Spontaneous Renal Artery Dissection Complicated by Renal Infarction

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A previously healthy 44-year-old woman, with no notable medical history developed left flank pain. To rule out left renal infarction, enhanced abdominal computed tomography (CT) was done and a wedge shaped hypointense lesion was identified in the left posteromedial aspect of the interpolar region. Renal angiography revealed an isolated renal artery dissection that was causing renal infarction due to narrowing of the main stem of the left renal artery. The patient experienced pain with severe uncontrolled hypertension. The patient was successfully treated by percutaneous angioplasty and renal artery stenting. **(Korean J Urol 2008;49:376-378)**

Key Words: Renal artery dissection, Renal infarction

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Primary dissection of the renal artery is rare. Spontaneous arterial dissection can be associated with diseases, such as, medial degeneration, neurofibromatosis, syphilitic arteritis, tuberculosis, polyarteritis nodosa, Marfan syndrome, Ehlers-Danlos syndrome, or fibromuscular dysplasia.[1] Malignant hypertension, severe atherosclerosis, and severe abdominal trauma may also cause renal artery dissection.[2] However, isolated renal artery dissection is rare. Spontaneous renal artery dissection, which is diagnosed by angiography, is manifested by an acute onset flank pain, and whereas some patients experience a good prognosis after conservative treatment, others require surgery or intervention to save renal function. Treatment is selected based on the hemodynamic state, renal function, and treatment modality feasibility.[3] The authors report the case of a 44-year-old woman who experienced spontaneous renal artery dissection complicated by renal infarction and severe uncontrolled hypertension despite the administration of antihypertensive drugs. The patient responded well to percutaneous angioplasty and renal artery stenting.

CASE REPORT

In March 2007 a 44-year-old, previously healthy woman presented at our emergency room complaining of severe left flank and left lower quadrant pain. She had no unusual medical or family history, no surgical history, and no traumatic history. These symptoms started at home 7 hours before visit. The pain occurred suddenly and worsened over about 6 hours. At admission her blood pressure was 180/110 mmHg, pulse 70/min, and temperature 37.5°C.

On physical examination, her abdomen was soft, with moderate tenderness in the left lower quadrant, left flank, and costovertebral angle. Laboratory studies revealed a white blood cell count (WBC) of 14,600/㎕, hemoglobin 13.6 g/dl, alanine aminotransferase (ALT) 58 IU/l, and aspartate aminotransferase (AST) 80 IU/l; blood urea nitrogen (BUN) and creatinine levels were normal. Urinalysis showed a pH of 7.5, a negative dipstick test for protein and blood, and normal urine sediment. There are no abnormal findings at KUB. We do enhanced abdominal CT scan, to rule out urinary stone disease. Enhanced abdominal CT scans showed a multifocal wedge shaped perfusion defect in the left renal upper and interpolar regions (Fig. 1). there are no definite thromboembolism in the vessels.

Subsequent angiography revealed the presence of a left renal artery dissection (Fig. 2). The dissection partially obstructed the left renal artery, 2.4 cm distal from the aorta. The patient

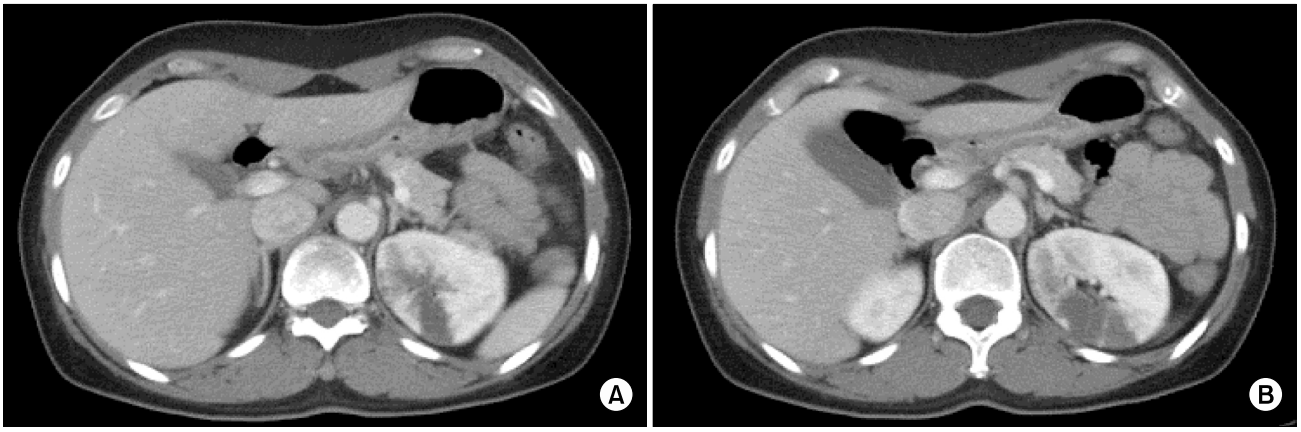

Fig. 1. (A) The enhanced abdominal computed tomography (CT) scans showed a multifocal wedge shaped perfusion defect of the left upper portion of the kidney. (B) Enhanced abdominal CT scans showed a multifocal wedge shaped perfusion defect of left interpolar portion of the kidney.

