Adrenal

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Cushing's Syndrome Associated With an Adrenal Cavernous Hemangioma

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Introduction: Adrenal cavernous hemangiomas are rare benign tumors that arise from vascular endothelium and are often discovered incidentally on abdominal imaging. The majority are nonfunctioning; however, we present a case of adrenal Cushing's syndrome in a patient with a cavernous adrenal hemangioma.

Case: A 72-year-old woman was referred for an incidental right adrenal mass. On questioning, she endorsed abdominal pain, sixty-pound unintentional weight gain over five years, truncal obesity, and easy bruising. Past medical history was relevant for hypertension. Her surgical history was extremely complicated, having had a perforated peptic ulcer, open cholecystectomy complicated by injury to the right ureter, incisional hernia repair, appendectomy, and hysterectomy with bilateral salpingo-oophorectomy.

She was first noted to have a right adrenal mass on a CT done eight years ago, measuring 3.8 x 3.2 cm. A repeat CT abdomen and pelvis now showed this mass to be 6.5 x 6.3 x 8.1 cm with unenhanced Hounsfield units of 29.6. Radiographically, this was a heterogeneous, solid, and cystic appearing mass with peripheral brisk arterial enhancement areas, which appeared to fill in on delayed imaging. The enhancement pattern of the lesion was consistent with an adrenal cavernous hemangioma. An MRI of the abdomen also demonstrated similar peripheral nodular enhancement favoring an adrenal cavernous hemangioma.

Functional testing for the adrenal mass was undertaken. Morning cortisol was 23.4 mcg/dl with ACTH low at 5.3 pg/ml, and DHEA-S 3 mcg/dl. She failed to suppress with overnight 1 mg dexamethasone with AM cortisol of 3.6 mcg/dl. Midnight salivary cortisol levels were high at 0.237 mcg/dl and 0.419 mcg/dl while a 24-hour urine free cortisol was normal at 15.2 mcg/d. She tested negative for pheochromocytoma and primary aldosteronism.

The patient was deemed a poor surgical candidate due to her history of multiple prior abdominal surgeries and a BMI of 46. Therefore, she underwent an IR angioembolization of the right adrenal mass instead. On follow-up CT, there was no significant change in the size of the lesion; however the degree of rim enhancement was slightly decreased. Post procedurally, her a.m. cortisol remained high-normal at 18.3 mcg/dL.. She is currently enrolled in a study for medical treatment of Cushing's syndrome.

Discussion: Adrenal cavernous hemangiomas usually present incidentally in the 6th-7th decade of life with a female predominance. These lesions are often asymptomatic; however, abdominal pain is the most common presenting symptom. The majority of adrenal cavernous hemangiomas are hormonally quiescent and mineralocorticoid excess and/or subclinical Cushing's syndrome is exceedingly rare. Our patient is unique in her presentation of adrenal Cushing's with this lesion and the novel use of angioembolization to decrease the size of this vascular tumor.

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Detection of Sex Steroid Expressions in Benign Versus Malignant Adrenal Tumor Tissue Homogenates With Western Blot Analysis

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Background: Adrenocortical cancer (ACC) is a rare tumor with poor prognosis. The prognostic value of sex steroid expressions in ACC, was firstly shown by our group with immunohistochemistry staining in paraffin embedded blocks (1). **Aim:** To detect the presence of sex steroid expressions in different types of adrenal fresh tissue samples by Western Blot method. **Method:** Adrenal fresh tissue samples were isolated from benign (patient 1: adrenal hemangioma, n: 1 intratumoral + 1 extratumoral tissue samples) and malignant tumors (patient 2: ACC, n: 4 intratumoral tissue samples). Expressions of estrogen receptor alpha (Erα), progesterone receptor A (PR), androgen receptor (AR) and aromatase proteins were investigated using Western Blot method in the tissue lysates obtained. Monoclonal antibodies that recognize a single determinant of the obtained denatured proteins with high affinity and specificity were used. GAPDH was used as control protein. After the primary antibody incubation, the incubation phase was started with the secondary antibody produced against the organism in which HRP (Horseradish Peroxidase) conjugated primary antibody was produced in order to visualize the primary antibody. ECL (Enhanced chemiluminescence) solution containing luminol, which is the substrate of the peroxidase enzyme contained in HRP conjugated to the secondary antibody, was used to enable the proteins to which the secondary antibody was bound to emit chemoluminescence. Finally, the densitometric densities of the bands obtained by chemiluminescence imaging were determined. **Results:** Expression of ER, AR, PR and aromatase was demonstrated in fresh tissue samples obtained from ACC, adrenal hemangioma and normal adrenal cortex. PR expression was higher in ACC lysates. ER and AR expressions were higher in hemangioma and normal adrenal cortex, respectively. Aromatase expression was also higher in adrenal hemangioma while similar in cancerous and normal adrenal tissue samples. **Conclusions:** We have demonstrated the dissimilarities between the expressions of sex steroid receptors and aromatase by using Western Blot method in fresh tissue samples obtained from different types of adrenal masses, including ACC. It would be possible to develop an in vitro experimental ACC model that can test the effect of sex steroid receptor ligands on tumor growth in order to clarify their role in adrenal tumorigenesis. **Reference:**1. Oguz SH, Sokmensuer C, Bayraktar M, Dagdelen S. Estrogen, progesterone, and androgen receptor expressions predict the prognosis for adrenocortical carcinoma. *Endocrine Society's Annual Meeting*, 23–26 March 2019, New Orleans - USA. *Journal of the Endocrine Society*, Volume 3, Issue Supplement_1, April-May 2019, SUN-352.