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Large Intratumoral Pseudoaneurysm in a Patient with Bleeding Renal Angiomyolipoma

Angiomyolipoma (AML) is the most common benign renal tumor. It is composed of an abnormal collection of 3 primary components: unusual abdominal blood vessels, clusters of adipocytes and sheets of smooth muscle. CT is the preferred imaging technique for diagnosing and characterizing AMLs. AMLs typically have a benign course, but patients occasionally present with complications, such as sudden pain or hypotension secondary to spontaneous hemorrhage in the tumor. If the patient is symptomatic, the tumor grows rapidly or is >4 cm, angiography and selective arterial embolization or renal-sparing surgical excisions of the tumor are the treatment of choice. Patients with AMLs treated with embolization generally have a favorable outcome.

Keywords: pseudoaneurysm, angiomyolipoma

Introduction

Angiomyolipoma (AML) is the most common benign renal tumor that consists of varying amounts of mature adipose tissue, smooth muscle, and thick-walled vessels.^{1,2} A renal angiomyolipoma is typically recognized as a fat-containing tumor on CT.³ Although vascular complication is unusual, the risk of complication—especially when the lesion is larger than 4 cm—is the main indication for treatment.³⁻⁵ It is usually found incidentally, owing to the more prevalent use of abdominal imaging for the evaluation of a wide variety of nonspecific complaints.⁶ Clinically significant hemorrhage occurs in as many as 51% of angiomyolipomas larger than 4 cm, which require surgical intervention.³

We report one case of hemorrhagic angiomyolipoma associated with a large intratumoral pseudoaneurysm.

Case Report

A 54-year-old woman with a history of vague abdominal discomfort presented with acute onset of right flank pain. The pain was not colicky, but was persistent and progressive. The patient had no symptoms of nausea, vomiting, fever, changes in bowel habits or hematuria. She also denied prior surgery or current use of medications. Her vital signs were a temperature of 37.2°C, respiratory rate of 20/min, heart rate of 100/min and blood pressure of 110/85 mmHg. The right side of her abdomen was tender on deep palpation, without guarding or rebound tenderness. She also had tenderness on palpation at the right costovertebral angle. Laboratory studies disclosed a hemoglobin level of 11.5g/dL and hematocrit of 38%. Sonographic examination revealed a round, well contained, highly echogenic solid mass measuring 4.5 cm, in the upper pole of the right kidney (Figure 1).

CT was performed before and after administration of contrast media. A 4.5-cm heterogeneous tumor associated with a subcapsular hematoma was visible in

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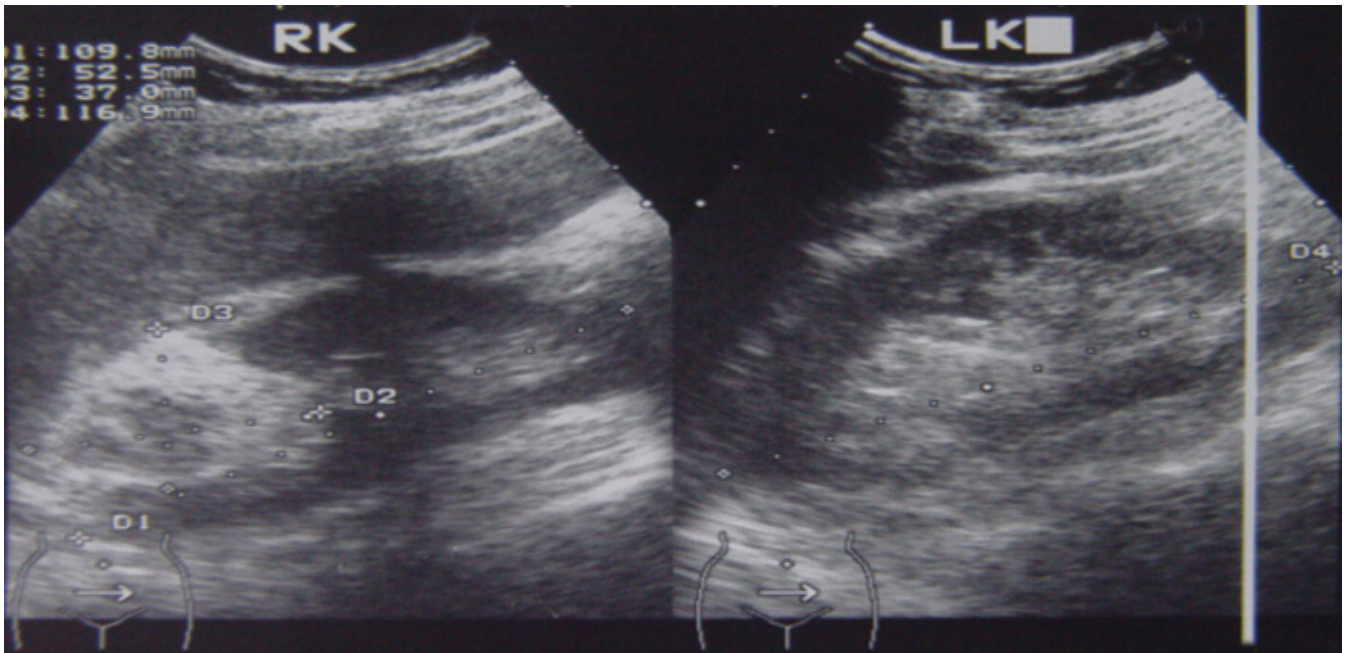


