An Unusual Cause of AKI in a Kidney Transplant Recipient

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Case Description

A 60-year-old man with autosomal dominant polycystic kidney disease underwent a living unrelated kidney transplant that was complicated by a perinephric hematoma, which became infected. A drain was placed, and appropriate antibiotics were administered. On postoperative day 34, he was found to have an extensive deep venous thrombosis of his right lower extremity which was attributed to direct compression of the venous system by the large perinephric collection. Anticoagulation with heparin followed by apixaban was started. Over the next few weeks, the patient remained clinically stable and repeat imaging showed significant decrease in the size of his perinephric collection. As there was minimal drainage from the collection, the drain was removed. Subsequent follow up in the outpatient clinic showed a rise in serum creatinine, which prompted a transplant kidney ultrasound. The ultrasound showed evidence of moderate hydronephrosis (not shown). An urgent magnetic resonance urogram was performed. This demonstrated that the previous perinephric collection, although smaller in size, had tracked down and engulfed the transplant ureter such that the ureter proximal to the collection was dilated to approximately 0.9 cm (Figure 1A). The ureter beyond the collection to the level of the bladder wall had a normal decompressed appearance. After consultation with the radiology and surgical teams, it was concluded that the collection was not amenable to further drainage. An internal double J stent was subsequently placed. A computed tomography scan of the abdomen/pelvis was obtained 3 months later and showed complete resolution of the previous complex perinephric collection with resolution of hydronephrosis (Figure 1B). The internal JJ stent was subsequently removed with close monitoring of kidney function and repeat imaging. Kidney function remained stable after the stent removal and follow up ultrasound of the kidney showed no evidence of hydronephrosis (Figure 1C).

The development of fluid collections adjacent to a kidney transplant is not uncommon, occurring in nearly 50% of kidney transplant recipients (1). These include hematomas, lymphoceles, seromas, urinomas, and others. Figure 1 shows the radiological progression of perinephric hematoma and hydronephrosis.

Figure 1. | Radiological progression of perinephric hematoma and hydronephrosis. (A) Magnetic resonance urogram showing a large perinephric collection engulfing the transplant ureter (arrow) with proximal ureteric dilatation and hydronephrosis (arrowhead). (B) Computed tomography of abdomen/pelvis showing resolution of the perinephric collection with indwelling ureteric stent. (C) Renal transplant ultrasound showing resolution of hydronephrosis and normal appearing allograft after removal of ureteric stent.
and abscesses (2). Perinephric hematomas vary in incidence (3) but are not usually associated with ureteric compression severe enough to cause obstruction and graft dysfunction. This case was an interesting learning opportunity where extrinsic compression of the transplant ureter was observed. Kidney function responded very well to internal stent placement avoiding the need for a percutaneous catheter or additional surgical procedures. This case suggests that a perinephric hematoma should be considered in the differential diagnosis of AKI in a kidney transplant patient.

Teaching Points

- Perinephric collections postkidney transplant are not always benign and can rarely be associated with extrinsic compression of the transplant ureter producing obstructive graft dysfunction.
- Early intervention in cases of transplant ureteric compression is essential in preventing long-term kidney dysfunction.
- A carefully managed internal ureteral stent can be an effective alternative for transplant ureteric obstruction management compared with percutaneous nephrostomy catheter drainage.

Disclosures

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Author Contributions

D. Malhotra wrote the original draft; and N. Dahl reviewed and edited the manuscript.

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