over guideline-concordant therapies such as levothyroxine (LT4). **Methods:** We conducted a mixed-methods study by analyzing patient-reported information from patient online forums to better understand patient preferences for and attitudes toward the use of DTE to treat hypothyroidism. We searched the 10 most popular patient forums based on number of users (*WebMD, Topix, Health questions, Patients like me, Drugs.com, Endocrine Web, Everyday Health, Talk Health Partnership, Spark People and Patients.info*) using the key terms: desiccated thyroid extract, desiccated thyroid treatment, thyroid USP, commercial names of DTE (Armour Thyroid® or Natural Thyroid®), thyroid extract, AND hypothyroidism. Unique posts were retrieved from those websites between each forum's inception to March 2018. From these posts, we extracted descriptive information on patient demographics and clinical characteristics and qualitatively analyzed posts' content to further explore patient perceptions on DTE and other thyroid hormone replacement therapies. **Results:** Unique 1,235 posts were initially retrieved from the included patient forums. After the initial screening, we selected data from three of these forums (*WebMD, Patients Like Me, and Drugs.com*) based on the completeness of the available information (673 posts). Nearly half (45%) of patients reported that a clinician initially drove their interest in trying DTE. Patients described many reasons for switching from a previous therapeutic approach to DTE, including lack of improvement in symptoms (58%) and the development of side effects (22%). Among a majority of patients, DTE was described as moderately-to-majorly effective overall (81%) and more effective than the previous therapy (77%). The most frequently described benefits associated with DTE use were an improvement in clinical symptoms (56%) as well as a change in overall well-being (34%). One-fifth of patients described side effects related to the use of DTE. Qualitative analysis of posts' content supported these findings and raised additional issues around the need for individualizing therapy approaches for hypothyroidism as well as difficulties obtaining DTE. **Conclusions:** Among patients with hypothyroidism, a subset may prefer DTE over guideline-concordant therapies for many reasons, including perceived effectiveness, despite the risks associated with DTE. Future work should incorporate patient-reported outcomes to better elucidate the mechanisms responsible for therapy preferences in this subset of patients.

Adipose Tissue, Appetite, and Obesity

OBESITY TREATMENT: GUT HORMONES, DRUG THERAPY, BARIATRIC SURGERY AND DIET

A Case of Pseudoglucagonoma Syndrome Post Bariatric Surgery

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MON-587

Introduction

Necrotizing migratory erythema (NME) is hallmark clinical finding of Glucagonoma, an islet cell tumor of the pancreas. NME can sometimes be seen in the absence of Glucagonoma, a condition referred to as Pseudo-glucagonoma syndrome(PGS). We report a case of NME associated with severe nutritional deficiency.

Case

48 y/o female presented to dermatology clinic with diffuse itchy rash of 6 months duration. The rash started on the arms and spread to involve lower abdomen, legs and perioral area. It was unresponsive to both topical and high dose PO steroids. Biopsy of the rash showed confluent parakeratosis and mild spongiosis secondary to nutritional deficiencies vs NME. Her medical history was significant for Nissen fundoplication 20 years ago with a revision to Roux-en Y gastric by-pass, 6 years ago. She did not have a history of Diabetes or Inflammatory Bowel Disease. She was not on any vitamin supplementation, as she did not follow up for post bariatric care. On admission to the hospital for sepsis from secondary infection of the rash, diffuse erythematous, eczematous papules and plaques were noted on bilateral forearms, thighs, calves, buttocks and ankles. She also had perioral erythema and fissuring. Laboratory evaluation showed low prealbumin and multiple nutritional deficiencies including copper, zinc, vitamin B6, Vitamin D, ferritin. Her HbA1c was 5.8 % and fasting glucagon levels were normal. Her liver function was initially normal but later developed transaminitis from septic shock. She was started on enteral feeds with nutritional supplementation. This resulted in significant improvement of her rash with correction of underlying nutritional deficiencies.

Discussion

NME in the absence of Glucagonoma is extremely rare and is seen in hepatic cirrhosis, malabsorption disorders, inflammatory bowel disease and nutritional deficiencies including zinc deficiency, Pellagra, Kwashiorkor. Though the exact mechanism for NME in these conditions is unclear. It is postulated that unabsorbed nutrients in the gut lumen are potent stimulators of enteroglucagon which in turn mediates the development of NME. The treatment of NME associated with PGS is to correct the underlying cause. Our patient had history of gastric bypass surgery and did not get routine post bariatric care. She presented with multiple nutritional deficiencies which likely caused NME. It is important to recognize that post bariatric surgery, patients are at risk for both macro and micronutrient deficiencies and hence need frequent nutrition assessment, supplementation and monitoring.

References

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Neuroendocrinology and Pituitary

NEUROENDOCRINE & PITUITARY PATHOLOGIES

Partial Secondary Adrenal Insufficiency and Growth Hormone Deficiency in Fibromyalgia

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SUN-307

Introduction: Low or borderline cortisol concentrations and impaired response to dynamic testing have been

reported in patients with fibromyalgia, potentially related to hypothalamus-pituitary dysfunction.[1,2] Superimposed adrenal insufficiency (AI) may contribute to some fibromyalgia symptoms or delay improvement in patients enrolled in fibromyalgia treatment programs. We hypothesized that a subset of patients with fibromyalgia have: 1) partial secondary AI and concomitant growth hormone (GH) deficiency 2) a discordance in Cosyntropin stimulation test and 3) improvement in fibromyalgia symptoms with initiation of glucocorticoid and/or GH replacement.

