CADAVERIC KIDNEY RETRANSPANTATION, 
IS IT JUSTIFIED?

M J H Slooff, A M Tegzess, V J Fidler, J M v.d. Voort-Beelen, 
R A F Krom, S Meijer, G Kootstra

University Hospital, Groningen, The Netherlands

Summary

Results of 44 second cadaveric kidney transplantations are reported and compared with the results of 149 primary cadaveric transplantations. No difference in patient survival is observed. Patients with a non-immunological first graft failure (NIF) had a better two year second graft survival (60%) when compared with patients with an immunological first graft failure (IF) (20%). This difference was not due to a higher degree of presensitisation in the IF group. The use of scarce cadaveric kidneys for retransplantation in patients whose first graft was rejected is considered questionable.

Introduction

There is still a shortage of kidneys for transplantation even in well organised sharing programmes like the Eurotransplant organisation [1]. Of all the cadaveric kidneys used for first transplantations 40% will be lost due to rejection or other causes. A number of these patients with a failed first cadaveric graft is eligible for a second cadaveric graft. In view of the literature [2,3,4] where the outcome of second cadaveric grafts is considered inferior to first cadaveric grafts, the use of scarce cadaveric kidneys for retransplantation was discussed in our team and a retrospective study was attempted to see if a negative approach to sequential cadaveric kidney retransplantation is justified.

Material and Methods

In the six year period January 1972 through January 1979 a total of 44 secondary cadaveric kidney transplantations were performed in the Academisch Ziekenhuis at Groningen. The results of these transplantations are compared to the results of 149 primary cadaveric transplantations performed in the same period.

The patients in the retransplanted group all had a cadaveric graft as a first
transplant.

The technique of harvesting, preservation, implantation and immunosuppressive regimen were the same for the two groups and are published elsewhere [5,6]. The mean age (34 years) of the patients and the male/female ratio (56/44) were the same for both groups.

In the retransplant group the mean pretransplant dialysis was 40 months versus 22 months in the group of recipients of a first graft. During the waiting period on dialysis the patients were routinely screened by standard micro cytotoxicity techniques for the presence of cytotoxic antibodies against a panel of 20–50 HLA typed donor lymphocytes. Patients were considered positive when one clearly positive reaction with at least one panel cell was found. In the retransplant group 21 out of 44 (47%) had cytotoxic antibodies versus 25 out of 149 (16%) primary graft recipients.

The mean mismatch for HLA-A and B antigens was 1.3 in both groups. In all but two patients there were no shared antigens between the first and second graft.

All patients in both groups had had blood transfusions. Viability of the kidneys was assessed on the basis of information from the donor hospital. In some cases kidneys were placed on a preservation machine and viability was assessed on the basis of perfusion parameters [7]. In all cases a biopsy was performed one hour after recirculation of the graft. The retransplant group was subdivided into two subgroups according to the cause of failure of the first graft. The immunological first graft failure group (IF-group) consisted of 29 patients whose first graft was rejected as judged by clinical criteria and histology of the 29 removed first grafts. All of them showed signs of severe rejection.

In the 15 retransplanted patients the first graft failed due to non-immunological reasons (NIF-group): 10 cases had arterial thrombosis shortly after transplantation, four cases non viable kidneys as judged by the ‘one hour biopsy’ and in one case the kidney was removed because of severe graft infection. Thirty-eight of the first grafts in our retransplanted patients were removed within three months and only the remaining six grafts lasted longer than three months. In all 44 patients immunosuppressive treatment was discontinued when chronic haemodialysis was resumed.

All survival curves are computed by actuarial methods.

Analysis was done by censored survival date as described by Peto [8] with a significance level of alpha = 0.05.

Results

Patient survival is not different in patients with a first cadaveric graft and patients with a second cadaveric graft, irrespective of cause of first graft failure (Figure 1) (p>0.10).

Significant difference in second cadaveric graft survival is observed between patients of the NIF-group and IF-group (Figure 2). Two year graft survival in the NIF-group being 60% compared to 20% in the IF-group (0.025<p<0.05). No difference exists (p>0.10) between the two year graft survival of the second
Figure 1. Patient survival first and second grafts (sub groups)

Figure 2. Graft survival first and second grafts (sub groups)
graft in the NIF-group (60%) and the two year graft survival of primary cadaveric grafts (56%).

However a significant difference (p<0.01) is observed between two year graft survival of the second graft in the IF-group (20%) and the two year graft survival of the primary cadaveric grafts (56%).

The presence or absence of cytotoxic antibodies before the second transplantation did not influence second graft survival, two year graft survival being not different in patients with or without cytotoxic antibodies before the second transplantation (p>0.5).

Discussion

When looking at our two year patient survival no objection exists to sequential cadaveric kidney transplantation. A two year patient survival of 83% after a second cadaveric graft is different from the figures mentioned in the literature, Husberg [9] reporting a 20% lower patient survival after second transplantations compared to first transplantations. Casali [2] mentioning 40% after two years and Ascher [4] 55%. This poorer outcome in patient survival in these series is mainly accounted for by an early postoperative mortality after retransplantation.

The favourable results in our series may be explained by two factors. Firstly no diabetics were selected for retransplantation. Secondly we favour a very careful approach to rejection crisis. According to the policy of Kountz [10], we remove grafts early when repeated rejection episodes do present, instead of increasing the dose of immunosuppressive drugs. Second cadaveric graft prognosis is influenced by the cause of first graft failure, patients in the NIF group having a superior second graft survival compared to patients in the IF-group.

This difference could not be explained by a difference between sensitised and non-sensitised patients, the outcome for both being not different in our patients.

This is in accordance with the data of Husberg [9] and Casali [2] who found no influence of the presence of cytotoxic antibodies on second graft survival.

Regrafting with cadaveric kidneys of patients in the NIF-group is justified because the graft prognosis is the same as in primary cadaveric grafts. However these patients are a disappearing population because of better techniques in organ harvesting and preservation. There is a large and still growing group of patients who rejected their first graft. Because most of the first grafts (86%) in our regrafted patients were removed within three months our data are mainly based on these ‘rapid rejectors’. These patients had a very poor second cadaveric graft prognosis (20%).

This observation is confirmed by the review of Opelsz and Terasaki [11]. They reported a two year second graft survival of 29% in patients with cytotoxic antibodies and whose first graft duration was one to three months, compared with 68% in patients whose graft lasted longer than three months and who were cytotoxic antibody negative.

In conclusion the use of scarce cadaveric kidneys as second grafts in patients who rapidly rejected their first cadaveric graft is questionable. This opinion is based on the outcome of graft survival and not on patient survival, which is the
same for primary and secondary transplantations. Only when kidney harvesting programmes are at least doubled, will enough kidneys be available for use in patients with an expected success rate of 20%.

References

1 Eurotransplant Foundation Annual Report 1977, 13
4 Ascher, NL, Ahrenholz, DH, Simmons, RL and Najarian, JS (1979) *Transplantation*, 27, 30
7 Belzer, FO (1973) *Lancet*, i, 1063
11 Opelsz, G and Terasaki, PI (1976) *Transplantation*, 21, 483