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BRIEF REPORT

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Back-table renal allograft angioscopy and thrombolysis

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Abstract Poor back-table perfusion of a renal allograft may occur as a result of intravascular thrombosis of the renal artery branches. We herein report such a case where back-table angioscopy was performed to confirm the diagnosis, followed by successful thrombolysis using urokinase under hypothermic conditions.

Key words Angioscopy, renal transplantation · Renal transplantation, angioscopy
Thrombosis, renal artery, angioscopy

Introduction

In the renal allograft, one usually relies on palpation of the renal artery and visual inspection of its aortic ostium for the diagnosis of pathology such as atherosclerosis. However, these modalities cannot be applied to the intraparenchymal branches of the renal artery. We recently encountered a situation where angioscopic examination of the renal artery and its branches provided important diagnostic information that guided our management.

Case report

The patient was a 59-year-old male who received a living related kidney transplant from his brother. The retrieval of the donor graft was uncomplicated, but upon inspection it appeared mottled and back-table perfusion was sluggish. The donor, as usual, was not anticoagulated and approximately 4 min elapsed between clamping of the renal vessels and cannulation for perfusion. A 1.4 mm Olympus angioscope was then used to establish the presence of intravascular thrombi within the secondary and tertiary branches of the renal artery. Following multiple attempts, perfusion with University of Wisconsin (UW) solution failed to wash out the thrombi. Next, 250000 units of urokinase in 100 ml of normal saline (cooled to 4 °C) was instilled in the renal artery over a period of 20 min. Perfusion with UW solution was no longer sluggish and the mottled appeared disappeared. Repeat angioscopy revealed lysis of the thrombi, following which transplantation was performed. The total cold ischemia time was approximately 40 min. Quadruple immunosuppression was used, with the introduction of cyclosporin on the 5th postoperative day. An immediate postoperative thallium scan revealed good perfusion but poor function in the graft, suggestive of acute tubular necrosis. The serum creatinine decreased from 7.7 to 1.0 over a 10-day period. A repeat thallium scan on the 9th postoperative day confirmed improved graft function. The patient is well after a 6-month follow-up period with normal renal function.

Discussion

Angioscopy is a recent development in the field of vascular surgery [1] and its use in transplantation has been very limited. Tzakis et al. [2] recently described a case where back-table angioscopy failed to confirm a suspected intimal injury in a renal allograft. In our experience, back-table angiography was crucial for the diagnosis of intra-

vascular thrombosis. The procedure is performed in a bloodless field, which makes it easy and fast and can be very helpful in selected cases where arterial intimal injury of intravascular thrombosis is suspected. The cause of intra-arterial thrombosis remains uncertain. We have not routinely used anticoagulation during living related donor nephrectomies in the past and have not encountered this complication. Possible explanations include migration of the thrombus from the operative field into the renal artery and thrombus formation during the interval between clamping and cannulation of the renal artery. Either way, perfusion with UW solution would have pushed the thrombi into the kidney, giving the impression of thrombosis at the level of the secondary and tertiary branches. The use of back-table thrombolytic therapy for lysis of allograft intravascular thrombi has not been previously reported. During hypothermia, the process of thrombus lysis, which involves activation of fibrin-bound plasminogen, is probably unaltered but much slower. Urokinase may be helpful in the setting of poor back-table perfusion of a renal allograft. In such cases the suspicion of intravascular thrombosis could be confirmed with angioscopy. Although our experience with angioscopy and the use of urokinase is limited to renal transplantation, with more experience these modalities could also be applied to other allografts and their role in transplantation expanded.

References

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