molecular, and physical differences between male and female mice receiving an adenine diet to induce CKD. Flox-Fgf23 mice (8 weeks of age, n=4-6/group; mice were Cre negative, thus phenotypically wild type) were placed on a 0.2% adenine-containing diet (CKD); a matching casein-based diet served as control. After 6 weeks, mice were euthanized, and blood and tissues were collected for analysis. As expected, body weight at baseline was initially higher in males than in females, however males lost significantly more weight. Serum BUN was also elevated in both sexes receiving adenine, although males were higher (1.2 fold; p<0.01). Males also had elevated creatinine and lower total serum iron from baseline whereas females had no significant changes. FGF23 was elevated in all mice, with no significant differences between sexes. Kidney fibrosis and inflammation markers were elevated in the CKD mice, with males having higher expression of Col1a1 and -3a1 versus females (3.5/1.5 fold; p<0.001) and TNFα mRNA (2 fold; p<0.001). Renal expression of the anabolic vitamin D metabolizing enzyme Cyp27b1 (1α-hydroyxlase) and early growth response 1 (Egr1) were increased in CKD mice, with males having higher expression over females. Conversely, CKD males had lower kidney Klotho mRNA expression, and both sexes fed adenine expressed significantly lower NPT2a (sodium- phosphate co-transporter2a) mRNA. Liver expression of ferritin (Fth1) was elevated in male CKD mice compared to diet controls, whereas female mice had no differences. Elevated FGF23 has been linked to ventricular hypertrophy, and CKD males had significantly higher heart weight to femur ratio at completion of the study. Our results support that male mice succumb more rapidly than females to adenine diet mediated CKD phenotypes, potentially enhanced by fibrosis and inflammation. It remains to be determined whether the more rapid onset of defects in iron handling parameters accelerate the severe male CKD phenotype.

Reproductive Endocrinology

MALE REPRODUCTIVE HEALTH - FROM HORMONES TO GAMETES

Utility of Ultrasensitive Inhibin B Measurement for the Management of Men with Non-Obstructive Azoospermia

Anne-Laure Barbotin, PhD[1], Ajay Kumar, PhD[2], Bhanu Kalra, PhD[2], Gopal Savjani, MS[2], Valarie Mitchell, PhD[1], Pascal Pigny, PhD[3].

[1]Laboratoire de Spermiologie, Institut de Biologie de la Reproduction, Lille, France, [2]Ansh Labs, Webster, TX, USA, [3]Lille University Hospital, Lille, France.

SAT-043

Inhibin B measurement by conventional assay(s) may be useful in the assessment of spermatogenesis in infertile male patients, especially in cases of azoospermia. Indeed, numerous previous studies have shown that Inhibin B could be helpful to predict a positive testicular sperm extraction (TESE). However, an undetectable Inhibin B concentration (<10pg/mL) does not predict a TESE failure in all cases. These findings explained that most medical centers have precluded the use of Inhibin B assay in the pre-operative hormonal assessment of azoospermic men. Recently, an ultrasensitive Inhibin B assay has been developed allowing the measurement of concentrations below 10pg/mL. The current study aims to assess the clinical relevance of this new assay in men with azoospermia with undetectable Inhibin B levels by conventional assay(s).

Methods: This retrospective study included 71 non-obstructive azoospermic men who had undetectable Inhibin B levels (i.e. <10pg/mL by Gen II ELISA from Beckman Coulter, USA) and who underwent a TESE procedure between 2013 and 2019 in the Lille University Hospital. Serum LH, FSH and testosterone levels were systematically measured by routine immunoassays. Cryopreserved serum samples were used to perform ultrasensitive Inhibin B assay (Ultrasensitive Inhibin B, AL-195, Ansh Labs, USA). Additional hormonal assays including Inhibin A, Activin B and Activin A were performed on available subset of samples.

Results: The TESE was successful, allowing sperm cryopreservation in 32.5 % (25/71) of the cases. No significant statistical difference was found in FSH, LH, or testosterone levels between patients with positive or negative TESE. By contrast, men with positive TESE had more than twice higher serum ultrasensitive Inhibin B levels (median 5.03pg/mL [1.93-8.5] vs. 2.19pg/mL [0.2-4.72], p=0.006). An ultrasensitive Inhibin B serum level >3.67pg/mL (determined by ROC analysis) was associated with increased odds ratio (OR= 4.82; 95% CI: 1.647-12.93) for positive TESE. Inhibin A, Activin B and Activin A serum concentrations did not differ significantly between the two groups.