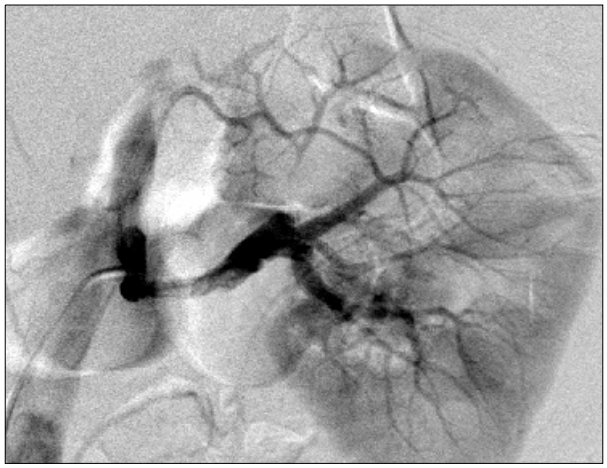

Fig. 2. Subsequent angiography revealed the presence of the left renal artery dissection.

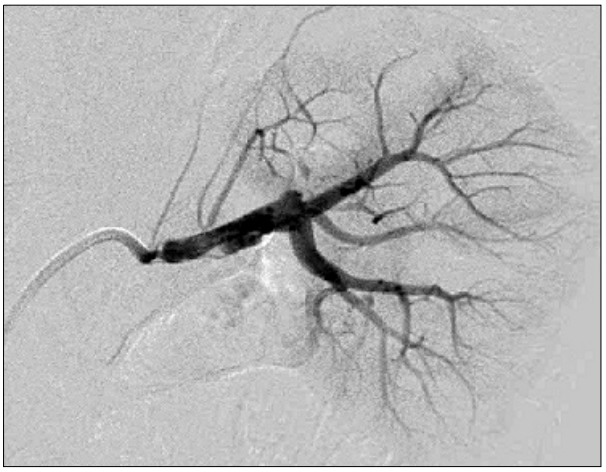

Fig. 3. The lesion was dilated with a Palmaz Genesis (4x24 mm) balloon-expandable metallic stent.

underwent percutaneous balloon angioplasty and stenting to save the renal parenchyme and prevent secondary renal hypertension. The procedure was performed using a retrograde left femoral approach. Segmental dissection of the left renal artery was observed 2.4 cm distal from the aorta. This was identified as true lumen stenosis of 70% by nonselective angiography and was selectively cannulated using a 5F pig tail catheter. The lesion was dilated with a Palmaz Genesis (4x24 mm) balloon expandable metallic stent (Fig. 3). Four hour after the procedure, the pain subsided and blood pressure was controlled at 130/80 mmHg. Six days later, she was discharged with a normal blood pressure and renal function.

DISCUSSION

Acute spontaneous renal artery dissection is a rare condition, which is generally diagnosed when imaging studies are reviewed to evaluate the cause of an abdominal or flank pain. The natural history of this condition is not well defined. Its most frequently encountered clinical presentation is sudden onset, severe, persistent, and poorly controlled hypertension.[4] Moreover, abdominal CT scan and renal angiography can be used to confirm the diagnosis.

Spontaneous arterial dissection can be associated with diseases, such as, medial degeneration, neurofibromatosis, syphilitic arteritis, tuberculosis, polyarteritis nodosa, Marfan syndrome, Ehlers-Danlos syndrome, or fibromuscular dysplasia.

Malignant hypertension, severe atherosclerosis, and severe abdominal trauma may also cause renal artery dissection.[1]

In this case, the patient was normotensive and had no medical or family history, and she was in a resting state before the symptom begin. Treatment of this disease remains controversial. Edwards et al.[5] concluded that medical treatment alone provides blood pressure control, which is as good as results obtained surgically, and Beroniade et al.[6] suggested that surgery be reserved as a second-line modality. However, Muller et al.[7] and Lawrie et al.[8] recommended surgical management to treat renovascular hypertension and to preserve kidney function. Surgical revascularization of dissected renal arteries is indicated for kidneys with a substantial residual renal function, and the prognosis is good in those that achieve permanent hypertension improvement with kidney function preservation. Lee et al.[3] insists acute spontaneous renal artery dissection can be treated with percutaneous intervention such as balloon angioplasty and stenting.

In the present case, the patient had severe and uncontrolled hypertension despite daily antihypertensive medication including diuretics, calcium channel blocker, angiotension converting enzyme inhibitors for 1 week, which proved to be the decisive factor when considering surgical or percutaneous intervention. In the event, we chose the latter because of the patient's surgical morbidity and mortality.

Acute spontaneous renal artery dissection was treated by balloon angioplasty and stenting, and the patient recovered without further ischemic damage or functional impairment to the kidney. In addition, the severe uncontrolled hypertension moderated to normal levels without complication.

Therefore, we conclude that the described procedure offers an effective treatment option in cases of acute spontaneous renal artery dissection. Nevertheless, further study is required to establish the role of this form of percutaneous intervention and of other modalities in the treatment of this disease.

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