Case Report

Transplant renal artery aneurysm following venous patch repair of a traction injury to the renal artery

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Introduction

Transplant renal artery aneurysm is a rare complication of renal transplantation. Aneurysms are reported to form at the site of anastomosis with the recipient artery. We report a case of an aneurysm in the middle third of the donor renal artery following a venous patch repair of an intimal tear, believed to have happened at the time of harvesting. Excision of the aneurysm and anastomosis to the internal iliac artery was performed.

Case report

A 16-year-old male with end-stage renal disease due to focal segmental glomerulosclerosis had a renal transplant in January 1993. The donor was a 19-year-old male. There was a 0, 2, 1 mismatch on the A, B, and DR loci, respectively.

The transplant renal artery on an aortic patch was anastomosed end to side to the external iliac artery. The renal vein was anastomosed end to side to the external iliac vein. There was good perfusion of the kidney on release of the vascular clamps but the kidney became dusky shortly thereafter. A constriction was noticed in the middle of the donor renal artery. A longitudinal arteriotomy was made along the constriction and a torn intimal flap was excised. The arteriotomy was then repaired with the recipient’s saphenous vein patch using 7/0 prolene. This added another 15 min to the total warm ischaemia time which was was 45 min. The kidney perfused completely on release of clamps and there was good primary function. The patient made an uneventful recovery and was discharged on the 10th postoperative day with a serum creatinine of 126 mmol/l on triple drug immuno-suppression, namely, cyclosporin, azathioprine and prednisolone.

Four years later, the patient presented with deteriorating renal function and hypertension. His serum creatinine was 172 mmol/l and blood pressure was 170/110 mmHg. An ultrasound revealed an aneurysm 2 cm in diameter in the middle of the renal artery with thrombus in its lumen. The kidney was well perfused throughout. An angiogram confirmed the presence of an aneurysm at the site of the venous patch repair (Figure 1).

The patient was admitted for surgery and the transplant kidney approached through a midline transperitoneal incision. The aneurysm was dissected out and after control of the vascular segment, the aneurysm was ligated both proximally and distally and excised. The internal iliac (hypogastric) artery was divided and its distal end swung and anastomosed to the renal artery distal to the site of the aneurysm. The total ischaemia time was 15 min. There was good primary function. The patient made an uneventful recovery and was discharged with a serum creatinine of 111 mmol/l.

Discussion

The incidence of vascular complications following renal transplantation varies from 3.5 to 14% [1,2]. However, aneurysms following renal transplantation are rare: there are only few cases reported in the literature [3,4]. These may be true or false aneurysms. True aneurysms are even rarer and are usually described at the site of anastomosis to the recipient artery. Our case represents a true aneurysm in the middle third of the transplanted renal artery. Several factors are thought to be important in the aetiology of this potentially life threatening complication. These include faulty suture technique, kinking of the renal artery, instrumental injury during perfusion, excessive dissection of the vasovasorum, immunological mechanisms, hyperlipidaemia, traction injury to the renal artery during harvesting, and hyper-
excessive traction on the renal artery at the time of harvesting.

Intimal injuries to the renal artery can either be repaired with a venous patch or resected. A venous patch repair led to an aneurysm in our case. Hypertension in the recipient may also have contributed to the aneurysm formation. Resection of the injured arterial segment and anastomosis to the external iliac or the internal iliac artery may have been a more appropriate option at the time of implantation. The reason for gradual deterioration of renal function in our case is not clear. This may have been due to microemboli arising from the aneurysm and the presence of hypertension. Although the kidney was not biopsied pre-operatively, improved renal function following surgery and the absence of proteinuria makes chronic rejection unlikely.

In conclusion our case highlights the fact that traction injury to the renal pedicle must be avoided. The retrieval team needs to be careful in dissecting out the kidney from the donor to avoid any vascular injury. Such injuries if noted before transplantation are best treated by excision and transplantation to the side of the external iliac artery or end of the internal iliac artery. The use of the internal iliac artery for reconstruction is a useful salvage technique for diseases of the proximal donor renal artery following renal transplantation.

Fig. 1. Selective angiogram showing aneurysm in the middle third of the transplant renal artery.

References

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