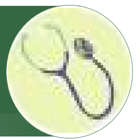

"Doc, why do I weigh so much?"

Jerzy K. Pawlak, MD, MSc, PhD; and T. J. Kroczak, MD

Henry, 72, has a long history of obesity, hypertension and dyslipidemia. He recently developed anemia, which required investigation.

Medical history

Henry's medical history reveals that he:

- has a long history of obesity, hypertension and dyslipidemia,
- underwent coronary artery bypass grafting one year ago,
- has chronic renal insufficiency with creatinine that fluctuates from 125 µmol/L to 170 µmol/L,
- has a family history positive for hypertension and diabetes (his father passed away at age of 62 from diabetes),
- has an obese 65-year-old brother who is hypertensive and diabetic,
- is married, with a hypertensive 43-year-old son,
- is taking metoprolol and hydrochlorothiazide for BP, atorvastatin for dyslipidemia and clopidogrel for protection against further atherothrombotic events and
- is a non-smoker.

Physical examination

A physical examination reveals the following:

- Weight: 305 lbs
- Height: 5 feet 8 inches
- BMI: 49.2 kg/m^2
- BP: 145/92 mmHg
- Heart rate: 68 bpm
- Mid-systolic murmur best heard at the apex
- Lungs clear
- Scar on front of chest and on left posterior calf due to bypass surgery
- Bilateral ankle edema: left more than right side

Clinical investigations

Clinical investigations note:

- Slight cardiac enlargement on chest x-ray
- Left ventricular hypertrophy on ECG
- Hemoglobin: 117 g/L
- Creatinine (serum): 147 µmol/L
- Creatinine clearance: 43 ml/minute
- Alanine aminotransferase: 75 U/L
- Aspartate aminotransferase: 64 U/L
- Iron (serum): 9 µmol/L
- Total iron binding capacity: 40 µmol/L
- Urinalysis: > 10 red blood cells/high powered field

CT scans of abdomen are taken (Figure 1 and Figure 2).

What's your diagnosis?

Aside from obesity, hypertension and anemia, Henry has:

a) Renal failure, left kidney nephrolithiasis and bilateral kidney cysts
b) Renal failure, left kidney cell carcinoma and bilateral kidney cysts
c) Renal failure and bilateral kidney cysts

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Answer: B

Kidney cell carcinoma

Renal cell carcinoma (hypernephroma, adenocarcinoma of kidney) is the most common renal neoplasm occurring almost exclusively in adults > 20-years-of-age.

Presentation

The classic presenting triad of hematuria, flank pain and a palpable abdominal mass is seen in < 20% of patients and among those with only advanced local tumours. Gross or microscopic hematuria is present in approximately 60% of patients with renal cell carcinoma alone. Microscopic hematuria is a consistent abnormality of the urinary sediment examination. Bleeding is not usually evident and the tumour often grows to a large size before symptoms appear.

Symptoms

Symptoms of renal cell carcinoma include pain and a sensation of fullness in the flank. By the time symptoms are present, the tumour has often invaded the renal capsule and local renal veins, which provide the main route to distant metastases, especially to the:

- lungs,
- brain and
- bone.

Local spread to liver and perirenal lymph nodes is also common. About half of the patients presenting with renal cell carcinoma have systemic symptoms of:

- fatigue,

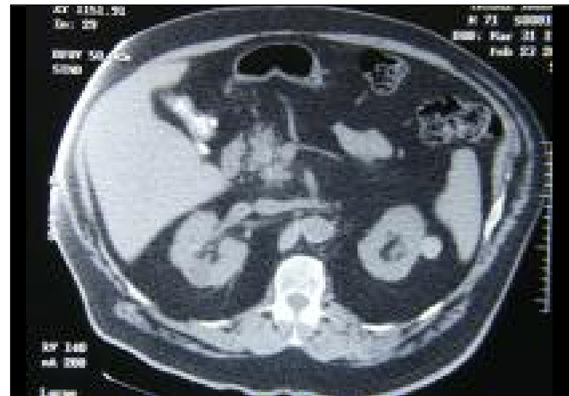

Figure 1. CT scan of abdomen.

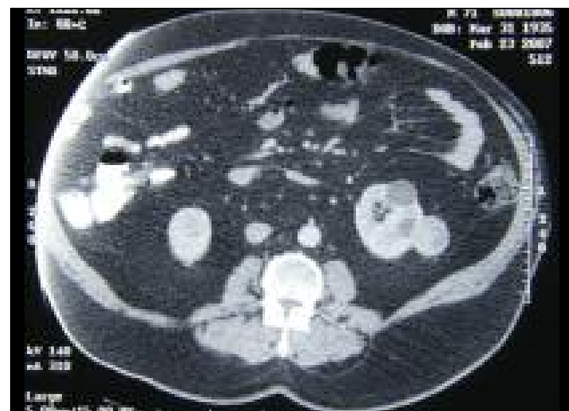

Figure 2. CT scan of abdomen.

The classic presenting triad of hematuria, flank pain and a palpable abdominal mass is seen in < 20% of patients and among those with only advanced local tumours.

- weight loss and
- cachexia.

Renal cell carcinoma is capable of producing a number of hormones or hormone-like substances, including parathyroid hormone and prostaglandins.

In vascular tumours, intrarenal arteriovenous fistulas may predispose to high-output congestive heart failure.

By the time symptoms are present, the tumour has often invaded the renal capsule and local renal veins.

Prognosis

The prognosis in patients with renal cell carcinoma is largely dependent upon the extent of tumour involvement at the time of diagnosis.

The response of metastatic renal cell carcinoma to treatment with chemotherapy or radiotherapy has generally been unsatisfactory.

About Henry

Henry's anemia was investigated. CT scans of his abdomen showed a 4 cm solid enhancing lesion arising from the mid-pole and lower-pole of the left kidney, which is consistent with renal cell carcinoma. There is no evidence of renal vein involvement, lymphadenopathy or bony metastasis. Two hyperdense cysts are seen in the left kidney, the largest measuring 3.9 cm. The findings are consistent with a hemorrhagic cyst. Several simple cysts are seen in the right kidney. The liver, pancreas, spleen and adrenal glands are normal.

As a result of the findings, Henry is preparing for a partial nephrectomy of a 4 cm solid renal mass.

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Resource

1. Isselbacher KJ, Adams RD, Braunwald E, et al (eds.): *Harrison's Principles of Internal Medicine*. Ninth Edition. McGraw-Hill, New York, 1979, pp. 1355-6.