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A Cadaveric Polycystic Kidney Donor

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Short Report

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Shortages of cadaveric organ donors have led to the use of kidneys previously thought to be unsuitable for transplantation. Advanced age, hypertension, mild diabetes mellitus and acute renal failure during a terminal illness had traditionally been considered exclusion criteria for donor acceptance. Kidneys from elderly donors (donor age > 60) are associated with 20-30% reduced graft survival rates 3 and 5 years after transplantation respectively (1). In addition, hypertension may be associated with pre-existing lesions that entail a poor renal function and graft outcome (2). Utilization of borderline donors may help to reduce the number of patients on the waiting list and expand the donor pool. Among these donors were those affected by autosomal dominant polycystic kidney disease (ADPKD) with preserved renal function. ADPKD is a hereditary disorder characterized by multiple renal cysts, with slow progressive deterioration of renal function. We report our recent transplantation experience of an ADPKD kidney with normal graft function.

Case Report

The cadaveric donor was a 38-year-old woman who had committed suicide on 8 August 2000. She was normotensive and had normal kidney functions. Her brother was known to suffer from polycystic kidneys. At the time of organ recovery, both donor kidneys had several cysts, 4-8 mm in size and approximately 12 cm in longitudinal axis. The serum creatinine concentration of the donor was 1.0 mg/dl. After serious consideration, the right polycystic kidney was transplanted into a 42-year-old man, a high-risk patient with end-stage renal failure and malignant hypertension (diastolic 125 mmHg). At that time he was bedridden due to uremic pericarditis and poorly tolerating hemodialysis. The donor and the recipient shared three HLA antigens. The operation was uncomplicated and the kidney functioned immediately after transplantation. The recipient was treated with cyclosporine, prednisone and azathioprine. He did not experience rejection and did well for the first 12 months. Furthermore, the last sonographic studies showed multiple small cysts 4-14 mm in diameter. The length of the grafted kidney was 12.5 cm and renal functions were normal with a serum creatinine concentration of 1.6 mg/dl. Up to the present, no cyst-related complications have been found. The other kidney from this donor was send to another center for transplantation. For this reason no information is available about that kidney.

ADPKD is a hereditary nephropathy characterized by slow progressive deterioration of glomerular filtration due to cystic changes. It usually terminates with the loss of renal function and accounts for 2-9% of the whole end-stage renal disease population (3). The possible risks associated with polycystic kidney are cerebrovascular accidents, hypertension, stone formation, cancer and infection (3). In the last 11 years, five studies have been reported on seven successful kidney transplantations from polycystic donors. Spees et al. have reported the transplantation of two polycystic kidneys from different donors. Nineteen and 29 months after transplantation, there had been no increase in cyst size (4). Mancini et al. reported that polycystic kidneys with normal renal function and preserved renal cortical mass could be used for transplantation (5).

Siegal has reported the disappearance of cysts in a transplanted kidney from a cadaveric polycystic donor 8 years after transplantation (6). Howard et al. reported that an ADPKD donor kidney with cysts size up to 34 mm may take 12.5 years to develop end-stage renal disease after transplantation (7). This is also the report with the longest follow-up period. It suggests that disease progression in a polycystic kidney will not stop after transplantation. In a recent study of a successful transplantation of two ADPKD kidneys, Shan showed that, 1 year after transplantation, the length of the kidneys and the size of the cysts had not increased very much (8). Over the past 20 years, great improvements have been made in graft survival with cyclosporin-based immunosuppression. One-year and three-year graft survival rates for normal kidney donations are 85% and 75% respectively (9). Also, up to now, no serious complications related to the presence of multiple cysts in the graft have been reported. Therefore, in light of the donor shortage, it seems appropriate to use these kidneys with a hope of extending the recipient's life span. We conclude that, in high risk recipients with somewhat shortened life expectancy, a donor polycystic kidney with normal chemical parameters may be considered suitable for transplantation.

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