

samples weighing greater than 10mg, hair weight was not correlated with hair aldosterone concentration ( $p=0.40$ ). There was no difference in measured hair aldosterone between the subjects with and without PA ( $2.01\pm 1.09$  vs.  $2.52\pm 2.45$  pg/mg;  $p=0.82$ ). Among all subjects, hair aldosterone did not correlate with serum aldosterone ( $p=0.92$ ), aldosterone-to-renin ratio (ARR;  $p=0.94$ ), 24 hour urine aldosterone (Ualdo;  $p=0.85$ ), or the serum aldosterone at the 4 hour time point of a SST (4hrAldo;  $p=0.98$ ). Serum aldosterone, ARR, Ualdo, and 4hrAldo all correlated highly amongst each other (all  $p$ 's  $< 0.001$ ).

**Conclusions:** Hair aldosterone levels do not correlate with other markers of PA. Further work is needed to understand whether optimization of study conditions could improve the usefulness of hair aldosterone measurements in the evaluation of PA.

## Tumor Biology

### ENDOCRINE NEOPLASIA CASE REPORTS II

#### *Silent Presentation of Urinary Bladder Paraganglioma: A Case Report*

Johnathan Kirupakaran, DO, Giovanna Rodriguez, MD, Gul Bahtiyar, MD, MPH.

Woodhull Medical Center, Brooklyn, NY, USA.

#### MON-907

**Background:** Paraganglioma is a rare extraadrenal, neuroendocrine tumor of the sympathetic or parasympathetic ganglia (1). Bladder paraganglioma accounts for 1% of all paragangliomas and 0.05% of all bladder tumors (1,2). Characteristic presentation of this tumor includes hypertensive crisis and postmicturition syncope (3).

**Clinical Case:** 35 year old Middle Eastern man with no pertinent past medical history presented with gross hematuria associated with dysuria, purulent penile discharge, urinary frequency, suprapubic pain, and bilateral flank pain for eight months for which he was given a course of an unknown antibiotic in his home country. Social history revealed smoking half a pack of cigarettes/day for 7 years. Has no family history of cancer. On physical exam he had normal blood pressure with mild tenderness to palpation in suprapubic region. U/A was remarkable for hematuria. Patient was treated for UTI with a course ciprofloxacin without resolution of symptoms. Culture returned negative. CT abdomen/pelvis yielded an approximately 1.9 cm enhancing mural nodule involving the anterior aspect of the bladder. Free metanephrine, nor-metanephrine, plasma catecholamine, and urine vanillylmandelic acid were within normal limits. Cystoscopy and transurethral resection of the tumor (TURBT) was completed; a 5-6mm tumor was visualized and resected. Surgical pathology demonstrated tumor growth into the lamina propria and muscularis propria. Neoplastic cells in the sample were diffusely positive for synaptophysin and chromogranin. S100 protein immunostain highlighted sustentacular cells. The diagnosis of paraganglioma was made based on surgical pathology. Post TURP MRI yielded an approximately 1.7 x 0.9 cm transmural hypervascular enhancing mass lesion involving the anterior aspect of the bladder. Given transmural extension of the tumor, an open partial cystectomy

was performed. The tumor was resected successfully with resolution of symptoms.

**Conclusion:** This is an exceedingly rare example of a hormonally silent paraganglioma, mimicking the presentation of a UTI. This case may present the unique consideration of tobacco specific carcinogens as a potential risk factor for the development of bladder paraganglioma.

#### References

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## Adrenal

### ADRENAL - HYPERTENSION

#### *Biochemical Abnormalities in Endocrine Function Associated with Lutetium 177-DOTATATE Therapy in Metastatic Pheochromocytoma and Paraganglioma*

Sriram Gubbi, MD<sup>1</sup>, Mohammad Al-Jundi, MD<sup>2</sup>, Abhishek Jha, MD<sup>2</sup>, Marianne Knue, CRNP<sup>2</sup>, Joy Zou, RN<sup>3</sup>, Jaydira Del Rivero, MD<sup>3</sup>, Baris Turkbey, MD<sup>3</sup>, Jorge A. Carrasquillo, MD<sup>4</sup>, Karel Pacak, MD, PhD<sup>2</sup>, Joanna Klubo-Gwiezdzinska, MD, PhD<sup>1</sup>, Frank I. Lin, MD<sup>3</sup>.

