Adrenal Cell Carcinoma: A Missed Diagnosis
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Background

- Fine needle aspiration is not indicated in work up of adrenal cell carcinoma (ACC). We present a patient, in whom two fine needle aspirations of an adrenal incidentaloma failed to make the correct diagnosis of ACC.

Case Presentation

- A 61-year-old male presented to hospital with sudden shortness of breath. CT of his lungs was diagnostic for pulmonary emboli and a small lung nodule of 0.5 cm, and incidentally revealed a left adrenal mass of 9.0 cm. He was treated with anticoagulation for the pulmonary emboli. Serum metanephrine and cortisol were within normal limit. Biopsy of the adrenal gland was done one month later and was nondiagnostic. A repeat biopsy, done three weeks after the first one, revealed adrenal cortical tissue with possible consideration of adrenal hyperplasia and adenoma. Evaluation by endocrinologist three months later showed: normal 24-hour urine catecholamines and cortisol, normal serum aldosterone to renin activity, electrolytes and DHEA-S levels. Repeat CT scan of adrenals revealed a bi-lobed heterogeneous mass in the left adrenal gland measuring 9.0 x 5.5 cm with central low density likely indicating necrosis (picture 1). The mass was suspicious for ACC. CT scan of his lungs revealed enlargement of the lung nodule to 0.8 cm. He underwent biopsy of the pulmonary nodule that revealed metastatic ACC. Histologic findings from the adrenal gland core biopsy (picture 2) showed cells resembling the adrenal cortex with no features associated with aggressive behavior were identified and the Immunohistochemical stains labeled the tumor cells in a pattern compatible with renal cortical tissue. The fine needle aspiration biopsy of a left lung nodule (picture 3) performed five months later demonstrated similarly bland lipid-rich cells with a capillary rich network. An extensive immunohistochemical panel was performed on very limited cell block material showing as staining that does correlate with an adrenal cortical tumor; however the material was extremely limited. The morphologic pattern was very similar to the adrenal biopsy and thus the determination was made that it was consistent with metastatic adrenal cortical carcinoma.

Discussion

- Adrenal cell carcinomas are rare with an incidence of approximately 1-2 cases per million populations per year (1). Clinical syndromes of hormone excess can be present in 45-68% of patients with ACC (2,3) and up to 80% of patients may have some type of adrenal hormonal overproduction (3). Thus it was easy to miss the diagnosis of ACC in this patient based on clinical picture and hormonal work up alone. However, signs of malignancy can be seen on his CT scan from the size and appearance of adrenal gland. CT scan has a 93% sensitivity in detecting ACC when the size of tumor is 4.0 cm or more (4). The bilobed feature, heterogeneity, and central necrosis on CT scan are commonly seen in ACC with central necrosis reaching up to 80% of cases (5). The presence of a 0.5 cm lung nodule along with a large adrenal mass may raise the suspicion of adrenal malignancy with pulmonary metastasis. A study of 416 cases of ACC showed that 29% presented with distant metastasis; the primary extra-adrenal organ involved was the lungs (65%) (6).

Conclusion

- Though rare, ACC should be suspected in adrenal incidentalomas with certain characteristics on imaging. FNA is not recommended as part of the evaluation and can be misleading. An incidentaloma of more than 4.0 cm should be referred to surgery.

References: