

iodine concentration. Suppurative thyroiditis (ST) often presents with fever, tachycardia, leukocytosis, tenderness, and euthyroid labs. However, when ST occurs with thyrotoxicosis, it can meet criteria for thyroid storm, which presents a diagnostic dilemma.

Clinical Case:

A 17 year old female with family history of Graves' disease presented to the ER with a sore throat. She was diagnosed with viral pharyngitis and treated with dexamethasone. Over the next 2 weeks, she developed fatigue, body aches, nausea, vomiting, and chills. She returned to the ER and was found to have tachycardia, hyperthyroidism [free T4 5.64 ng/dL (0.8 - 2.0 ng/dL), TSH <0.015 uIU/mL (0.5 - 4.5 uIU/mL)], and WBC 11 k/uL (3.5 - 11.5 k/uL). She was prescribed atenolol and referred to Endocrinology. Three days later she developed fever, diaphoresis, ear pain, vomiting, and abdominal pain. In the ER, she was febrile to 101.2°F with a heart rate (HR) of 117 BPM. Labs showed a free T4 6.14 ng/dL, TSH <0.015 uIU/mL, and WBC 20 k/uL. She was treated with methylprednisolone, propylthiouracil, and labetalol with improvement and transferred for concern of impending thyroid storm. Exam showed left-sided thyroid enlargement with tenderness. Thyroid ultrasound showed an enlarged heterogenous left thyroid lobe with 2 nodules, one 25 x 33 x 21 mm heterogenous and one 19 x 11 x 19 mm homogenous, without discrete abscess. That night she developed vomiting, hand tremors, HR in the 130's BPM, fever to 104.1°F, and a headache. Treatment was initiated with methimazole, SSKI drops, propranolol, and dexamethasone. Symptoms improved save persistent neck tenderness and dysphagia. CT neck demonstrated a left-sided 25 x 17 x 90 mm abscess with concern for 4th branchial apparatus abnormality. She underwent incision and drainage with drain placement. Cultures grew *Streptococcus anginosus* and *Fusobacterium necrophorum*. Broad spectrum antibiotics were started and later narrowed to ampicillin-sulbactam. Betablockers and methimazole were discontinued and thyroid labs nearly normalized by discharge [T4 11.8 mcg/dL (4.5-11.5 mcg/dL), free T4 2.0 ng/dL (0.8-2 ng/dL), and total T3 78 ng/dL (100-210 ng/dL)]. Thyroid auto-antibodies were negative.

Discussion:

In patients with ST, only 11% present with hyperthyroidism. Current thyroid storm scoring systems are sensitive but not specific so an acute bacterial infection with thyrotoxicosis can easily meet criteria. While ultrasound is standard for assessing for thyroid abscesses, in the setting of high clinical suspicion, further imaging with contrasted neck CT is warranted.

Adipose Tissue, Appetite, and Obesity MECHANISMS AND TREATMENT OF OBESITY IN HUMANS

Amino Acid Signature of Abdominal Obesity in the TwinsUK Cohort

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Background and aim: Metabolomic studies have shown that circulating amino acid levels are altered in the context of obesity. The branched-chain amino acids (BCAAs, namely leucine, isoleucine and valine) have been the most studied because of their consistent positive association with adiposity and their ability to prospectively predict type 2 diabetes and cardiovascular diseases (1). Circulating glutamate has been much less investigated, but some have shown that its specific association with central fat accumulation was stronger than that of BCAAs (2). This study aimed to evaluate the relationship between circulating glutamate and abdominal obesity and the impact of genetic factors on this association. **Methods:** In the TwinsUK cohort, we selected individuals for whom both metabolomics and DXA trunk fat measurements were available (n=4 665). We used linear regression to assess the correlation between glutamate level and trunk fat. Those with a trunk fat mass greater than 15 kg were considered abdominally obese. We compared the odds of presenting abdominal obesity in each circulating glutamate quintile with logistic regression models. Monozygotic twin pairs discordant for trunk fat were selected to identify analyte differences driven by non-genetic factors. All analyses were also performed with BCAAs for comparison. **Results:** Circulating glutamate was positively and significantly associated with trunk fat (β : 0.28, 95%CI: 0.26-0.31). Individuals in the highest circulating glutamate quintile had a more than 8-fold higher risk of being characterized by abdominal obesity compared to those in the lowest quintile (OR: 8.44, 95%CI: 6.17-11.55). In the 54 monozygotic twin pairs discordant for trunk fat, the heavier twin had significantly higher glutamate level compared to the leaner co-twin (p-value: 4.05e-07). In all these analyses, the results for glutamate were more significant than with any of the BCAAs. **Conclusion:** There is a positive relationship between circulating glutamate and trunk fat that is partially independent of genetic background. This often-overlooked metabolite might represent an interesting biomarker of abdominal obesity. **References:** (1) Newgard (2017). Metabolomics and Metabolic Diseases: Where Do We Stand? *Cell Metab*, 25(1), 43-56, (2) Kimberly et al. (2017). Metabolite profiling identifies anandamide as a biomarker of nonalcoholic steatohepatitis. *JCI Insight*, 2(9).

Tumor Biology

NOVEL REGULATORS OF BREAST CANCER PROGRESSION

The Androgen Receptor Is a Tumour Suppressor in Estrogen Receptor Positive Breast Cancer

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