standardization and harmonization of insulin assays limit the clinical use of insulin-based surrogate indexes of insulin resistance. The lipoprotein insulin resistance (LPIR) score, a metabolomic marker, reflects the lipoprotein abnormalities observed in insulin-resistant states. The reliability of the LPIR score to predict IR in South Asians is currently unknown. In this study, we aimed to evaluate the predictive accuracy of LPIR compared to other fasting-based surrogate indices in SA.

In a cross-sectional study of 59 non-diabetic SA subjects (age 36 ± 8 years, BMI 26.5 ± 5.2 kg/m²), we used calibration model analysis to assess the ability of the LPIR score and other simple surrogate indices [homeostasis model assessment (HOMA-IR), quantitative insulin sensitivity check index (QUICKI) and Adipose tissue insulin sensitivity (Adipo-SI)] to predict insulin sensitivity derived from the reference frequently sampled intravenous glucose tolerance test (FSIVGTT) and Minimal Model analysis (SiMM). LPIR scores were calculated using six lipoprotein particle concentrations and sizes measured by nuclear magnetic resonance (NMR) spectroscopy. Further, quantitative predictive accuracy and index comparisons were determined by root mean squared error (RMSE) of prediction and leave-one-out cross-validation-type RMSE of prediction (CVPE). Receiver operating characteristic (ROC) curve analysis was performed to determine how well LPIR distinguished insulin resistant individuals, categorized as an SiMM < 3. As determined by calibration model analysis, Adipo-SI, HOMA-IR, and QUICKI showed moderate correlations with for SiMM (Adipo-SI: r = 0.66; HOMA-IR: r = 0.60; QUICKI: r = 0.57, p < 0.0001). No significant differences were noted among CVPE or RMSE from any of the routinely used surrogate indices when compared with LPIR. The ROC area under the curve was 0.76 (95% CI 0.64–0.87) suggesting that LPIR performed well in identifying insulin resistant subjects. The optimal cut-off in IR individuals was LPIR >46 (sensitivity: 75.9 %, specificity: 70.0%). We conclude that NMR-derived LPIR may be an appropriate index to assess insulin resistance in South Asians.

Cardiovascular Endocrinology
ENDOCRINE HYPERTENSION AND ALDOSTERONE EXCESS

Can Histology Predict the Presence of KCNJ5 Somatic Mutation in Aldosterone-Producing Adenomas?
Yuto Yamazaki, MD, PhD1, Xin Gao, MD1, Yuja Tezuka, MD, PhD2, Kei Omata, MD1, Yoshiykiyo Ono, MD, PhD2, Ryo Morimoto, MD1, Celso E. Gomez-Sanchez, MD2, Yasuhiro Nakamura, MD, PhD2, Fumitoshi Sato, MD, PhD1, Hironobu Sasano, MD, PhD1
1Department of Pathology Tohoku University Graduate School of Medicine, Sendai, Japan, 2Division of Clinical Hypertension, Endocrinology and Metabolism, Tohoku Graduate School of Medicine, Tohoku University, Sendai, Japan, 3Division of Nephrology, Endocrinology, and Vascular Medicine, Tohoku University Hospital, Sendai, Japan, 4Tohoku Univ Grad Sch of Med, Sendai Miyagi, Japan, 5Univ of Mississippi Med Ctr, Madison, MS, USA, 6Tohoku Medical and Pharmaceutical University, Sendai, Japan, 7Tohoku Univ Sch of Med, Miyagi, Japan.

