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A Tale of Two NETs: A Pheochromocytoma Masquerading as a Pancreatic NET

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Introduction

- Neuroendocrine tumors (NETs) are rare endocrine neoplasms with myriad of clinical manifestations
- We present a case of two different NETs in a patient to increase physician awareness and highlight the importance of prompt multidisciplinary approach to avoid catastrophic complications

Case Presentation

A 58-year-old female with history of difficult to control hypertension, diabetes mellitus and gastroesophageal reflux was referred to an oncology office for suspected metastatic pancreatic neuroendocrine tumor.

She had undergone abdominal imaging for known hepatitis B, and a cystic pancreatic lesion was discovered in addition to a hypervascular right adrenal nodule which was thought to represent metastatic disease.

She endorsed flushing, headache, gastroesophageal reflux and cough in addition to recent worsening in glycemic control, but denied any diarrhea or rashes. Otherwise complete review of systems was unremarkable.

Physical exam:

BP 188/90 mm of Hg, HR 83. Physical exam revealed an obese female, otherwise no significant findings

Notable Laboratory and Imaging studies:

- Chromogranin A 205 ng/ml,
- Plasma free metanephrines 552 pg/ml, post clonidine: 413 pg/ml
- a.m. cortisol 1 ug/dl following dexamethasone suppression test.

EUS with biopsy confirmed WHO grade 1 neuroendocrine tumor.

Ga-68 Dotatate scan: radiotracer uptake in the pancreatic tail corresponding to the known pancreatic neuroendocrine tumor. Focal radiotracer uptake in the right adrenal gland corresponds to the previously seen adrenal gland nodule

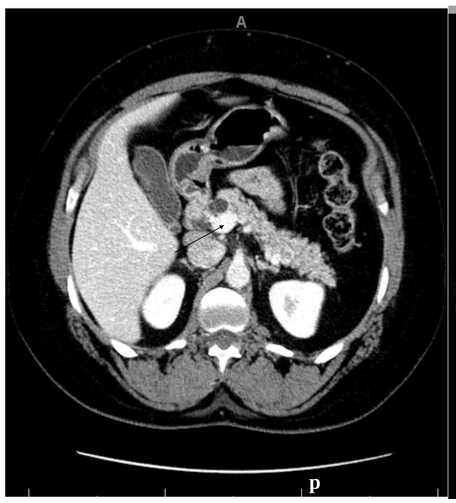

Figure 1: 14mm lesion can be seen at the neck of the pancreas

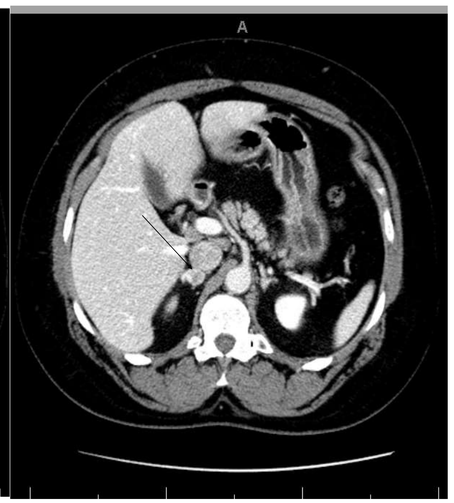

Figure 2: A hypervascular adrenal nodule can be appreciated.

Discussion

- Pancreatic NETs arise sporadically, however they can be associated with genetic syndromes including multiple endocrine neoplasia type I (MEN1), von Hippel-Lindau syndrome, neurofibromatosis type I or tuberous sclerosis. Surgery is the only known cure for sporadic pancreatic NETs, whether functional or nonfunctional. Tumor functionality, grade, and stage are important factors in choosing patients for surgical treatment and determining the operative approach
- Pheochromocytomas are rare catecholamine secreting tumor with malignant potential that arises from chromaffin cells of the adrenal medulla
- Biochemical confirmation of the diagnosis using total fractionated urine metadrenalines or plasma-free metadrenalines should be followed by radiological evaluation to locate the tumor (4)
- Treatment of pheochromocytomas involves resection of the pheochromocytoma following appropriate medical preparation with alpha-adrenoreceptor blockade, calcium channel antagonists or alpha-metyrosine (5)
- Our patient was diagnosed with 2 separate NETs: a pancreatic neuroendocrine tumor and a pheochromocytoma. She was placed on Doxazosin with excellent control of her blood pressure with plans for staged resection of her two NETs.
- Appropriate biochemical testing completely changed her medical management strategy and provided hope for curative treatment .

Diagnostic Workup of Endocrine Tumors

Test	Uses	Pearls/Pitfalls
Plasma Free Metanephrines	Evaluation of Pheochromocytoma by measuring the amount of metanpehrines produced	Pearls: High Sensitivity of between 96-100% Pitfall: Low Specificity of between 85-89%
Urine Free Metanephrines	Evaluation of Pheochromocytoma by measuring the amount of metanephrines produced	Pearls: 98% Sensitivity & 98% Specificity Based on the extremely high sensitivity & specificity, this should be the first line test
Low Dose Dexamethasone Suppression Test	Screening test for excess Cortisol production in Cushing's Syndrome: Dexamethasone should suppress the hypothalamus & anterior pituitary's production of CRH & ACTH	Pitfall: The cutoff value of serum cortisol can affect the sensitivity & specificity of your results
Clonidine Suppression Test	Clonidine will suppress central metanephrine production, but should not suppress pheochromocytoma metanephrine production	Useful when you have a moderate-high suspicion for pheochromocytoma, but your urine metanephrine test is equivocal

Teaching Points

- All patients with adrenal incidentalomas should be evaluated for the possibility of malignancy and subclinical hormonal hyperfunction
- Prompt surgical intervention is crucial because untreated pheochromocytoma may result in significant cardiovascular complications.
- Multidisciplinary approach is necessary for appropriate diagnosis, management and follow up of patients.

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