175±57 vs 161±55 mg/dl, p<0.001) were higher in T1D compared to T2D. Patients with T1D also had higher number of hypoglycemic events (<70 mg/dl, 49% vs 23%, p<0.001 and <40 mg/dl, 19% vs 6%, p<0.001) compared to T2D. Patients with T1D had higher rates of acute kidney injury (32% vs 20%, p<0.001) and lactic acidosis (14% vs 7%, p<0.001) compared to T2D, but there were no differences in mortality.

Conclusion: Our data indicate significant differences in inpatient clinical characteristics and hospital outcomes between age-matched patients with T1D and T2D. Patients with T1D have worse glycemic control, more hypoglycemia and hospital complications than patients with T2D. Randomized controlled studies are needed to assess the impact of improved inpatient glycemic control in T1D.

Abstract #1212

ADHERENCE TO LIFESTYLE ADVICE AND TREATMENTS IN PAKISTANI PATIENTS WITH TYPE 2 DIABETES MELLITUS

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Objective: This study aimed to determine adherence to lifestyle, self-management and drugs, with specific evaluation of tobacco use, exercise, diet, glucose monitoring, foot care and medication use.

Methods: A cross sectional hospital based study was conducted among patients attending the diabetic clinic at the Aga Khan University Hospital, using a structured questionnaire. Adult patients with T2DM, and with at least one year duration of diabetes were included in the study.

Results: Participants were aged between 32 and 92 years with a mean age of 55.7 years (SD=10.7). Mean duration of diabetes was 10.7 years (SD=7.7). Majority (94%) of the patients were literate. Around half (47.3%) of the patient have had achieved glycemic target (HbA1c <7%). Above target glycemic control was more common among patients with ischemic heart disease (68.1%), neuropathy (64.8%), those on insulin (62.5%). Self-Reported adherence for blood sugar monitoring (39.8%), dietary advice (75%), oral agents (91.1%), insulin (95.6%), physical activity (23.5%), tobacco use (56.6%) and foot care (56.1%) was noted. Partial adherence reported for: Self Monitoring of Blood Glucose (SMBG) (50.7%), diet (22%), oral agents (8.9%), insulin (4.3%) and physical activity (14.8%). Good adherence to physical activity was found in males with college degree. The highest percentage of tobacco use (33.3%) was reported among businessmen.

Discussion: In this cross sectional study, combination of several factors including lesser duration with diabetes, follow up duration between 1 and 3 years and triglyceride level <150 was associated with good glycemic control (HbA1c < 7%). Furthermore patients with poor glycemic control were found to have strong association with ischemic heart disease (68.1 %), neuropathy (64.8%), on insulin alone (62.5%) and on combination of insulin and OHA (69.8%). These results also showed that significant no of diabetic patients had co morbid conditions like obesity (78.4 %), dyslipidemia (76.1 %) and hypertension (72%),52.7 % of our study population had poor glycemic control (HbA1 c >7%).

Conclusion: Higher proportion of patients in our study had poor glycemic control compared to studies conducted previously from the same region. Our study reported low adherence to advice for physical activity, tobacco use and self-monitoring. There was mainly partial adherence to dietary advice and medication use. This was a selected, more educated group visiting a teaching hospital and we postulate that adherence would be lower in the patients with DM2 in the community. Further efforts are required to motivate patients to improve lifestyle and adhere to therapy.

Abstract #1213

THE COMBINATION OF INSULIN, LIRAGLUTIDE AND DAPAGLIFLOZIN AS TRIPLE THERAPY FOR TYPE 1 DIABETES

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University at Buffalo

Objective: We have recently demonstrated that the addition of liraglutide to insulin significantly improves the glycemic control in patients with type 1 diabetes (T1D). We have now investigated whether the addition of dapagliflozin, a SGLT-2 inhibitor, which induces glycosuria, to insulin and liraglutide would improve glycemia further.
Methods: We conducted a retrospective analysis of 10 patients on continuous glucose monitoring system (CGMS) treated with this combination. They were under treatment with insulin and had received liraglutide for 11±2 months (baseline HbA1c: 8.01±0.22 %; mean age: 56±4 years; mean age of diabetes diagnosis: 29±5 years; mean BMI: 29±1 Kg/m2; mean body weight: 86.4±4.5 kg; mean BP: 125/75±3 mm Hg). In all patients, dapagliflozin was started at a dose of 5 mg daily and was increased to 10 mg daily 7±1 days later.
Results: At the end of 12±1 weeks of dapagliflozin therapy, mean HbA1c fell by 0.66±0.22% (p=0.0004); mean glucose fell by 28±2mg/dl from a baseline of 172±9 mg/dl (p=0.016,); the daily carbohydrate intake increased from 166±3g to 196±4g (p= 0.04); mean body weight and BMI fell from 87±5 Kg to 85±5 Kg and 29±1 to 28±1Kg/m2, respectively (p=0.02). Total insulin dose remained unchanged at 0.7±0.1 u/Kg daily. Percent time spent in glycemic range of 70-160 mg/dl increased by 11±2% while that greater than 160 mg/dl decreased by 13±3% (p<0.05 for both). There was no additional hypoglycemia (<70 mg/dl). One patient developed diabetic ketoacidosis (DKA) in spite of normal blood glucose concentrations within 48 hours of increasing the dose of dapagliflozin to 10 mg. The dose of insulin in this patient had declined from 0.45 to 0.39 u/kg (total dose: 32.9 to 28.5 units). Carbohydrate intake had increased from 50 to 95g daily.
Discussion: This is the first study demonstrating that the addition of dapagliflozin to insulin and liraglutide in patients with T1D results in a significant improvement in glycemia. However, care would have to be exercised in terms of the reduction in insulin dose and thus the occurrence of euglycemic DKA.
Conclusion: We conclude that the addition of dapagliflozin to insulin and liraglutide in patients with T1D results in a significant improvement in glycemia.

Abstract #1214

DECREASING HYPOGLYCEMIA WITHOUT COMPROMISING EFFICACY IN AN AGING TYPE 2 DIABETES MELLITUS (T2DM) POPULATION

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Objective: Glycemic control remains suboptimal in many patients with T2DM on insulin. Recent studies showed higher rates of hypoglycemia leading to hospitalizations in the older population. New insulin glargine 300 U/mL (Gla-300), a formulation with a more constant pharmacokinetic profile and prolonged duration of action than insulin glargine 100 U/mL (Gla-100), has similar efficacy but lower incidence of hypoglycemia: we assessed efficacy and hypoglycemia of Gla-300 vs Gla-100 in an aging population.
Methods: Pooled data on glycemic control and hypoglycemia were generated for patients with T2DM randomized to Gla-300 or Gla-100 once daily for 6 months from two multicenter, open-label EDITION studies (EDITION 2, patients on basal insulin plus oral antidiabetes drugs [OADs]; EDITION 3, insulin-naïve patients on OADs). Four age groups (<55 years, 55 – ≤60 years, 60 – ≤65 years, >65 years) were used to analyze hemoglobin A1c (A1C), % of patients reaching A1C<7.5%, weight change and incidence and event rates of confirmed (blood glucose ≤70 mg/dL) and/or severe hypoglycemia. Descriptive statistics, trending and regression modelling analyses were conducted.
Results: A total of 1,670 patients (<55 years, n=553; 55 – ≤60 years, n=343; 60 – ≤65 years, n=364; >65 years, n=410) were included (mean age, 58.0 years; age range, 24.0 – 87.0 years; mean A1C, 8.4%; mean duration of T2DM, 11.2 years; mean BMI, 33.8 kg/m2). At 6 months' follow-up, A1C reduction was similar for Gla-300 and Gla-100 and across age categories (A1C change for Gla-300 vs Gla-100 for respective age categories: −0.94% vs −1.01%; −1.07% vs −0.99%, −1.06% vs −1.10%; −1.01% vs −1.02%). The proportion of patients reaching A1C <7.5% was also similar (Gla-300 vs Gla-100: 56.8% vs 57.5; 61.1% vs 58.5%; 62.2% vs 67.4%; 62.5% vs 59.7%). Hypoglycemia incidence was consistently lower for Gla-300 patients (% patients, Gla-300 vs Gla-100: 55.5% vs 62.7%; 57.5% vs 70.5%; 60.4% vs 69.7%; 63.6% vs 70.5%) as was event rate (events/patient-year for Gla-300 vs Gla-100: 7.1 vs 10.3; 8.1 vs 13.6; 9.0 vs 11.2; 10.8 vs 12.3), trending with age (incidence, P=0.100; event rate, P=0.057). Weight change was neutral across age groups for both Gla-300 and Gla-100.

Discussion: Among patients with T2DM, Gla-300 and Gla-100 had similar efficacy in reducing A1C in younger and older age groups, while showing a trend for lower hypoglycemia rates with Gla-300 across age groups.
Conclusion: The aging population may benefit from the Gla-300 attributes, including similar efficacy vs Gla-100 with a lower rate of hypoglycemia.

Abstract #1215

HUMAN REGULAR U-500 INSULIN TREATMENT OVER 24 WEEKS IMPROVES B-CELL FUNCTION IN SEVERELY INSULIN-RESISTANT PATIENTS WITH LONG-STANDING TYPE 2 DIABETES: A SUBSTUDY OF A RANDOMIZED, TITRATION-TO-TARGET CLINICAL TRIAL

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Objective: Both pancreatic B-cell dysfunction and insulin sensitivity may improve with attainment of glycemic control in patients with type 2 diabetes. This study assessed parameters of ß cell function and insulin sensitivity following treatment with human regular U-500 insulin (U 500R) in overweight/obese, severely insulin-resistant patients with poorly controlled type 2 diabetes.
Methods: A subset of patients in a 24-week, open-label, randomized titration-to-target trial (Hood RC, et al. Endocr Pract 2015) comparing U 500R given thrice daily (n=14/162) or twice daily (n=11/163) underwent standard mixed meal tolerance testing at baseline and endpoint. Baseline characteristics were similar between treatment groups (combined means: age 54.0 years; duration of diabetes 13.6 years; BMI 38.8 kg/m2; HbA1c 8.3%; U 100 total daily dose [TDD] 287.6 units, 2.6 units/kg). The primary outcome was improved ß cell function in combined treatment groups measured by ratio of area-under-the-curve for C peptide to glucose (AUCC peptide/AUCglucose) at 24-week endpoint. Additional ß-cell function parameters and insulin sensitivity measures were also analyzed.
Results: ß-cell function and insulin sensitivity significantly improved with glycemic control after 24 weeks of U-500R therapy in combined treatment groups. The primary outcome measure of ß cell function, ratio of AUCC peptide/AUCglucose, increased by 34% (change from baseline [CFB] ratio, 1.34; 95% CI, 1.18–1.52; P=0.0001). Secondary outcome measures of ß-cell function using C-peptide and glucose levels also improved. Integral of total insulin secretion rate increased from 27.0 to 33.7 nmol·m–2 (CFB, 6.73; 95% CI, 1.10–12.35; P=0.02), glucose sensitivity increased from 18.3 to 24.0 pmol·min-1m-2mM-1 (CFB, 5.64; 95% CI, 1.00–10.29; P=0.02), and rate sensitivity (a parameter related to first-phase insulin release) increased from 267.9 to 473.0 pmol·m-2mM-1 (CFB, 205.11; 95% CI, 31.09–379.12; P=0.02). The Matsuda index increased from 0.8 to 1.3 (CFB ratio, 1.54; 95% CI, 1.14–2.09; P=0.01). Change-from-baseline HbA1c, U-500R TDD, and weight were −1.17% (−12.8 mmol/mol; P=0.0002), 80.8 units (P=0.0003), and 5.9 kg (P=0.33), respectively.
Conclusion: Despite long-standing duration of diabetes and poor glycemic control at baseline, functional recovery of ß cells was observed with improved glycemic control in these high-dose insulin-treated, severely insulin-resistant patients with type 2 diabetes, possibly due to alleviation of glucotoxicity. These findings may have important clinical implications and call for additional study.

Abstract #1216

DAPAGLIFLOZIN IMPROVES BETA-CELL FUNCTION AND INSULIN SENSITIVITY IN TYPE 2 DM

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Objective: Beta-cell dysfunction and insulin resistance are core defects in T2DM and chronic, sustained hyperglycemia contributes to impaired insulin secretion and worsening insulin resistance (IR). Dapagliflozin (DAPA) is a SGLT-2 inhibitor which works via an insulin-independent mechanism to increase urinary glucose excretion. This allows one to examine the effect of lowering the plasma glucose concentration on beta-cell function and insulin resistance independent of off-target effects of the drug. The aim was to examine the effects of DAPA on beta-cell function and IR in T2DM individuals.
Methods: 24 subjects with T2DM taking a stable dose of metformin were randomized (2:1) to either DAPA 10 mg/day (n=16) or placebo (PBO) daily (n=8) for 2 weeks. On separate days, a 75-gram OGTT and euglycemic hyperinsulinemic clamp with 3-3H-glucose infusion were performed to quantitate whole body insulin-mediated glucose disposal (TGD) and endogenous glucose production (EGP). After a 3-hour 3-3H-glucose equilibration period, basal EGP was measured, and then subjects received a prime-continuous insulin infusion (80mU/m2-minute) for 4 hours. A variable glucose infusion maintained euglycemia (100mg/dl) throughout the clamp. TGD was calculated during the last 30 minutes of the insulin clamp. During the 2-hour OGTT, plasma

glucose, insulin, and C-peptide concentrations were measured every 30 minutes.

Results: At baseline, the DAPA and PBO groups were well matched. DAPA lowered the FPG, the 2-hour PG concentration, and the incremental area under the plasma glucose concentration curve (ΔG0-120) during OGTT by -33±5 mg/dl, -73±9mg/dl and -60±12 mg/dl·min, respectively, compared to -8±9, -33±13 and -18±9 in the PBO-treated subjects (all $p<0.05$). ΔC-Pepide0-120/ΔGlucose0-120 , a measure of beta-cell function, improved in DAPA-treated subjects, while it did not change in PBO-treated subjects (0.019±0.005 vs 0.002±0.006, $p<0.01$). TGD during the baseline insulin clamp was similar in both groups. After treatment, DAPA improved TGD (4.5±0.5 to 5.2±0.6; $p<0.05$) whereas no improvement was seen with PBO. The insulin secretion/insulin resistance index, measured as ΔC-Pep0-120/ΔG0-120 ÷ (1/TGD), improved with DAPA (0.12±0.04 to 0.26±0.05; $p<0.01$ vs baseline) but not with PBO(0.14±0.05 to 0.17±0.03). This represents a 2-fold ($p<0.01$) improvement in beta cell function.

Conclusion: Lowering the plasma glucose concentration via an insulin-independent mechanism with dapagliflozin significantly improves beta-cell function and insulin-mediated glucose disposal. This provides strong clinical support in man that hyperglycemia per se contributes to the core defects of beta-cell dysfunction and insulin resistance in T2DM.

Abstract #1217

EGLYCEMIC MANAGEMENT SYSTEM SAELY ACHIEVES PRESCRIBED GLYCEMIC TARGET WITH A LOW INCIDENCE OF HYPOGLYCEMIA IN PATIENTS WITH ACUTE MYOCARDIAL INFACTION IN THE HOSPITAL

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Objective: Acute myocardial infarction (AMI) patients presenting with hyperglycemia on admission have a higher mortality risk regardless of prior diabetes history. A more specific marker for this increased risk is persistent and unresolved hyperglycemia. Proper screening for, and resolution of hyperglycemia in patients with AMI has been shown to have an impact on mortality. Many hospitals are challenged with implementing a comprehensive and standardized approach to identification of hyperglycemia and subsequent glycemic management. This study attempted to determine if Glucommander, a computerized intravenous and subcutaneous insulin-dosing algorithm can identify patients for intervention and be an effective method of improving glycemic management in AMI patients. Most importantly, if improving hyperglycemia without a subsequent increase in hypoglycemia.

Methods: Two hundred and twenty-two patients identified with GlucoSurveillance as having two blood glucoses (BG) >180 mg/dL within 24-hour period were randomized to an intravenous (IV) insulin dosing regimen, and then transitioned to subcutaneous insulin therapy. Arm1 consisted of using Glucommander IV and SubQ and Arm2 consisted of using standard paper order sets. The glucose target in both groups was set at 120-180 mg/dL. Measured outcomes included general demographics and: (1) average glucose reduction (2) percent of glucose readings in target (3) mild (<70 mg/dL) and severe (<40 mg/dL) hypoglycemia and (4) average glucose on day of discharge.

