Case Reports

Iliac Artery Aneurysm Repair with Preservation of a Single Ectopic Pelvic Kidney

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An ultrasonographic study in a 60-year-old man incidentally detected an iliac artery aneurysm that gave rise to the renal artery of a single ectopic pelvic kidney. Renal-preservation solution could not be used during surgery, because the unclamped renal vein would have enabled the solution to enter the systemic circulation. Therefore, cold saline solution was infused through the renal ostium, and the kidney was maintained under cold saline immersion. We performed aortoiliac bypass and then implanted the renal artery into the bypass graft. Postoperatively, the patient's serum creatinine level increased; after one year, his renal function was normal. We discuss our use of cold saline solution for renal preservation. ***(Tex Heart Inst J 2015;42(1):61-2)***

The surgical treatment of intra-abdominal artery aneurysms is challenging when the renal artery arises from the aneurysm. Preserving the kidney is crucial when repairing the aneurysm. In these cases, renal-preservation solution cannot be used, because it would pass through the renal vein into the general circulation. For this reason, various techniques have been proposed to preserve renal viability. We discuss our surgical correction of an iliac artery aneurysm in a man whose single ectopic pelvic kidney necessitated an alternative treatment.

Case Report

In August 2010, a 60-year-old man with hypertension and type 2 diabetes mellitus underwent abdominal ultrasonography and was incidentally found to have an iliac artery aneurysm. Results of physical examination were unrevealing. Computed tomographic angiograms disclosed a 5 × 7-cm saccular aneurysm in the right common iliac artery; this vessel gave rise to the renal artery of a single ectopic pelvic kidney (Fig. 1). Calibrated angiograms confirmed that the single renal artery originated from the iliac artery aneurysm. No other abnormalities of the cardiovascular system were detected. Because of the high risk of rupture, surgical treatment was recommended.

A thermal blanket was used to prevent hypothermia in the patient, whose body temperature remained unchanged throughout the operation. The aneurysm was exposed after dissection of the involved arteries. Cold normal saline solution (8 °C) was infused through the ostium of the renal artery at a rate of 20 cc/min (total volume, 400 cc). Renal-preservation solutions were not infused, because the renal vein was not clamped and such solutions would reach the systemic circulation. Topical cooling of the kidney with normal saline solution was also performed. We performed an aortoiliac bypass with use of a 10-mm Bard® DeBakey® Vasculour® Dacron graft (Bard Peripheral Vascular, Inc.; Tempe, Ariz). The renal artery, which supplied the ectopic pelvic kidney, was implanted onto the graft by means of an end-to-side anastomosis. The duration of renal ischemia was 40 minutes.

The patient's postoperative recovery was uneventful, and he was released from the hospital after 13 days. His preoperative serum creatinine level of 1.2 mg/dL had increased 30% to 1.7 mg/dL, but no renal failure was observed. At that time, results of Doppler ultrasonography showed normal renal function, and the results of technetium-99 gammagraphy confirmed patency of the renal vessels. One month after the operation, the patient's serum creatinine level was 1.9 mg/dL; after one year, it was normal at 1.4 mg/dL.

Key words: *Abnormalities, multiple/diagnosis/surgery; kidney/abnormalities/blood supply; risk assessment; treatment outcome; vascular surgical procedures/methods*

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Fig. 1 *Computed tomographic angiogram shows an ectopic right kidney originating from a common iliac artery aneurysm.*

Discussion

The association of iliac artery aneurysm with congenital pelvic kidney is rare.[1] Renal arterial vascularization and renal protection during surgical repair of the iliac artery aneurysm are major concerns.[2,3] Repairing these aneurysms is technically difficult, because the abnormal origin of the renal arteries poses the problem of renal ischemia during aortic cross-clamping. In our patient, a single renal artery was clearly identified and reimplanted into an arterial bypass graft. Renal preservation was achieved by directly perfusing the renal artery with cold normal saline solution, together with topical cooling with use of the same solution. The method of renal preservation used in this case was simple and effective.

References

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