after initial thyroid FNA showed marked improvement of the diffuse swelling.

Conclusion: The phenomenon of diffuse thyroid edema after fine need aspiration has been termed acute thyroid swelling (ATS). Given how frequently thyroid fine needle aspirations are performed, ATS appears to be a very rare complication. The etiology of ATS remains unknown, but the use of blood thinners, such as in our patient, does not appear to be a risk factor (1). The radiological appearance of fluid filled 'cracks' within the thyroid parenchyma suggests a more diffuse process, rather than a localized reaction. While NSAIDs or steroids may help with symptoms, patients appear to improve irrespective of whether or not medications are given. This suggests that ATS is a self-limiting condition without long term complications.

Reference: (1) Polyzos SA, Anastasilakis AD, Arsos. Acute transient thyroid swelling following needle biopsy: An update. Hormones. 2012;11(2);147-150

Adrenal

ADRENAL CASE REPORTS I

Newly Diagnosed Schmidt's Syndrome and Steroid Induced Psychosis

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SAT-230

In 1926, Schmidt reported the combination of hypothyroidism and adrenal insufficiency (AI) with lymphocytic infiltration of both the thyroid and adrenal glands.1 This syndrome is now known as autoimmune polyendocrine syndrome (APS) type 2, characterized by two of the following three endocrinopathies: type 1 diabetes, autoimmune thyroiditis, and Addison's disease.2 It may seem surprising that transient relative hypercortisolemia in AI patients at the beginning of treatment results in steroid induced psychosis (SIP). Here, we present a patient who developed SIP after starting steroid for AI.

44 year old Caucasian female with bipolar disorder and Hashimoto's thyroiditis was admitted for generalized weakness, nausea, vomiting and weight loss of about 15 pounds in 3 months. On exam, blood pressure was 93/54 mmHg and pulse rate was 99. Her abdomen and arms looked hyperpigmented. Lab test revealed plasma glucose of 68 mg/dl, serum sodium of 129 mmol/l (133-145), potassium of 4.9 mmol/l (3.6 – 5.2), bicarbonate of 20 mmol/l (22 – 29). TSH was 16.93 mIU/ml (0.4 – 4.00) and FT4 was 0.74 ng/dl (0.7 1.8). CT abdomen and pelvis with contrast was unremarkable. As AI was suspected, cortisol level was checked and low at 0.5ug/dl. Cosyntropin stimulation test (CST) revealed pre-CST cortisol of 0.4 ug/dl, and post CST cortisol of 0.5 ug/dl at 45 min. ACTH was elevated at 514.4 pg/ml (7.2 – 63.3). A diagnosis of Schmidt's syndrome was made based on elevated 21 hydroxylase of 8.5 U/ml (<1.0) and anti-thyroid peroxidase antibody of 20.5IU/ml (<5.6). Screening for type 1 diabetes and celiac disease was negative. After CST, stress dose hydrocortisone was started and dose was gradually tapered down in a few days. However, five days after steroid therapy, patient was admitted for suicidal ideation and catatonia which resolved quickly with Ativan and steroid taper to physiologic dose.

APS type 2 has a prevalence of 1:1000. Clinicians should raise the suspicion for this syndrome in the appropriate context as seen in this patient presenting with classic features of AI. Although SIP in AI patients is not frequently reported, we should be mindful about this potential event especially in patients with underlying psychiatric illness. It is postulated that prolonged hypocortisolism in undiagnosed AI might lead to upregulation of central glucocorticoid receptors and hence glucocorticoid replacement might elicit a relative supraphysiological response in these patients.3

Diabetes Mellitus and Glucose Metabolism

DIABETES COMPLICATIONS I

The Effect of Continine Verified Smoking on the Development of Diabetes

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SAT-634

ABSTRACT

Background: Cigarette smoking is a major public health problem and the leading cause of death. We aimed to analyze the effects of cotinine verified smoking on the development of diabetes mellitus.

Methods: Among individuals enrolled in the Kangbuk Samsung Health Study and Kangbuk Samsung Cohort Study, a total of 17,626 men (mean age 37.9 years) who underwent a health screening program in 2011 and 2017 were enrolled. Anthropometric and biochemical parameters, including urinary cotinine level were measured. The odds ratios (OR) for the presence of diabetes were analyzed in three groups according to their self-reported smoking status (Never smoker; Quitter and Current smoker) and cumulative amount of smoking. Individuals with urinary cotinine levels>50 ng/mL were defined as cotinine-verified current smokers.

Results: Among the total participants without diabetes at baseline, 605 (3.4%) participants had diabetes after 6 years. The risk for diabetes was lower in nonsmokers than in current smokers and quittters after adjusting for confounding factors (OR 0.71; 95% confidence interval (CI)0.56-0.89) with current smokers as the reference group. The risks of diabetes were gradually increased with amount of smoking in both quitters and current smokers. When the participants were analyzed in subgroups according to the urinary cotinine levels, those with high urinary cotinine levels >500ng/mL showed the higher risk for the development of diabetes (OR 1.57; 95% CI 1.27 – 1.93).

