Endovascular repair of an abdominal aortic aneurysm in patient with horseshoe kidney: a case report

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INTRODUCTION

Horseshoe kidney (HSK) is a complex congenital malformation that results from the fusion of renal parenchyma, usually of the inferior poles; it is associated with anomalous rotation of the urinary tract and vascular anomalies [1-4]. Its rate of occurrence ranges from 0.15% to 0.8%, which corresponds to 1 in every 400 people [5,6]. The association of horseshoe kidney with abdominal aortic aneurysm (AAA) is rare: about 1 in every 710 autopsied cases, and only 0.12% of the patients that undergo AAA repair [1,7,8].

We report a case of a patient with an AAA, an occluded right iliac artery aneurysm, an HSK and impaired renal function. The patient was treated with endovascular repair (EVAR).

CASE REPORT

A 68-year-old woman with diabetes mellitus, arterial hypertension and coronary heart disease presented with lower back pain of recent onset (about 10 days). On physical examination, she had a pulsatile abdominal
mass, and palpation reproduced the pain. The right femoral pulse was weak, but the left femoral pulse was normal. She had a history of heavy smoking (2 packs a day) and mild renal dysfunction (creatinine = 1.5 mg/dl; urea = 55 mg/dl). Multislice spiral CT angiography with 3-dimensional reconstruction revealed a fusiform AAA 68 mm in diameter and a horseshoe kidney (Figure 1). The proximal neck was 20 mm in diameter and 25 mm long but severely angulated (>60 degrees) - (Figure 2). The HSK was supplied by two renal arteries on the right side and three on the left. An occluded right common iliac artery aneurysm 48 mm in diameter was also found (Figure 3).

Endovascular repair (EVAR) was chosen. Both femoral arteries were dissected with the patient under spinal anesthesia. First, an attempt was made to pass a guidewire through the occluded right iliac artery, which was successfully achieved through the right common femoral artery. A 23 X 12 mm X 16 cm bifurcated Gore-Tex (Excluder) stent graft was chosen, and a proximal aortic extension (aortic extender 23 X 33 mm) was used to seal the angulated neck. The main trunk was deployed using an 18 Fr sheath through the left common femoral artery, and the contralateral limb was inserted through the right common femoral artery with a 12 Fr sheath. A 7-cm-long iliac extension was placed in the right side to treat the right iliac artery aneurysm, covering the right internal iliac artery and landing at the external iliac artery (Figure 4). After that, the proximal aortic extender was deployed. One of the left polar renal arteries was occluded by the stent grafting. After the surgery, creatinine rose to 2.5 mg/dl, but returned to baseline levels after 3 days. The patient was discharged on postoperative day 6, and recovery was uneventful. A postoperative CT scan showed good anatomic correction and a well functioning HSK (Figures 5 and 6).
DISCUSSION

The surgical treatment of AAA coexistent with HSK gives rise to several technical difficulties. The renal isthmus is located in front of the aneurysm and frequently needs to be divided to expose the aorta [9]. Moreover, ectopic renal arteries are often found in this condition [10]. Since 1991, EVAR has been described for the treatment of AAA coexistent with HSK in 13 cases, and uni-iliac stent grafting was used in most of them [11-19]. This method is easier and quicker because there is no need to catheterize the contralateral limb.

REFERENCES


