intrauterine insemination (n=1), or timed intercourse/ spontaneous pregnancy (n=2). For women with a history of failed IVF (n=3), there was an improvement in oocyte retrieval, a higher fertilization rate, and a greater number of high-quality embryos compared to previous IVF attempts. There were 2 twin pregnancies (both following IVF). All 7 pregnancies resulted in live births. Consistent with previous studies, the amino acid blend was well tolerated; no adverse events were observed. We report a case series of successful pregnancy in 7 women with conditions associated with low hGH including PCOS, endometriosis, and poor response to ovarian stimulation/history of failed IVF who administered the amino acid blend concomitant with fertility treatment or who reported spontaneous pregnancy. This may represent a potential low-risk and cost-effective treatment to improve IVF success and increase pregnancy rates in individuals with infertility or impaired fertility.

Neuroendocrinology and Pituitary

CASE REPORTS IN SECRETORY PITUITARY PATHOLOGIES, THEIR TREATMENTS AND OUTCOMES

A Case of Central Hyperthyroidism From a TSH Secreting Pituitary Adenoma

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SAT-LB55

This is a case of a 41 year old Filipino female, with one month history of palpitations, unintentional weight loss and increased frequency of bowel movement. Patient was tachycardic and had a slightly enlarged thyroid on physical exam. There were no cushingoid or acromegalic features. Initial work-up revealed elevated TSH 7.10 U/mL prompting referral to an endocrinologist who had an initial consideration of central hyperthyroidism, MRI was done revealing a pituitary adenoma with dimensions of 7.4 x 11 x 5.8 mm. Prolactin level was at 118.9 ng/mL, gonadotropins (FSH 5 mIU/mL, LH 4.3 IU/L) were within normal range for pre-menopausal non pregnant women and early 24h urine cortisol was within normal at 63.79 nmol/ day. Patient was started on propranolol 40 mg thrice daily and methimazole 20 mg twice a day which prompted slight relief. She was also referred to neurosurgery service for further management. Patient underwent transsphenoidal surgery which was tolerated well. Subsequent clinical course revealed improvement of hyperthyroid symptoms with no evidence of post-operative complications such as hematomas, CSF leak, vision loss, diabetes insipidus or central adrenal insufficiency. Immunohistochemical staining was positive for TSH.

On outpatient follow-up, repeat thyroid function tests were within normal with TSH 1.260 and free T4 15.07 pmol/L. Patient is currently symptom free and off methimazole or propranolol. Future plans include a repeat MRI after 6 months of surgery and hormonal testing to confirm cure.

Genetics and Development (including Gene Regulation)

GENETICS AND DEVELOPMENT AND NON-STEROID HORMONE SIGNALING II

A Pilot Genome Wide Association Study (GWAS) on Primary Aldosteronism Patients in a Multi-Ethnic Malaysian Cohort

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MON-LB129

Abstract: Studies on excised aldosterone-producing lesions have found somatic mutations in five genes (*KCNJ5*, *CACNA1D*, *ATP1A1*, *ATP2B3*, and *CTNNB1*) commonly causes the excess aldosterone production. Interestingly, Oriental cohorts had the highest frequency of *KCNJ5* mutations whereas *CACNA1D* mutations were most common in Black African Caribbean patients, suggesting that genetic background affects the prevalence and distribution of aldosterone-driving somatic mutation. We therefore aimed to identify the common germline variants that associates with excess aldosterone production through performing a pilot genome wide association study (GWAS) on primary aldosteronism (PA) patients. GWAS was performed using the Human Infinium OmniExpressExome-8 v1.4 BeadChip containing 960,919 markers to compare gDNA of 154 PA patients with 78 healthy controls. Samples were checked for sex discordance, heterozygosity rate, missing rate and the degree of recent shared ancestry for each pair of individuals using the PLINK program and Genome Studio (Illumina). In total, 150 patients and 75 controls (112 males and 113 females) were included in the downstream analysis. 630,749 markers that passed quality control steps (missing call rate <95% and minor allele frequency in controls >1%) were used to perform association analysis using the Chi-square Test which was then subjected to multiple testing corrections (Bonferroni correction). As expected with a pilot sample size, no variants passed the suggestive significant threshold of Bonferroni corrected P-value < 5 x 10^{-6} (-log10 P = 5.3). However, 27 SNPs had the uncorrected P-value<0.0002, odds ratio >2, and differences of frequencies in cases compared to control >0.1 or <-0.2, of which 3 genes (*SRGAP3*, *AUTS2*, and *RORA*) associated with these SNPs were also highlighted in the UK Biobank database of 72 patients with primary aldosteronism (*https://biobankengine.stanford. edu/coding/HC189*). Of these, *RORA* has recently been found

to be down-regulated in adrenals from PA patients and spontaneously hypertensive rat adrenals compared to control adrenals[a,b]. *RORA* encodes for the protein retinoic acid receptor (RAR)-related orphan receptor alpha, a member of the NR1 subfamily of nuclear hormone receptors (NR1F1). Interestingly, adrenal is the second organ to skin with the highest expression of *RORA* and treatment of angiotensin II in the adrenocortical cell line H295R increases *RORA* expression[c,d]. Taken together, this pilot GWAS highlights *RORA* as a potential nuclear hormone receptor that regulates aldosterone production.

