correlation with 96.8% of ATA low risk group being stage 1 in AJCC8, 2.9% stage 2 and 0.3% stage 3 and none in stage 4. The ATA intermediate risk group was 87.4% AJCC8 stage 1, 12.3% stage 2, 0.4% stage 3 and none in stage 4. The ATA high risk group was 19.1% in AJCC8 stage 1, 33% in stage 2, 9.6% in stage 3 and 38.3% in stage 4.

In addition, AJCC8 was more predictive of the outcome with 80% of pts with evidence of disease (biochemically and structurally incomplete) being in AJCC8 stage 3 or 4 compared with 60% in AJCC7. For ATA staging, 8.6%, 22.4% and 67.7% of low, intermediate and high risk groups had evidence of disease at the last follow up, respectively.

Conclusion: In this Middle Eastern population, AJCC8 downstaged a significant percentage of pts with DTC from higher stages in AJCC7. It also correlated better with the outcome and with the ATA risk classification system.

Thyroid
THYROID DISORDERS CASE REPORTS II

New Breast Cancer Therapy Atezolizumab, Leads to Thyroiditis.
Joseph Theressa Nehu Parimi, MD, Richa Patel, MD.
UNIVERSITY OF MISSOURI-COLUMBIA, Columbia, MO, USA.

SAT-475
Background: A NSABP B 59 trial is currently underway to check the efficacy of an experimental drug, Atezolizumab (Anti-PDL 1 monoclonal antibody) in the treatment of triple negative breast cancer. In the trial, the drug is added to the usual neoadjuvant chemotherapy given before surgery and prolonged treatment with it is continued after surgery to reduce the recurrence. Listed adverse effects are immune medicated hyperthyroidism in 2% of population.

Clinical Case:
32 y old Asian woman was diagnosed with triple negative left breast cancer in May 2018. She was started on paclitaxel, carboplatin and study medication Atezolizumab/Placebo in June 2018 and she received 4 cycles of the same and then it was stopped in August 2018. She was started back on the same in September 2018 which ended in November 2018. Patient tested positive for BRCA1 gene mutation and underwent bilateral mastectomy in December 2018. The study medication was restarted in January 2019.

Patient is received a total of 11 doses of study medication and was due to receive 16 doses if she had finished the trial in June 2019. Patient received radiation therapy starting in January 2019 till February 2019.

On her oncology visit in April 2019 patient was found to have a suppressed TSH of 0.009 with a high free thyroxine of 1.72 and an elevated free T3 of 5.4. She was referred to endocrinology for evaluation of thyroid abnormalities, as the study medication can cause thyroid problems. She denied symptoms of hyperthyroidism. TPO, TSI and anti-thyroglobulin antibodies were negative. Thyroid uptake scan showed uniformly decreased tracer distribution in both thyroid lobes consistent with thyroiditis.

As per the protocol for the study medication as well as recommendations by the American Society of oncology, we waited for normalization of the thyroid function test before resuming the study medication. In July 2019, TSH normalized to 2.99 and free T4 0.97.

She was noted to have low random cortisol level of 3.27 at 1000AM. ACTH stimulation test was performed and she responded appropriately.

Hence could not take the remainder of the study medication that were scheduled until June 2019. She is on observation phase since June 2019 and currently doing well.

Neuroendocrinology and Pituitary
ADVANCES IN NEUROENDOCRINOLOGY

Evidence that Urocortin 2 Contributes to the Suppressive Effect of Metabolic Stress on LH Secretion in Female Mice
Richard B. McCosh, PhD, Michael J. Kreisman, MS,
Katherine Tian, BS, Kellie M. Breen, PhD.
University of California - San Diego, La Jolla, CA, USA.