Fig 1. Sonogram shows hyperechoic renal mass in upper pole of right kidney with round hypoechoic intratumoral area.

the upper pole of the right kidney. A small amount of fat (confirmed by -20 Hounsfield units), inside the lesion, was seen on CT scan, which was considered diagnostic for angiomyolipoma (Figure 2). A suspicious intratumoral pseudoaneurysm, which enhanced in the early arterial phase of CT and washed out in the delayed phase, was seen (Figures 3a and b).

Selective renal digital subtraction angiography was performed transfemorally with a 5-F Cobra catheter and confirmed the diagnosis of a large intratumoral pseudoaneurysm about 2 cm (Figure 4).

The patient underwent successful angioembolization in the acute setting, initially with sequential 1-

to 2-ml aliquots of 500 to 750- μ m polyvinyl alcohol (PVA) particles to stop active bleeding, and then the segmental artery of the pseudoaneurysm was selectively occluded using a 0.018-inch guidewire (Figure 5). After recovery from the acute retroperitoneal hemorrhage, she had follow-up ultrasound and CT scan examinations. The patient was discharged after 5 days. At the 6-month follow-up, the tumor had shrunk to 2 cm, with no recurrent hemorrhage or other complications.

Discussion

The treatment of these lesions depends on whether there is a risk of acute hemorrhage or a chance of renal cell carcinoma in patients with angiomyolipomas that have no detectable intratumoral fat.³⁻⁵

Follow-up imaging has been proposed to manage asymptomatic neoplasms and symptomatic lesions smaller than 4 cm whose symptoms resolve promptly, whereas asymptomatic tumors of 4 cm or larger and symptomatic tumors smaller than 4 cm should be treated by surgery or embolization.³

The risk of hemorrhage correlates with the size of the tumor and is significantly greater in angiomyolipomas larger than 4 cm.^{3,4} Although intrarenal or perinephric hemorrhage is the usual complication of angiomyolipomas, pseudoaneurysm appears to be un-

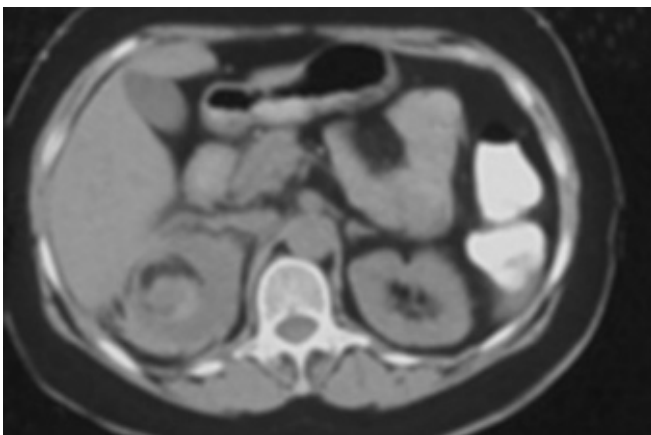


Fig 2. Unenhanced CT scan shows heterogeneous mass. A small fat-dense lesion is seen in the periphery of the mass and perirenal hemorrhage.