Results: 109 patients in Arm1 with Glucommander had an average age of 64 years, A1c of 8.4 and an initial BG of 273.7 mg/dL. The average BG reduction was 132.3 mg/dL with 87.4% of glucose readings within target range. Hypoglycemia <70 mg/dL was 0.46% and <40 mg/dL was 0.04%. Average glucose day of discharge was 141.4 mg/dL. 113 patients in Arm2 with standard paper order sets had an average age of 66 years, an A1c of 8.8 and an initial BG of 262.8 mg/dL. The average BG reduction was 60.9 mg/dL with 46.7% of glucose readings within target range. Hypoglycemia <70 mg/dL was 2.29% and <40 mg/dL was 0.06% and average glucose day of discharge was 201.9 mg/dL.

Conclusion: Our results suggest using eGlycemic Management System (eGMS) with GlucoSurveillance to identify inpatient hyperglycemic AMI patients then initiate and manage insulin with Glucommander in the hospital improves BG control. Patients achieve glucose target range at a higher percentage than standard paper order sets with less hypoglycemia. Additionally, patients were more likely to be discharged with blood glucoses in target. Further study is needed to assess implications for possible reduction in readmission and recurrent AMI as seen in DGAMI.

Abstract #1218

INPATIENT GLYCEMIC CONTROL: IMPORTANCE OF EDUCATING NURSING, MEDICAL AND NUTRITION DEPARTMENT STAFF ON COORDINATING MEAL TRAY ARRIVAL AND INSULIN DELIVERY.

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Objective: Hyper- and hypoglycemia are common, serious, and costly problems in hospitalized diabetic patients. Appropriate blood sugar control can ensure a better quality of care for patients with diabetes. Administering the pre-meal short acting insulin should ideally be 10-15 minutes before the meal, at the start or just after the meal to avoid hyper- and hypoglycemia. Postprandial blood sugar control in the hospital depends on the coordination of three basic steps–fingerstick glucose check, meal tray arrival and insulin injections. In our project, we educated nursing, medical and nutrition staff on the importance of the coordination of these three steps.
Methods: The study was a retrospective chart review. The timing of fingerstick glucose recording, meal tray arrival and insulin administration were followed for 32 patients receiving pre-meal insulin (lispro) during March 2014. The educational sessions for nursing, medical and nutrition staff were conducted during May and June 2014, emphasizing better coordination between these three steps. The same above data were obtained after the educational intervention, during the month of August 2014.Our goal was to have the fingerstick blood sugar testing, meal tray arrival and insulin administration within 30 minutes.
Results: The average fingerstick to insulin administration times for breakfast, lunch and dinner in March 2014 were 64, 32 and 36 minutes respectively. After the educational sessions, there was a decrease in the fingerstick to insulin administration time to 19, 25 and 23, respectively in August 2014. A statistically significant difference was demonstrated for breakfast ($P<0.05$) and dinner and a non-statistically significant was seen for lunch ($P>0.05$, NS).
Discussion: The co-ordination of the three important steps 1.Fingerstick blood sugar measurement 2.Meal tray arrival and 3.Insulin administartion is important in the post prandial blood sugar control while in the hospital. Education of staff on the effects and pharmacokinetics of short acting insulin and its importance of administation in relation to meals appears to be a key factor in this process.
Conclusion: This study demonstrates that education aimed to reinforce the importance in coordinating the timings for fingerstick glucose check, meal arrival and insulin injection can ensure improvement and may subsequently help to avoid glycemic complications in inpatients with hyperglycemia.

Abstract #1219

SEXUAL DYSFUNCTION IN TYPE 2 DIABETIC WOMEN

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Objective: To analyze the factors related with sexual dysfunction in diabetic females, comparing them with non-diabetic women.
Methods: Material and Methods: 381 women 30-60 years old were studied, divided in two groups: diabetic patients and non diabetic woman. They were stratified in two groups: from 30- 45 and 46-60 years old. An anonymous survey was carried out about libido quality, sexual excitement, vaginal humidity, genital sensibility, orgasm, dyspareunia and sexual satisfaction, being described on a scale from 0 to 4. The questionnaire had an alpha confidence index (0.86). X2 test in charts of 2x2, t Student test, and correlation matrix was used for statistical analysis.
Results: In the diabetic women group (30-45 and 46-60 years old) low libido was reported in 30 and 51%; low to absent sexual excitement in 18 and 40%; vaginal dryness in 23 and 30%. Disturbed genital sensibility in 12 and 34%, uncommon orgasm or anorgasmia in 25 and 44%, and dyspareunia in 18 and 18% respectively.
In the non-diabetic women group the reported results was 16 and 40%, 4 and 16%, 13 and 16%, 7 and 20%, 13 and 24%, and 9 and 11%, respectively. When comparing the sexual dysfunction frequency as group, it was 65% in diabetic women and 35% in non-diabetic women ($p = .001$).
Discussion: In the literature it is reported a frequency of sexual dysfunction in the women in general of 41 to 43%. In this study the occurrence of sexual dysfunction in non-diabetic women was lightly smaller (35%), but it was a high number of type 2 diabetic patients (65%) that reported sexual dysfunction.
The highest frequency of sexual dysfunction in the type 2 diabetic women is not related to patient age, it was found always a more dysfunction, even in the 30-45 years old group, although in some of the sexual dysfunction factors the difference was not statistically significant.
At the present time, hypoactive sexual desire disorder is the most commonly diagnosed female sexual disorder followed by orgasmic disorder and vaginal dryness while in this study the most frequent alterations were in the libido, the arousal and the vaginal dryness.
The report of dissatisfaction with its sexual life was higher

among the diabetic women (31 and 37%) when comparing them with the non-diabetics (13 and 32%). However, in spite of report a sexual dysfunction of some type, many of the women qualified their sexual satisfaction as normal or appropriate.
Conclusion: In the present study, there was more sexual dysfunction in the diabetic women that in non-diabetic females, affecting libido, arousal and vaginal lubrication frequently.

Abstract #1220

REDUCED HYPOGLYCEMIA IS OBSERVED WITH INHALED INSULIN VERSUS SUBCUTANEOUS INSULIN ASPART IN PATIENTS (PTS) WITH TYPE 1 DIABETES MELLITUS (T1DM)

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Objective: Conduct a post hoc analysis of hypoglycemia rates from a 24-week, phase 3 randomized study of prandial Technosphere Insulin Inhalation Powder (TI; N=172) versus insulin aspart (IA; N=167) added to basal insulin in pts with T1DM (NCT01445951).
Methods: Annualized hypoglycemia event rates were determined in the overall study population, pts taking ≥1 postmeal supplemental dose (TI n=111; IA n=91), and pts not taking a supplemental dose (TI n=61; IA n=76). Hypoglycemia rates during study weeks 0-12 (dose adjustment) and 12-24 (stable dosing) were assessed. Hypoglycemia was defined as total (all events), confirmed (blood glucose <49 mg/dL), nocturnal (0:00−6:00 AM), and severe (assistance required). Data were adjusted for baseline A1C level.
Results: There was no significant difference in the mean number of supplemental doses taken between the TI and IA arms (34.1 vs 26.6, respectively; P=0.1907). Significantly higher hypoglycemia rates (events per pt/year) were seen for IA versus TI in the overall population (total 81.1 vs 55.2; confirmed 15.0 vs 9.0; nocturnal 8.8 vs 5.9; severe 0.9 vs 0.5; all P<0.05) and pts taking ≥1 supplemental dose (total 96.3 vs 60.9; confirmed 18.6 vs 9.8; nocturnal 11.5 vs 6.5; and severe 1.1 vs 0.6; all P<0.05). In pts not taking a supplemental dose, a significantly higher total hypoglycemia rate was seen with IA versus TI (64.9 vs 46.0 events per pt/year; P=0.0160). Within each arm there was a trend for higher total hypoglycemia rates ≥1 hour after supplemental dosing (events per pt/year) in pts with a higher supplemental dose frequency (TI vs IA: 0.4 vs 0.4; 1.7 vs 2.2; 4.9 vs 6.6 for pts receiving 1-5, 6-20, and 21-60 supplemental doses during the study); there was no significant difference between the TI and IA arms. In the overall study population, within both treatments arms there was a trend for a higher rate of all types of hypoglycemia during weeks 0-12 (titration) versus 12-24 (stable dosing). In pts taking a supplemental dose, a similar trend was seen in the IA arm only. In pts not taking a supplemental dose, there was a trend for higher total, confirmed, and nocturnal hypoglycemia rates during weeks 0-12 versus 12-24 for IA; and total, confirmed, and severe hypoglycemia for TI.
Discussion: These data show that the more rapid onset and offset of action with TI versus IA was not associated with greater supplemental dosing. There was a consistently lower hypoglycemia rate in pts with T1DM treated with TI versus IA, including those taking supplemental doses, and during dose adjustment and stable dosing.
Conclusion: These data show that supplemental TI dosing does not result in an increased hypoglycemia risk.

Abstract #1221

IMPROVEMENT IN CLINICAL OUTCOMES FOLLOWING IMPLEMENTATION OF A DIABETIC KETOACIDOSIS MANAGEMENT PROTOCOL

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Objective: The primary objective was to study the clinical and biochemical outcomes following implementation of an adult diabetic ketoacidosis(DKA) management protocol for patients admitted to the intensive care unit(ICU) in a community hospital.
Methods: We did a retrospective chart review of patients admitted to our hospital with DKA from February 2011 till July 2012. The analysis includes patients who were treated 6 months before the protocol, 6 months after the initiation of protocol and 12 months after the initiation of the protocol. A total of 78 adult patients were admitted to the ICU with DKA during this time frame. Of the total 77 patients included in the study, 24 patients were admitted before the implementation of protocol and 53 patients were admitted after the implementation of protcol. The outcomes were measured by time to resolution of anion gap, length of ICU stay, length of hospital stay, number of hypoglycemic episodes and mortality.
Results: The data is presented as mean +/- standard error of mean (SEM).The time for resolution of anion gap was significantly shorter (10.6 +/- 0.866 hours in first 6 months of protocol, 13.76 +/- 1.983 hours in second 6 months of protocol) in those patients who were managed using our DKA protocol compared to those patients admitted before the implementation of DKA protocol (23.19 +/- 3.253

hours). Patients managed using DKA protocol also had a lower ICU length of stay,(19.62 +/- 1.73 hours in first 6 months of protocol and 20.10 +/- 2.112 hours in second 6 months of protocol vs 39.9 +/- 4.496 hours in patients before protocol). In our study there was no significant difference in the length of hospital stay, number of hypoglycemic episode and mortality.

Discussion: Diabetic ketoacidosis is one of the serious medical emergencies in patients with diabetes mellitus. Although the American Diabetes Association (ADA) has treatment recommendations for hyperglycemic emergencies, significant variation in actual medical practice exists. Implementation of a DKA protocol has been shown to improve key components of DKA management, decrease the time in intensive care unit (ICU) and decrease the length of hospital stay. For this reason we implemented a DKA management protocol for patients admitted in the ICU.

Conclusion: Implementation of the DKA protocol in our hospital resulted in significant reduction in time for anion gap resolution and length of ICU stay. These findings were consistent in first 6 month and second 6 months after the implementation of the protocol.

Abstract #1222

ACUTE PANCREATITIS AND PANCREATIC CARCINOMA DIAGNOSED AFTER LINAGLIPTIN THERAPY: A CASE STUDY

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Case Presentation: An 85 year old lady was hospitalized for gnawing epigastric pain radiating to the back and aggravated by food intake, associated with nausea and diarrhea of 6 weeks duration. She also had a 13 pound weight loss over this time period. These symptoms began 3 weeks after initiating linagliptin for diabetes. She had a history of toxic multinodular goiter and had undertone radioactive iodine ablation 7 years ago. She had been diagnosed with type 2 diabetes one year prior to presentation. She had not tolerated therapy with metformin due to diarrhea, and glipizide and repaglinide due to dizziness. Therefore, linagliptin 5 mg daily had been initiated and Levemir insulin was added for better glycemic control. On presentation, she was found to have mild epigastric tenderness. Laboratory workup was significant for an elevated lipase of 1066 units/L (reference 0-50), leukocytosis of 12,200/mm³ (reference 4,300-10,300) and HbA1c of 9%. Abdominal CT demonstrated a 3.1 x 2.2 x 2.6 cm hypoattenuating mass in the pancreatic head, biliary and pancreatic ductal dilatation, peri-pancreatic fat stranding and lymphadenopathy. She did not have other common risk factors for acute pancreatitis like alcohol intake, hypertriglyceridemia, biliary stones or hypercalcemia. She was managed for acute pancreatitis with bowel rest and intravenous fluids. Over 2 days, her pain improved, lipase trended down and she was able to tolerate a solid diet. Subsequently, she underwent an endoscopic FNA of the mass, which was positive for malignant cells of primary pancreatic adenocarcinoma. CA 19-9 was found to be elevated at 2562 units/mL (reference <32). On review of previous records, she had undergone an abdominal CT 2 years ago which was normal. For diabetes management, Levemir insulin dosage was increased and linagliptin was discontinued. The patient was discharged home with a plan to follow up in the oncology and endocrinology clinics.

Discussion: Linagliptin is an oral dipeptidyl peptidase-4 (DPP-4) inhibitor that has demonstrated favorable efficacy and safety in clinical trials. A recent analysis of 22 placebo controlled trials has reported <0.1% incidence of pancreatitis in linagliptin treated patients. To date, there are no reported cases of pancreatic carcinoma in the setting of linagliptin use.

Conclusion: This case demonstrates acute pancreatitis and pancreatic adenocarcinoma diagnosed shortly after linagliptin therapy for type 2 diabetes mellitus. Pancreatic carcinoma was diagnosed following linagliptin use; however, we cannot be certain that this was medication induced. It is more likely that the carcinoma contributed to the development of pancreatic inflammation which was exacerbated by linagliptin.

Abstract #1223

PRIMARY LIVER ABSCESS AND SEPTIC PULMONARY EMBOLI IN A DIABETIC PATIENT: A NEW INVASIVE SYNDROME.

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Objective: During the past two decades a distinct invasive syndrome that causes klebsiella pneumoniae liver abscess(KPLA) with bacteremia and metastatic infections to central nervous system and other sites has been increasingly reported in Asia. This syndrome is emerging as a global disease and has been recently reported in a few cases in North America. We present a rare case of primary Klebsiella liver abscess with metastatic septic pulmonary emboli in a 52 year old diabetic female.

Case Presentation: A 52 year old diabetic Puertorrican

female who presented with a three days history of poor appetite, nausea, vomiting, fever, diarrhea and altered mental status. On examination the patient was disoriented in person, time and place, and somnolent. Laboratory tests revealed leukocytosis, pancreatitis, elevated liver enzymes and biochemical criteria of diabetic ketoacidosis. Abdominal ultrasound showed an enlarged liver with a large dirty shadow in right hepatic lobe of 10.7x6cm. An abdominopelvic CT showed large gas filled necrotic lesion of 12.3x8.7x12 cm at right hepatic lobe with internal fluid and debris consistent with an hepatic abscess. She was started on broad spectrum antibiotics. Blood cultures were positive for K. pneumoniae bacteremia. Days later patient developed shortness of breath and hypoxemia that required endotracheal intubation. Chest CT was performed and several nodules were seen bilaterally at lung periphery, some showing small central lucency suggesting cavitations. These nodules were in close proximity to small branches of the pulmonary arteries, compatible with septic emboli. After intravenous antibiotics and billiary drainage she gradually improved clinically.

Discussion: In the past decade, 38 patients were diagnosed as having KPLA in two case series in the USA. KPLA is commonly associated with underlying diabetes mellitus. Patients with diabetes are at increased risk for common infection due to impaired host defense mechanisms. The invasiveness of K. pneumonia is related to the hypermucoviscous phenotype associated with serotypes K1 and K2. These serotypes have a high prevalence of resistance to phagocytosis and intracellular killing.

Conclusion: This invasive syndrome seems to be spreading to countries outside Asia. Diabetes plays an important role in the physiopathological process of this disease. Presentation of liver abscess with bacteremia in a diabetic patient infected with K. pneumoniae strains can be the first clinical clue. Rapid diagnosis followed by appropriate treatment should improve a patient's outcome and prevent metastatic complications, which are severe.

