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Detection of IgG antibodies to donor specific HLA class I & II antigens in post renal transplant cases

Renal transplants are now a well establish mode of treatment offered to the patients of chronic kidney disease manifesting as chronic renal failure. With ever decreasing surgical complications, the management of post-transplant cases is becoming a challenging task. This has been reduced to such extent by the availability of HLA typing and effective immunosuppressive drugs. A well matched graft does not give rise much complications during post-transplant period. Many times a well-matched transplant is not available and unrelated or spousal or cadaveric kidney is offered for transplantation. A positive T-cell cross match is an absolute contraindication to renal transplantation. Early trials in kidney transplantation showed that the presence of donor-specific antibodies (DSA) before engraftment almost invariably produced the clinical syndrome of hyperacute rejection with allograft lost.^{1,2} Among these antibodies against HLA class I and class II are probably the most important. Several studies in past have evaluated the prevalence of HLA specific antibodies after renal transplant and their clinical relevance in terms of risk of acute or chronic rejection. It has been estimated that the overall incidence of acute humoral rejection (AHR) after transplantation is 2%–10%, that is approximately 20%–30% of all acute rejection episodes have a humoral component.^{3,4} We tested the recipient sera for donor specific antibodies at three months, six months and at 12 months interval.

A total 25 cases were studied and followed up. Twenty-three post renal transplant cases received kidney transplants at Army Hospital (R&R) Delhi, during 2007–08 and two received during 2005. These were followed up for one year. Anti-donor antibodies were screened at three, six and twelve months interval. Anti-donors antibody screening was done by ELISA technique using commercially available kit manufactured by GTI MICRO-AMS (class I and class II), Waukesha, USA. Donor antigens panel were prepared from donor lymphocyte by solubilizing the cells with a non-ionic detergent. The sensitivity and specificity of the kit is 100% at 95% confidence level when 101 samples were tested. All these patients had donor specific cross match negative.

Among 25 cases studied there were 17 males and 8 females recipients with mean age of 31 years (range 12–53 years). The mean age of donors was 44 years (range 22–71 years). 12 were male donors and 13 were female donors. Out of 25 donors 15 were live related, 9 spousal donors, and 1 cadaveric transplant. There were total seven rejection episodes and one of the recipients showed donor specific antibody production after 3 months. Further, thirteen patients received multiple blood transfusion and out of them ten received more than three units

of packed cells but none had developed other blood group antibodies. Though only small number of cases were studied, but result does correlate with the other studies done for post renal transplant follow up. Cardarelli et al using ELISA assay found that 11% had developed circulating anti-HLA antibodies in their serum after six months of transplantation, however, only 4.4% of patients had DSA.⁴ The development of DSA occurs well in advance. Detection of DSA and AHR is clinically important as this carries a poor prognosis and require different modality of treatment e.g. plasma pheresis. Monitoring of the DSA by ELISA is a useful tool for tailoring immunosuppression after kidney transplantation. New interventions for preventing acute antibody mediated rejection, such as anti-C5 antibody mediated complement blockade and proteasome inhibitor mediated plasma cell depletion, are promising therapeutic avenues currently under investigation.⁵

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