Aldosterone-producing adenoma (APA) is well known to harbor marked intratumoral heterogeneity in terms of morphology and CYP11B2 (aldosterone synthase) localization. In histology, APAs is generally characterized by two distinct cell subtypes, namely “clear cells” and “compact cells”. Clear tumor cells harbor abundant lipid droplets in their cytoplasms and compact tumor cells generally featuring small round shape have abundant intracytoplasmic organelles including mitochondria. Relatively close correlation between these histological characteristics (morphology and CYP11B2 immunohistochemistry) and genotypes of aldosterone-driver gene somatic mutation has been reported. Among them, KCNJ5-mutated APAs have been reported to harbor clear cell predominant features, while APAs with other rare somatic mutations including ATP1A1, ATP2B3 and CACNA1D harbor heterogenous or relatively compact cell predominant morphometry. However, these previous evaluation were based on eyeball analysis with relatively low reproducibility. Therefore, we developed the more quantitative methods using digital image software in order to analyze the widespread area, which can reflect intratumoral heterogeneity, with high reproducibility to analyze the further detailed correlation between histopathological characteristics and genotype in APA. We explored the utility of immunohistochemistry including CYP11B2 and KCNJ5. We further attempted to propose histopathological scoring system to predict the presence of KCNJ5 somatic mutation in APAs.

Results of our present study revealed that KCNJ5 was predominantly immunolocalized in zona glomerulosa among adrenal cortex (vs. ZF, P=0.0002, vs. ZR, P=0.0002), furthermore, predominantly in APCCs than in non-APCCs (P=0.0019). Among the tumors, KCNJ5 immunoreactivity was significantly higher in KCNJ5-wild type APAs than in mutated ones (P=0.0037). KCNJ5-mutated APAs had significantly lower nuclear / cytoplasm ratio and abundant clear cell components than those with wild type, harboring large tumor size. In conclusion, we firstly proposed a novel histopathological predicting scoring system for the presence of KCNJ5 somatic mutation, including the following histopathological findings: N/C ratio, clear cell (%), tumor size, CYP11B2 immunoreactivity and KCNJ5 immunoreactivity. It is true that no single histological factors above could precisely predict the presence of KCNJ5 somatic mutation but this newly developed combined histopathological predicting scoring system could provide relatively high accuracy to predict KCNJ5 somatic mutation in APAs (AUC=96%, sensitivity:100%, specificity:90%, 4 points or more). However, further prospective validation by large number of cases is required for clarification.

Adrenal
ADRENAAL CASE REPORTS I

Primary Adrenal Lymphoma Presenting with Symptomatic Hypercalcaemia
Hannah Elizabeth Forde, MB BCh BAO PhD1, Jane Noble, MB BCh1, David Gibbons, MB BCh Nai MMed Sci1, John Holian, PhD1, Connaghan Daniel Gerard, MB BCh1, Rachel K. Crowley, MD, MRCP2
1JESOCI Volume 4, Abstract Supplement, 2020

DOI: 10.1210/jendso/bvaa046 | Journal of the Endocrine Society | A879
SAT-185
Introduction: Primary adrenal lymphoma (PAL) is a rare cause of adrenal enlargement with approximately 200 cases reported in the literature to date. It tends to affect elderly men and has a high incidence of bilateral involvement at diagnosis. We report the case of a 66 year old male, whose PAL manifested with symptomatic hypercalcaemia. A 66 year old male, originally from the Philippines, was referred to the emergency department with nausea, vomiting, weight loss and right flank pain. His past medical history was significant for hypertension, gout and stage 3b chronic kidney disease. His medications were amlopidine, losartan and febuxostat. His family history was significant for hypertension. On examination he was hypertensive (blood pressure, 160/100 mmHg) and hyperpigmented. His laboratory investigations revealed; corrected calcium of 3.79 mmol/l, undetectable PTH, vitamin D 49 nmol/l. He was treated with intravenous (IV) 0.9% saline and IV zoledronic acid and his calcium levels improved.

To investigate causes of non-PTH mediated hypercalcaemia, computerised tomography of the thorax, abdomen and pelvis (CT TAP) as well as a positron emission tomography (PET) scan were performed. These demonstrated bilateral, large, metabolically active adrenal masses with no evidence of extra-adrenal disease. Differential diagnosis at this point included bilateral adrenal hyperplasia, metastases, lymphoma or adrenal TB. There were no radiological features of adrenocortical carcinoma (ACC) or phaeochromocytoma and subsequent biochemical investigations confirmed no evidence of cortisol, androgen or catecholamine excess. Adrenocorticotrophic hormone (ACTH) levels were elevated however, and a synacthen test revealed inadequate adrenal reserve (peak cortisol 214 nmol/l). The patient was commenced on maintenance steroids and with stress dose steroid cover, proceeded to adrenal biopsy. Histology confirmed diffuse large B cell non-Hodgkin’s lymphoma. Haematology became involved in his care and he commenced polychemotherapy in the form of R-CHOP, 1 week post confirmation of the diagnosis. His treatment is ongoing and he has tolerated it well with minimal side effects, except a flare of gout.