Conclusions: This study showed that cotinine-verified smoking was associated with the development of diabetes. Furthermore, there was a potential association between smoking amounts and the development of diabetes regardless of smoking cessation. We also found that those with

high urinary cotinine levels showed an increased risk for diabetes compared with participants with low urinary cotinine levels.

Keywords: diabetes, smoking, cotinine

Reproductive Endocrinology

FEMALE REPRODUCTION: BASIC MECHANISMS

Neural Circuits and Hormonal Mechanisms Underlying the Negative Impact of Stress on Pregnancy Outcomes

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MON-016

Despite numerous findings detailing the negative impact of stress on female reproductive health, the means by which stress acts on the CNS and periphery to compromise reproductive success remains poorly understood. As a result, the current study sought to clarify the neuroendocrine mechanisms by which stress acts on the brain to deleteriously influence pregnancy outcomes. Reproduction is regulated by the hypothalamo-pituitary-gonadal (HPG) axis, with hypothalamic gonadotropin-releasing hormone (GnRH) neurons representing the final, common pathway of this axis. Cells expressing the inhibitory neuropeptide, RFamide-related peptide-3 (RFRP-3), lie upstream of the GnRH system and are markedly regulated by environmental and psychosocial factors, including stress. In the present study, we asked whether RFRP-3 neurons mediate the effects of stress on pregnancy outcomes through the regulation of prolactin secretion, as prolactin is critical for pregnancy maintenance. More specifically, because specialized hypothalamic dopaminergic neurons, namely tubero-infundibular dopaminergic (TIDA) neurons, are major regulators of prolactin secretion, we hypothesized that RFRP-3 neurons directly target TIDA cells to negatively influence fetal development. To test this possibility, we subjected pregnant mice to chronic restraint stress for the first half of pregnancy and performed a broad screen of hypothalamic neuroendocrine function compared to non-stressed controls. Stressed mice exhibited elevated baseline concentrations of corticosterone that remained high at least 6 days after the final exposure to stress. Whereas progesterone concentrations were reduced by stress early in pregnancy, stressed mice recovered typical progesterone secretion during late gestation. These early, stressful experiences resulted in persistent developmental delays, reduced embryo weight, and abnormal placental histology. Significantly, a small percentage of TIDA cells receive close contacts from RFRP-3 axons, providing a mechanism for the control of prolactin secretion by stress. However, contrary to expectation, the percentage of TIDA neurons receiving input from RFRP-3 cells was not impacted by stress. Together, these findings identify a potential pathway of control for the impact of stress on neuroendocrine factors critical to pregnancy success, although further work using more sensitive approaches is needed to examine the putative role of RFRP-3 on stress-induced pregnancy outcomes.

Adrenal

ADRENAL CASE REPORTS I

A Rare Cause of Cardiogenic Shock

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SAT-225

Background: Rare cases of pheochromocytoma are associated with stress induced Takotsubo cardiomyopathy, occurring in approximately 3% of secreting pheoochromocytoma and paraganglioma (PPGL). **Case:** A 39-year-old female with a history of hypertension and anxiety disorder, re-presented to the ED within 24 hours with headache, vomiting and severe hypertension (BP 205/70 mmHg). She rapidly developed acute pulmonary oedema and cardiogenic shock. ECG revealed dynamic ST-segment abnormalities and troponin rise peaked at 38,000 ng/L (N < 16ng/L). The coronary angiography excluded any coronary artery lesion. Echocardiography revealed severe global hypokinesis with an ejection fraction of 5% and evidence of apical ballooning. A bedside abdominal ultrasound revealed 7cm left adrenal mass confirmed by computed tomography (CT). Investigations revealed a metanephrine level of > 13,760 pmol/L (N < 900 pmol/L) and normetanephrine of > 60,780 pmol/L (N < 500 pmol/L). Her clinical status deteriorated despite on diuretics, inotropes and mechanical ventilation. Extra-corporeal membrane oxygenation (ECMO) was implanted. Alpha adrenergic blockades were initiated followed by beta blockers, during which control of blood pressure was achieved. Her haemodynamic status improved and ECMO removed 8 days post-implantation. Two weeks after discharge from hospital, she underwent uncomplicated open adrenalectomy; histologic examination of the mass confirmed the pheochromocytoma diagnosis. **Reference** 1. Gagnon N, Mansour S, Bitton Y et al. Takotsubo-like cardiomyopathy in a large cohort of patients with pheoochromocytoma and paraganglioma. Endocrine Practice.2017;10: 1178-1192

Thyroid

THYROID CANCER CASE REPORTS II

Clinical Profile of Thyroid Papillary Microcarcinoma in Brazil

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MON-456

INTRODUCTION: The thyroid papillary microcarcinoma (TPMC) is defined as a tumor ≤ 1 centimeter. This variant