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Measurement of cellular sensitisation in renal transplant patients

Background: Rejection is a major cause of renal transplant failure. T Lymphocytes are believed to be critical to the rejection process and the proportion of T lymphocytes that can recognise alloantigen is high. Patients can be sensitised to alloantigen by pregnancy, blood transfusion and transplantation. Humoral sensitisation is looked for by screening for anti-HLA antibodies and by crossmatch techniques. In most settings, B lymphocytes are dependent on T helper cells for antibody production. Cellular sensitisation is not regularly looked for in patients waiting for a renal transplant. T lymphocyte precursor frequencies to donor antigens can be measured by limiting dilution assays (LDA) and cellular sensitisation estimated.

Questions we want to address are: (1) helper (HTLp) and cytotoxic T lymphocyte precursor (CTLp) frequencies in patients with panel reactive antibodies (PRA) waiting for a renal transplant and (2) HTLp and CTLp frequencies in renal transplant patients with and without rejection, related to PRA and crossmatches. At our centre, we have a high proportion of living donor transplantations and donor cells are available for these studies. Studies on the relationship between cellular and humoral sensitisation can help to understand why some organs are rejected, and others not. The continuing discussion on the policy of crossmatches can be brought a step further.

At the Institute of Transplantation Immunology in Oslo, there is a high level of experience on T lymphocyte research. Limiting dilution assays for cytotoxic and helper T lymphocytes have not been in use. I was fortunate to spend 2 weeks at the Hammersmith Hospital in February 1993 to work in the laboratory and learn the practical aspects of these methods.