

SERUM CREATININE IN THE FIRST YEAR POST-TRANSPLANT AS A PREDICTOR OF LONG-TERM RENAL TRANSPLANT OUTCOME

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Background: As short-term renal transplant survival continues to improve, with known risk factors having a diminishing effect, attention has been increasingly focused on alternative measures of outcome such as renal function. This study explores the relationship between renal function in the first year post-transplant and long-term kidney transplant survival.

Methods: Cadaveric heartbeating donor kidney only transplants in adult patients in the UK between 1983 and 1987 were analysed. Transplants failing in the first year were excluded. Analysis of transplant survival (death with function treated as a failure) considered 3 and 12-month serum creatinine, the change between 3 and 12-month serum creatinine (Δ creatinine) and a number of donor and recipient-related factors. Data on patient size, ethnicity, cold ischaemia time and sensitisation were not recorded. All other data were available for 2766 transplants with 97% 10-year follow-up including 17% regrafts, which were analysed separately.

Results: Analysis of first transplants showed a highly statistically significant association between ten-year transplant survival and 12-month creatinine, Δ creatinine and an interaction of the two ($p < 0.0001$). Unadjusted 10-year transplant survival estimates ranged from 62% (95% confidence interval (CI) 58-65%) for transplants with 12-month serum creatinine $< 120 \mu\text{mol/l}$ to 13% (95% CI 9-18%) for those with 12-month creatinine $\geq 265 \mu\text{mol/l}$. There was an adverse association between outcome and creatinine deterioration, which was greatest for those with poor function at 12-months. Other factors adjusted for were recipient age ($p < 0.0001$), blood group ($p < 0.001$) and HLA match ($p < 0.1$). Significant effects of donor age and donor-recipient gender match disappeared with the introduction of measures of post-transplant renal function. Analysis of regrafts and of graft (death-censored) survival both showed comparable results. The relevance of findings to more recent data was validated by analysis of 3-year outcome of a recent cohort.

Conclusion: For transplants functioning after the first post-operative year, 12-month serum creatinine and Δ creatinine were highly predictive of 10-year transplant survival. There was a 49% survival difference at 10-years post-transplant between the group with the poorest renal function at one year and the group with the best function.