SUN-257
Pulsatile luteinizing hormone (LH) secretion is disrupted by numerous stimuli including metabolic stress. Insulin-induced hypoglycemia is a model of metabolic stress that suppresses LH secretion in numerous species including mice. Our recent work provides evidence that this inhibition of LH secretion occurs via suppression of neurons that contain kisspeptin (Kiss1), neurokinin B (NKB) and dynorphin (Dyn) in the arcuate (ARC) nucleus (KNDy cells). Thus, our current objective is to identify the neural components responsible for the suppression of KNDy cells during metabolic stress. Several lines of evidence support the hypothesis that the neuropeptide urocortin 2 (UCN2) has a key role in the inhibition of LH during stress in rats. First, ICV injection of UCN2 suppresses LH secretion. Second, an antagonist to the receptor for UCN2 reverses the suppression of LH during metabolic stress. Finally, restraint and osmotic stress increase UCN2 mRNA abundance in the paraventricular nucleus (PVN). To determine if UCN2 neurons in the PVN are activated during metabolic stress we performed immunohistochemistry for UCN2 and c-Fos in tissue collected 120 min after saline or insulin (0.75mU/kg) injection (n = 2/group, ovariectomized, adult, C57/BL6). Insulin significantly increased both the number of UCN2 cells (saline: 109.0 ± 8.5, insulin: 156.3 ± 10.8 cells) and the percentage of UCN2 cells that expressed c-Fos (saline: 13.1 ± 2.5%, insulin: 31.2 ± 0.8%). Next, we administered UCN2 (7.23nmol) via ICV injection to determine if this molecule suppresses LH secretion and/or mRNA abundance of KNDy genes. LH was measured in serial blood samples collected from 60 min prior to and 30-90 min following injection. Tissue was collected 3 h after ICV injection to confirm injection site and quantify mRNA abundance in ARC micropunches. In saline-treated mice (n = 5 successful injections), mean LH concentration and the number of LH pulses did not differ across sampling periods (mean: 6.4 ± 0.4 ng/mL vs. 6.0 ± 0.4 ng/mL; pulses: 2.6 ± 0.2 vs. 3.0 ± 0.3, pre vs. post). In contrast, in mice with successful UCN2 injections (n = 4) there was a significant reduction in both mean LH and the number of LH pulses following UCN2 (mean: 5.0 ± 0.3 ng/mL vs. 1.4 ± 0.2 ng/mL; pulses: 3.0 ± 0.0 vs. 0.25 ± 0.25, pre vs post). UCN2-treated animals had a significant reduction in the abundance of mRNAs encoding KNDy cells.
Kiss1 (~35%) and NKB (~40%) compared to saline-treated animals; the abundance of Dyn mRNA did not differ between treatments. These data demonstrate that PVN UCN2 cells are activated during metabolic stress and that UCN2 is sufficient to suppress LH secretion and the expression of genes involved in stimulating LH pulses. These data support the hypothesis that UCN2 released from neurons in the PVN impairs KNDy cell function and LH secretion during acute stress.

Adrenal

**TRANSLATIONAL STUDIES ON ADRENOCORTICAL FUNCTION IN HEALTH AND DISEASE**

**Luteinizing Hormone/Human Chorionic Gonadotropin Receptor Protein Expression in Adrenocortical Progenitor Cells, Aldosterone Producing Cell Clusters and Adrenal Adenomas Derived from Postmenopausal Women**

Effie Thomos, MD,¹ Regina Belokoloskaya, DO,² Jose Sanchez Escobar, MD,² Shen Yao, MD,² Kazutaka Nanba, MD,² Kenneth Haines, MD,¹ William E. Rainey, MS PHD,¹ Alex Kirschbaum, MD,¹ Alice C. Levine, MD,¹

¹Icahn School of Medicine at Mount Sinai, New York, NY, USA, ²Lenox Hill Hospital, New York, NY, USA, ³National Hospital Organization Kyoto Medical Center, Kyoto, Japan, ⁴University of Michigan, Ann Arbor, MI, USA.

**OR19-02**

Objective/Background

Adrenal pathologies are more common in women than men. Embryologically the adrenals and gonads develop from the adrenogenital ridge with differential migration and differentiation. We hypothesized that in adult females there are adrenocortical progenitor cells that express the LH/hCG-R and proliferate in response to elevated LH. Indeed, several case reports demonstrated LH/hCG-R expression in adrenal secretory tumors in postmenopausal and pregnant females. In aging adults, nests of cells known as aldosterone-producing cell clusters (APCCs) that may be precursors to aldosterone producing adenomas are frequently detected. We retrospectively studied the immunohistochemical expression of LH/hCG-R in normal adrenals, adrenal adenomas and APCCs in archival specimens derived from post-menopausal women.

