a biologically inactive form of T₃ that may block T₄ from binding to the thyroid hormone receptor. As about 15% of patients on L-T₃ replacement with a normalized TSH report continued fatigue and other hypothyroid symptoms, efforts are needed to understand this phenomenon. Decades ago, endocrinologists realized that in severe illnesses, rT₃ is often high and T₄ is often low and termed this “sick euthyroid syndrome”. However, more recently, alternative or functional doctors have argued that high rT₃ is detrimental and can block T₃ from binding to the thyroid hormone receptor. Without peer-reviewed publications, these functional doctors rely heavily on rT₃ levels to treat patients that may have no other laboratory findings of hypothyroidism and often prescribe them L-T₃-only preparations to try to lower the rT₃.

**Hypothesis:** Patients on L-T₃ alone will more likely have an elevated rT₃ compared to patients on desiccated thyroid or L-T₃/L-T₄ therapy.

**Methods** rT₃ was measured in 98 consecutive patients seen in a tertiary Endocrinology clinic with possible or confirmed hypothyroidism (all with severe fatigue) with many of them were already treated with different thyroid preparations.

**Results:** The figure shows the 25%-75% quartiles, ranges and ratio of rT₃ above the normal range/patients in that category. The cutoff of 24 ng/dL (upper limit of normal for rT₃ at either Quest or LabCorp) is indicated by the line. Overall, 18 of the 98 patients had a rT₃ above the normal range. Patients on L-T₃ alone or desiccated thyroid plus L-T₄ had the highest levels of rT₃, and the highest % above the cut-off. Three of the patients with a high rT₃ were not on any thyroid medicine, and in 2 of them, the rT₃ normalized when repeated. The 8 patients with a high rT₃ on L-T₃ was a relatively high percentage (29%).

**Conclusion:** Measuring rT₃ may be helpful in patients who are already on T₄-containing thyroid treatments who still have hypothyroid symptoms. Based on this data, measuring rT₃ in most patients who are not taking thyroid medicine is not recommended, as only a very small percentage of them has an elevated rT₃. Future studies are needed to determine if high rT₃ levels correlate with hypothyroid symptoms and if adding L-T₄ or desiccated thyroid to hypothyroid patients on L-T₃ normalizes rT₃ and improves hypothyroid symptoms.

**Neuroendocrinology and Pituitary**

**CASE REPORTS IN UNUSUAL PATHOLOGIES IN THE PITUITARY**

**Too Big to Be True, Too Young to Stroke!**

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**SUN-285**

**Background:** Lactotroph adenomas are the most common type of pituitary adenomas and can cause infertility and menstrual irregularities in women; hypogonadism and gynecostasia in men. Giant prolactinomas are an unusual subset of pituitary macroadenomas with limited literature available on their management. We describe an unusual case of giant prolactinoma in a young man who presented with symptoms of stroke, that reversed with treatment with cabergoline. **Clinical Case:** 25-year-old man presented with gradually progressing upper extremity weakness for evaluation of stroke. He reported stumbling into things when walking. There was a question of left sided facial droop and Bell’s palsy in recent past. He reported recent weight gain and erectile dysfunction. He was noted to have left homonymous hemianopsia on exam in addition to left upper and lower extremity weakness. MRI Brain showed an enormous mass that filled the sella turcica, invaded the sphenoid sinus and right side of the skull base, invaginating deep into the base of the right cerebral hemisphere with mass effect on the pons, right-sided midbrain, right temporal lobe and right basal nuclei, measuring 6.3 X 5.5 x 7.5 cm. Pituitary hormonal evaluation showed elevated prolactin (PRL) level with dilution at 13,580 ng/mL, with low testosterone (T) level (total T 42 ng/dL, free T 10 pg/mL, SHBG 15 nmol/L). Thyroid and adrenal axes were intact with normal IGF-1 level. In view of very high PRL level, he was started on cabergoline 0.5 mg daily initially and decreased to every other day after 2 weeks as PRL level began to decline. In 8 months, PRL levels decreased to 1293.07 ng/dl (90% reduction) and prolactinoma decreased to 6.0 x 3.7 x 4.7 cm (56% volume reduction). Total and free T improved to 134 ng/dL and 31 pg/dL respectively. He experienced marked improvement in left hemianopsia, with resolution of weakness and slurred speech. Energy level and erectile dysfunction improved. Currently he is being maintained on 0.5 mg cabergoline every other day. **Conclusion:** Giant prolactinomas are uncommon and can present with compressive symptoms, that can be mistaken as stroke. Treatment with anticoagulation may cause hemorrhage and apoplexy with worsening of symptoms.¹² There is limited data available regarding first line therapy for giant prolactinomas with 2 case reports where giant prolactinomas have been treated effectively with cabergoline.¹³⁴ It is important to recognize the cause of such symptoms, and treated where possible with effective medical therapy to prevent morbidity. **References:**

1. Moraes A et al., Giant prolactinomas: the therapeutic approach. Clin Endo (Oxf). 2013 Oct;79(4):447-56 2. Acharya SV et al., Giant prolactinoma and effectiveness of medical management. Endocr Pract. 2010 Feb;16(1):42-6 3. Ahmed, M. et al., Large Prolactinoma. NEJM 2010; 363:177 4. Masoud, R et al., Giant prolactinoma: case report. J Diabetes Metab Disord. 2013; 12: 3

**Reproductive Endocrinology**

**REPRODUCTIVE ENDOCRINOLOGY: REPRODUCTIVE FUNCTION AND DYSFUNCTION ON DEVELOPMENT**

**Diagnostic Performance of Ovarian Morphology for Anovulatory Conditions in Lean and Overweight Women**

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**MON-041**

**Introduction:** Sonographic evidence of polycystic ovarian morphology (PCOM) is a cardinal feature of polycystic ovary syndrome (PCOS), a condition which reflects a spectrum of phenotypes. The criteria to define PCOM are based on an upper threshold for follicle number and ovarian size in lean, regularly cycling women. Whether ovarian features can be used to distinguish between distinct anovulatory conditions is unclear, as is any impact of body mass index (BMI) on the diagnostic performance of ovarian morphology for anovulatory conditions.

