signaling is important to aid the development of new tissue-specific treatments. We hypothesized that the posttranslational modification phosphorylation in estrogen receptor alpha (ERα) may modulate ERα transcriptional activity in a tissue-dependent manner. Phosphorylation of site S122 in ERα has been shown in vitro to affect ERα activity, but the tissue-specific role in vivo is unknown. We herein developed and phenotyped a novel mouse model with a point mutation at the phosphorylation site S122 in ERα (S122A). Female S122A mice had increased fat mass and serum insulin levels but unchanged serum sex steroid levels, uterus weight, bone mass, thymus weight, and lymphocyte maturation compared to WT mice. In conclusion, phosphorylation of ERα S122 has a tissue-dependent role with an impact specifically on fat mass in female mice. This study is the first to demonstrate in vivo that phosphorylation of a transactivation domain in a nuclear steroid receptor modulates its activity in a tissue-dependent manner.

Reproductive Endocrinology

TRANSGENDER MEDICINE AND RESEARCH

Estradiol Dose and Concentrations in Transfeminine Individuals

Brendan J. Nolan, MBBS, FRACP, Adam Brownhill, MBBS, MRCGP (UK), FRACGP, FARGP, Ingrid Bretherton, MBBS, FRACP, Peggy Wong, MBBS, FRACGP, Susan Fox, MBBS, FRACGP, Peter Locke, Nicholas D. Russell, MBBS, FRACP, Mathis Grossmann, MD, PhD, FRACP, Jeffrey D. Zajac, MBBS, FRACP, PhD, Ada S. Cheung, MBBS, FRACGP, PhD.

1University of Melbourne (Austin Health), Melbourne, Australia, 2Equinox Gender Diverse Clinic, Melbourne, Australia.

SUN-039

Background: Feminizing hormone therapy with estradiol is used to align an individual’s physical characteristics with their gender identity. Australian expert consensus guidelines (1) recommend targeting estradiol concentrations of 250-600 pmol/L (68-163 pg/mL) based on local cross-sectional data (2). We aimed to establish the proportion of individuals achieving estradiol concentrations in consensus guidelines.

Methods: A retrospective cross-sectional analysis was performed of transfeminine individuals attending a primary or secondary care clinic in Melbourne, Australia who were prescribed oral estradiol valerate for at least 6 months and had estradiol dose and concentration available. Estradiol concentration was measured by immunoassay. Outcomes were (1) proportion of individuals achieving target estradiol concentrations and (2) influence of estradiol dose and BMI on estradiol concentrations.

Results: 259 individuals (median age 25.8 [IQR 21.9, 33.5] years) had data available for analysis. Median duration of estradiol therapy was 24 (15, 33) months. Median estradiol concentration was 328 (238, 434) pmol/L (89 [65, 118] pg/mL) on 6.4 (8) mg estradiol valerate. 172 (66%) individuals had estradiol concentrations within the target range recommended in consensus guidelines. 70 (27%) individuals had estradiol concentrations below target, and 17 (7%) above target. There was a weak positive correlation between estradiol dose and estradiol concentration (r=0.156, p=0.012). There was no correlation between BMI and estradiol concentration achieved (r=-0.063, p=0.413).

Conclusions: 66% of individuals achieved estradiol concentration recommended in consensus guidelines with a relatively high oral estradiol dose. There was significant interindividual variability. Estradiol concentration should be interpreted in conjunction with clinical features of feminization and weighed against potential risks of escalating estradiol dose.

References
1. Cheung AS, Wynne K, Erasmus J, Murray S, Zajac JD. Position statement on the hormonal management of adult transgender and gender diverse individuals. Med J Aust 2019; 211:127-133
2. Angus L, Leemaqz SY, Ooi O, Cundill P, Silberstein N, Locke P, Zajac JD, Cheung AS. Cyproterone acetate or spironolactone in lowering testosterone concentrations for transgender individuals receiving estradiol therapy. Endocr Connect 2019

Thyroid

THYROID DISORDERS CASE REPORTS III

A Case of Inoperable Substernal Goiter

Garyfallia Papaioannou, MD, PhD, Erick Perez Sifontes, MD, Gnanambal Manivel, MD, Manivel Kumaran Esuwan, MD, MS.

1University of Central Florida College of Medicine, North Florida Regional Medical Center Internal Medicine Residency Program, Gainesville, FL, USA, 2University of Central Florida College of Medicine, North Florida Regional Medical Center Internal Medicine Residency Program, Accent Physician Specialists, Endocrinology, Gainesville, FL, USA.

