

Reference: (1) Huang, Zhengxiang, et al. "Dapagliflozin restores insulin and growth hormone secretion in obese mice." *Journal of Endocrinology* 245.1 (2020): 1-12.

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## Adrenal

### ADRENAL - HYPERTENSION

#### *Diagnosis of Non-Functional Masses in Adrenal Gland Topography - Experience of a Tertiary Health Center*

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### MON-206

**Introduction:** Masses in adrenal topography are diagnosed frequently due to the increase in radiological imaging in clinical practice. Adrenal incidentalomas occur between 4% and 10% of the patients above 50 years undergoing abdominal imaging, and the majority are benign pathologies.

**Objective:** To analyze the characteristics of the masses located in adrenal gland topography not originating from the adrenal gland. **Methods:** We retrospectively assessed patients from our tertiary hospital who underwent surgical treatment for masses in adrenal gland topography between 2006 and 2018. All patients had hormonal evaluations, according to the European and American Societies of Endocrinology guidelines. Two expert radiologists reviewed all images. Forty-six patients were included in the study, and the surgical specimens were analyzed by the same experienced pathologist. Patients with confirmed adrenocortical carcinoma (ACC) were excluded from this cohort. **Results:** Thirty-two (69.6%) patients were female. The median age was 49.5 years old (range 18-82yo). Abdominal or lumbar pain was the most frequent reason for medical investigation (43.5%). Adrenal incidentalomas represented 38.4% of the cohort. None of these patients had any clinical signs of adrenal hyperfunction, nor hormonal alteration. Twenty-four patients (52.17%) presented a mass on the left side, and only two cases presented bilateral adrenal masses. The median size was 8.6cm (1.3-18cm). The mean of Hounsfield Units (HU) on a non-contrasted CT was 25HU (0-50HU). Several etiologies were found: 8 cases (18%) of ganglioneuroma; 6 cases (13.5%) of adrenal cysts; 4 cases (9%) of leiomyosarcoma and adrenal hemorrhage; 3 cases (6.5%) of infectious disease; 2 cases (4.5%) of lymphangioma, schwannoma, and sarcoma. We also found single cases of renal cell carcinoma, poorly differentiated

small cell neuroendocrine carcinoma, hepatocellular carcinoma, high grade dedifferentiated liposarcoma, epithelioid neoplasia, epithelial neoplasia with neuroendocrine differentiation, malignant peripheral nerve sheath tumor of the adrenal gland, poorly differentiated neuroblastoma, high grade lymphoma, myelolipoma, acute splenitis, arteriovenous malformation, and prostate cancer metastasis.

**Discussion and Conclusion:** Ganglioneuroma was the most frequent diagnosis in adrenal incidentalomas in our cohort. In general, these conventional radiological exams could not differentiate lesions originated in the adrenal glands from lesions of other origins. In this large cohort, we could identify non-adrenal origin in approximately 45% of the patients with masses in the adrenal topography.

## Healthcare Delivery and Education

### EXPANDING CLINICAL CONSIDERATIONS FOR PATIENT TESTING AND CARE

#### *Reducing Unnecessary Repeat Vitamin D Testing at a Large Ambulatory Hospital: A Quality Improvement Initiative*

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### MON-117

**Background:**

With the increasing interest in the importance and potential benefits of vitamin D, there has been a significant rise in unnecessary vitamin D testing.

The aim of the project was to reduce unnecessary repeat vitamin D testing at Women's College Hospital by 50% by May 30<sup>th</sup> 2020.

**Methods:**

The Model for Improvement framework was used in the design of the quality improvement project to reduce unnecessary repeat vitamin D testing. Problem characterization was conducted to design the intervention to address root causes and iterative Plan-do-Study-Act cycles were used to develop an intervention that incorporated a best practice advisory (BPA). The primary outcome measure was unnecessary vitamin D testing. Unnecessary repeat testing was defined as: repeat 25-hydroxyvitamin D testing within 3 months or repeat 25-hydroxyvitamin D testing after a normal result (>75 mmol/L) in the preceding 12 months. Secondary outcomes which included BPAs generated, as well as the number of BPAs that resulted in no test being ordered were tracked. Paper-based orders were also tracked as a balancing measure.

**Results:**

It was identified that 12.7% of vitamin D testing (n=289/2276) between July 2017 and July 2018 was related to unnecessary repeat testing. Following our cause and effect analysis and problem characterization, it was noted that providers ordered repeat vitamin D testing due to being unaware of prior normal results, as well as due to

a knowledge gap of current testing recommendations. If the 25-hydroxyvitamin D order was identified as unnecessary at the time of order entry, a BPA was generated at the point of care. The BPA was implemented on February 4<sup>th</sup>, 2019. As of August 31st, 2019 based on the analysis of the number of BPAs generated and the number of tests not ordered as a result, there has been a 26% reduction in the number of inappropriate repeat vitamin D orders.

