Management of Large Allograft Mass Following Living Donor Kidney Transplantation

Joy E. Obayemi, Kai Zhao, Thomas J. Guzzo, and Peter L. Abt

Clinical Presentation

A 61-year-old woman with a diagnosis of autosomal dominant polycystic kidney disease underwent bilateral native nephrectomies followed by living donor kidney transplantation. Seventeen years later, while undergoing workup for a hematoma, a large mass was discovered through an ultrasound in the hilum of her transplanted kidney. Magnetic resonance imaging revealed a 7.7-cm multiloculated, mixed cystic and solid, hemorrhagic mass (Fig 1). She had stable graft function with serum creatinine level of 1.26 mg/dL. Her immunosuppression regimen was tacrolimus, 4 mg, twice daily; mycophenolate mofetil, 500 mg, twice daily; and prednisone, 5 mg, daily.

In collaboration with urology, the decision was made to perform a partial nephrectomy attempting kidney allograft salvage. Figure 2 shows the mass in situ; it was successfully removed and the patient had an unremarkable hospital course. She had a peak serum creatinine level of 3.92 mg/dL but was discharged on postoperative day 11 with a serum creatinine level of 1.81 mg/dL. Four months after resection, serum creatinine level was 1.36 mg/dL.

1. What is the differential diagnosis for this mass?
2. Besides partial nephrectomy, what are some other treatment options for this patient?
3. What additional considerations might there be for transplant recipients who have retained their native kidneys?
4. How should the living kidney donor be counseled on future risk?

Discussion

What is the differential diagnosis for this mass?

The differential diagnosis for kidney masses can largely be categorized by the shape of the mass, either “ball type,” producing a contour bulge that deforms the kidney, or “bean type,” in which there is infiltrative growth that maintains the shape of the kidney.1 The differential diagnosis for ball-type lesions as seen here includes renal cell carcinoma (RCC), angiomyolipoma, oncocytoma, lymphoma, and metastatic disease. RCC is by far the most common, accounting for 85% of all detected kidney tumors.2 Therefore, a lesion in this
immunosuppressed transplant recipient should first be considered to be RCC.

**Besides partial nephrectomy, what are some other treatment options for this patient?**

Radical nephrectomy, partial nephrectomy, microwave ablation, and cryoablation have all been successfully used to treat RCC in the kidney allograft. The choice of treatment depends on the size and location of the lesion relative to graft vasculature and anatomy. Radiofrequency ablation and cryoablation are favored for lesions < 3 cm. Though the data are limited, a recent meta-analysis of 56 studies of kidney allograft tumors revealed that the local RCC recurrence rate following partial allograft nephrectomy is ~3.6% at a median follow-up of 3.12 years. This rate is comparable to that observed in the native kidney following partial nephrectomy, indicating that favorable oncologic outcomes are achievable.

**What additional considerations might there be for transplant recipients who have retained their native kidneys?**

Kidney transplant recipients have 10- to 15-fold increased risk for developing RCC compared with the general population. Most of these lesions occur in native kidneys, but the incidence of allograft RCC (0.2%) is still greater than the incidence of RCC in the general population (0.017%). Although RCC surveillance is recommended for patients receiving maintenance dialysis, recommendations vary for kidney transplant recipients. The European Renal Best Practice guidelines recommend regular screening ultrasounds for the native and allograft kidneys of transplant recipients, while the American Society of Transplantation provides no recommendation.

**How should the living kidney donor be counseled on future risk?**

The incidence of RCC being found in the contralateral kidney is 1.2%, with an average of 5 to 6 years between initial treatment and detection. Long term follow-up with living donors often ends 2 years following donation. Although guidelines currently state that infectious disease or malignancy discovered during the donor’s first 2 years of follow-up are subject to disclosure to the recipient, there is no consensus regarding the reverse line of communication in which recipient health is reported back to the donor. As a result, general age-appropriate cancer screening would be the formal recommendation for the donor. In this case, the donor was in contact with the recipient and underwent ultrasound screening of the contralateral kidney.

**Final Diagnosis**

Renal cell carcinoma (papillary subtype).

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