CHAPTER 14

SURVIVAL OF RECIPIENTS OF CADAVERIC KIDNEY TRANSPLANTS COMPARED TO DIALYSIS TREATMENT IN AUSTRALIA AND NEW ZEALAND

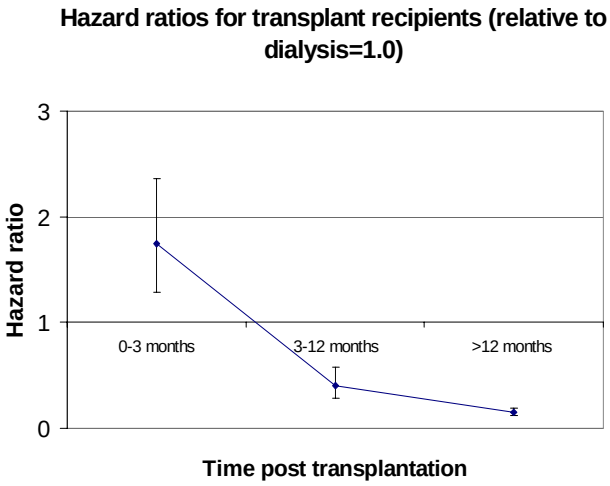
Stephen P McDonald
Graeme R Russ

Introduction

The present study compared outcomes among transplant recipients with patients receiving dialysis treatment aged 15-65 years, from 1 April 1991. People were included in this analysis if they were reported as "on active transplant list" at least once, regardless of whether they subsequently remained on the list. Recipients of grafts from living donors were excluded.

The exact date of listing is not provided in the ANZDATA returns, so the mid-point of the first six month survey period where the "active" list was first noted was used. The outcome assessed was all-cause mortality. Survival was analysed using Kaplan-Meier curves and Cox regression.

Figure 14.1
Survival of patients 15-65 years who began ESRD treatment 1991-2001 by placement on active transplant waiting list, excluding recipients of live related grafts, adjusted for gender and age.



Results

Of those who started renal replacement therapy aged <65 years between 1991-2000, 5397 (53%) of these were reported on the active transplantation waiting list at some stage. Five year survival of the group waitlisted was 83% versus 36% in the non-waitlisted group.

Compared to those who were never grafted, those who ultimately received cadaveric grafts at some stage were younger (at ESRD entry) and more likely to be male. Type 2 (but not type 1) diabetes, coronary artery disease, smoking and lung disease were associated with reduced chance of receiving a graft.

Mortality rates were higher in the immediate post transplant period, but this steadily reduced until at 12 months there was a considerable survival advantage (fig 14.1). The co-morbidity adjusted model showed similar survival benefit to the transplanted group, particularly in the period 12 months after transplantation. Mortality rates post transplantation did not vary with type of dialysis pre-transplantation (peritoneal vs. haemodialysis).

As well as rates, the causes of death differed between the dialysis and transplant groups. In the transplanted there was an early excess of infective deaths, whereas the mortality in the dialysis was principally due to cardiovascular causes.

Discussion

The early increased mortality among transplant recipients is likely to relate to peri-operative mortality and infections, the latter related to the immunosuppression required post transplantation. This excess is short lived; by 3 months after operation, the mortality rate is less than the comparison and in the longer term rates are around 20% of a comparable control group.

The best approach to the comparison of the two types of treatment has been discussed at length [1-3]. Inclusion of those treated by dialysis but not listed for transplantation raises issues of selection bias. It is important to analysing survival from time of listing to avoid the "time-to-treatment" bias from the early phase of ESRD treatment. The transplanting process is in some ways analogous to "randomisation" insofar as, whether and when a person ultimately receives a transplant is not known.

The results here are similar to those reported elsewhere. In particular, Wolfe et al [2] showed a relative risk of mortality in the immediate post operative period was 2.8, falling to a long term relative risk of 0.32 from 12 months. In an Australasian centre, Johnson et al [4] demonstrated a hazard ratio of 0.16 for transplant recipients over 60 years in their centre.

Note : This is an abridged version of a presentation given at the 2001 ANZSN ASM.

References

1. Port FK, Wolfe RA, Mauger EA, Berling DP, Jiang K. Comparison of survival probabilities for dialysis patients vs cadaveric renal transplant recipients. Jama 1993; 270:1339-43.
2. Wolfe RA, Ashby VB, Milford EL, et al. Comparison of mortality in all patients on dialysis, patients on dialysis awaiting transplantation, and recipients of a first cadaveric transplant. N Engl J Med 1999; 341:1725-30.
3. Aitken M, Laird N, Francis B. A Reanalysis of the Stanford Heart Transplant data. J Am Statist Assoc 1983; 78:264-274.
4. Johnson DW, Herzig K, Purdie D, et al. A comparison of the effects of dialysis and renal transplantation on the survival of older uremic patients. Transplantation 2000; 69:794-9.