Conclusion: FSH measurement which is routinely performed in men with azoospermia was not predictive of successful TESE whereas, Inhibin B was found to be a valuable marker in predicting TESE success in this population using ultrasensitive Inhibin B assay.

Neuroendocrinology and Pituitary

NEUROENDOCRINOLOGY AND PITUITARY

FGFR-4 Expression in Pituitary Adenomas Is Associated with Aggressive Tumor Features

Pinar Kadioglu, MD[1], Emre Durcan, MD[1], Fatma Ela Keskin, MD[2], Hande Mefkure Ozkaya, MD[1], Sabri Sirolu, MD[3], Serdar Sahin, MD[1], Ozge Polat Korkmaz, MD[1], Nurperi Gazioglu, MD[2], Necmettin Tanriover, MD[4], Nil Comunoglu, MD[5], Buge Oz, MD[5], Osman Kizilkilic, MD[3].

[1]Division of Endocrinology and Metabolism, Department of Internal Medicine, Cerrahpasa Medical Faculty, Istanbul University-Cerrahpasa, Istanbul, Turkey, [2]Division of Endocrinology and Metabolism, Department of Internal Medicine, T.C. Demiroglu Bilim University, Istanbul, Turkey, [3]Department of Radiodiagnostic, Istanbul University Cerrahpasa, Cerrahpasa Medical Faculty, Istanbul, Turkey, [4]Department of Neurosurgery, Istanbul University Cerrahpasa, Cerrahpasa Medical Faculty, Istanbul, Turkey, [5]Department of Pathology, Istanbul University Cerrahpasa, Cerrahpasa Medical Faculty, Istanbul, Turkey.

MON-269

Biomarkers predicting tumor aggressiveness in pituitary adenomas have been largely investigated, albeit, with inconsistent results. We investigated the relationship of Fibroblast Growth Factor Receptor-4 (FGFR-4) expression and determined its relationship with radiological, pathological, and clinical parameters.

In our study, 650 patients who were followed up for pituitary disease were reviewed from medical charts retrospectively. Of the 307 patients who underwent pituitary surgery for a pituitary adenoma between 2000 and 2015, we selected 161 cases on the basis of availability of pathology specimen of hypophysis tissue in our center. Patients' radiological, pathological, and clinical parameters were obtained from medical charts. FGFR-4 immunostaining was evaluated using a semiquantitative Histologic score (H score).

The mean age of the patients was 56.02 ± 14.80 years. Ninety-two (57.1%) were male and 69 (42.9%) were female. The mean follow-up period was 68.94 ± 44.15 months. Pathological examination revealed the following subtypes; 53 nonfunctioning pituitary adenomas, 26 corticotroph adenomas, 25 hormone receptor negative adenomas, 22 mammotroph adenomas, 13 somatotroph adenomas, 8 combined hormone secreting adenomas, 7 somatomammotroph, and 7 PIT-1 positive adenomas. The mean tumor size was 26.83 ± 14.92 mm. In patients with cavernous sinus invasion, the mean adenoma size was significantly higher than those without ($p < 0.001$). Mean H-score and Ki-67 levels were not different between patients with and without cavernous sinus invasion ($p > 0.05$ for all). The mean H-score, Ki-67, and adenoma size were significantly higher in patients without remission than those with remission ($p < 0.001$, $p = 0.014$, $p < 0.001$, respectively). The mean H score and adenoma size were significantly higher in patients with residual lesions than those without ($p = 0.002$, $p < 0.001$; respectively); there was no significant difference in Ki-
67 levels ($p > 0.05$). When the H-score and Ki-67 levels were assessed in terms of gender, sellar-dural invasion, tumor function or presence of poor subtype, no significant difference was detected ($p > 0.05$ for all). The mean H score and adenoma size were significantly higher in patients with Ki-67≥ 3 than those with <3 ($p = 0.002$, $p = 0.004$; respectively). There was a weak positive correlation between H-score and Ki-67 ($p = 0.005$; $r = 0.218$); on the other hand, Ki-67 was not correlated with mitosis grade, p53 staining, and age, respectively ($p > 0.05$ for all).

