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The quality of function of renal allografts is associated with donor age

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Abstract The quality of renal allograft function was assessed by prospective measurement of creatinine clearance at 1 year ($n = 197$) and at 3 years ($n = 115$) after cadaveric renal transplantation in a cohort of 268 patients treated with triple therapy immunosuppression. Donor age ($P < 0.0012$) and recipient age ($P < 0.01$) were independently associated with creatinine clearance both at 1 and at 3 years. In patients with donor age above 50 years and recipient age above 45 years, the mean creatinine clearance was 32.7 (SD 10.4) ml/min ($n = 27$). When the donor age was below 30 years and recipient age below 45 years, the mean creatinine clearance was 55.6 (SD 14.4) ml/min ($n = 47$, $P < 0.001$). However, in these patients there was no significant association between graft function and many of the factors known to influence graft survival, such as HLA matching, sensitisation of the recipient, and the occurrence of rejection. In conclusion, the quality of renal allograft function declined with increasing donor and recipient age in our patients, whilst immunological factors were not significantly associated with function in surviving grafts.

Key words Donor age, renal function · Kidney function, donor age · Age donor, renal function

Introduction

Although increasing age of renal allograft donors is associated with reduced 1-year graft survival in many [7, 11, 14, 18], but not all [2, 16], studies, such grafts achieve acceptable overall graft survival rates, and the use of cadaveric donors over the age of 55 years is now routine in many units.

The quality of function of grafts taken from older donors has, however, only been examined in detail in patients from the precyclosporin era [9]. We have studied a cohort of patients treated with triple therapy immunosuppression, so that these data are not confounded by varying treatment protocols. Furthermore, the data on graft function were prospectively gathered in an outpatient annual review clinic. The effect of donor age on the quality of graft function has been assessed in the context of other factors that are powerfully associated with overall graft survival. These included HLA-DR matching, crossmatch status, delayed graft function, and the occurrence of rejection.

Patients and methods

Two hundred and sixty-eight patients who received cadaveric renal transplants from beating heart donors between May 1985 and February 1990 attended an outpatient annual review clinic. There were 225 patients seen at 1 year after transplantation and 131 patients at 3 years after transplantation, with 87 patients seen both at 1 and 3 years after transplantation (Table 1). Three patients with functioning grafts who moved away from Oxford were not seen in the clinic; otherwise, all patients with functioning grafts were seen.

All kidneys were retrieved from beating heart donors who had fulfilled the criteria of brain death. All data on donor characteristics were compiled at the time of transplantation and entered onto either our database or standard United Kingdom Transplant Service (UKTS) records.