Learning points: PAL should be considered in the differential diagnosis in patients with bilateral adrenal masses. Image guided adrenal biopsy is the gold standard for diagnosis, though caution must be exercised and an ACC or phaeochromocytoma should be excluded prior to biopsy. The prognosis of PAL is poor and therefore early diagnosis and prompt initiation of treatment are required to improve outcomes.

Thyroid

Benign Thyroid Disease and Health Disparities in Thyroid II

Risk Factors Associated with Thyroid Nodules in Type 2 Diabetes
Sonia Gisella Chia Gonzales, MD1, victor noriega ruiz, MD1, Miguel Eduardo Pinto, MD, MSc, FACE2, eduardo pretell zárate, MD3, Segundo Seclen Santiesteban, MD1.

SUN-422
Objective: To determine risk factors associated with the presence of thyroid nodules in patients with type 2 diabetes

Material and methods: A case control prospective study, matched 1:1, according to age, sex and smoking habit was conducted. Patients with type 2 diabetes were recruited from the Endocrinology Service of Cayetano Heredia Hospital, Lima-Perú. Clinical evaluation, laboratory tests and thyroid ultrasound were performed to indentify patients with type 2 diabetes with and without thyroid nodules. The association was evaluated by calculating Odds ratios (OR) by conditional multivariate logistic regression techniques.

Results: 83 patients with type 2 diabetes and thyroid nodule and 83 patients with type 2 diabetes without thyroid nodule were obtained. The risk factors associated with the presence of thyroid nodules in patients with type 2 diabetes were HbA1c (OR= 4.12, P= 0.002), BMI (OR= 1.13, P= 0.030) and TSH (OR= 3.27, P= 0.0001), with cut-off points according to ROC curve of HbA1c ≥ 8%, TSH in the normal upper limit ≥ 2.3 μIU / mL and BMI ≥ 27 kg / m2. Patients with type 2 diabetes and thyroid nodule had higher values of blood glucose, thyroid volume, abdominal and neck circumference; greater frequency of acantosis nigricans and acrochordons compared to controls.

Conclusions: The risk factors associated with the presence of thyroid nodules in patients with type 2 diabetes were HbA1c, BMI and TSH, with cut-off points according to ROC curve of HbA1c ≥ 8%, TSH in the normal upper limit ≥ 2.3 μIU / mL and BMI ≥ 27 kg / m2.

Reproductive Endocrinology

Transgender Medicine and Research

Cardiometabolic Effects of Cross-Sex Hormone Therapy in Transgender Patients
Lana Kosi Trebicj, MD1, Carola Deischinger, MD1, Anita Thomas, BSc1, Ivica Just-Kukurova, PhD2, Siegfried Trauttig, Prof, MD3, Ulrike Kaufmann, MD3, Alexandra Kautzky-Willer, Prof, MD3.

1Medical University Vienna, Division of Endocrinology and Metabolism, Gender Medicine Unit, Vienna, Austria, 2Medical University Vienna, Centre of Excellence, High-Field MR, Department of Radiodiagnostics, Vienna, Austria, 3Medical University Vienna, Department of Obstetrics and Gynecology, Vienna, Austria.

SUN-048
Background: Sex hormones are believed to play an important role in development and progression of cardiovascular disease. However, the gender gap in onset and mortality is not yet completely understood. Transsexuals undergoing hormone therapy are a promising collective for analysing the effects of sex hormones on cardiometabolic disease.

Methods: Aim of this study is to identify gender specific cardiovascular changes attributed to high-dose cross-sex hormone therapy (HT) in male-to-female (MtF) and female-to-male (FtM) transgender patients by performing an oral glucose tolerance test (OGTT) and 3 Tesla magnet...