Abstract #1224

EVALUATION OF CANAGLIFLOZIN EFFECTS ON PATIENTS WITH TYPE 2 DIABETES AND SEVERE HYPERGLYCEMIA IN A ER-DIVERSION UNITS

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LifeDoc

Objective: Efforts at improving the quality of care in diabetic patients include efficient outpatient management of severe hyperglycemic conditions in order to avoid unnecessary emergency room visit and hospitalization. SGLT2 inhibitors (canagliflozin) are efficient in ameliorating hyperglycemia by fostering a rapid excretion of excessive glucose by the kidney. This pilot study compares safety and efficacy between canagliflozin + hydration (CGF) vs. traditional Insulin + hydration (INS) in the management of severe hyperglycemia in the outpatient clinical setting.

Methods: Patients with T2DM were admitted to the ER-diversion unit at the Lifestyle Diabetes and Obesity Center Memphis TN (LifeDOC) if capillary blood glucose (CBG) was (Accucheck®) >300 mg/dL, had clinical signs of dehydration (orthostatic hypotension, tachycardia, dry mucosa, rapid changes in body weight) and without clinical evidence of underlying infection, coronary heart disease, neurological or cognitive impairment. After clinical evaluation the CGF group were administered a single dose of 300 mg of canagliflozin + 3 hr hydration with NS 0.9 (1 L/hr); Novolog® was administer subcutaneous (0.15 u/Kg) hourly if after 3 hr CBG was >250 mg/dL. Patients in the INS underwent similar hydration protocol but instead subcutaneous insulin was given 1 hr after initiating hydration if CBG >250 mg/dL. Complete metabolic profile and urine analysis were done at baseline and discharge and hourly CBG were obtained while the patient remained in the ER-diversion unit.

Results: The CGF and INS groups consisted of 10 and 39 patients, respectively. The mean age 41.1 ± 12. v 39.9 ± 12.7 y; weight 83 ± 18 kg v 95 ± 25 kg; BMI 29.6 ± 5 v 34 ± 8 baseline CBG 396 ± 76 mg/dL v 415 ± 78 mg/dL were not significantly different. There were no differences in baseline serum chemistries. The decline in CBG over the first hour was 149 ± 62 mg/dL v 86 ± 60 mg/dL, $p<0.01$, time to a CBG < 250 mg/dL was 1.6 ± 0.9 h v 3.1 ± 1.5 h, $p = 0.02$ and the number of patients requiring insulin was 0 (0%) v 27 (69%), $p <0.01$ for CGF and INS groups, respectively. The 1, 2, 3, and 4 h CGB (mg/dL) were 247 ± 96 v 329 ± 82, $p<0.01$; 247 ± 67 v 285 ± 59, NS; 190 ± 47 v 281 ± 59, $p<0.01$; and 182 ± 74 v 227 ± 57, NS.

Discussion: In patients with T2DM and severe hyperglycemia the use of single dose of canagliflozin + hydration may be a suitable and safe treatment strategy. Subjects treated with CGF experienced and faster and more efficient correction of their hyperglycemia preventing the use of insulin and its potential risk of hypoglycemia.

Conclusion: Further research is required to validate the role of canagliflozin in the management of severe hyperglycemic conditions.

Abstract #1225

E-GLYCEMIC MANAGEMENT SYSTEM SAFELY ACHIEVES MULTIPLE PRESCRIBED GLYCEMIC TARGETS WITH RARE HYPOGLYCEMIA FOR GERIATRIC INPATIENTS

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Objective: The aging population and the number of older persons with diabetes is rising in the United States. Approximately 26% of people over age 65 have diabetes (11.2 million elderly adults). The American Diabetes Association and other agencies endorse maintaining blood glucose below 180 mg/dl during inpatient care, yet challenges remain to achieving these goals. This study will attempts to determine if Glucommander, a computerized insulin dosing algorithm, can safely improve glycemic control using 3 different target ranges for patients 80-100 years of age on intravenous (IV) insulin (IVI).
Methods: The study examined outcomes for 678 patients 80-100 years of age requiring IVI to control hyperglycemia. Patients presented were identified by eGMS GlucoSurveillance™ ,a best practice alert protocol triggered when with 2 BG values exceed 180 mg/dl over a 24-hour period. The following glucose targets were evaluated: 100-140, 120-160 & 140-180 mg/dL. Measured outcomes were (1) Average glucose reduction (2) percent of glucose readings in target (3) mild hypoglycemia (BG<70 mg/dl MH) and severe hypoglycemia (BG<40 mg/dl SH) and (4) average glucose day of discharge.
Results: Patients studied for each BG range had an average age of 84 years. Target BG 100-140 mg/dL target had an average initial BG of 202 mg/dL with an average glucose reduction of 85 mg/dL, 92.3% of readings within target range, hypoglycemia rates of 0.79% MH, 0.03% SH, and day of discharge glucose average of 117 mg/dL. Patients with aTarget BG 120-160 mg/dL had an average initial BG of 183 mg/dL with an average glucose reduction of 44 mg/dL, 89% of readings within target range, hypoglycemia rates of 0.54% MH, 0.0% SH, and day of discharge glucose average of 138.3 mg/dL. Target BG of140-180 mg/dL had an average initial BG of 288.9 mg/dL with an average glucose reduction of 135 mg/dL, 89.7% of readings within target range, hypoglycemia rates of 0.3% MH, 0.0% SH, and day of discharge glucose average of 154.1 mg/dL.
Discussion: Our results suggest multiple glucose targets are safely obtained and maintained using treatment with IVI managed by Glucommander for geriatric patients 80-100 years of agewith an average age of 84 years.
Conclusion: All 3 target ranges resulted in a high percentage of blood glucose values <180mg/dL, day of discharge blood glucose average around the midpoint of the respective target range, and overall very low rates of MH or SH during treatment with Glucommander.

Abstract #1226

E-GLYCEMIC MANAGEMENT SYSTEM SAFELY MAINTAINS GLYCEMIC TARGETS WITH A LOW INCIDENCE OF HYPOGLYCEMIA FOR NON-DIABETIC CV SURGICAL PATIENTS IN THE INPATIENT SETTING

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Objective: Patients without a prior diagnosis of diabetes admitted for cardiovascular surgery commonly experience inpatient hyperglycemia. Data from the Sentara Heart Hospital suggest that as many as 40 -50% of patients without a diagnosis of diabetes evaluated for CV surgery will have post-operative hyperglycemia (BG > 180). Hyperglycemia in this patient group is frequently ignored and perceived as transient and/or at high risk to induce hypoglycemia with use of insulin.
Methods: This study evaluated outcomes for 40 CV surgical non-diabetic patients requiring IV and SubQ insulin to control hyperglycemia post surgery. Patients without a diagnosis of diabetes and an A1c <6.5% on admission requiring insulin to maintain glycemic targets were placed on Glucommander (GM) IV, transitioned with GM and then managed on GM SubQ until discharge. The glucose target was set at 100-140 mg/dL for both IV and SubQ. Measured outcomes were (1) percent of glucose readings in target (2) percent of glucose reading above 180 mg/dL (3) mild (<70 mg/dl) and severe (<40 mg/dl) hypoglycemia (4) average A1c on admission and (5) average glucose control during SubQ breakfast, lunch, dinner and bedtime (6) average glucose on IV start and day of discharge and (7) average length of treatment.
Results: Percent of glucose readings in the prescribed target range of 100-140 mg/dL was 95.4% for IV and SubQ GM treated patients from 2,051 total BG's. Percent of glucose readings above 180 mg/dL was 4.2%. There were no (0.0%) episodes of severe hypoglycemia <40 mg/dL for IV or SubQ managed patients. The percent of hypoglycemia <70 mg/dL was 0.4% for both IV and SubQ managed patients. Patients average A1c on admission was

6.0%. Glucose averages for Breakfast was 127 mg/dL, lunch 136 mg/dL, dinner 131 mg/dL and bedtime a 137 mg/dL. Average BG prior to starting IV insulin was 165 mg/dL and BG average on the day of discharge was 135 mg/dL. The average length of IV + SubQ GM treatment was 2.5 days.

Discussion: Our results demonstrate that non-diabetic patients who require insulin were able to maintain prescribed glucose targets safely for both IV and SubQ regimens with Glucommander. Targets were achieved at each IV and SubQ meal measurement period and sustained on day of discharge.

Conclusion: Both IV and SubQ regimens were safe with no severe hypoglycemia (BG <40 mg/dL)and low rates ,0.4%, of mildhypoglycemia (BG <70 mg/dL).

Abstract #1227

PUMPMASTER, A DIGITAL PROGRAM THAT PROVIDES INSULIN PUMP DOSING ADJUSTMENTS WITH RESULTS SUPERIOR TO EXPERIENCED PUMP THERAPISTS

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Objective: To evaluate the safety and effectiveness of a digital program for adjustment of the insulin dosing of Basal-Bolus patients, primarily pump patients.

Methods: A prospective trial involving an Intervention Group using a digital program PumpMaster (Patent applied-for), and a Control Group of patients treated by experienced endocrinologists not using PumpMaster. The primary outcome measure was A1c%. Paired comparisons were made within each group of the patients' A1c%'s before and after treatment. The A1c changes were compared between the two groups. The study was over a 9-year period, but inconsistencies in the patient's visit schedule resulted in instances of time-in-study to be less than 9 years.

Results: Since the beginning of the study 5827 patient visit records have been collected. The 293 patients in the Intervention Group showed an A1c% decrease: (-0.27% in A1c percent points. P<0.001). The 150 patients in the Control Group showed an A1c% increase: (+0.21% in A1c percent points. P<0.04). The comparison of the two A1c% changes showed the Intervention Group to be superior (P<0.0003).

Discussion: The PumpMaster algorithm (Intervention) was designed for insulin pump and Multiple Daily Injection (MDI) regimens. The clinic version of PumpMaster has been used to collect 10 years of pump data. It uses downloads from pumps, meters, and sensors, and provides output comprised of adjusted values of Basal Rates, Carbohydrate-to-Insulin Ratios, and Insulin Sensitivity Factors. It uses the average over the downloaded days of the total day's correction doses as an indicator of the error (+ or -) in the patient's Total Daily Dose of insulin (TDD). It applies a fraction of this error, adjustable by the healthcare professional (HCP) with advice by the program, to adjust the doses. It divides this adjustment between basal and meal insulin in a proportion adjustable by the HCP and advised by PumpMaster, and then it automatically divides this intermediate result among the time intervals in the day as weighted by the input data. These HCP decisions are guided by PumpMaster recommendations. After the adjustment, a printable one-page report is given or emailed to the patient and submitted to the EMR. The algorithm could also be installed in a portable device like an insulin pump or it may be installed on a hospital's computer, a patient's computer, or on the internet.

Conclusion: The concept of "minimum practitioner input" is shown to work. PumpMaster is particularly well-suited to encourage confident pump use by less experienced pump clinicians.

Abstract #1228

E-GLYCEMIC MANAGEMENT SYSTEM PROVIDES SAFE AND EFFECTIVE MEAL COVERAGE FOR CRITICAL CARE AND SURGERY PATIENTS MANAGED WITH IV INSULIN IN THE HOSPITAL

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Objective: The management of post-operative and critically ill patients frequently requires the use of prolonged intravenous insulin infusions (IVI). Current approaches (such as doubling IVI rate premeal and during, additional bolus insulin either IV or SC) to management of hyperglycemia in patients on IVI are varied and generally unsuccessful at maintaining patients within the targeted blood glucose range; either by exceeding target BG or inducing hypoglycemia. We examined the utility of a carbohydrate based IVI adjustment protocol in maintaining targeted blood glucoses in patients consuming meals while on IVI.

Methods: 510 critical care and surgical patients consuming carbohydrates while on IV insulin therapy were evaluated for efficacy of GM Meal Coverage option in maintain BG control on IVI while consuming calories orally. GM Meal Coverage calculates a incremental insulin change

based on patients pre-meal BG and grams of carbohydrate consumed. Qualifying patients with Blood Glucose (BG) above 180 mg/dL were treated with IV insulin using Glucommander (GM). Prescribed glucose target was 100-140 mg/dL for all patients studied. Efficacy and safety were evaluated by the following parameters: (1) BG Average at 3 main measurement points Pre-meal, During Meal and At Meal End mg/dL (2) Percent of hypoglycemic events <40 and <70 mg/dL at initial check BG, plate check BG, post-plate check BG andfinal check BG (3) average BG during total meal (4) percent of glucose readings in target (5) Number of meals covered.

Results: Patients placed on GM Meal coverage had an average BG of 117 mg/dL pre-meal, 127 mg/dL during meal, and 133 mg/dL at meal end. Hypoglycemic events <40 mg/dL was 0.0% for all measurement periods. Hypoglycemic events <70 mg/dL was 0.0% at initial check BG, 0.0% at plate check BG, post-plate check BG 0.13% and final check BG 0.54%. The average BG during total meal coverage was 126 mg/DL. The percent of glucose readings in target was 95.2% during the treatment window. There were 929 meals covered during the study period.

Discussion: Patients using the Meal Coverage option in GM achieved a significant number of BG values within the prescribed target range regardless of pre, during, or post meal timeframe, with a very low incidence of hypoglycemia (<70 mg/dl) and no incidence of critical hypoglycemia (<40 mg/dl).

Conclusion: These results suggest GM can safely maintain prescribed glucose targets with very minimal risk of hypoglycemia for critical care and surgery patients consuming carbohydrates and requiring IV insulin therapy.

Abstract #1229

EFFECTS ON GLUCOSE LOWERING OF A CORTISOL RECEPTOR ANTAGONIST IN CUSHING SYNDROME

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UCI

Objective: The relative effects of mifepristone on insulin secretion and insulin sensitivity in a Cushing's syndrome patient with diabetes

Methods: This study consists of a food intake measurement, an oral glucose tolerance test (OGTT) (75 g) before and 8 wks after mifepristone treatment.

The plasma C-peptide and glucose levels were measured at time 0, 1 hour, and 2 hours during the 2-hour OGTT

A tuna sandwich test was used to measure the amount of food intake and a visual analogue scale to assess the level of subjective hunger.

