

The Effect of Acute Rejection and Delayed Graft Function on Renal Transplant Fibrosis in Live Donor Renal Transplantation

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Abstract : The research hypothesis is that early post-transplant allograft fibrosis will be linked to donor factors and that acute rejection and/or delayed graft function in the recipient will be independent risk factors for the development of fibrosis. This research hypothesis is to explore whether acute rejection/delay graft function has an effect on the renal transplant fibrosis within the first year post live donor kidney transplant between 1998 and 2009. Methods: The study has been designed to identify five time points of the renal transplant biopsies [0 (pre-transplant), 1 month, 3 months, 6 months and 12 months] for 300 live donor renal transplant patients over 12 years period between March 1997 - August 2009. Paraffin fixed slides were collected from Leicester General Hospital and Leicester Royal Infirmary. These were routinely sectioned at a thickness of 4 Micro millimetres for standardization. Conclusions: Fibrosis at 1 month after the transplant was found significantly associated with baseline fibrosis ($p < 0.001$) and HTN in the transplant recipient ($p < 0.001$). Dialysis after the transplant showed a weak association with fibrosis at 1 month ($p = 0.07$). The negative coefficient for HTN (-0.05) suggests a reduction in fibrosis in the absence of HTN. Fibrosis at 1 month was significantly associated with fibrosis at baseline ($p = 0.01$ and 95%CI 0.11 to 0.67). Fibrosis at 3, 6 or 12 months was not found to be associated with fibrosis at baseline ($p = 0.70$, 0.65 and 0.50 respectively). The amount of fibrosis at 1 month is significantly associated with graft survival ($p = 0.01$ and 95%CI 0.02 to 0.14). Rejection and severity of rejection were not found to be associated with fibrosis at 1 month. The amount of fibrosis at 1 month was significantly associated with graft survival ($p = 0.02$) after adjusting for baseline fibrosis ($p = 0.01$). Both baseline fibrosis and graft survival were significant predictive factors. The amount of fibrosis at 1 month was not found to be significantly associated with rejection ($p = 0.64$) after adjusting for baseline fibrosis ($p = 0.01$). The amount of fibrosis at 1 month was not found to be significantly associated with rejection severity ($p = 0.29$) after adjusting for baseline fibrosis ($p = 0.04$). Fibrosis at baseline and HTN in the recipient were found to be predictive factors of fibrosis at 1 month. ($p = 0.02$, $p < 0.001$ respectively). Age of the donor, their relation to the patient, the pre-op Creatinine, artery, kidney weight and warm time were not found to be significantly associated with fibrosis at 1 month. In this complex model baseline fibrosis, HTN in the recipient and cold time were found to be predictive factors of fibrosis at 1 month ($p = 0.01$, < 0.001 and 0.03 respectively). Donor age was found to be a predictive factor of fibrosis at 6 months. The above analysis was repeated for 3, 6 and 12 months. No associations were detected between fibrosis and any of the explanatory variables with the exception of the donor age which was found to be a predictive factor of fibrosis at 6 months.

Keywords : fibrosis, transplant, renal, rejection

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