Design: This was a retrospective study of patients with fibromyalgia diagnosed with partial secondary AI based on abnormal insulin tolerance test (peak cortisol < 18 mcg/dL) at our institution from June 2002 to August 2019. Patients were excluded if they had other reasons for adrenal insufficiency, including steroid exposure and opioid use.

Results: We identified 22 patients (18 women, 82%) diagnosed with partial AI at a median age of 38 years (range 19-65). The fibromyalgia symptoms included fatigue (n=22, 100%), pain (n=22, 100%), sleep disturbance (n=15, 68%), and bowel changes (n=13, 59%). The median morning cortisol concentration was 8.6 mcg/dL (range 1.1-11); 9 patients (41%) had a morning cortisol concentration below the normal range (7 mcg/dL). The median ACTH level was 15.5 pg/mL (range 7.7-54). Nineteen patients had baseline IGF1 levels, with a median z-score of -0.94 (range -1.96 to 1.70). MRI pituitary imaging was performed in 20 patients and showed no significant pituitary pathology.

All patients achieved hypoglycemia <=40 mg/dL during the insulin tolerance test. Peak median cortisol level was 11 mcg/dL (range 5.4-17). Nineteen patients (86%) also had partial GH deficiency (defined as a peak GH < 4 ng/mL) with a median GH level of 0.36 ng/mL (range 0.03-3.83). Cosyntropin stimulation test was performed in 13 patients (59%) with a 1 mcg dose in 2 patients and 250 mcg dose in 11 patients. The peak cortisol was >=18 mcg/dL in 10 (77%) patients. All patients were started on physiologic glucocorticoid replacement, and 12 patients were started on GH replacement. Endocrinology follow-up information was available for 13 patients, and 8 (62%) reported symptom improvement after starting treatment.

Conclusions: Patients with fibromyalgia can have co-existing partial secondary AI and GH deficiency as defined by insulin-induced hypoglycemia. Cosyntropin stimulation test can be used in patients with fibromyalgia, but a normal test does not rule out partial secondary AI. Replacing the underlying deficiency improved symptoms in some patients demonstrating certain fibromyalgia symptoms may overlap with AI and GH deficiency.

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Adrenal

ADRENAL - CORTISOL EXCESS AND DEFICIENCIES

Disrupted ACTH-Cortisol Temporal Coupling in Healthy Men After an Overnight Fast, and the Modulatory Role of Orally Ingested Macronutrients

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MON-184

While long term fasting is reported to augment the corticotropic function, effect of short term (overnight) fasting on ACTH-cortisol coordinated release pattern and potential effect(s) of nutrient intake is not fully defined. Eleven healthy men (age: 33-70 yrs, BMI 20.4-31.5 kg-m^2) were studied after overnight fast on 4 separate days, involving oral ingestion of 300 ml of either water, dextrose, protein, or lipid solutions. Test meals were isocaloric (400 kcal). Sessions were 6.5 h long, starting at 0800-0900 hrs. Blood was collected at 10-min intervals for ACTH (pg per mL), and cortisol (µg per dL) measurements. Linear regression, cross-correlation, deconvolution, and ApEn were used for data analyses. ACTH and cortisol concentration time series during short-term fast (water day) were found not to be chronologically coupled per linear regression (r^2= 0.0014, P=0.82), and cross-correlation (r= - 0.156, lag=150 min) statistics. Oral intake of the 3 macronutrients improved the temporal relationship between ACTH and cortisol concentrations, verified by linear regression (r^2:P- dextrose 0.54:0.0001, protein 0.65: 0.0001, lipid 0.42:0.0001), and cross-correlation (r:lag in min- dextrose 0.8:10, protein 0.77:10, lipid 0.78:20). Oral ingestion of either macronutrient did not significantly alter mean ACTH and cortisol concentrations and their respective secretion pattern (total, pulsatile, basal) over the period of 6.5 hr. However compared to the control (water) session, dextrose ingestion evoked less frequent and larger ACTH secretory bursts, and more regular ACTH and cortisol secretory patterns. In this study, we have observed lack of concordance between ACTH and cortisol after overnight fasting, which is restored with oral intake of macronutrients. This effect appears to be uniform among the 3 macronutrients, except for less frequent and lager ACTH bursts and more regular ACTH and cortisol release events after dextrose intake. These findings and the specific role of nutrients being direct or via physiologic nutrient-induced hormonal adaptation warrants future investigation.

Genetics and Development (including Gene Regulation)

GENETICS AND DEVELOPMENT AND NON-STEROID HORMONE SIGNALING II

Characterizing DNA Methylation Signatures in Adipose Tissue from Metabolic Impaired Asymptomatic Individuals

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Obesity remains as a global epidemic characterized by progressive metabolic dysregulation in glucose homeostasis.