Case Presentation: A 43-year-old woman (BMI:31.4 kg/m2, HbA1c: 10.4%, FBS: 218 mg/dl) was in consultation for a solid right adrenal mass measuring 2.6 x 1.7 cm on a contrasted CT scan. She complained of a 20- pond weight gain in 2 years. She presented with central obesity, a plethoric moon face, buffalo hump,, and protuberant abdomen. She failed to the overnight 1 mg dexamethasone (DEXA) suppression. For her abnormal DEXA suppression, she underwent a low dose (0.5 mg every 6h x 2 days) and a high-dose (2 mg every 6 h x 2 days) suppression tests. Baseline 24- hour urine and daily 24-hours urine samples were taken during the the low- and high- dose dexamethasone suppression tests; the samples were measured for daily urinary cortisol, creatinine, and 17 (OH)CS. The results showed the lack of complete suppression (< 50% from baseline) during both the low-dose and high-dose suppression studies. These results support the diagnosis fo Cushing;s syndrome from adrenal cortisol-secreting adenoma. The dosage of mifepristone was 300 mg/d x 4 wks followed by 600 mg /d . The results showed (1) Prior administration of mifepristone produced a reduction (35%) in food intake based on the number of sandwich squares consumed in 3 consecutive 10-minute eating periods.(2)A 50% decrease in aappetite that changed from 10/10 to 4/10 on the scale after taking 600 mg treatment for 4 weeks. (3) No change in insulin secretion based on the calculated c-peptide areas-under-the curve observed before and after treatment (710 ng/mlx minute versus 639 ng/ml xmin) despite a significant reduction in glucose level at each time-point measured . An HbA1c reduction from 10.4 % to 7.8% and FBS from 227 to 114 mg/dl in 8 weeks were noted

Discussion: The result indicated the effect of mifepristone on glycemic control involves a decrease in hunger sensation and mild weight reduction 8 lbs (170 -162 lbs) in 8 weeks, thereby the subject experienced improved insulin sensitivity with consequent improvement in glycemic control

Conclusion: Cortisol-receptor antagonists block cortisol receptor binding and can be effectively used as an anti-obesity and anti-diabetic agent for patients with dysmetabolic syndromewith abdominal obesity

Abstract #1230

ACQUISITION OF BLOOD GLUCOSE MONITORING SUPPLIES IS ASSOCIATED WITH MORTALITY IN MEDICARE BENEFICIARIES

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Objective: Self-monitoring of blood glucose (SMBG) is considered to be a critical component in the management of insulin-treated diabetes. The Centers for Medicare & Medicaid (CMS) implemented a trial of the Competitive Bidding Program (CBP) for diabetes supplies in 9 test sites in January 2011. In 2012, CMS stated the program was a success, noting that beneficiary access to supplies was not compromised; however, changes in acquisition of SMBG supplies were not reported. The CBP was implemented nationally in July 2013. We assessed the impact of full acquisition of blood glucose testing supplies vs. partial acquisition on mortality among insulin-treated Medicare beneficiaries.
Methods: We used CMS data from 2009-2012 to assess the impact of CBP on acquisition of self-monitoring of blood glucose (SMBG) supplies by Medicare beneficiaries with a prescription for insulin and record for SMBG purchase. The 2009 records were separated into two cohorts; inclusion in the test sites (TEST; n=43,939) vs. all other non-test sites (NON-TEST; n=485,688). Full SMBG acquisition was defined as >80 of test strips covered, based on 3 test strips per day. Propensity score matched analysis was conducted to control for covariates.
Results: Among these beneficiaries, 71.1% were treated with rapid-acting insulin (including analog pre-mix); 20.4% with rapid-acting and long-acting insulin (including analog, recombinant human pre-mix). Four-year survival was negatively associated with partial SMBG acquisition or no SMBG record in both cohorts $p<0.0001$. In both study groups, the mortality rate was higher among beneficiaries with full SMBG acquisition in 2010 who migrated to partial SMBG acquisition or no SMBG record in 2011 compared with maintaining full SMBG acquisition: TEST, 11.5% vs. 6.6%; NON-TEST, 11.7% vs. 6.2%. However, the mortality rate was lower among beneficiaries with partial SMBG acquisition or no SMBG record in 2010 but migrated to full SMBG acquisition in 2011: TEST, 8.2%; NON-TEST, 7.2%. Similar associations were seen in propensity matched score matching.
Discussion: The available data did not allow us to assess actual utilization of SMBG by Medicare beneficiaries; however, our analysis showed a significant the association between SMBG acquisition and mortality.
Conclusion: Our findings suggest that safeguards are needed to identify and mitigate disruption of access to SMBG supplies.

Abstract #1231

EFFICACY OF GLYCOSYLATED HEMOGLOBIN VS. OGTT IN DIAGNOSING A SAMPLE OF AT-RISK CHILDREN AND ADOLESCENTS: A COMPARISON STUDY

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Objective: DM is one of the fastest growing epidemics in children and adolescents and is becoming increasingly associated with obesity. The ADA recommends the use of glycated hemoglobin (Ghb) to assess risk for DM and pre-DM. We aim to compare HbA1c vs. OGTT in accurately measuring severity of risk for DM and pre-DM to assure the best window for intervention. We must also evaluate any potential discrepancies in thresholds for HBA1c between youth and adults.
Methods: A review of our prospectively growing database was conducted among 904 children and adolescents at-risk for DM or pre-DM were referred to the Lifestyle Diabetes and Obesity Center (LifeDOC) for DM risk stratification and obesity management. Results of FPG and OGTT were obtained on the same day using prospectively collected data. Patients with no existing criteria underwent HbA1c analysis to rule out presence of DM two weeks prior. From this data, we determined sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and criterion thresholds, creating a risk profile for each subject according to ADA standards.
Results: Mean Age and BMI = 11.6 ± 3.32 years & 33.4 ± 8.12 kg/m2, respectively. Mean Ghb = 5.7 ± 0.5% (39 ± 1.5 mmol/mol). Using this method in testing for DM held high levels of PPV & NPV as well as specificity for all groups. While Ghb accurately predicted disease in children and adolescents diagnosed via OGTT with sensitivity of 90.9%, success was unreliable when screening with Ghb alone. Prevalence of DM based on OGTT v Ghb = 1.7% (n=15) v 2.9% (n=26). Prevalence of pre-DM based on the OGTT v Ghb = 5.6% (n=51), v 54.3% (n=491). ROC curve analysis indicates threshold for DM diagnosis = Ghb > 5.8% (40 mmol/mol). Area under the curve = 0.763, indicating threshold for children and adolescents is significantly lower than the 6.5% (48 mmol/mol) recommended by the ADA. Ghb proved unreliable in predicting pre-DM when compared to OGTT. While sensitivity and NPV = 82.7% and 97.9%, respectively,

specificity and PPV = 44.7% and 8.6%, respectively.
Discussion: The specificity and PPV indicated unreliable success in identifying individuals with the disease using the Ghb alone. Ghb can be successfully used to screen for pre-DM or DM in a population displaying risk factors for the disease. Additional testing is required in order to best establish optimal threshold values for children and adolescents with normal BMI and no risk factors.
Conclusion: While it allowed identification of subjects without pre-DM, Ghb displayed a tendency to over-diagnose children and adolescents when relied solely. Thus, using Ghb alone over OGTT has proven to be an unreliable form of identifying DM and pre-DM for early intervention.

Abstract #1232

INTERIM ANALYSIS OF THE FEEHD SURVEY: FASTING-EVOKED EN-ROUTE HYPOGLYCEMIA IN DIABETES

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Objective: To increase awareness of an overlooked form of hypoglycemia, referred to as fasting-evoked en-route hypoglycemia in diabetes (FEEHD), which occurs in patients who are routinely asked to fast overnight for laboratory tests without adjustment of hypoglycemic medications. We recently published observational studies, a case series and a review article addressing FEEHD, but there are no studies to evaluate the prevalence of this iatrogenic, potentially harmful adverse event in diabetes management. Because FEEHD may occur while patients may be driving, this could lead to traffic accidents. This study was designed to evaluate the prevalence of FEEHD in clinical practice settings.
Methods: Patients with diabetes attending family and medical clinics were surveyed during their office visits. Inclusion criteria included the presence of diabetes and the use of anti-diabetic medications that could cause hypgolycemia, mainly insulin and sulfonylurias. Patients were asked if they had hypoglycemic events (plasma glucose below 70 mg/dL), while fasting for laboratory tests, in the preceding 12 months. If so, how often, as well as the details of the circumstances leading to, and associated with these events, and whether or not they had made medication adjustment before and during the fasting period.
Results: The study is still ongoing, since the end of October, 2014, at multiple academic-based clinical sites (including one diabetes clinic). At the time of the writing of this abstract, 74 patients, aged 53 years completed the survey. Of these, 58% were women; 72% had T2DM; and 90% were on insulin and or sulfonylurias (with or without other medications). Thirty seven patients (50%) had fasted overnight, but only 4% reported making medication adjustments on their own or per their providers' instructions. Twenty three patients (31%) had at least one FEEHD event in the preceding 12 months, with a frequency of up to 7 events. Of the 23 patients who experienced FEEHD, only 61% notified their providers of the event(s). Still, rarely were preventive measures taken to prevent future events.
Discussion: These interim results vividly confirm the occurrence of FEEHD in clinical practice, and indicate a significant prevalence (31%). This is the first study, to our knowledge, to examine the prevalence of FEEHD. The study is ongoing untill a larger sample size is achieved. One limitation of the study is the reliance on patients' recollection of events.
Conclusion: This study serves as a means of increasing awareness about the occurrence of FEEHD in clinical practice, which clinicians appear to overlook. This study can be used to inform future projects and national diabetes care guidelines, to examine this complex clinical problem.

Abstract #1233

9-MONTH SAFETY AND EFFICACY OF SAROGLITAZAR IN DIABETIC DYSLIPIDEMIA

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Objective: This was a post-marketing surveillance study conducted with the objective to evaluate the safety and efficacy of saroglitazar 4mg once daily in patients with diabetic dyslipidemia in clinical practice.
Methods: It was a multicenter, observational phase 4 study conducted all over India. Total 787 patients with diabetic dyslipidemia were prescribed saroglitazar 4mg once daily and lipid and glycemic parameters were evaluated at baseline, 3 month, 6 month and 9 month follow up.
Results: The baseline patients' demographic profile was: mean age 53 yrs, mean body weight and BMI 73.9 kg and 27.5 kg/m2 respectively. There were 507 (64.4%) male participants in this study. At baseline, 722 (91.7%) and 395 (50.2%) patients were on on-going antidiabetic and statin therapy. Among the patients who were on on-going antidiabetic medications at baseline, the most commonly

reported antidiabetic medication was metformin (73.7%), followed by sulfonylureas (58.3%), gliptins (26.2%), insulin (17.4%) and glitazones (5.2%). At 9 month follow up, there were significant reduction in triglycerides by 43.8% (297.9 ± 122.59 mg/dL to 156.1 ± 50.72 mg/dL; p<0.0001), LDL-C by 18.5% (132.5 ± 47.90 mg/dL to 100.5 ± 29.87 mg/dL; p<0.0001), total cholesterol by 23.1% (239.9 ± 74.66 mg/dL to 176.6 ± 44.56 mg/dL; p<0.0001), non HDL-C by 29.7% (199.0 ± 76.53 mg/dL to 131.9 ± 44.69 mg/dL; p<0.0001). There was statistically significant improvement in HDL-C from 41.0 ± 14.73 mg/dL at baseline to 44.5 ± 8.31 mg/dL at 9 month follow up. There was significant reduction in HbA1C from baseline 8.5 ± 1.37% to 7.0 ± 0.78% at 9 month follow up (p<0.0001). Fasting and post-prandial blood sugar were also significantly reduced at 9 month follow up by 28.1% and 35.2% (p<0.0001) respectively. In a subgroup analysis of patients with baseline HbA1C less than 7% (n=60), HbA1C was significantly reduced at 9 month follow up from mean baseline value of 6.6 ± 0.38% to 6.1 ± 0.58% at 9 month follow up, while in patients with baseline HbA1C ≥7%, HbA1C was significantly reduced from 8.7 ± 1.29% to 7.1 ± 0.73% (p<0.0001). Saroglitazar treatment was not associated with increase in body weight (73.9 ± 11.92 kg at baseline to 72.4 ± 11.55 kg at 9 month follow up). Saroglitazar was found to safe and well tolerated, without reports of any serious adverse event.

Discussion: Saroglitazar is the world's first commercially available dual PPAR α and γ agonist, approved in India for the treatment of diabetic dyslipidemia.

Conclusion: The current study indicates that 9 month treatment with saroglitazar is safe and effective for the control of glycemic and lipid parameters in patients with diabetic dyslipidemia.

Abstract #1234

DXA SCREENING AFTER FRAGILITY FRACTURE: A NEED FOR QUALITY IMPROVEMENT

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Objective: This quality improvement (QI) project aims to identify the frequency of appropriate osteoporosis screening after a fragility fracture.

Methods: We retrospectively reviewed 918 charts with the diagnosis of fracture based on ICD-9 codes in patients admitted to a tertiary academic hospital from January 2009 to November 2012. After excluding 419 patients for traumatic/pathological fractures, and mortality within the subsequent 12 months, 499 patients were included in the study. We defined successful osteoporosis follow up by a DXA within 1 year after hospitalization or initiation of bisphosphonate treatment ± 2 years prior to fracture. Vitamin D25-OH level was also assessed within 12 months of the fracture.

Results: 269 patients had no post fracture follow-up within the hospital system. Out of 231 patients with fragility fracture and documented follow up, 62 (12%), which is slightly more than one-quarter of subjects with known follow-up (26%), had successful screening and intervention for osteoporosis. There were 166 patients (33%) with vitamin D levels checked either at the time of admission or within 12 months prior. One-third of patients with documented follow-up failed to obtain appropriate screening for osteoporosis.

Discussion: It is a well-established fact that those patients who suffered fragility fracture are at a higher risk to suffer subsequent fractures. Admission for fragility fracture is a unique opportunity to investigate the underlying cause of fracture and ensure effective secondary preventive care. However, existence of a care gap in secondary fracture prevention remains a challenge in US healthcare. It is very important to identify and address any existing disconnect in post fragility fracture management to minimize both the debilitating consequences of subsequent fractures for patients and economic burden to healthcare. Hence, organizations advocated initiation of a fracture liaison program with a goal to optimize appropriate osteoporosis screening and secondary preventative assessment and intervention triggered by a fragility fracture admission. In our QI project, the concerning lower rate of successful post fracture osteoporosis assessment will serve as a basis for planning subsequent implementation phase on how to emphasize the need for DXA and osteoporosis management.

Conclusion: This QI project serves as an effective tool to help identify areas of improvement for better patients' outcomes after a fragility fracture. The action phase of this project is ongoing with an aim to bridge the gap between fragility fracture and secondary osteoporosis care.

Abstract #1235

OSTEOGENESIS IMPERFECTA: DIFFERENCES IN FRACTURE RATES BETWEEN RESPONDERS AND NON-RESPODERS FOLLOWING BISPHOSPHONATE THERAPY

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Objective: Bisphosphonates (BP) are extensively used for the treatment of children and adults with Osteogenesis Imperfecta (OI). Many but not all children respond to BP with a decrease in fractures but fracture response to BP in adults is considered marginal. This report compares metabolic and bone biomarker responses to BP treatment in patients who do, or do not, decrease fractures following BP treatment.
Methods: 19 children treated with pamidronate, birth to age 18, were divided into treatment responders and non-responders according to the incidence of fractures during and following BP treatment. In children, the treatment period may have started at birth and was of variable duration. Responders were defined at having no fracture during the period of treatment. In 34 adults and 12 non-treatment controls we assessed fracture incidence covering 5 year intervals before and after a minimum of 3 years of BP treatment.
Results: In children the average duration of treatment for the responders was 42.6±8.1 months and 72.7±10.97 months for the non-responders (p=0.02). The mean number of fractures recorded in children during the treatment period was 4.8±3.4 in the responders vs.15.6±9.3 in the non-responders (P=0.02). All responders were type I OI. Non-responders were: 6 type I, 3 type III, and 2 type IV. In children we found no significant difference between the two groups for levels of vitamin D, phosphorus, alkaline phosphatase, osteocalcin and C-telopeptide (CTX). In treated adults (types 1, III, IV) and non-treated controls (types I, IV) there was no difference the mean number of fractures during the 5 year period before treatment (0.86±0.18) or after treatment was started (1.06±0.15; p=0.380). In adults mean treatment responses were not significantly different over 5 year intervals between the treated and non-treated groups for vitamin D, calcium, alkaline phosphatase, phosphorus, CTX or N-telopeptide. As expected, osteocalcin levels remained significantly higher in the non-treated group 31.55 ng/ml vs. 13.73 ng/ml; p= < 0.001).
Discussion: The reasons for non-response in certain children remains unclear. This is not reflected in differences in vit D levels or bone biomarkers between responders and non-responders. In adults, lower bone turnover compared to children may decrease response but we did not find that reflected in bone biomarker responses to treatment. Assessment of fracture rate response rather than BMD changes to BP treatment requires ongoing evaluation in both children and adults.
Conclusion: Certain children and adults as a group do not decrease fracture rate in response to BP treatment. Understanding why may lead to improved treatment.