<sup>1</sup>National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Bethesda, MD, USA, <sup>2</sup>Eunice Kennedy Shriver National Institute of Child and Human Development, National Institutes of Health, Bethesda, MD, USA, <sup>3</sup>National Cancer Institute, National Institutes of Health, Bethesda, MD, USA, <sup>4</sup>Memorial Sloan Kettering Cancer Center, New York, NY, USA.

#### MON-214

**Background:** Lutetium-177 (<sup>177</sup>Lu) DOTATATE (Lutathera®) is a form of peptide receptor radionuclide therapy (PRRT) that has shown efficacy in the treatment of neuroendocrine tumors through its action on somatostatin receptor 2. The effects of Lutathera on endocrine function in metastatic pheochromocytoma and paraganglioma (PPGL) has not been evaluated. **Methods:** We performed a prospective analysis on 21 patients (10 female, 11 male) with metastatic PPGL receiving <sup>177</sup>Lu DOTATATE (NCT03206060) at our center from July 2017 to August 2019. Hormonal evaluation was obtained 24 and 48 hours after each <sup>177</sup>Lu DOTATATE administration and 4 weeks  $\pm$  1 week after each cycle to assess for biochemical endocrine abnormalities (BEAs). Blood samples were obtained after 30 minutes of resting with an in-dwelling intravenous catheter. We excluded BEAs that were present either prior to the initiation of <sup>177</sup>Lu DOTATATE or due to a pre-existing endocrine disorder. **Results:** We observed BEAs in 18 of 21 (85.7%, 7 female, 11 male) patients. BEAs most commonly involved the pituitary-adrenal axis [ACTH (N: 5-46 pg/mL): 6/21 (28.5%, 5 high, 1 low); serum cortisol (N: 5-25 mcg/dL): 5/21 (23.8%, 2 high, 3 low)], followed by pituitary-thyroid axis [TSH (N: 0.27-4.2 IU/mL): 6/21 (28.5%, 4 high, 2 low); free thyroxine (N: 0.9-1.7 ng/dL): 2/21 (9%, 0 high, 2 low)],

pituitary-gonadal axis [FSH (N: 1-11 U/L): 2/21 (9%, 1 high, 1 low); LH (1-8 U/L): 1/21 (5%, 0 high, 1 low); total testosterone (N: 262-1593 ng/dL): 4/21 (19%, 0 high, 4 low)]; and growth hormone [3/21 (N: 0 - 3 ng/mL): (14.3%, 3 high, 0 low)]. Of the 28 observed BEAs, 17/28 (61%) were initially noted during cycle 1, 7/28 (25%) during cycle 2, and 4/28 (14%) during cycle 3, and 16/28 (57%) were noted within 48 hours of <sup>177</sup>Lu DOTATATE injection. There was no significant association between the standardized uptake values of adrenals (p=0.28), pituitary (p=0.75), and thyroid gland (p=0.61) on the baseline diagnostic <sup>68</sup>Ga DOTATATE scan and their respective BEAs. One patient developed overt hypothyroidism and was started on levothyroxine, and another patient developed central adrenal insufficiency likely from immunotherapy started after <sup>177</sup>Lu DOTATATE therapy. In all other patients, BEAs were transient and spontaneously resolved. Limitations included the observational nature of the study, lack of data on levels of IGF-1, parathyroid hormone, or hemoglobin A1C. **Conclusion:** <sup>177</sup>Lu DOTATATE therapy for metastatic PPGL is associated with biochemical abnormalities in endocrine function. Although mostly transient, there is a potential risk for BEAs to be permanent and to manifest clinically. Therefore, serial monitoring of abnormal hormonal values is necessary and treatment should be considered when appropriate. Studies on larger populations with long-term follow-up are necessary to further investigate the incidence of endocrine abnormalities with <sup>177</sup>Lu DOTATATE therapy.

## Reproductive Endocrinology

### TRANSGENDER MEDICINE AND RESEARCH

#### *Gonadotropin Releasing Hormone (GnRH) Agonist Therapy Induces a Sustained Reduction in Plasma Testosterone Levels and Is Well Tolerated in Transwomen Veterans*

Lyan Gondin, MD<sup>1</sup>, Jonathan Trejo, MD, MPH<sup>2</sup>, Sheila Pinkson, MPAC<sup>1</sup>, xi chen, MD, PhD<sup>1</sup>, Emima Case, HS<sup>1</sup>, Joy Wortham, MD<sup>1</sup>, Maureen koops, MD<sup>1</sup>, Devjit Tripathy, MD, PhD<sup>3</sup>.