References
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Neuroendocrinology and Pituitary
CASE REPORTS IN SECRETORY PITUITARY PATHOLOGIES, THEIR TREATMENTS AND OUTCOMES

Tension Pneumothorax Following Cabergoline Initiation for Macroprolactinoma

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SAT-LB47

Background Pneumocephalus is a rare and life-threatening complication of dopamine agonists (DA) for the treatment of invasive giant prolactinomas. Here we present a catastrophic case of pneumocephalus following cabergoline therapy for invasive macroprolactinoma. *Clinical Case* A 49-year-old man presented with transient left-sided facial weakness for one day. MRI Brain showed no acute infarcts but revealed a 3.7cm pituitary macroadenoma extending into the sphenoid sinus and left cavernous sinus, encasing the left internal carotid artery with scattered hemorrhagic foci. He was discharged on cabergoline 0.25mg twice weekly for hyperprolactinemia of 7640 ng/mL (N 2.64-13.13 ng/mL). Four weeks later, he was readmitted for altered sensorium, clear rhinorrhea and positional headache. Work-up showed a prolactin of 204 ng/mL confirmed on dilution testing, and a random cortisol of 8.3 mcg/dL. MRI Brain revealed mass involution measuring 2.8cm with the central component replaced by air, and extensive pneumocephalus overlying bilateral cerebral hemispheres, within lateral ventricles and basal cisterns. Further DA therapy was held, and the patient was started on stress dose steroids. He underwent emergent surgical repair of the CSF leak, partial tumor resection and lumbar drain placement. Pathology confirmed pituitary adenoma staining positive for prolactin. Two weeks later, prolactin was 7157 ng/mL. Subsequent attempts to restart DA therapy was complicated by recurrent CSF leaks requiring two additional surgical repairs. After a complicated hospital course requiring prolonged intubation, tracheostomy and PEG tube placement, he was discharged to an acute rehabilitation center on low dose bromocriptine 2.5mg daily as well as maintenance hydrocortisone 10mg twice daily. *Discussion* CSF leak with pneumocephalus is a rare complication of DA therapy for invasive macroprolactinomas. It occurs due to disruption of the dura with an osseous defect of the skull base. Rapid volume reduction by DA leads to exposure of previously created pathologic opening in the skull base originally plugged by tumor itself until then. Out of 60 patients from 1980 to 2017 who developed DA therapy-induced CSF leak, more than half (57%) were on bromocriptine. Median initial prolactin was 5460 ng/ml and median time from therapy initiation to presence of rhinorrhea was 6 weeks, although it can occur as late as 2 years. The recommended definitive management of DA-induced rhinorrhea is surgical repair. Subsequently, there is no consensus on how to restart DA post-repair. *Conclusion* This case illustrates the importance of watchful monitoring of response after DA therapy initiation in invasive macroprolactinomas. Although data is sparse, there may be benefit in lower and less frequent dosing initially. Patient education regarding the risk of complications and signs/symptoms to watch out for with DA therapy is also crucial.

Neuroendocrinology and Pituitary
PITUITARY TUMORS II

Thyrotropinoma and Pregnancy.

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MON-LB46

Thyrotropinomas (TSHomas) are rare pituitary tumours, comprising 1-2% of all pituitary adenomas. Thyrotropinomas in pregnancy are exceedingly rare and management of these in pregnancy can be challenging due to the potential for maternal and foetal harm. We report the case of a 35 year old woman who was found to have a pituitary macroadenoma on imaging whilst being evaluated for headaches and sinusitis. She had felt more stressed than usual but no other overt thyrotoxic symptoms. There were no visual field abnormalities or symptoms to suggest other endocrine hypo or hypersecretion. Pituitary MRI revealed a macroadenoma and biochemistry demonstrated raised free T4 24 pmol/L and free T3 6.8 pmol/L and inappropriately elevated TSH of 4.2 mIU/L, in keeping with secondary hyperthyroidism. She was scheduled for transsphenoidal (TSA) pituitary surgery, however on review she had naturally fallen pregnant. After a multi-disciplinary discussion, it was decided that surgery should be deferred and close observation be undertaken under the care of a multidisciplinary team. During the first half of pregnancy she suffered hyperemesis gravidarum with ongoing thyrotoxicosis but declined carbimazole. Her visual fields were normal throughout pregnancy. She delivered vaginally at 38 weeks, weight 3.395kg and had no malformations. Post birth was complicated by post-partum