Abstract #1236

THE BLOOD TURNOVER MARKERS AND PARATHORMON LEVELS IN MENOPAUSAL WOMEN WITH VITAMIN D DEFICIENCY

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Objective: The hypovitaminosis D is a frequent event especially in menopausal women. The bone turnover markers (BTM) might be related to the vitamin D deficit which might be associated or not with high parathormon levels (PTH).
We aim to analyze the BTM and PTH in menopausal women with abnormal low vitamin D.
Methods: This is a cross-sectional study in women. The inclusion criteria were menopausal state and low vitamin D. The exclusion criteria were active or previous bone neoplasms, or specific therapy for osteoporosis or bone metastases. The 25-hydroxyvitamin D or 25(OH)D was assessed (chemiluminescence), as well as intact PTH and BTM: CrossLaps (CL), Osteocalcin (OC), and serum total Alkaline Phosphatase (AP). Statistical significance was at p<0.05.
Results: 353 women had 25(OH)D<30ng/mL. Three groups were formed based on 25(OH)D levels: group I (N=111, 25(OH)D≤9.99ng/mL); group II (N=182, 25(OH)D between 10 and 19.99ng/mL); group III (N=60, 25(OH)D between 20 and 29.9ng/mL). The values of BTM were for group I/II/II (mean±SD) as following. CL = 0.49±0.29/ 0.62±0.44/ 0.48±0.28ng/mL (normal between 0.226 and 1.008ng/mL), and were not statistically significant different between 2 continuous groups (goup I-II: p=0.34, group II-III: p=0.49). OC = 23.05±11.4/ 24.22±13.2/ 23.3±14.16ng/mL (normal between 15 and 46ng/mL), and were not statistically significant different between 2 continuous groups (goup I-II: p=0.44, group II-III: p=0.8). AP = 80.14±28.16/ 76.7±24.9/ 76.77±30.8ng/mL (normal between 38 and 105ng/mL), and were not statistically

significant different between 2 continuous groups (goup I-II: p=0.29, group II-III: p=0.8). PTH values were for groups I/II/III: 54.63±28.16/ 48.89±24.7/ 53.44±38.67 ng/mL (normal between 15 and 65ng/mL), and were not statistically significant different between 2 continuous groups (group I-II: p=0.14, group II-III: p=0.29).
Discussion: As limit of study we mention that this is a single centre experience and the data are difficult to be extrapolated to the Caucasian population in our geographic area.
Conclusion: Based on our observations, in menopausal women with levels of 25-hydroxyvitamin D less than normal, the bone turnover markers, neither the intact parathormon levels were not statistically significant between groups with different levels of vitamin D deficit.

Abstract #1237

DIETARY INTAKE, PHYSICAL ACTIVITY LEVEL, AND SOCIOECONOMIC STATUS AS DETERMINANTS OF VISCERAL OBESITY IN ADULTS - A BRAZILIAN COMMUNITY-BASED STUDY

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Objective: The aim of this study was to investigate if dietary intake, physical activity level, and socioeconomic status are determinants of abnormal waist circumference and if visceral obesity affects the metabolic profile of middle age Brazilian adult.
Methods: A cross-sectional study was conducted with 1557 middle age adults (74% females) screened to participate in a lifestyle changing program. Anthropometric (weight, BMI, waist circumference), biochemistry, physical activity (IPAQ-Long, version 8), cardiorespiratory fitness (VO2 peak), dietary intake (24-hour recall, HEI), and blood pressure were assessed for all participants. Visceral obesity was characterized by abnormal values of waist circumferences (WC). NCEP criteria were used to characterize all Metabolic Syndrome components. Logistic regression (Odds ratio) was performed in order to observe the association of dietary intake, physical activity, income, and education level with visceral obesity.
Results: Low carbohydrate intake (OR=1.72, CI:1.14-2.58) represented a risk factor for high WC. Consumption of at least three servings of fruit a day (OR=0.68, CI:0.49-0.96) and moderate to high level of physical activity (OR=0.53, CI:0.36-0.77) showed to be protective against visceral obesity. Cardiorespiratory fitness correlated negatively with abnormal WC (r=-0.33, p<0.001). Normal WC protects against high blood pressure (OR=0.47, CI:0.36-0.62), high blood glucose (OR=0.41, CI:0.30-0.54), low HDL-C (OR=0.58, CI:0.45-0.75), high triglycerides (OR=0.59, CI:0.46-0.76), high C-reactive protein (OR=0.44, CI:0.30-0.66) and high uric acid (OR=0.29, CI:0.19-0.43). Low household income increased the likelihood of visceral obesity, even after adjustment for confounders.
Discussion: Visceral obesity is an independent risk factor for cardiovascular disease, type 2 diabetes mellitus, hypertension, dyslipidemia, coagulopathy, and some types of cancer. Poor diet and physical inactivity are associated with visceral obesity. In our population, adequate fruit intake and moderate to high levels of physical activity were protective against abnormal WC, while low income and low carbohydrate intake (<50% of total energy intake) represented a risk factor for visceral obesity. Low carbohydrate intake was replaced with increased fat intake in our subjects. Visceral obesity increased the risk for Metabolic Syndrome components.
Conclusion: This study indicates that planning and implementing effective lifestyle modification strategies and actions may be important for preventing or reducing visceral obesity and Metabolic Syndrome.

Abstract #1238

COMPARISON OF CARDIOVASCULAR RISK FACTORS IN CHILDREN AND ADULTS STRATIFIED BY AGE AND SEVERITY OF OVERWEIGHT

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LifeDoc

Objective: To examine the variation in cardiovascular risk factors (CVRF) and evaluate congruencies in the risk profiles between overweight and obese children and adults.
Methods: A cross-sectional study of prospectively collected patient data spanning January to December 2011 was conducted, examining a sample multiracial overweight/obese patients initially referred to Lifestyle Diabetes and Obesity Center (LifeDoc), Memphis, TN for the management of uncomplicated obesity. Participants in this cross-sectional investigation had no diagnosis of pregnancy, diabetes mellitus and were not taking any medications affecting glucose metabolism. Subjects had no known kidney, liver or heart conditions, and were grouped according to age; Children (5 – 11.99 y), Adolescents (12-17.99 y), and Adults (>18 y). Nine possible CVRF were identified from anthropometrics, a comprehensive lipids analysis, CRP, blood pressure, and a 2-hour oral glucose tolerance test (OGTT) using national

standards. Relative BMI (RBMI) was calculated based on the subject's BMI divided by the 50th percentile BMI for age and sex times 100. A RBMI <150 (~2 z-scores) were classified as overweight and a RBMI >150 as obese.
Results: A total of 759 subjects were evaluated, 36.1% males, 63.8% Black, 27.2% Hispanic and 10% White; mean BMI 33.0+9.0; and mean RBMI 169.5+41.4. There were 259 (34.1%) Children (28.2% overweight and 71.8% obese), 296 (39.0%) Adolescents (14.5% overweight and 85.5% obese), and 204 (26.9%) Adults (61.8% overweight and 38.2% obese). Type 2 diabetes: 1 (0.4%), 11 (3.7%), and 5 (2.5%) and impaired glucose tolerance: 12 (4.6%), 28 (9.5%) and 28 (13.7%) were identified in Children, Adolescents and Adults, respectively, $p<0.05$. The incidences of CVRF across the three age groups (Children [C], Adolescents [ADOL], Adults) and two RBMI categories (< 150 v >150) are: > 1 CVRF [C 86.3% v 97.8%*, ADOL 93% v 100%*, Adults 100% v 100%]; > 2 CVRF [C 57.5% v 92.5%*, ADOL 72.1% v 91.3%*, Adults 84.1% v 94.1%**]; > 3 CVRF [C 27.4% v 72.0%, ADOL 37.2% v 77.9%, Adults 53.2% v 75.6%*]; > 4 CVRF [C 15.1% v 46.8%*, ADOL 37.2% v 77.9%*, Adults 28.6% v 39.7%] *$p<0.001$, **$p=0.02$.
Discussion: This study demonstrates that excessive weight in children and adolescent is associated with a high number of CVRF and a high incidence of altered glucose metabolism.
Conclusion: A RBMI >150 was associated with a higher number of cardiovascular risk factors across all age groups. Treatment strategies to prevent the development of cardiovascular disease will likely need to be implemented in childhood.

Abstract #1239

ISOLATED AND RECALCITRANT HYPOCALCEMIA AFTER ROUX EN Y GASTRIC BYPASS SURGERY: A CASE REPORT

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Objective: As the most effective treatment for obesity, roux-en-Y gastric bypass (RYGB) is an increasingly common procedure. Nutrient deficiencies are one postoperative complication. Although RYGB induces calcium and vitamin D deficiencies, isolated hypocalcemia is rarely reported and usually with contributory factors like secondary hypoparathyroidism after thyroidectomy.
Case Presentation: We report a case of a 62-year-old female with severe hypocalcemia refractory to vitamin D correction, presenting as secondary hyperparathyroidism four years post-RYGB for morbid obesity, without thyroidectomy. Despite aggressive oral calcium replacement, serum calcium levels ranged from 7.1-7.5 mg/dl (nl: 8.5-10.1), ionized calcium level was 4.23 mg/dL (nl: 4.43-4.93), and intact PTH was 237.8 pg/mL (nl: 14-72 pg/ml). Osteoporosis developed 3 years post-surgery, complicated by fragility fractures. Cortical bone mineral density at the forearm fracture site was 0.662 g/cm3. Intravenous infusions of 4 grams calcium gluconate during office visits were then added to her oral calcium therapy. Subsequently, calcium levels improved and PTH levels decreased. The patient was evaluated for other malabsorption syndromes, but had a normal celiac disease panel and normal creatinine, albumin, zinc, iron, magnesium, phosphorus, TSH and 24-hour urine calcium levels. Notably she does not have malabsorption for vitamin D: serum level was at goal, with supplementation of oral vitamin D2 at 50,000 units weekly for 3 months. Reversal of gastric bypass is being considered due to severe calcium malabsorption.
Discussion: The pathophysiology of calcium malabsorption after gastric bypass is multifactorial. Literature suggests that gastric bypass using a relatively long alimentary limb (150cm) may be an important risk factor for greater malabsorption. No clear consensus specifies the lengths of bypassed segments that best predict calcium homeostasis.
Conclusion: Monitoring and supplementation of calcium and vitamin D should address recalcitrant postoperative hypocalcemia in patients undergoing RYGB surgery and are showing signs of metabolic bone disease. Due to the malabsorptive enteric anatomy, providers should closely monitor calcium and vitamin D levels, preventively administering supplementation to avoid the symptomatic effects of hypocalcemia and complications associated with vitamin and mineral deficiencies.

Abstract #1240

GASTRIC CARCINOID TUMOR TYPEII IN THE SETTING OF METASTATIC GASTRINOMA – A RARE COEXISTANCE

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Case Presentation: A 60 yr old WM was evaluated for chronic non bloody, watery diarrhea and iron deficiency anemia He also reported nausea, emesis, early satiety, unintentional weight loss and episodic facial flushing. Physical examination only revealed mild epigastric tenderness. Laboratory results showed mild anemia.

An EGD showed a 6 mm nodule in the gastric body consistent with gastric carcinoid. A follow up abdominal CT showed multiple liver lesions concerning for metastatic disease. Endoscopic ultrasound of UGI showed a hyperechoic, homogeneous, rounded mass of 4.3cm x 3.5cm in the pancreaticoduodenal area highly suspicious of a Gastrinoma Serum Gastrin level was 47000pg/mL. A 24 hr urine HIAA level was 10.1. An Octreotide scan was intensely positive for Octreotide activity within the pancreaticoduodenal mass and liver lesions compatible with a neuroendocrine tumor (NET). Biopsies of the liver lesions were strongly positive for Chromogranin A, Synaptophysin and Gastrin suggesting a metastatic Gastrinoma. The patient was treated with high dose PPI and Lanreotide .Four years later he underwent trans-catheter arterial chemoembolization (TACE) of the liver lesions with significant control of his symptoms. He underwent chemotherapy with capecitabine, temozolomide and everolimus. The pt did well for about 6 years until recently he developed ascites requiring monthly paracentesis.

Discussion: In our case strongly positive IHC staining of liver lesion for gastrin is consistent with metastatic gastrinoma. Our patient was not a suitable surgical candidate and he has responded well to current medical treatment.

Gastric carcinoids (GCA) are rare (5% of all carcinoid tumors and less than 1% of all stomach tumors) NETs arising from enterochromaffin like (ECL) cells either in the setting of hypergastrinemia (type I/II) or sporadically (type III). Clinical presentations include anemia (72%), abdominal pain (69%) and carcinoid syndrome (11%). Immunohistochemistry (IHC) showing positive staining for Chromogranin A and Synaptophysin provides the diagnosis of carcinoid tumor.

Conclusion: In conclusion this is rare metastatic gastrinoma associated with type II gastric carcinoid presenting as a carcinoid syndrome with good response to medical treatment.

Abstract #1241

METFORMIN HAS A POSITIVE THERAPEUTIC EFFECT ON PROSTATE CANCER IN DM2 PATIENTS

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Objective: Prostate cancer and type 2 diabetes mellitus are both common diseases found in the elderly male population. The diabetic drug, metformin, has been shown to have anti-neoplastic properties and demonstrated better treatment outcomes when used as adjuvant therapy in breast cancer patients. Some proposed signaling pathways include inhibition of mTOR and activation of tumor suppressor genes p53 and LKB1 via AMPK. The analogous to breast hormonally-sensitive cancer in men is prostate. We investigated improved survival, lower risks of recurrences, and lower and more stable levels of prostate specific antigen (PSA) in DM2 patients with prostate cancer on metformin.

Methods: Prostate cancer patients with type 2 diabetes that remained on metformin were compared to controls not on metformin matched by age, weight, race, and Gleason score cancer staging. The endpoints of our study included final PSA values, number of recurrences, metastases and number living for each group. Final hemoglobin A1C (HbA1C) and creatinine levels were obtained and compared in both groups. Inclusion and exclusion criteria were identified. Statistical analysis included paired and unpaired t-test and ANOVA.

Results: Final PSA values were found to be significantly lower for prostate cancer patients on metformin ($p < 0.05$). We found significantly fewer deaths (25% vs 10%), fewer recurrences (22 vs 15), and fewer metastases (7 vs 3) in the metformin group. The primary treatments for prostate cancer (i.e. surgery, radiation, androgen depletion) were found to be comparable in both groups

Discussion: Our data suggests that metformin has an overall effect of keeping PSA values low years after treatment and preventing recurrence and spread of the cancer. PSA value is an important prognostic indicator of prostate cancer with large, increasing values from a baseline value signifying recurrence. Although PSA has been criticized for being a non-specific marker that can be markedly elevated due to age, benign prostatic hyperplasia, or prostatitis, a rise in PSA after diagnosis and treatment of prostate cancer is more specific for recurrence.

Conclusion: Our retrospective study shows that adjuvant use of metformin leads to a better prognosis in prostate cancer. Not only are PSA levels controlled for several years, but there are significantly fewer cancer recurrences in metformin treated patients. HbA1C levels were similar in both groups, so increased mortality in the control group was not due to complications of their diabetes. Overall, these results are promising and should be followed up with a prospective study to assess long-term survival.

Abstract #1242

GENERALIZED EDEMA CAUSED BY ALBIGLUTIDE (TANZEUM) - A CASE REPORT

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Objective: Albiglutide (Tanzeum™ [US]; Eperzan® [EU]) is a once weekly GLP-1 agonist. The most common side effects include gastrointestinal symptoms and localized reaction at the site of injection. We report a first case of Albiglutide induced generalized edema.
Case Presentation: A 35 year old female with type 2 diabetes mellitus that was diagnosed 5 years ago, who is being managed with metformin, was given Liraglutide 6 months ago to improve her glycemic control. However, for a better dosing schedule, Liraglutide was subsequently discontinued and a recently approved medication, Albiglutide, was added. The following day, post administration of her first dose, the patient reported swelling of her lower extremities, which progressed over the next 2 days to involve the face and upper extremities. She also had a weight gain of five pounds. There was no other possible explanation of the generalized edema and the patient did not have cardiac, liver, or renal disease. There were also no recent changes in her medications. Her physical examination was remarkable for generalized edema and periorbital puffiness. There was no stridor and her lungs were clear to auscultation. Further physical examination was unremarkable. Laboratory investigations, including thyroid function tests, were all normal. Chest X Ray, electrocardiogram and ultrasonography of her abdomen were all unremarkable. Due to the cause and effect relationship, it was presumed that her generalized edema could be due to a possible side effect of Albiglutide. Consequently, Albiglutide was discontinued, which lead to the resolution of her generalized edema; thereby, confirming Albiglutide as the causative agent. Liraglutide was then resumed and our patient remained symptom free
Discussion: Adverse effects of Albiglutide are mostly gastrointestinal, acute pancreatitis, hypoglycemia usually in conjunction with use of sulfonylureas or insulin and localized skin reactions. To the best of our knowledge, this is the first case report of generalized edema caused by Albiglutide. The pathophysiology is not clear. Since her albumin level was normal and changes in oncotic pressure cannot be the cause, the most likely possible mechanism is fluid retention.
Conclusion: Our case emphasizes the potential for generalized edema as an adverse effect of Albiglutide. Patients prescribed Albiglutide should be aware of such adverse effects and if leg swelling occurs with its use, the medication should be discontinued to prevent its progression to generalized edema.