<sup>1</sup>Univ of Texas Health Science Center, San Antonio, TX, USA,

<sup>2</sup>UTHSCSA, San Antonio, TX, USA, <sup>3</sup>ALM VA Hospital, Univ of Texas Health Science Center, San Antonio, TX, USA.

#### SUN-044

Gender affirming hormone therapy (GAHT) is the mainstay of long-term management of transgender individuals. In transwomen, treatment with physiologic doses of estrogen alone is often insufficient to suppress testosterone to the desired level. Although GnRH agonist therapy is usually prescribed for puberty suppression in trans youth, in adult transwomen, GnRH agonist may be added. The durability of long-term GnRH agonist in lowering testosterone as well as the long-term safety is not clear. We examined the effect of leuprolide a GnRH agonist, on testosterone as well as clinical and metabolic features in transwomen Veterans. Out of 91 subjects with gender dysphoria followed at a VA Endocrinology clinic, 65 were transwomen (age 49 ± 3 years) who had a detailed clinical, biochemical and hormonal profile (lipid profile, HbA<sub>1c</sub>, FPG, testosterone, estradiol). We performed a retrospective cohort study of the 31 (48%) transwomen on Leuprolide (3.375mg q month) and 33 transwomen who were not on Leuprolide. Plasma

testosterone, lipid profile, were analyzed before, 6 months, 1 year and at the last follow-up visit. The median follow-up of subjects on Leuprolide was 2.7 (1.7-3.8) years. Plasma testosterone concentration declined by 89% from 432±32 ng/dl to 47±9 ng/dl within 3-6 months after initiation of GnRH agonist treatment. Plasma testosterone remained persistently low 39±4ng/dl at 1 year and at the end of 2.7 yrs, most subjects on Leuprolide had plasma testosterone concentration <50ng/dl. Leuprolide therapy led to similar rapid decline in testosterone concentration in both younger (<40yrs) or relatively older (>50yr) transwomen. Leuprolide was in general well tolerated requiring discontinuation in just one patient due to severe fatigue. Three subjects (10%) experienced hot flashes which did not lead to discontinuation of medication. In the non-Leuprolide group, of 33 subjects, the follow-up was relatively inconsistent and only 12 subjects were regularly followed throughout a year with stable treatment. The decline in plasma testosterone was of a lower magnitude versus the leuprolide group (55% vs 89%, p <0.05). The testosterone levels declined from 393±42 to 180±44 ng/dl at 6 months. Body weight, and lipid profile: triglyceride, and plasma HDL concentration did not change significantly with or without GnRH agonist therapy. In conclusion, GnRH agonist therapy led to a sustained suppression of plasma testosterone levels in transwomen and was not associated with worsening lipid profile, was effective, and well tolerated in transwomen regardless of their age and may be considered an adjunct to the ant-androgen and estrogen therapy.

## Bone and Mineral Metabolism

### BONE DISEASE FROM BENCH TO BEDSIDE

#### *Changes in Bone and Glucose Metabolism in Patients Post Solid Organ Transplant*

Keswick Lo, B.S.<sup>1</sup>, Omer H. Tatar, MD<sup>1</sup>, Subhashini Yaturu, MD<sup>2</sup>.

<sup>1</sup>University of South Carolina, Columbia, SC, USA, <sup>2</sup>Dorn VAMC, Columbia, SC, USA.

#### SUN-367

Introduction:

Solid organ transplantation has emerged as a pivotal therapeutic option for various organ failures and has gained more popularity with newer technologies and better immunosuppressive options.

However, immunosuppressive therapies for survival of solid organ transplant is also associated with various metabolic complications with changes in bone and glucose metabolism.

The aim of our study is to review the changes in bone and glucose metabolism in post solid organ transplant recipient Veterans.

Methods:

Single center, retrospective study with subjects who had solid organ transplant conducted at William Jennings Bryan Dorn Veteran Hospital in Columbia, South Carolina. All available subjects who had solid organ transplant between January 1, 2008 till December 31<sup>st</sup>, 2017 and had at least one post-transplant followed up visit were included. Data was collected from computerized patient record system after approval by Institutional Review board (IRB) and Research and development. Collected data included