Endocrine-Guided Multimodal Oncological Management of a Giant Non-functioning Adrenal Tumor With Isolated DHEA-S Elevation

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Abstract:

Background: Adrenal malignancies are rare and often present diagnostic challenges due to heterogenous imaging characteristics and variable hormonal activity. While most hormonally active tumors exhibit overt endocrine syndromes, isolated androgen elevation without classical manifestations can often delay the diagnosis. Endocrine profiling plays a critical role in identifying tumor origin and guiding oncologic management.

Case Presentation: A 43 years old mother to one, presented with Amenorrhea for six months and progressive abdominal fullness for four months, associated with nausea and decreased appetite. There were no features of Cushing's syndrome or Hypercatecholaminemia. Physical Examination revealed a palpable mass in Right Hypochondriac region.

Diagnostic work Up: Cross-sectional radiological Imaging revealed a fairly large soft tissue mass measuring approximately 17.3 cm in craniocaudal dimension, 13.4 cm in AP dimension and 11.2 cm in transverse dimension, is seen in relation to the superior pole of the right kidney causing caudal and anterior displacement of the kidney. The mass shows fairly preserved capsule, however, the capsule is thinned out along the anterior and superior part of the mass at its interface with the liver. The right adrenal could not be seen separate from the mass.

18F- FDG PET-CT showed intense radiotracer uptake (SUV max 18.2), raising concern for Malignancy. Biochemical Hormonal workup indicated elevated dehydroepiandrosterone levels (DHEAS) 820 mcg/dL (Normal range: 35-430 mcg/dL) with otherwise nonfunctional biochemical profile including Normal Aldosterone, Plasma Renin Activity, Cortisol variability and Metanephrines.

Treatment: As the imaging revealed aggressive behavior of the lesion and threatened Vascular perfusion, a Multidisciplinary team compromising of Hepatobiliary surgery and Vascular surgery team were involved. The patient underwent open surgical excision, Intraoperatively the lesion was found to be adhered to IVC, requiring IVC repair and complete removal of the tumor.

Histopathology examination reported the size of the mass as 24 cm x 12.7 cm x 9 cm and weighing 1685 grams. The tumor demonstrated a Weiss score of 7/9 and a high Ki 67 labeling rate of 45 %, indicative of aggressive tumor biology and high risk of recurrence.

Postoperative management included Intensive monitoring of hemodynamics, Stress dose steroid coverage in Intensive care unit. Recovery was uneventful, patient was discharged on Adjuvant Mitotane therapy and Steroid replacement. Radiation to the surgical bed was performed as a part of multimodal management. Adjuvant Mitotane therapy is ongoing, with serial biochemical and radiological monitoring for recurrence.

Follow up: Follow up imaging demonstrated complete removal of tumor and no evidence of recurrence was found. Therapeutic levels of Mitotane were achieved and maintained at 17 mcg/mL (Desired therapeutic range :14 - 20 mcg/mL)

Conclusion: This case demonstrates the pivotal role of endocrine evaluation in Oncologic decision making for Adrenal tumors. Isolated DHEA-S elevation may serve as an important biochemical marker for diagnosis and prognosis of Adrenocortical Carcinoma with serial monitoring. Complete surgical excision combined with adjuvant endocrine-directed therapy can result in favorable Oncologic outcomes.