Abstract #1243

PRIMARY HYPERPARATHYROIDISM IN ADOLESCENTS AND YOUNG ADULTS HAS A MORE DRAMATIC INITIAL PRESENTATION WITH AN EMERGENCY ROOM ADMISSION DUE TO SEVERE HYPERCALCEMIA AND ADVANCED STAGE DIAGNOSIS

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Objective: We review the clinical characteristics of primary hyperparathyroidism (PHPT) in adolescents and young adult patients based on our institutional experience. The aim of this study was to review the progression of disease in these patients, and to highlight the severity of hypercalcemia and initial presentation of symptoms that more often requires hospitalization.
Methods: A retrospective study included adolescents and young adult patients age < 30 years with PHPT, who underwent parathyroidectomy by single surgeon (AS) between May 2008 and March 2015. Patients with MEN were excluded.
Case Presentation: Of 388 consecutive parathyroidectomy patients, 12 met the criteria for the study (3%). These patients presented with more advanced disease, and high levels of hypercalcemia. The mean calcium level was 12.5 mg/dL(10.6-16mg/dL), PTH was 221 pg/mL(67-800 pg/mL). Four (36%) were admitted into the emergency room due to severe hypercalcemia at initial presentation of PHPT, with symptoms of severe abdominal pain, nausea, vomiting, weakness and fatigue; one patient had pancreatitis. Bone density was measured in 6 patients: two had osteoporosis (33%), one osteopenia (17%). One patient presented with nephrolithiasis. Ultrasonography and sestamibi localized single parathyroid adenoma in 92% and 80% of patients respectively. All eleven patients (one surgery is pending) underwent parathyroidectomy with findings of a single parathyroid adenoma (mean volume: 4.4 cm3; range: 0.6-21 cm3). Pathology in all cases was consistent with a single, and usually large, parathyroid adenoma. There were no MEN syndromes.
Discussion: PHPT is rare in adolescents and young adults (3%). If adult patients are commonly asymptomatic,

adolescents and young adult patients, however, presented with severe and unspecific symptoms, such as vomiting and fatigue, and have more advanced disease. Four patients were admitted to the emergency room for treatment of symptoms associated with dramatic elevation of calcium levels (up to 16 mg/dL) as the initial presentation of PHPT, and five patients had end organ damage upon initial diagnosis, including bone and renal diseases. Only two patients were asymptomatic upon diagnosis. The most common symptoms in these 12 young PHPT patients during initial presentation were sever tiredness, weakness, and fatigue, presenting in 5 (42%) of patients. This group of symptoms should be noted as being associated with this disease, so that evaluation for hyperparathyroidism can be prompt in young patients.

Conclusion: Teenagers and young adults with PHPT, compared to adults, commonly present with severe hypercalcemia, more often require hospitalization, and have a greater likelihood of end organ damage if left undiagnosed.

Abstract #1244

A CASE OF CALCIPHYLAXIS POST-LIVER TRANSPLANTATION

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Objective: Calciphylaxis is a rare disease characterized by calcification of arterioles causing ischemia and subcutaneous tissue necrosis. It generally occurs in patients with ESRD on hemodialysis (HD). We present a case of calciphylaxis occurring in a eucalcemic post- liver transplant patient.

Case Presentation: 53 year old male presented with painful skin lesions 17 days post-liver transplantation for alcoholic cirrhosis. Tender, violaceous lesions developed over the course of 2 weeks, on the posteromedial aspect of his distal lower extremities. Skin biopsy confirmed calciphylaxis. Prior to transplant, he had developed hepato-renal syndrome requiring brief HD and had received a course of prednisolone.

Current labs showed Cr 2.2 mg/dL, corrected Ca 9.3 mg/dL, Phos 4.5 mg/dL, PTH 96 pg/mL and 25-(OH)D 20ng/mL. Ca:Phos product was 42. Parathyroid U/S was normal. Labs were consistent with secondary hyperparathyroidism (HPT). Treatment was started with sodium thiosulfate and hyperbaric oxygen therapy (HBOT). Cinacalcet further reduced calcium and PTH. By hospital day 9, calcium remained normal and PTH decreased to 16 pg/mL. Phos remained elevated, so Sevelamer was added. Despite improvement in the Ca:Phos product, the skin lesions progressed proximally. On hospital day 10, cinacalcet was stopped and he underwent sub-total parathyroidectomy. Ca and Phos levels remained normal and skin lesions did not advance.

Discussion: Calciphylaxis mainly occurs in patients with uremia and primary HPT with a mortality rate of 60-80%. The pathogenesis of calciphylaxis is poorly understood. Deficiencies in vascular calcification inhibitors (fetuin-A, matrix Gla protein) and derangements of RANK ligand receptor play a role. Risk factors include CKD, elevated Ca:Phos product, HPT, malignancy, hypercoagulable states, immunosuppressive and corticosteroid therapy.

Alcoholic liver disease was the cause of 16% of cases of non-uremic Calciphylaxis (NUC). NUC is predominantly seen in individuals with normal Ca, Phos and PTH levels with Ca:Phos product < 50. Creatinine is generally normal, but formally defined as a Cr <3.0 mg/dL. Our patient had a number of described risk factors and best fit clinically and biochemically with a NUC etiology. To our knowledge there are no case reports of NUC in post-liver transplant patients. In addition, none of the NUC cases describe treatment with sodium thiosulfate, cinacalcet, or HBOT.

Conclusion: Calciphylaxis should be considered in individuals with multiple risk factors despite the absence of hypercalcemia and ESRD. NUC should be considered in the differential diagnosis of necrotic skin lesions in ESLD or post-liver transplant patients.

Abstract #1245

HYPERCALCEMIA- AN EARLY MARKER OF THE AGGRESSIVENESS OF ACUTE T-CELL LYMPHOMA.

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Objective: Hypercalcemia of malignancy is the most common cause of inpatient admissions for hypercalcemia and is usually associated with lung, breast, kidney and hematological malignancies particularly myeloma and adult T cell lymphoma/leukemia (ATLL). We report a case of relapsing hypercalcemia in the early phase of an acute variant of ATLL in a young patient.

Case Presentation: 35 year old man with non-alcoholic fatty liver disease presented with complaints of bilateral neck swelling and generalized weakness. He had hypercalcemia 12.6-13.5mg/dL (normal-8.5-10.5 mg/dL) and leukocytosis on presentation. Head, neck and abdominal CT scan revealed diffuse lymphadenopathy, suspicious for malignant process. His PTH and 25-OHD levels were low, with PTHrP level of 36 pg/mL (normal-14-27pg/dL). He received treatment with IVF, pamidronate

and calcitonin which resulted in a decrease of calcium level to 9.4 mg/dL. Epstein bar virus nuclear antigen and human T cell lymphotropic virus-1 (HTLV-1) antigen were positive and his axillary lymph node biopsy revealed a histologic classification of ATLL. Patient was immediately started on prophylactic tumor lysis treatment and chemotherapy. His clinical course was further complicated by severe C. difficile infection, multifocal pneumonia, acute respiratory failure requiring intubation and AKI requiring HD. Several weeks after initiation of chemotherapy he had rebound hypercalcemia (14.8 mg/dL) associated with an elevated PTHrP level (66-68 pg/mL). Repeat CT scan showed progression of adenopathy in the abdomen and pelvis despite aggressive chemotherapy treatment. He was treated again with IVF, pamidronate and another course of chemotherapy, but hypercalcemia persisted. The patient's condition deteriorated and he died days later.

Discussion: ATLL is a rare aggressive malignancy of the peripheral T lymphocytes, caused by (HTLV-1) infection. Hypercalcemia occurs in 50-70% of patients with this malignancy. The exact mechanism is not known but may be due to increased bone resorption mediated by PTHrP or other lymphokines. Hypercalcemia may improve after treatment with anti-resorptive agents and reduction of tumor burden with chemotherapy. In our patient hypercalcemia was detected in the early phase of the malignancy and was adequately treated but then relapsed and was associated with a rapidly deteriorating clinical course suggesting the aggressive behavior of the tumor.

Conclusion: The detection of hypercalcemia in malignancy typically carries a poor prognosis and when present in the early phase can be a marker of the aggressive behavior of the tumor. Clinicians should be aware of the prognosis associated with patients who present with refractory hypercalcemia of malignancy.

Abstract #1246

ASYMPTOMATIC HYPOCALCEMIA SECONDARY TO AUTOSOMAL DOMINANT ENHANCING MUTATION OF THE CALCIUM SENSING PROTEIN (CASR)

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Objective: Hypocalcemic disorders can be caused by deficiency of PTH, by a defect in the PTH/PTHrP receptor or by insensitivity to PTH caused by defects downstream of the PTH/PTHrP receptor secondary to mutations in several genes such as CaSR, PTH, GCM2, GATA3. We report a case of asymptomatic hypocalcemia probably due to autosomal dominant enhancing mutation of the calcium sensing protein.

Case Presentation: A 45-year-old homeless alcoholic man was admitted to orthopedic service with a hip fracture following a fall down a steep embankment. Laboratory results showed low calcium level at 3.6mg/dL (reference range 8.4-10.2mg/dL) with albumin level of 2.5g/dL (3.5-5.0g/dL) and total protein level of 4.8 g/dL (6.3-8.2g/dL). Corrected serum calcium was 4.8mg/dl. Despite the low calcium level patient was asymptomatic. Chvostek and Troudeau signs were negative.

The patient recalled that he had been told over several years that his calcium level was low and he had been prescribed calcium and vitamin D but never took it. He was not aware of any history of endocrine disease or calcium problems in his family. Further work up revealed ionized calcium of 2.0mg/dL (4.48-5.28mg/dL); mild hyperphosphatemia of 4.7 mg/dL (2.5-4.5mg/dL) and decreased parathyroid hormone level at 5 pg/mL (10-65pg/mL); decreased 1,25-dihydroxycholecalciferol 9 pg/mL (18-64pg/mL) and 25-hydroxycholecalciferol at 20ng/mL (11-70ng/mL). Magnesium level was borderline low at 1.3mg/dL (1.6-2.3mg/dL). 24-hr urinary calcium excretion was normal as were thyroid function tests. There was no past surgical history involving removal of his thyroid gland. Pseudohypoparathyroidism was thought to be unlikely due to absence of third digit brachydactyly and low PTH. Initially he was started on calcium and vitamin D supplements; however these medications were discontinued by the endocrinology team as autosomal dominant hypocalcemia (ADH) was suspected. His hip was repaired. The surgical team commented on the strength of his bone structure. Since discharge he has been followed with calcium levels ranging from 3.1-5.3mg/dl and he remains asymptomatic with no other fractures.

Discussion: The extracellular Ca2+-sensing receptor (CaSR) regulates PTH secretion and the rate of calcium reabsorption by the kidney. Gain-of-function mutation in the CaSR gene is a rare cause of hypocalcemia which is often familial. Such patients reset their PTH/calcium signaling so that low serum levels of calcium are associated with low levels of PTH.

Conclusion: Although ADH is a very rare it is important to distinguish hypocalcemia due to an activating mutation of CaSR from isolated hypoparathyroidism because ADH patients are usually asymptomatic as was our patient and require no therapy.

Abstract #1247

RECOGNIZING HORMONAL CAUSES OF HYPONATREMIA

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Objective: Understanding the etiology of hyponatremia is essential in its management. Hormonal derangements are often overlooked as contributing factors to low serum sodium levels. Clinically significant hyponatremia caused by a combination of primary hypothyroidism and isolated adrenocorticotropic hormone deficiency, in the absence of panhypopituitarism, has rarely been reported.
Methods: A 55-year-old male with newly diagnosed, untreated invasive laryngeal squamous cell carcinoma with a history of hyponatremia secondary to the syndrome of inappropriate antidiuretic hormone (SIADH) presented for the management of persistent hyponatremia manifesting as altered mental status. The patient had previously been treated with fluid restriction and demeclocycline without improvement of serum sodium.
Case Presentation: On his second admission, laboratory tests revealed a serum sodium of 116 mmol/L, serum osmolality of 251 mOsm/kg (270-305 mOsm/kg), an elevated thyroid stimulating hormone of 176 uIU/mL (0.35-5.5 uIU/mL), and a low free T4 level of 0.1 ng/dL (0.8-1.7 ng/dL). Anti-thyroglobulin antibodies and anti-microsomal antibodies were elevated. The patient's morning cortisol was 0.8 ug/dL (5-25 ug/dL) and an adrencorticotropic hormone level was 5 pg/mL (10-60 pg/mL), with a positive cosyntropin test. Luteinizing hormone, follicle-stimulating hormone, prolactin, testosterone, and serum electrolytes, including glucose, were within normal limits. The patient was afebrile with stable vital signs. Physical examination was remarkable for cachexia and decreased level of mentation. A brain magnetic resonance imaging (MRI) study with dedicated pituitary sequences showed no pituitary masses or hemorrhages. The patient was treated with physiological doses of hydrocortisone and thyroid hormone replacement. Within 8 weeks, the patients' thyroid levels and serum sodium levels normalized. His altered mental status resolved.
Discussion: Hormonal causes potentiating the effects of antidiuretic hormone (ADH) are underappreciated. The patient's laboratory tests are diagnostic of primary hypothyroidism and central adrenal insufficiency without evidence of panhypopituitarism. Cortisol, which normally inhibits ADH secretion, can result in altered resorption of water when dysregulated. Low thyroid hormone decreases the excretion of free water, in turn, affecting serum sodium. In our patient, both systems were affected, in the absence of panhypopituitiarism, with associated effects upon sodium levels.
Conclusion: To the best of our knowledge, this is one of the few reported cases of primary hypothyroidism and central adrenal insufficiency, in the absence of other pituitary hormone deficiencies, discussing clinically significant hyponatremia.

Abstract #1248

USE OF MIFEPRISTONE IN AN ECTOPIC CUSHING'S SYNDROME PATIENT PENDING TUMOR LOCALIZATION

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Objective: Ectopic adrenocorticotropic secretion accounts for 20% of the ACTH-dependent Cushing's syndrome (CS) cases. Yet, the biochemical and imaging modalities for localizing the tumor can be a complex and lengthy process. We detail the successful treatment with mifepristone (MIFE, Korlym®, Corcept Therapuetics), a competitive glucocorticoid receptor antagonist, for an ectopic CS patient without tumor localization.
Case Presentation: A 64y/o woman presented w/ uncontrolled HTN, associated with edema and hypokalemia. She experienced progressive CS symptoms: unexplained rapid weight gain (35lbs in 6mo), abdominal obesity, fat pads, muscle weakness (using a walker), easy bruising, osteopenia, and acute hypokalemia with episodes of edema.
Her history included: DM (controlled w/Lantus 38U qhs), hyperlipidemia, hypothyroidism, sinus tachycardia, and a family history of lung cancer (father).
Hormonal testing showed ACTH-dependent CS: UFC 136.2µg/d, unsuppressed ACTH (27pg/mL) and serum cortisol (19.3 µg/dL) after a 2day HDDST.
MRI of the pituitary gland failed to demonstrate the presence of an adenoma; IPSS was consistent with ectopic CS. Body imaging showed normal adrenal glands, with aorta calcification. Chest CT revealed the presence of a stable 6mm lesion in the left upper lobe that did not change in size over time. Octreoscan failed to demonstrate a metabolically active lesion.
Due to her symptoms, MIFE was initiated at 300mg/d and titrated to the current dose of 1200mg/d a year later. Therapy was temporary held after the 1st month due to hypokalemia and edema. K supplementation was provided. During MIFE therapy, she was counseled to adjust her insulin to avoid potential hypoglycemic events due to improvements in her metabolic conditions. Her insulin

was later stopped; HbA1c improved from 6.8% to 6.5% without insulin. Lisinopril was discontinued to prevent episodes of hypotension. She lost 47lbs, her BMI was reduced from 39 to 29.6, and she reported improvements in her Cushingoid features.
Further octreoscans are planned due to the potential change in somatostatin receptors after successful MIFE therapy.
Conclusion: The complexities and challenges of localizing the site of ectopic ACTH secretion are demonstrated with this case. In this patient, the addition of MIFE helped managed the manifestations of CS while further investigations were conducted. MIFE provided control and improvements in several manifestations of CS (A1C, weight, appearance) while eliminating the need for insulin and an antihypertensive, representing a viable option for patient whom tumor localization is difficult.