MON-467

Introduction: Goiter is abnormal growth of the thyroid gland. When goiter extends into the mediastinum it is called retrosternal or substernal. Substernal goiter can cause compression of the great vessels, trachea, and esophagus. When it compresses trachea it can result in airway obstruction. In that case treatment of choice is thyroideectomy and Radio Iodine Ablation (RIA). But some patients are considered to be high risk for operation due to multiple comorbidities. We are presenting this case where we tried experimental therapy with airway stent and external beam radiation. Case: An 81 year old female presented to the hospital complaining of chest pain. She also reported dysphagia to solids and liquids and weight loss during one month. Past medical history included congestive heart failure, atrial fibrillation, chronic obstructive pulmonary disease with home oxygen support. On physical exam thyroid was palpable to the level of sternal notch. Arterial blood gases showed hypoxemia (PO2 63), thyroid function tests showed an abnormally suppressed TSH (<0.005 IU/mL), elevated free T4 (2.48 ng/dl) and normal T3. Thyroid stimulating immunoglobulin, IgG, IgM and IgA levels were normal. Thyroglobulin and thyroid peroxidase antibodies were negative. Chest X-ray revealed an upper mediastinal mass. Chest CTA showed a very large substernal goiter with left thyroid lobe of 7.4 x 3.4 x 7.8 cm that extended to the level of the carina causing compression of the...
Adrenal

**ADRENAL - HYPERTENSION**

**Genetic Analysis and Clinical Characteristics of Hereditary Paraganglioma and Pheochromocytoma Syndrome in Korean Population.**

Heeun Choi, Medical school student1, Namki Hong, MD2, Saeam Shin, MD1, Seung Tae Lee, MD1, Jong Rak Choi, MD4, Sang Wook Kang, MD1, Yumie Rhee, MD,PHD2.

1Yonsei University College of Medicine, Seoul, Korea, Republic of, 2Department of Internal Medicine, Severance Hospital, Endocrine Research Institute, Yonsei University College of Medicine, Seoul, Korea, Republic of, 3Department of Laboratory Medicine, Yonsei University College of Medicine, Seoul, Korea, Republic of, 4Department of Surgery, Yonsei University College of Medicine, Seoul, Korea, Republic of.

**MON-195**

Pheochromocytoma (PCC) and paragangliomas (PGL), rare neuroendocrine tumor originating from the chromaffin cells together referred as PPGl, are acknowledged to be more than 40% hereditary, related to germline mutations of susceptibility gene. With the advancement of genetic analysis technique, including next-generation sequencing (NGS), there has been attempts to classify PPGl into molecular clusters - Pseudohypoxic, Wnt signaling, and Kinase signaling PPGl. With NGS being applied to clinical setting only recently in Korea, we aimed to review the result of genetic analysis, including NGS, and investigate its association with clinical characteristics in Korean PPGl patients. We reviewed medical records of patients with PPGl in Severance hospital enrolled between January of 2006 to October of 2019. We gathered clinical phenotype by reviewing medical records of the patients who underwent targeted NGS from March of 2017 to October of 2019 using Severance hospital's endocrine panel or who had known germline mutations of related genes. Family gene analysis was recommended for family members of patients with significant gene mutations. Among 78 patients with PPGl, 58 patients underwent targeted NGS results or had prediagnosed mutations. Thirty-three patients (62.1%) had clinically significant germline mutation. In patients with hereditary PPGl, there were higher likelihood of family history and presence of other tumors. There were significant differences in the type of PPGls, percentage of family history, metastasis rate and the presence of other tumors among 3 molecular clusters - pseudohypoxic TCA cycle-related, pseudohypoxic VHL/EPAS1-related and kinase-signaling group. Twenty-seven different germline mutations from 11 genes (SDHB, RET, VHL, EPAS1, NF1, KIF1B, MAX, SDHA, SDHC, SDHD, and TMEM127) were found, SDHB mutation being the most common. Four of them were novel mutations; EPAS1 c.1250G>A (p.Gly417Glu), NF1 c.6215delA (p.His2072LeufsTer10), NF1 c.6777del (p.Gly2260fs), and SDHC exon 2-6 duplication. In conclusion, we report the prevalence of germline mutations in Korean PPGl patients, and the rate of hereditary PPGl is estimated to be as high as 62.1%. NGS is a good and accessible tool for genetic analysis in patients with PPGls, and further research on molecular classification will lead to precision medicine.

Diabetes Mellitus and Glucose Metabolism

**DIABETES TECHNOLOGY AND ADVANCES IN CLINICAL TRIALS**

**Autonomous Drone Delivery of Insulin**

Derek Timothy O’Keeffe, MB BCh BAO PhD1, Kevin Johnson, PhD2, Spyridoula Maraka, MD, MS3.

1University Hospital Galway, Galway, Ireland, 2University of Limerick, Ireland, Limerick, Ireland, 3University of Arkansas for Medical Sciences, Little Rock, AR, USA.

**OR30-04**

Abstract: Unmanned aerial vehicles (UAVs) or drones have become ubiquitous in modern society, predominantly as recreational tools (e.g. racing, photography). However, their use to transport medical products is still nascent, with the best examples seen in emerging economies with underdeveloped infrastructure due to local terrain such as East African jungles or the South Pacific islands. A case in point is the drone operator Zipline, which has pioneered the delivery of blood products in Rwanda since 2016 [1]. Therefore UAV’s have potential in disaster relief operations where there is often significant disruption of health systems [2]. After Ireland experienced Storm Ophelia (Cat 3 Hurricane) in 2017 and then Storm Emma (Winter Blizzard) in 2018, many of our patients with Diabetes had issues with insulin supplies as they remained housebound due to subsequent flooding/snowdrifts. Diabetes Mellitus is one of the world’s most common chronic diseases with approximately 400 million people affected. Insulin is often needed to achieve and maintain glycemic control and therefore is considered a lifesaving medication for patients.