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

Correção endovascular de aneurisma de aorta abdominal em paciente com rim em ferradura: relato de caso

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Abstract

Horseshoe kidney is a rare congenital anomaly that may cause various technical problems during conventional repairs of abdominal aortic aneurysms. We report the case of a 68-year-old woman with a horseshoe kidney, symptomatic abdominal aortic aneurysm and mild renal failure. The patient underwent endovascular repair using a bifurcated endoprosthesis. The postoperative was uneventful. We describe the diagnosis and the endovascular technique and literature review.


INTRODUCTION

Horseshoe kidney (HSK) is a complex congenital anomaly that results from the fusion of renal parenchyma (usually of the lower 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]. Horseshoe kidney associated with abdominal aortic aneurysm (AAA) is rare: it is found in about 1 in every 710 autopsied cases, and in only 0.12% of the patients that undergo AAA repair [1,7,8].

We report a case of an AAA patient, occluded right iliac artery aneurysm, 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...
recent-onset lower back pain (lasting about 10 days). During her physical examination, she presented a pulsatile abdominal mass, and pain reproduced by palpation. Right femoral pulse was weak, but left femoral pulse was normal. She had a history of smoking heavily (an average of 2 packs per 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 (68mm diameter) and a horseshoe kidney (Figure 1). The proximal neck was 20mm (diameter) and 25mm long - but severely angulated (>60 degrees), as shown in 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. This was successfully achieved through the right common femoral artery. A 23 x 12mm x 16cm 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 graft. After surgery, the patient’s creatinine level rose to 2.5 mg/dl, but returned to baseline levels after 3 days. The patient was discharged from the hospital on the 6th postoperative day, and the 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 used 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