Abstract #1249

NOVEL USE OF PHYSICIAN SOCIAL NETWORK DATA TO MAP THE GAP IN THE ENDOCRINOLOGY WORKFORCE

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Objective: Several reports have ascertained the need for an increase in the endocrinology workforce in the United States to match the current epidemics in obesity and diabetes. While there is a general agreement that a mismatch exists, little updated data is available regarding the geographic distribution of endocrinologists as the latest Lewin survey dates back to 2011. Such granular data would be useful in further planning targeted interventions to meet the needs at a local level. We propose to use social network data to assist in such interventions.
Methods: De-identified data about the number of board-certified endocrinologists by US zipcode was obtained from the Doximity physician database. This database is refreshed monthly and contains uptodate data from a variety of sources. This data was mapped using Google Fusion Tables and the results compared to the available CDC maps by county for obesity and diabetes.
Results: A total of 5975 adult and pediatric endocrinologists were identified. Our results show a general agreement with previously published data concerning the concentration of endocrinologists in the US. Specifically, endocrinologists tend to be more concentrated in the Northeast and Southwest. In addition, a similar trend around large metropolitan areas was noted. Surprisingly, our data found significant presence of Endocrinologists in the Southeast, specifically Florida, as well as selected areas in the Midwest. When this 'heat map' was compared to the diabetes and obesity prevalence maps, significant discrepancies with physician availability were noted, especially with regards to the 'Southern Belt' with high prevalence of diabetes, and the wide prevalence of obesity in the central Midwest, from North and South Dakota to Oklahama.
Discussion: Our results validate previous finding from the 2011 surveys regarding the endocrinology workforce in the US. They also highlight the lack of significant growth in the total number of practicing endocrinologists. The use of this novel approach to mapping specialist physicians has the potential of providing nearly real-time data regarding their geographical spread. The discrepancy between the lack of endocrinologists and the high prevalence of diabetes and obesity in certain geographic areas highlights the need for targeted interventions to balance the workforce. These may include additional fellowship spots in those areas, as well as certain financial and practice incentives.
Conclusion: This approach to the use of social network 'big data' to generate real time mapping of the endocrinology workforce is novel. The availabilty of granular data will help future policy making in targeting the epidemics of diabetes and obesity in the US.

Abstract #1250

INSULIN TITRATION AND DECREASES IN MEAN BG USING GATHER HEALTH, A SMARTPHONE-BASED DIABETES MANAGEMENT PLATFORM: EARLY INNOVATIVE EXPERIENCE IN INDIA

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Objective: In India, less than 30% of diagnosed diabetics have an A1c in line with the guidelines for care. Insulin therapy is a key tool in Type 2 diabetes management, but providers and patients frequently fail to intensify insulin when indicated. This clinical inertia has been ascribed to concerns over hypoglycemia risk and relatively infrequent patient-provider contacts. Mobile phone penetration has increased dramatically, up from 8 per 100 people a decade ago to 70 per 100 people today. While telemedicine tools have had success in the West, it remains unclear if they can be leveraged to provide continuous support in contexts like India. Gather Health's web portal for providers and smartphone app for patients offers a promising platform to enable more frequent interactions and steady, gradual insulin titration. We analyzed use of the system among insulin users and impact of changes on mean and fasting blood glucose (BG) level.

Methods: We analyzed routinely collected data from one endocrinology clinic in Mumbai, India from patients using insulin and enrolled in Gather Health. Patient and provider behavior from the first 8 weeks on the platform was reviewed and univariate and bivariate statistics calculated. Results: There were 48 Type 2 diabetics on insulin, who had enrolled in Gather Health at least 8 prior. Of these, 46% were female; mean age was 55 years (SD ±10.8). At 8 weeks, 28 (58%) were still using the application. Neither gender nor age was associated with continued use. Among continued users, there were 57 insulin changes in these 8 weeks. 68% were increases in quantity of insulin administered, 18% were decreases, and 14% were timing changes. Patients showed a decrease of 31 mg/dL in mean fasting BG from 156 to 125, and a 16 mg/dL drop in mean BG from 161 to 145. On average, each recorded 1.8 occurrences of BG < 70mg/dL and 0.3 occurrences of BG < 50 mg/dL.
Discussion: Observational data indicates Gather Health facilitates more frequent titration of insulin, enabling tighter glucose control, with few recorded hypoglycemic episodes.
Conclusion: The system is acceptable to a variety of patients in India and has the potential to be used to support more continuous diabetes care. Additional research is needed to determine impact on long-term clinical outcomes, including HbA1c.

Abstract #1251

A CASE OF IPILIMUMAB INDUCED HYPOPHYSITIS

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Objective: To describe a case of hypophysitis in a patient with metastatic melanoma after treatment with ipilimumab.
Case Presentation: A 62-year-old male with a history of metastatic melanoma, as well as a recent diagnosis of hypothyroidism, presented with one week of fatigue after receiving his fourth dose of ipilimumab. He was found to be hypotensive, despite one liter of normal saline. Laboratory studies were significant for a ACTH of <9 pg/mL (9 – 46 pg/mL), TSH of <0.02 uIU/mL (0.3 – 5 uIU/mL), free T4 of 1.2 ng/dL (0.7 – 1.7 ng/dL), FSH of 0.9 mIU/mL (1.5 – 12.4 mIU/mL), total testosterone of 4 ng/dL (250 – 1100 ng/dL) and a free testosterone of 0.4 pg/mL (35 – 155 pg/mL). A noon cortisol was 0.3 mcg/dL (normal AM range 16 – 20 mcg/dL and PM range 2 – 12 mcg/dL). An MRI of the brain performed two days earlier for surveillance of his known brain metastases was reviewed on admission and revealed diffuse enlargement of the pituitary gland. This finding was new compared to an MRI performed three months earlier, prior to starting ipilimumab. The patient was started on corticosteroids for secondary adrenal insufficiency and was maintained on levothyroxine for what was now clearly secondary hypothyroidism.
Discussion: Ipilimumab blocks cytotoxic T-lymphocyte antigen 4 (CTLA-4), a protein receptor on the surface of T-cells, resulting in their activation, proliferation and an anti-tumor response. Commonly reported immune-related side effects of ipilimumab are enterocolitis, dermatitis, and hepatitis. However, autoimmune hypopituitarism is an important clinical entity to recognize. Endocrine-related adverse events were reported in 8.5% of patients in a recent phase III trial designed to evaluate ipilimumab as an adjuvant therapy following resected stage III melanoma, with hypophysitis encompassing 5.1% of these events. Clinical manifestations are often non-specific and they depend on the extent of hormone deficiencies. Corticosteroids should be promptly initiated as soon as secondary adrenal insufficiency is detected and lifelong treatment may be needed. Hormone deficiencies can improve, although corticotroph function seems to be the least likely to recover.
Conclusion: A high clinical suspicion for hypopituitarism in patients receiving the drug is imperative due to the non-specific symptoms and potentially life threatening consequences. While ipilimumab has many side effects, the drug has improved survival in metastatic melanoma and remains an important treatment option.

Abstract #1252

PANHYPOPITUITARISM COMPLICATING VARICELLA ZOSTER ENCEPHALITIS

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Case Presentation: Few cases of pituitary insufficiency following CNS infection have been documented. Exhaustive literature search failed to show any case directly linked to varicella zoster encephalitis. We report a case of panhypopituitarism secondary to VZV encephalitis, the first confirmed case to the best of our knowledge.
32-year-old African American woman presented with 3-day history of confusion, blurring of vision, headache and nausea and vomiting. Three days prior, she presented to the ER with an itchy vesicular rash on the left forehead. She was treated for herpes zoster rash and conjunctivitis with acyclovir. Her vital signs were normal.
At current presentation, she was disoriented. Blood pressure was 96/71mmHg, pulse rate 52 b/m, respiratory rate 18 and temperature 98°F with normal oxygen saturation. Except for disorientation, neurologic examination was negative

for focal deficit. CSF was colorless, with 100 wbcs (80% lymphocytes), glucose of 33 mg/dL and protein of 423 mg/dL. Gram stain was negative. CT head showed sella fullness. Empirical ceftriaxone, vancomycin, ampicillin, dexamethasone and acyclovir were initiated.
She had worsening delirium, global aphasia, hypothermia (temp. of 89.2°F), hypotension and bradycardia 24 hours later. Despite treatment, she deteriorated on the 3rd day. She was intubated and vasopressors were initiated and a transvenous pacemaker placed.
Due to persistent autonomic dysfunction, an endocrinology work up was ordered; TSH 0.17 μU/mL free T4 0.27 ng/dL, T3 0.43 ng/ mL, ACTH <5, Cortisol of <1 μg/dL (random) and <5 pg/mL (60 minutes post cosynthropin test). Prolactin was 3.6 ng/mL ,LH and FSH were <0.3 mIU/ml and <0.1 mIU/ml respectively. PCR for CSF VZV came back positive.
Fludrocortisone and levothyroxine initiation resulted in significant improvement. She was extubated on day 9 and the transvenous pacemaker was discontinued. Her aphasia improved and she was discharged to a short-term rehabilitation facility on levothyroxine and prednisone.
Conclusion: Most cases of pituitary hormone dysfunction following CNS infection have been described in children but few cases of isolated pituitary insufficiency in adults have been reported. The most common infectious agent affecting the hypothalamic- pituitary axis is Tb. Other infectious agents include cocksackie B virus, S. Pneumonia, Cryptococci and Herpes simplex. Unrecognized selective partial or panhypopituitarism as a part of a critical illness is associated with worse overall prognosis. Although it might not be prudent to screen all patients with CNS infection for pituitary dysfunction, keeping in mind the possibility of such complication is important given the high rate of mortality involved.

Abstract #1253

CSF RHINORRHEA: AN EARLY COMPLICATION OF A MEDICALLY TREATED MACROPROLACTINOMA

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Objective: Cerebral spinal fluid (CSF) leak is a known surgical complication of an invasive macroprolactinoma. Case reports suggest its occurrence even with dopamine agonist (DA) treatment. We report one such case of an invasive macroprolactinoma with an early CSF leak followed by complete regression of the tumor.
Case Presentation: A 35 year-old obese male with no past medical history presented with weight gain of over 100 lbs within the last year and absent morning tumescence. Physical exam and formal visual field testing were unremarkable. Lab data: total prolactin (TP) 4655 ng/ml, monomeric prolactin (MP) 1719 ng/ml, total testosterone 24 ng/dl. MRI brain: pituitary macroadenoma (4.2*2.5*3.5cm) extending into cavernous and sphenoid sinuses, partially eroding the sphenoid bone, encasing internal carotid arteries.
Cabergoline 0.25 mg twice a week was started and after taking 2 doses, the patient developed rhinorrhea and was hospitalized. Adenoma size was (3.3*4.1*1.9 cm). TP 824 ng/ml, MP 612 ng/ml. A planned endoscopic subtotal resection with CSF leak repair was performed. Post-op MRI: persistent pituitary tumor (3.7*3.1*2.7cm). Treatment with cabergoline was continued. CSF leak resolved within a few days. In 2 months, TP substantially declined to 370 ng/ml with no change in the adenoma (4.2*3.5*2.5cm). Cabergoline dose was increased to 0.5 mg twice a week. A month later, MRI showed no discrete pituitary mass and regression of the tumor with cystic changes. TP and MP were 102 ng/ml and 89 ng/ml respectively.
Discussion: CSF leak is a life threatening complication with a high risk of ascending meningitis. The postulated mechanism is a brisk loss of the so-called "Stopper Effect" - shrinking of the tumor leading to an uncovering of a preexisting fistula and leakage. Literature suggests DA resistance is more frequent in macroprolactinoma with rhinorrhea. The cystic transformation of invasive prolactinoma has been described with DA use over 2 years. Our case has multiple interesting aspects: The growth of a large adenoma with erosion of the sella and surrounding skull base and increase in intracranial pressure due to patient's significant weight gain (similar mechanism as in pseudotumor cerebri) likely led to the spontaneous CSF leak that occurred within one week on low-dose cabergoline. Contrary to what the literature suggests, this invasive pituitary tumor with CSF leak was DA-sensitive and a low dose sufficed to achieve recession and cystic changes within 3 months.
Conclusion: Clinicians should be highly observant of and educate patients about CSF rhinorrhea as an early consequence of medical therapy of macroprolactinoma even on a low-dose DA to avoid misdiagnosis and fatal sequelae of this complication.

Abstract #1254

MENSTRURAL ABNORMALITIES AND MISCARRIAGES IMPROVED WITH TREATMENT OF SUBCLINICAL HYPOTHYROIDISM.

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Objective: To show measurable changes in menstrual abnormalities and ability to conceive after a miscarriage using the narrow range for treatment of subclinical hypothyroidism.
Methods: Literature review, and in 23 women in several endocrine practice, serial lab values pre and post treatments.
Case Presentation: successful pregnancies, return to normal menses, decreased weight and better energy levels.
Discussion: Management of high risk pregnancies and working closely with Obstetricians who used more strigent TSH guidelines improved outcomes and quality of life.
Conclusion: NHANES III and Colorado Health Study indicate a narrow range for Normal TSH. These guidelines were presented in 2004 at AACE meeting. These case presentations and lab values are supporting the new guidelines and stricter control to improve the outcomes for subclinical hypothyroidism, menstration, pregnancy and quality of life.

Abstract #1255

THE FUTILITY OF EARLY TSH TESTING IN GRAVES' PATIENTS TREATED WITH I-131

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Objective: Graves' patients treated with I-131 almost inevitably achieve a hypothyroid state. Many physicians monitor the transition from hyperthyroidism to hypothyroidism by measuring both serum thyroid stimulating hormone (TSH) and free T4 (fT4) levels. The purpose of this study is to determine efficacy of collecting TSH levels in addition to fT4 levels in the early months following treatment.
Methods: This retrospective study analyzes data from patients in the Nuclear Medicine Department of Beaumont Health System diagnosed with Graves' disease and treated with radioactive I-131 between November 2008 and August 2013. Data concerning date of treatment and serum TSH and fT4 levels were collected for 250 patients. Data were analyzed using percentages and graphical trends.
Results: 161 of 250 patients met inclusion criteria. 47 (29.2%) were male and 114 (70.8%) were female. The mean age was 49.5 with a standard deviation of 14.3. The number of fT4 tests collected in months 1-5 was 31, 99, 67, 37 and 16 respectively. The number of TSH tests collected in months 1-5 was 23, 76, 62, 36 and 15 respectively. The percentage of fT4 tests above reference range decreased from 80.1% (25/31) to 66.7% (66/99) to 34.3% (23/67) in months 1-3, and then increased to 43.2% (16/37) and 50.0% (8/16) in months 4-5. The percentage of TSH tests above the reference range increased linearly in each month (8.7% (2/23), 23.7% (18/76), 51.6% (32/62), 58.3% (21/36), and 73.3% (11/15)). The percentage of TSH tests ordered when concurrent fT4 levels were still above reference range decreased in months 1-4 from 91.3% (21/23), to 78.9% (60/76), to 53.2% (33/62), to 44.4% (20/36) and then rose in month 5 to 60% (9/15).
Conclusion: A large percentage of both fT4 and TSH tests ordered in the first 2-3 months following treatment with I-131 remained outside reference range. TSH levels may take more than 3-4 months to rise beyond reference range and are ordered unnecessarily in the first 2 months following treatment with I-131. The economic impact is obvious.

Abstract #1256

RETROSPECTIVE MEDICAL RECORD REVIEW AND TELEPHONE SURVEY TO ASSESS THE ASSOCIATION BETWEEN SUGAR SUBSTITUTES AND HASHIMOTO THYROIDITIS (HT)

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Objective: To determine the correlation between the usage of sugar substitutes (Artificial Sweeteners) in human subjects and development of HT, as documented by the presence of positive anti-thyroid peroxidase (TPO) antibodies.
Methods: Based on the review of electronic medical records, a total of 100 patients with a diagnosis of HT, documented by the presence of positive TPO antibodies were included in the study.The patients were interviewed in person or over the telephone and they were asked to respond to a questionnaire, pertaining to the use of artificial sweeteners in their diet.A few other parameters such as gender, ethnicity, TSH, free T4 levels, weight, LT4 dose and a family history of thyroid disease were included.
Results: Based on the data, it was found that of the 100 patients, a total of 53 patients (53%) took artificial sweeteners while 47 patients (47%) did not take any. Statistical analysis done with Pearson correlation test

between the average number of packs of artificial sweeteners consumed daily, and TSH values showed a positive correlation of 0.23 with a p-value of 0.05.

