A 12-cm Mass with No Symptoms and Unremarkable Laboratory Results

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CASE DESCRIPTION

A 60-year-old man presented to his general practitioner with complaints of indigestion and flu-like symptoms. The results of a clinical examination were unremarkable. The only abnormality found in routine hematology and biochemistry investigations was an increased serum alkaline phosphatase concentration (131 U/L; reference interval, 35–120 U/L). Given his abdominal discomfort, the patient was referred for an abdominal ultrasound evaluation, which revealed a 12-cm cystic mass in the area of the left kidney. Further imaging with computed tomography scanning suggested that the mass arose from the left adrenal gland (Fig. 1). The patient's medical history was notable for hypertension, which was controlled with 8 mg candesartan once daily. The patient reported no headaches, palpitations, or diaphoresis.

The patient was referred for further investigation. Plasma free metanephrines (PMets) were measured. Initial results showed borderline increases in plasma normetanephrine (NMN) and metanephrine (MN) that were not diagnostic of pheochromocytoma (PCC). PMet measurements were repeated with a separate plasma sample, and total fractionated urine MNs (UMets) were measured in a sample of an acidified 24-h urine collection. Urine and plasma analysis results were concordant, with borderline increases in NMN (Table 1). The patient was not on any medications known to cause a physiological increase in PMets.

CASE FOLLOW-UP

On the basis these findings, the size of the mass, and the lack of interfering medications, the patient underwent α-blockade with 10 mg phenoxybenzamine 3 times per day and surgical resection of the adrenal mass. A subsequent histologic analysis revealed a cystic PCC with evidence of intratumoral hemorrhage and degeneration. PMet concentrations returned to normal after tumor resection (Table 1). Subsequent testing identified no germline mutations in PCC-predisposing genes, a result consistent with sporadic disease. During follow-up the patient remained normotensive and off antihypertensive medication.

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Questions to Consider
• How should borderline increases in MNs be interpreted and followed up?
• How best should one integrate clinical, radiologic, and biochemical features of adrenal masses?
• How do sampling conditions and medications affect MN and NMN concentrations?

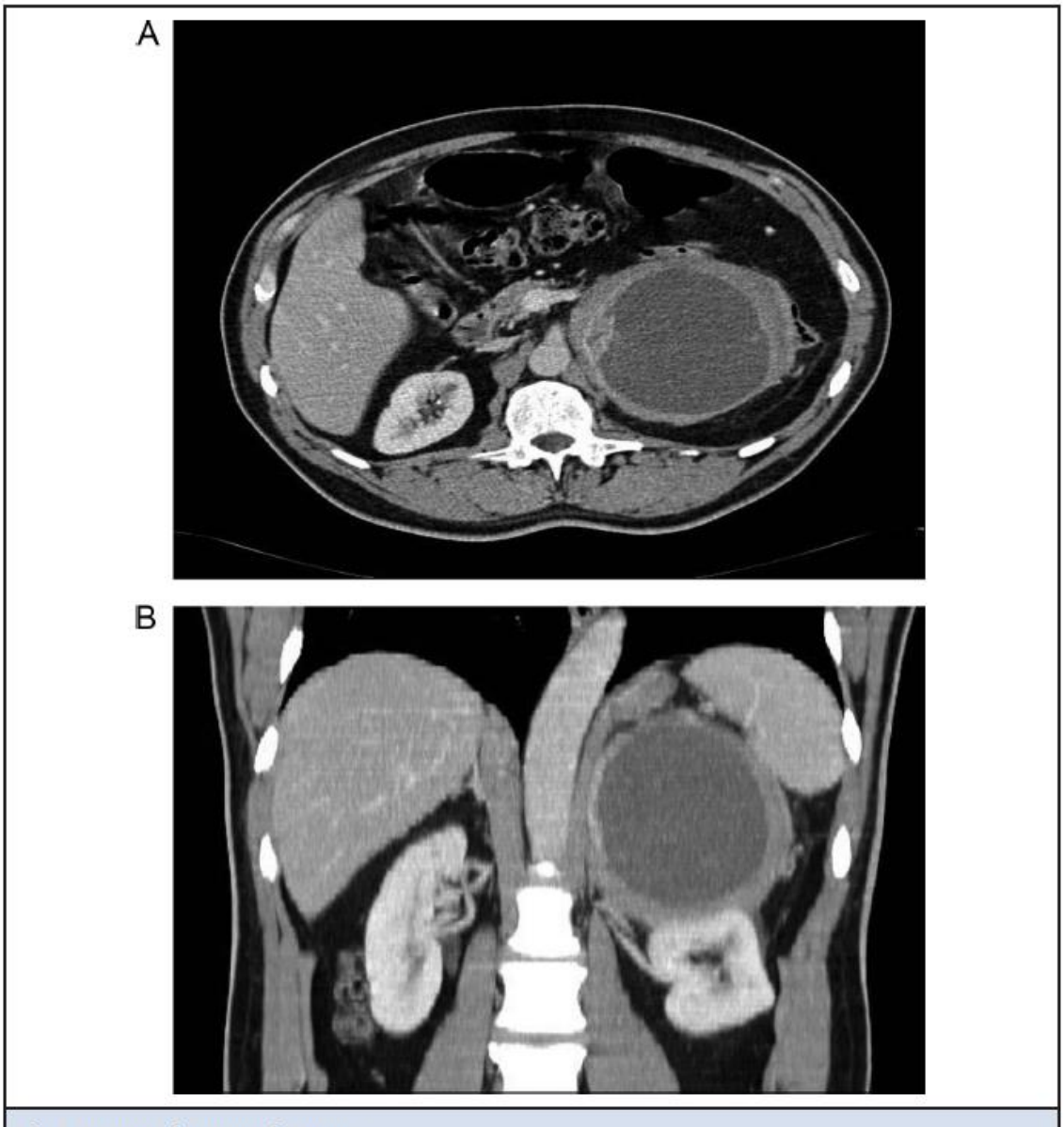

Fig. 1. Computed tomography images.
Coronal (A) and axial (B) images showing a 12-cm mass in the left adrenal gland.

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Table 1. Plasma free MN and urine total fractionated MN results.[a]

Analyte	Initial	Follow-up	Postsurgery	Reference interval
Plasma NMN, pmol/L	1348	1487	211	120–1180
Plasma MN, pmol/L	598	638	106	80–510
Urine NMN, μmol/24 h		6.6		<3.8
Urine MN, μmol/24 h		0.9		<2.2

[a] Plasma MNs were measured with liquid chromatography–tandem mass spectrometry. Samples were collected with the patient in a seated position after a 20-min rest. Reference intervals are based on a seated reference population.

Final Publication and Comments

The final published version with discussion and comments from the experts will appear in the November 2013 issue of *Clinical Chemistry*. To view the case and comments online, go to http://www.clinchem.org/content/vol59/issue11 and follow the link to the Clinical Case Study and Commentaries.

Educational Centers

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