Conclusions:

Based on the preliminary data, a best practice advisory alert for vitamin D testing can be an appropriate QI intervention to reduce unnecessary vitamin D testing. Ongoing data analysis will be conducted to assess the long-term impact and sustainability of this intervention. Next steps include consideration of implementation of force function to reduce inappropriate repeat vitamin D testing.

## Adrenal

### ADRENAL CASE REPORTS I

#### **Metastatic Non Seminomatous Germ Cell Tumor Masquerading as Bilateral Adrenal Masses**

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#### SAT-218

Context: Adrenal incidentalomas are commonly nonfunctional and can be diagnosed with imaging and biochemical testing. However, detection of rare causes of adrenal incidentalomas like metastatic adrenal tumors can make its diagnosis very challenging due to vast majority of uncommon primary tumors. Consideration of biopsy for diagnosis and the awareness of rare primary tumors that can metastasize to adrenals is essential to prevent unnecessary adrenalectomies. Our case illustrates one such rare case where bilateral adrenal mass was the initial presentation of obscure retroperitoneal primary NSGCT (Non seminomatous germ cell tumor). Case Description: We present a case of a 34-year-old male with acute abdominal pain found to have huge bilateral adrenal masses. The left adrenal gland was markedly enlarged to 11 x 9 x 5 cm and the right adrenal gland was 6.5 x 3.4 x 7.7 cm. Multiple enlarged and centrally necrotic retroperitoneal lymph nodes (maximum 2.6 x 4.2 x 5.4 cm) along with iliac and inguinal lymphadenopathy were noted. The incidentalomas were proven to be biochemically nonfunctional and extensive imaging and further lab work ruled out lymphoma, mycobacterial or fungal infection, infiltrative diseases. He then underwent a core biopsy of the left adrenal mass which showed predominantly necrotic tissue, acute inflammatory cells with histiocytes, and rare atypical cells without evidence of malignancy. Repeat core biopsy of left adrenal mass was unrevealing. He finally underwent a core biopsy of a large 4cm retroperitoneal lymph node which ultimately revealed NSGCT. Scrotal ultrasound showed testicular microlithiasis without any testicular mass. He had a very low testosterone level of 21 (241-827 ng/dL) and a mildly

elevated b-hCG (beta human chorionic gonadotropin) of 134 (0-1mIU/ml). A retroperitoneal primary NSGCT with metastasis to the adrenal glands was the most likely diagnosis (visceral metastasis) - Stage III (pTxN3M1S1). He was started on bleomycin, etoposide and cisplatin (BEP) chemotherapy. Conclusion: Rapidly progressing adrenal masses in young males should prompt consideration for metastatic germ cell tumors as a possible cause, even with near normal tumor markers such as alpha-fetoprotein (AFP) and beta human chorionic gonadotropin (B-HCG). Confirmation of the metastatic tumor, via histopathology, is required to avoid unnecessary adrenalectomy.

## Thyroid

### THYROID DISORDERS CASE REPORTS II

#### **Levothyroxine Absorption Test: A Potential Therapeutic Tool for Levothyroxine Malabsorption**

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#### SAT-483

#### LEVOTHYROXINE ABSORPTION TEST: A POTENTIAL THERAPEUTIC TOOL FOR LEVOTHYROXINE MALABSORPTION

##### ABSTRACT

##### INTRODUCTION

Persistent hypothyroidism (PH) even on high doses of levothyroxine is a common clinical problem and it is difficult to treat. Levothyroxine absorption test has been used to distinguish between pseudo-malabsorption and malabsorption as one of its causes. This test uses 1000 mcg of levothyroxine to calculate the percentage of levothyroxine absorbed. We present a case of malabsorption in which we used the levothyroxine absorption test to diagnose as well as treat malabsorption.

Case:

55-year-old male with history of papillary thyroid cancer status post total thyroidectomy, postsurgical hypothyroidism, recurrent small bowel obstruction, status post jejunal resection, complicated by high output enterocutaneous fistula, distal high-grade obstruction status post placement of jejunal tube, chronic abdominal pain on narcotics, who initially presented with sepsis and was also found to be hypothyroid.

The thyroid stimulating hormone (TSH) level was 45.25 with free thyroxine (FT4) level of 0.54. He was adherent to his levothyroxine (LT4) 175 mcg once daily which is given one hour after tube feeds have been stopped or one hour prior to any administration of other medications.

Levothyroxine absorption test was done to distinguish between malabsorption versus pseudo-malabsorption. Three different doses of LT4 were used with results all consistent with malabsorption. The percentage of absorption with 175 mcg, 500 mcg, and 1000 mcg LT4 were 3.4%, 7.2%, and 18% respectively. The formula used to determine the percentage of absorption was (total T4 at 2 hour after LT4 administration - baseline total T4 prior to administration in mcg/L) x plasma volume in liter/dose of administered LT4 in mcg. The final prescription dose of 700 mcg once daily was then