Discussion: Sugar substitutes have been reported to cause autoimmune disorders in animals but not much is known about their impact on humans. Aspartame, Sucralose and Saccharin, the main ingredients of artificial sweeteners are known to cause side effects in animals. Aspartame gets metabolized to formaldehyde and been associated with Type IV delayed hypersensitivity reactions. In rats fed with sucralose a decrease in the size of thymus and spleen and lymphopenia has been noted, implying that it could have a negative effect on immune system. Saccharin is carcinogenic and associated with induction of several cancers in animals. The results of this study show a high prevalence (53%) of HT in patients consuming artificial sweeteners. A close estimate showed that 45% subjects consumed Equal, 45% consumed Splenda, 7% Struvia and 3% Sweet n Low. In addition the results of this study suggest that average number of packs of artificial sweeteners consumed by patients with hypothyroidism, may impact their TSH levels causing hypothyroidism.

Conclusion: This study emphasizes that in patients with HT, a history of intake of artificial sweeteners should be obtained and an attempt should be made to discontinue artificial sweeteners from their diet with a further follow-up, using the thyroid function tests to adjust the dose of thyroid hormone replacement therapy with possible discontinuation of medication in patients with complete resolution of hypothyroidism. The significance of this study is to increase public awareness for this adverse effect from the use of artificial sweeteners.

Abstract #1257

COST EFFECTIVE EVALUATION OF A PATIENT WITH RAPIDLY INCREASING THYROXINE REQUIREMENTS

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Objective: To highlight the value of a cost effective diagnostic method that can easily go under prioritized in the workup of a patient with rapidly increasing thyroxine demands.

Methods: A case report and review of the literature.

Case Presentation: A 67 year old Caucasian male with past medical history of hyperlipidemia and primary hypothyroidism for 20 years, presented for evaluation of rising TSH levels that failed to suppress despite increasing doses of Levothyroxine. The patient had previously been stable on Levothyroxine 137mg for the past 5 years and was found to have a TSH of 4.7 mU/L (N: 0.27-4.20 mU/L) and Free T4 of 1.3 ng/dL (N 0.8-2.8ng/dL) by his primary care physician who subsequently increased the patient's Levothyroxine dosage. Nevertheless, the patient's TSH continued to rise to 18.27 mU/L despite the increasing medication doses.

The patient's only complaint was "some fatigue," and there were no significant physical exam findings for hypothyroidism or other diseases.

Notably, the patient's lab work was significant for a Total Protein level of 5.9 g/dL (N: 6-8.3 g/dL) and a serum Albumin of 2.8 g/dL (N: 3.4-5.4 g/dL), therefore he underwent an extensive GI evaluation for malabsorption, including an EGD with biopsies. This workup did not yield convincing evidence for malabsorption. Patient was switched to a high absorption Levothyroxine formulation in order to counteract a potential malabsorptive process that was presumed to still be undiagnosed. Nevertheless, the patient's thyroxine requirements continued to rise despite introduction of the new, and more expensive, medication.

Months after initial presentation a urine dipstick was performed which revealed proteinuria, and subsequent urine collection revealed 8,968 mg of protein in 24hrs, consistent with Nephrotic range proteinuria. This was surprising as the patient had not had any physical exam findings or predisposition for Nephrotic syndrome. The patient is presently undergoing workup by a Nephrologist for the underlying etiology of his Nephrotic syndrome.

Discussion: Typically patients with primary hypothyroidism have steady thyroxine requirements, therefore rapidly changing medication needs are abnormal. Issues of medication compliance, interactions, malabsorption and inactivation must be addressed during workup. It is important to recognize that thyroid hormones can also be lost in the urine, and such losses are significantly increased in patients with proteinuria.

Conclusion: Despite lack of predisposing factors and clinical signs or symptoms of Nephrotic syndrome, this patient could have had a more cost effective workup and rapid diagnosis had urinary protein losses been addressed earlier with a simple and cost effective urine dipstick test.

Abstract #1258

SEVERE ACUTE HYPERCALCEMIA ASSOCIATED WITH GRAVES DISEASE; AN UNUSUAL CULPRIT.

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Objective: To demonstrate the successful management of severe hypercalcemia associated with Graves Disease
Methods: A 64 year old lady was confused and lethargic for 2 days before she was sent from her nursing home to hospital. She has Crohn disease complicated by colostomy, hypertension, bilateral knee osteoarthritis and a remote history of breast cancer. She had a left mastectomy with chemotherapy 20 years ago with no disease recurrence. She was on mesalamine 250 mg orally 4 times daily, losartan 100 mg daily, lopressor 25 mg twice daily and analgesics as needed. She was not on vitamin D or calcium supplements. On examination, vitals were: blood pressure 178/85, pulse was regular at 115 beats per minute, respiration 25 breaths/minute, temperature 99.5 F, height 64 inches, weight 143 lbs, BMI 24.6. She appeared emaciated, drowsy and confused. She was dehydrated.
Pertinent laboratory findings: corrected calcium was elevated 15.7 mg/dl (8.7-10.3). Phosphorous 3.6 mg/dl (2.5-4.5) and Magnesium 1.7mg (1.7-2.5) were normal. Intact PTH 9.56 pg/ml (15-65) and PTH related peptide 13 pg/ml (14-27) were suppressed. Calcitriol 24.8 pg/ml (10-75) and serum protein electrophoresis were normal. Calcidiol was 19 ng/ml (30-100). BUN 32 mg/dl (7-25) and creatinine 1.0 mg/dl (0.6-1.1) were elevated. GFR was 67. Hemoglobin and ESR were 8.8 g/dl (12.1 - 15.9) and 84 mm/hr (0-30) respectively. Thyroid function tests were abnormal: TSH 0.01 mU/ml (0.4-4), Free thyroxine 2.68 ng/ml (0.8-1.9), total triiodothyronine 105 ng/ml (82-179), TSI 436% (<140), TPO >900 (<9) and thyroglobulin antibody 331 IU/ml (<1).
Case Presentation: Thyroid ultrasound showed a diffusely enlarged highly vascular gland. Computed tomography (CT) of the head, chest, abdomen and pelvis showed no abnormalities or lytic lesions.
The patient received IV normal saline which decreased her calcium levels modestly. She received a one time dose of zoledronic acid 4 mg IV. Her vitamin D was repleted. She started Methimazole 10 mg daily and propranolol 20 mg three times daily.
Her calcium levels trended down with resolution of her delirium. She was diagnosed with Graves Disease.
The patient was discharged and followed up as an outpatient 6 weeks post zoledronate and starting methimazole. She had normal thyroid function and normocalcemia at this visit.
Discussion: Acute hypercalcemia is an endocrine endocrine emergency. It is prudent to consider all PTH and non PTH mediated causes. This case is unusual due to the severity of hypercalcemia (>14 mg/dl) associated with Graves Disease.
Conclusion: Hyperthyroidism usually causes mild to moderate hypercalcemia. However, this patient's severe hypercalcemia was likely associated with previously undiagnosed Graves disease.

Abstract #1259

ANTIBODY NEGATIVE POST ABLATIVE GRAVES' DISEASE FROM A MULTINODULAR GOITER

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Objective: Background: Graves' Disease and autonomous toxic nodules are two separate entities of the thyroid gland that lead to hyperthyroidism or thyrotoxicosis. In autonomous toxic nodules the molecular basis is unknown, but in Graves' the autoimmune phenomenon causing excess thyroid hormone secretion is well understood. Radioactive iodine ablation therapy is a widely used treatment for both conditions. There have been a small number of cases of patients with toxic multinodular goiter (MNG) that transition to Graves' Disease weeks to months after ablation therapy as a side effect of 131I treatment (1).
Case Presentation: Case: A 68 year old female presented for an evaluation of a symptomatic multinodular goiter. Thyroid ultrasound showed a 1.4 x 1 x 0.8cm mixed echogenic nodule in the right midlobe and a right posterior subcentimeter hypoechoic nodule. The left lobe demonstrated a 1.3 x 0.7 x 0.7cm mixed echogenic nodule and another sub-centimeter nodule was seen. Thyroid function studies showed a suppressed TSH of 0.01 uIU/ml, total T4 of 9.4 mcg/dl, free T4 of 1.6 ng/dl, and total T3 of 131ng/dl. Thyroid peroxidase antibody (TPO) and thyroid stimulating immunoglobulin (TSI) antibodies were negative. Thyroid uptake/scan demonstrated a focal hyperfunctioning nodule in the right midlobe with the rest of the gland suppressed. She was started on Methimazole; however she could not tolerate the therapy and underwent a 131I ablation with a dose of 18.25mCi. Three months post therapy, she had an elevated TSH of 32.69 uIU/ml, free T3 of 1.6 pg/ml, and a free T4 of 0.5ng/dl. Thyroid replacement therapy was started. A year post ablation, the patient had symptoms of hyperthyroidism and her TSH

was suppressed at 0.01 uIU/ml, free T4 of 3.5ng/dl and total T3 of 309ng/dl. Her Levothyroxine was decreased and eventually stopped. A second thyroid uptake/scan demonstrated even distribution of increased activity in both lobes with 72% uptake at 24 hours. She was restarted on Methimazole and underwent a second radioactive iodine ablation with 13.69mCi 131I. She did well and is currently on thyroid replacement therapy.

Conclusion: Transient hyperthyroidism can be seen post ablation but Graves' Disease is a less common complication. The risk of developing Graves' was found to be 1.3% in patients with a multinodular goiter post radioiodine ablation and it increased almost 10 fold higher in patients who had elevated levels of anti-TPO prior to ablation (3). It has been suggested that elevated anti-TPO is a marker for increased risk of developing Graves' Disease after radioiodine treatment (1,2). Clinicians should be aware of this potential complication to prevent delay of the diagnosis.

Abstract #1260

OUTCOMES, SIDE EFFECTS AND RISK FACTORS FOR COMPLICATIONS OF ULTRASOUND-GUIDED LASER ABLATION FOR THYROID NODULES. A MULTICENTER STUDY ON 1531 PATIENTS.

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Objective: Image-guided laser ablation therapy (LAT) of benign thyroid nodules has demonstrated favorable results in prospective randomized trials. Aim of this retrospective multicenter study was to assess effectiveness, tolerability, and complications of LAT in a large consecutive series of patients from centers operating with this technique in their common clinical activity.

Methods: Inclusion criteria were: solid or mixed nodules with fluid component up to 40%; benign cytological findings and normal thyroid function.

A multidisciplinary board of endocrinologists, interventional radiologists and surgeons developed a database for the retrospective evaluation of LAT outcomes in benign thyroid nodules. Clinical records of 1,534 consecutive laser-treated nodules in 1,531 patients from eight Italian thyroid referral centers were re-evaluated. Treatments were performed with a fixed-power protocol (3W) while number of applicators and illumination time were different case by case according to target size and structure. During the same session were performed from one to three illuminations with pullback technique. Nodules were classified into three subgroups according to baseline volume: small (≤13 mL), medium (from13.1 to 30.0 mL) or large (>30 mL). Patients were evaluated during LAT, within 30 days and 12 months after the procedure.

Results: Total number of treatments was 1,837 and 1,280 (83%) of the 1,534 nodules were treated with a single LAT session. Mean nodule volume decreased from 27±24 mL at baseline to 8±8mL 12 months after treatment ($p<0.001$). Mean nodule volume reduction was 72±11% (range, 48-100%). This figure was significantly greater in mixed nodules (79±7vs72±11, $p<0.001$). Volume reduction in small, medium and large nodules was 73±10, 73±11, and 71±10, respectively. Symptoms decreased from 49% to 10% of cases ($p<0.001$) and evidence of cosmetic signs from 86% to 8% of cases ($p<0.001$). Seventeen complications (0.9%) were registered. Eight (0.5%) patients experienced transitory voice changes which completely resolved within 2-84 days. Nine (0.5%) minor complications were reported. No changes in thyroid function or autoimmunity were observed.

Conclusion: In real practice LAT is clinically effective and well tolerated both in solid and in mixed nodules. The risk of major complications is low, due to the use of fine needles and constant US monitoring.

Abstract #1261

HYPOTHRYOIDISM AND POLYCYSTIC OVARIAN SYNDROME PRESENTING WITH FEMALE PATTERN BALDNESS

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Objective: To report a case of female pattern baldness in a patient with Hashimoto thyroiditis (HT) and polycystic ovarian syndrome (PCOS)

Case Presentation: A 43 year-old female with a history of untreated Hashimoto thyroiditis (HT) seeks medical care. She was poorly compliant with treatment and

also had a history of untreated diabetes mellitus type 2, dyslipidemia, sleep apnea, hypertension, depression, asthma and PCOS (undiagnosed at the time). She was not taking any medications. Her family history was significant for coronary artery disease. The patient had two children. Her main concerned was her ongoing alopecia. Physical examination revealed an obese female (BMI 34.5) with blood pressure 130/80. Terminal hair loss localized to frontal and vertex of the scalp, and miniaturized hairs. The thyroid gland was diffusely enlarged. Her initial blood work showed total cholesterol 282mg/dL, triglycerides 1099mg/dL, HbA1C 7.9%, AST 48U/L, ALT 57U/L, TSH 2.44mIU/L, free T4 1.4 ng/dL, thyroid peroxidase antibodies >1000IU/mL, total testosterone 12ng/dL and DHEA 214ng/dL. Pelvic/transvaginal ultrasound found enlarged ovaries, and thyroid ultrasound revealed enlarged gland with diffusely hypoechoic micronodular appearance. She was started on levothyroxine 50mcg, metformin 1000mg twice a day, fenofibrate 145mg daily and pravastatin 10mg daily, and subsequently on spironolactone 100mg daily. She had tried minoxidil in the past but was not able to afford it. In a period of 6 months after started on spironolactone, her frontal hairline had significantly improved, she had decreased hair loss and new hair strands were visible.

Discussion: There is a known association between HT and PCOS. There is a threefold increase in the incidence of HT in patients with PCOS. Hair thinning is one of the manifestations of hypothyroidism as well as of PCOS. This patient demonstrated a female baldness pattern, which has been linked to PCOS, but there might also be a correlation with HT. The use of spironolactone is an off-label indication in cases of female baldness pattern, due to its aldosterone antagonist action that competitively blocks androgen receptors and weakly inhibits androgen synthesis.

Patients with hypothyroidism and female baldness pattern should also be screened for PCOS.

It could be suggested by association that spironolactone might be of use in patients with HT suffering from uncontrolled hair loss despite being on treatment for their hypothyroidism.

Conclusion: Further studies are needed to evaluate the use of spironolactone in cases of hair loss/thinning in patients with well-controlled hypothyroidism.

FOLLOW UP OF A COHORT OF SUBACUTE THYROIDITIS FROM A SOUTH INDIAN CITY

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Objective: Subacute thyroiditis is a temporary dysfunction of the thyroid gland and is commonly due to viral infection of the gland. Permanent hypothyroidism after recovery from subacute thyroiditis has been reported in various studies.

Methods: This prospective study was done in two tertiary care centres in South India to prospectively evaluate and follow up these cases for development of permanent primary hypothyroidism at 1 year after recovery from subacute thyroiditis. The diagnosis of subacute thyroiditis was confirmed in all cases with biochemical profile of thyroid function tests confirming thyrotoxicosis and technetium (Tc) 99 pertechnetate scan of thyroid showing a reduced or absent uptake.

Results: The total number of cases were 146 which included 103 females (69.5%) and 43 males (29.5%). The mean age of females was 33.03 ± 11.70 years and mean age of males was 40.17±11.84 years. Seven patients reported a second attack of thyroiditis. The maximum number of cases were recorded in the month of February followed by July (12.2% and 11.5% respectively).The mean TSH recorded at baseline was 0.29 ± 0.98mIU/L, total T4 was 169.63 ± 73.75 nmol/L and total T3 was 3.19 ± 2.53 nmol/L. Permanent hypothyroidism was seen in 29 (19.86%) cases at one year follow up.

Discussion: The females and males were affected at a younger age as compared to other studies. The incidence of permanent hypothyroidism was found to be high as compared to what has been reported in literature.

Conclusion: The patients with subacute thyroiditis need to be followed up for development of permanent hypothyroidism. The reason for higher incidence of permanent hypothyroidisim following subacute thyroiditis in our population as compared to literature needs to be further studied.

Abstract #1262