Methods

Archival specimens from adrenal adenomas derived from 23 women >55 years of age were examined. Clinical data was obtained in a blinded fashion and hormonal data was available in 9/23 cases; 6/9 were secreting cortisol and 3/9 adenomas were secreting aldosterone. In addition, 6 samples derived from a repository of normal adrenals from deceased kidney donors (1 male, and 5 postmenopausal females) were studied. All specimens were immunostained for LH/hCG-R and the adrenal stem cell marker DLK1 that facilitates the maintenance of an undifferentiated phenotype. The normal adrenal tissues were also stained for aldosterone synthase (CYP11B2) to detect APCCs. The slides were reviewed and graded by a pathologist in a blinded fashion.

Results

Expression of LH/hCG-R was demonstrated in both normal and adenomatous tissues in all 23 specimens. The staining in adenomas was heterogeneous, with clusters of densely stained LH/hCG-R positive cells in all specimens. There were less densely stained clusters in normal adjacent adrenocortical tissue that was most prominent in the subcapsular, zona glomerulosa region, an area where the putative adrenal cortical stem cells are found as well as the zona reticularis. Double staining for the stem cell marker DLK1 and LH/hCG-R confirmed that these cells represent adrenocortical progenitor cells. CYP 11B2 immunohistochemistry of normal adrenals demonstrated cell foci dipping from the capsule into the zona fasciculata classified as APCCs that co-expressed cytoplasmic LH/hCG-R.

Conclusion

Adrenal adenomas and APCCs derived from postmenopausal women exhibited heterogeneous but strong immunohistochemical expression of LH/hCG-R in all samples. Interestingly, DLK1-positive adrenocortical stem cells in the subcapsular zone also expressed LH/hCG-R. These data may provide insights into the female predominance of adrenal pathologies, particularly in postmenopausal women with high LH levels. The LH/hCG-R may be a viable target for treatment of adrenal adenomas in postmenopausal women.

**Neuroendocrinology and Pituitary**

**CASE REPORTS IN SECRETORY PITUITARY PATHOLOGIES, THEIR TREATMENTS AND OUTCOMES**

**New Diagnosis of Acromegaly with DKA as Initial Presentation**

Rajani Gundururu, MD,¹ Ritika Verma, MD,¹ Hariharan Regunath, MD,² Michael J. Gardner, MD,² Kiet Huynh, BS in biology.¹

¹UNIVERSITY OF MISSOURI-COLUMBIA, Columbia, MO, USA, ²University of Missouri, Columbia, MO, USA.

**SAT-251**

**Background:** While diabetes mellitus from growth hormone related insulin resistance is not uncommon in GH secreting tumors, initial presentation with diabetic ketoacidosis is rare.

**Clinical Case:** 31 YO male with no significant past medical history presented with c/o fatigue, 40 lb weight loss, polyuria, polydipsia. Clinical features of acromegaly with frontal bossing, protruding jaw, large hands and feet, thick spade like fingers, hammer toes, high arches and thickened fat pads on both feet were noted. Initial labs were consistent with DKA with anion of 31 mmol/L (0-20), blood glucose 241 mg/dl, bicarb 12 mmol/L (22-29), serum betahydroxy butyrate > 8 mmol/L (0-0.29), urine positive for glucose, ketones, protein. Patient was initially treated with IV insulin per DKA protocol, transitioned to subcutaneous insulin.

MRI brain showed 2.1x1.3x2.1 cm pituitary macro adenoma. Labs showed elevated IGF1 LC/MS, S 1094 ng/ml (54-310), IGFBP3 14 mcg/ml (3.5-7), Z score IGF MS Mayo > 3 (-2 to +2), normal FSH 7.1 m unit/ml (1.5-12.4), normal LH 3.4 m unit/ml (1.7-8.6), normal prolactin 6 ng/