In our study, we demonstrated that patients with residual lesion and those without remission had high expression of FGFR-4. Also FGFR-4 levels were positively correlated with Ki-67 which itself correlated with lack of remission. Taken together, our results indicate that higher levels of FGFR-4 and Ki-67 in pituitary adenomas might indicate a more aggressive tumor phenotype.

Adrenal

ADRENAL - TUMORS

Potential Diagnostic Use of a Steroid Profile in Patients with Poorly Controlled Diabetes Mellitus

Kellie Fecteau, Ph.D., Luca Giori, DVM, Ph.D., Alex Esteller-Vico, DVM, Ph.D., Hugo Eiler, DVM, Ph.D.
University of Tennessee, Knoxville, TN, USA.

SAT-162

Cushing's syndrome may contribute to insulin resistance and impaired insulin secretion in patients with diabetes mellitus. The prevalence of Cushing's syndrome in human patients with type II diabetes mellitus has been reported as high as 9.4% (1), and prevalence of diabetes mellitus as a complication of Cushing's syndrome has been reported as high as 50% (2). In our laboratory, evaluation of steroid profiles (analysis of cortisol, progesterone, 17-hydroxyprogesterone, androstenedione, estradiol, testosterone, and aldosterone at baseline and post-ACTH) in 3,600 dogs over 2 years revealed 2% to 8% of dogs with diabetes mellitus had concurrent hyperadrenocorticism. These steroid profiles in dogs with uncontrolled diabetes mellitus, despite insulin therapy, implicated elevated estradiol, progesterone, and 17-hydroxyprogesterone concentrations, with or without elevated cortisol, as probable contributors to poor control of glycemia. It has been reported that high doses of estradiol can decrease expression of insulin receptors in target tissues (3) and progesterone can decrease GLUT 4 expression in target tissues and modulate beta cell proliferation in the pancreas (4), thereby contributing to insulin resistance and possibly insulin secretion. In human patients, decreasing cortisol concentration in Cushing's syndrome improves the glycemic state in many, but not all gain normoglycemia (5). It is suspected, that for some human patients, cortisol is not the only steroid involved in hyperglycemia and a steroid profile may be a useful diagnostic tool for investigating other steroids contributing to insulin resistance. **References:** (1) Nieman, Endocrinol Metab Clin N Am. 2018; 47:259-273. (2) Giordano et al., Eur J Endocrinol. 2014; 170:311-319. (3) Gonzalez et al., Steroids. 2002; 67:993-1005. (4) Branisteanu et al., TRENDS Endocrinol Metab. 2003; 14:54-56. (5) Rogowicz-Frontczak et al., Endokrynol Pol. 2017; 68:334-342.

Adrenal

ADRENAL CASE REPORTS I

Clinical Case of ARMC5 Tumor Syndrome: A Rare Case of Cushing's Syndrome from Primary Bilateral Macronodular Adrenal Hyperplasia Caused by ARMC5 Mutation with Concomitant Presence of Meningiomas and Primary Hyperparathyroidism

Sahil Parikh, MD, Jeena Matthews, MD, Sara E. Lubitz, MD, Stephen Schneider, MD.
Robert Wood Johnson Medical School, New Brunswick, NJ, USA.

SAT-193

Background: Primary Bilateral Macronodular Adrenal Hyperplasia (PBMAH) is a known rare cause of Cushing's syndrome (CS). A mutation in the armadillo repeat containing 5 (ARMC5) sequence is associated with up to 55% of PBMAH cases. Recent studies have linked ARMC5 mutations to presence of other benign neoplasias suggesting that ARMC5 could be a tumor suppressor gene. **Case:** 72-year-old female with a history of obesity, HTN, DM2, osteoporosis, multiple meningiomas, and hypercalcemia with recurrent kidney stones was incidentally found to have bilateral adrenal nodules on CT imaging. She had mild cushingoid features with truncal obesity and moon facies. She had multiple low dose dexamethasone suppression tests with AM cortisol levels in 17-21 ug/dL range (<1.8 ug/dL). She had late night salivary cortisols of 0.885ug/dL and 1.935ug/dL (0.022-0.254 ug/dl in PM). The overall clinical picture of obesity, HTN