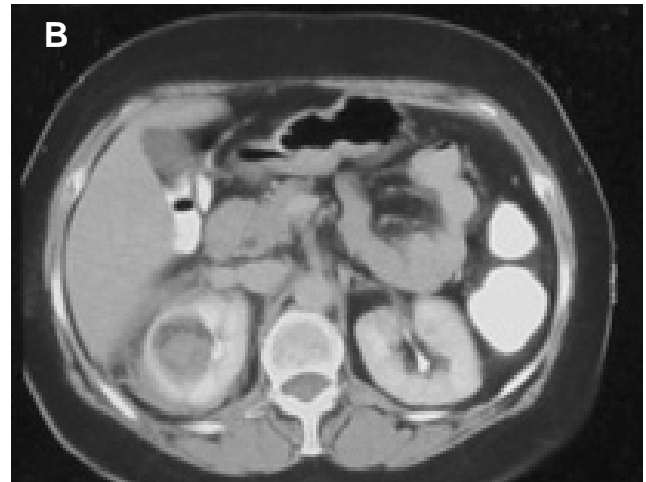
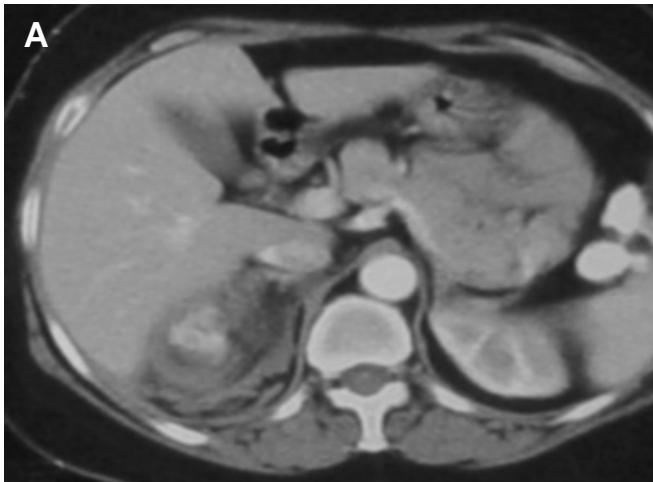


Fig 3. A. Arterial phase CT scan shows enhancing structure (arrow) in upper pole of right kidney. **B.** Contrast CT scan with 10-min delay shows washout focal enhancement of pseudoaneurysm, compared with A.

usual, because to our knowledge, it has been reported only in three cases.⁷ Intrarenal pseudoaneurysm is also a well-known complication of penetrating renal injuries, renal surgery, and percutaneous renal procedures.^{8,9}

Early contrast-enhanced CT studies can be used to diagnose renal artery pseudoaneurysms.¹⁰

In conclusion, arterial pseudoaneurysm is a vascular complication that can be associated with hemorrhage within an angiomyolipoma. The detection of such a vascular lesion should prompt appropriate treatment based on the size of angiomyolipoma.

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Fig 4. Selective angiogram shows intratumoral pseudoaneurysm.

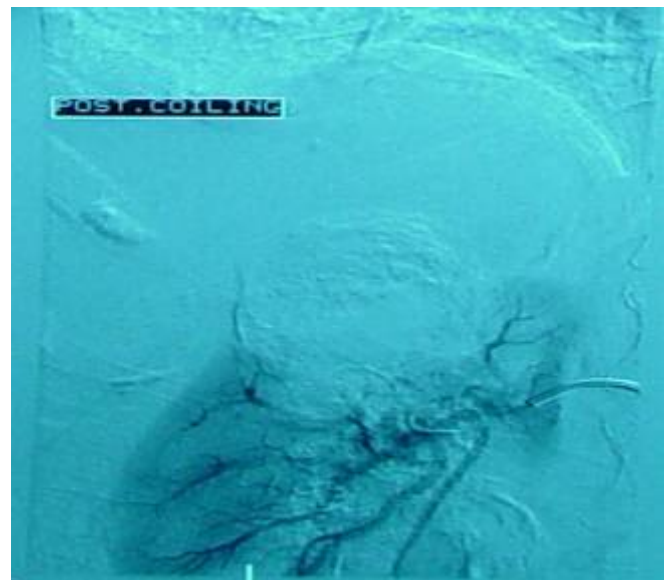


Fig 5. Tumor in the upper pole of right kidney and intratumoral pseudoaneurysm successfully embolized using PVA and two metal coils.

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