Case Report

Polycystic kidney patient as a cadaveric donor: is it appropriate?

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Introduction

Shortage of cadaver kidney donors has prompted occasional use of abnormal kidneys such as those affected by autosomal dominant polycystic kidney disease (ADPKD) with preserved renal function [1–3]. ADPKD is a hereditary disorder characterized by slow progressive deterioration of renal function due to cystic changes [4]. Upon serious consideration of quality-of-life improvement with a functioning kidney graft, there is justification for use of cadaveric polycystic ADPKD kidneys when the intervals between progression to end-stage renal disease and graft survival period are compared. We report our experience of transplantation of two ADPKD kidneys with normal graft function.

Case

The cadaveric donor was a 21-year-old male with left frontotemporal subdural haemorrhage and right temporal subarachnoid haemorrhage following a traffic accident. There was no known family history of renal disease. Preoperative procurement evaluation of the heart revealed normal chamber dilatation and mild hyperkinesia of the interventricular septum at the basal part with an ejection fraction of 0.707. The serum creatinine concentration of the donor was 88 µmol/l. The size of the grafted kidneys was approximately 12 cm in longitudinal axis. Multiple small cysts, 3–5 mm in size, were found in both kidneys during procurement of organs in December 1998. After serious consideration, these two polycystic kidneys were transplanted into two young patients with end-stage renal disease who were 19 and 20 years old, respectively. The postoperative courses were uneventful. Follow-up sonographic studies 1 year later showed multiple small cysts 2–13 mm in diameter. The length of the two grafted kidneys was 12.2 cm and 12.9 cm, respectively. Renal functions were normal, with serum creatinine concentration of 115 and 123 µmol/l. No cyst-related complications have been found up to the present.

Discussion

ADPKD is a hereditary nephropathy characterized by multiple renal cysts, with slow progressive deterioration of renal function. It often terminates in renal failure and accounts for 2–9% of this population. The symptoms of ADPKD do not generally develop until adulthood; 85% of carriers are asymptomatic until the fourth decade of life [4]. In Daigard’s retrospective study, the mean age for diagnosis of ADPKD was 47.2 years, while Singh reported that the mean age at the start of ESRD treatment was 47.3 ± 15.2 years [5,6]. There is often a period of more than 10 years when patients with polycystic kidneys develop symptoms of end-stage renal disease. Howard et al. [7] 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. Based on the age of a 21-year-old cadaver donor there should be at least a 10-year period of kidney function. Over the past 40 years, great improvements have been made in graft survival with some forms of cyclosporin-based immunosuppression. One-year and 3-year graft survivals of 85 and 75% respectively are possible for normal kidney donations. Furthermore, previous reports showed that polycystic kidneys with normal renal function and preserved renal cortical mass could be used for transplantation [1,2] and disappearance of the cysts may even occur, as reported by Spees [1,3]. Ettenger et al. [8] compared mortality between renal cadaveric transplant patients
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and patients on dialysis who were or were not waiting for transplantation. He found that the mortality rate is lower in the renal transplant patients after 2 years follow-up. In consideration of quality of life with a good functioning kidney and the shortage of donors, a polycystic kidney with good renal function may be used as a donor kidney based on the estimated time for the donor kidney to fail and the graft survival period on immuno-suppression.

References


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Editor’s note

Please see also Editorial Comment by R.A.P. Koene, pp. 227–229.