**Objectives:** To determine whether ovarian morphology can discriminate between women with regular cycles, normoandrogenic anovulation (NA-Anov), and hyperandrogenic (HA-Anov) anovulation. Any impact of BMI-specific thresholds to improve the diagnostic performance of ovarian morphology for anovulatory conditions was determined.

**Methods:** Women with HA-Anov (biochemical and/or clinical hyperandrogenism and irregular cycles; N=53), NA-Anov (irregular cycles in the absence of hyperandrogenism; N=42), and normoandrogenic women with regular cycles (Controls, N=41) underwent a reproductive health history, physical exam, transvaginal ultrasound scan of their ovaries and fasting blood tests for reproductive hormones. Follicle number per ovary (FNPO, 2-9mm) and ovarian volume (OV) were determined. The diagnostic performance of sonographic markers for anovulatory conditions was tested using receiver operating characteristic curves.

**Results:** FNPO and OV discriminated between HA-Anov and Controls when all women were considered (area under the curve [AUC]=0.82, sensitivity [Se] 72%, specificity [Sp] 90% and AUC=0.84, Se 77%, Sp 81%, respectively). The diagnostic accuracy (AUC = 0.87) and sensitivity (83%) of FNPO improved in lean women (BMI < 25 kg/m²), whereas specificity (93%) improved for women with overweight/obesity (BMI > 25 kg/m²). By contrast, the diagnostic performance of OV declined when BMI was considered. FNPO discriminated between HA-Anov and NA-Anov in lean women (AUC=0.77) whereas OV discriminated between anovulatory conditions in women with overweight or obesity (AUC=0.76), FNPO, but not OV, differentiated between NA-Anov and controls – albeit thresholds were lower for women in lean (>22 follicles) versus overweight categories (>38 follicles).

**Conclusion:** Ovarian morphology has diagnostic potential for anovulatory conditions – but its performance is impacted by BMI status. OV differentiated between HA and NA status, whereas follicle counts discriminated anovulatory conditions from controls suggesting differential roles for FNPO and OV in reproductive dysfunction. Consideration of BMI improved diagnostic performance in some cases, however the overlap in morphological features between NA- and HA-Anov is too extensive to propose condition-specific thresholds at this time.

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**SAT-305**

Stable somatostatin analogs (SSAs) are the first choice for medical treatment of pituitary adenomas and other neuroendocrine tumors. The somatostatin analogs octreotide, pasireotide, and veldoreotide primarily have been characterized according to their binding profiles. However, their ability to activate individual somatostatin receptor subtypes (SSTs) has not been directly assessed so far. In this study, we assessed G-protein signaling in human embryonic kidney (HEK293) cells stably expressing G-protein-coupled inwardly rectifying potassium (GIRK) channels and SSTs using a novel fluorescence-based membrane potential assay. Dose-response curves obtained for veldoreotide revealed high potency and efficacy in cells expressing SST2, SST4, and SST5. Veldoreotide also inhibited proliferation and chromogranin A secretion in SST4-transfected BON-1 cells. In addition, we assessed G-protein signaling in primary pituitary cultures from SST2 and SST5 knockout mice. Our results show that octreotide mediates its effects selectively via the SST2 receptor. Conversely, pasireotide mediates its effects selectively via the SST5 receptor. In contrast, veldoreotide can activate both SST2 and SST5 receptors under otherwise identical conditions. Thus, veldoreotide is a unique SSA with full agonistic activity at the SST2, SST4, and SST5 receptors.

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**Adipose Tissue, Appetite, and Obesity**

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

**Identifying Active Duty Military Meal Planning Preferences to Maximize Nutrition Therapy for Obesity**

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**MON-583**

**INTRODUCTION:** Obesity rates exceed 30% for active duty service members with vitals in the military health system electronic medical records. Although nutrition therapy is a cornerstone of treatment for all individuals with obesity, it is even more important in active duty service members, who have restrictions for obesity medications and are not eligible to receive bariatric surgery. Among nutrition therapy services, online nutritional cooking classes are the most desired intervention by patients at our institution. We currently do not have this resource available. The aim of this survey was to identify meal planning preferences among active duty service members to guide the development of online nutritional cooking classes.

**METHODS:** Surveys were distributed to active duty service members and/or their spouses at San Antonio Military Medical Center and Wilford Hall Medical Center in the summer of 2019. Data included preferences for time spent cooking each meal, weekly grocery budget, meal size, batch cooking preference, available kitchen equipment, most common meals eaten, and desired features in an online nutritional cooking class.

**RESULTS:** 141 surveys were collected, 77% of whom were active duty service members and 23% of whom were

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**Neuroendocrinology and Pituitary**

**PITUITARY TUMORS I**

**Veldoreotide (COR005) Mechanisms of Action Studies: Comparison to Octreotide and Pasireotide**

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