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DR Expression on Vascular Endothelial Cells in Normal Human Kidney

(with 1 color plate)

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Dear Sir,

Human HLA-DR antigens are expressed on cytoplasmic membrane of cells associated with immunological activity [1]. Moreover, the HLA-DR expression can be induced on other cells which are normally negative for HLA-DR molecules. Thus, the thyroid follicular cells bear these antigens when cultured with mitogens [2]. The umbilical vein endothelial cells express HLA-DR when cultured with phytohemagglutinin [3] or co-cultured with activated T cells [4]. *Häyry* et al. [5] observed HLA-DR antigens on the dispersed kidney vascular endothelial cells. In addition, morphological studies on tissue sections suggest that renal vascular endothelium appears to express HLA-DR antigens [6–8]. We have observed, using immunofluorescence (IF) microscopy and a nucleic acid counterstain with ethidium bromide (EB), that in the normal human kidney these antigens are localized on the vascular endothelium around cellular structures.

We have used a mouse monoclonal antibody directed against a monomorphic determinant of HLA-DR (Edu-1) described elsewhere [9, 10]. Normal renal tissue from 2 biopsy and 9 necropsy specimens was tested for HLA-DR antigens by indirect IF technique. A nucleic acid stain with EB was used for cellular localization. Tonsil sections were used as positive control. Monoclonal antibody to non-HLA-DR antigens (Cris-1) [9, 11] and ascitic fluid, obtained intraperitoneally of Balb/c NSA myeloma line were used as negative controls. A constant pattern of HLA-DR antigens was observed in all the specimens. Heavy IF staining was identified in the renal interstitium and in the glomerular capillary walls. Moreover, bright staining was observed in the mesangium. EB counterstaining showed HLA-DR antigens around endothelial cells in glomerular capillaries (fig. 1a) and probably vascular endothelial cells in intertubular capillaries (fig. 1b).

The considerable amount of HLA-DR antigens observed in capillaries of human normal kidney suggest at least two biological implications. First, the vulnerability of the microcirculation of transplanted kidney to circulating antibodies with specificity for HLA-DR antigens

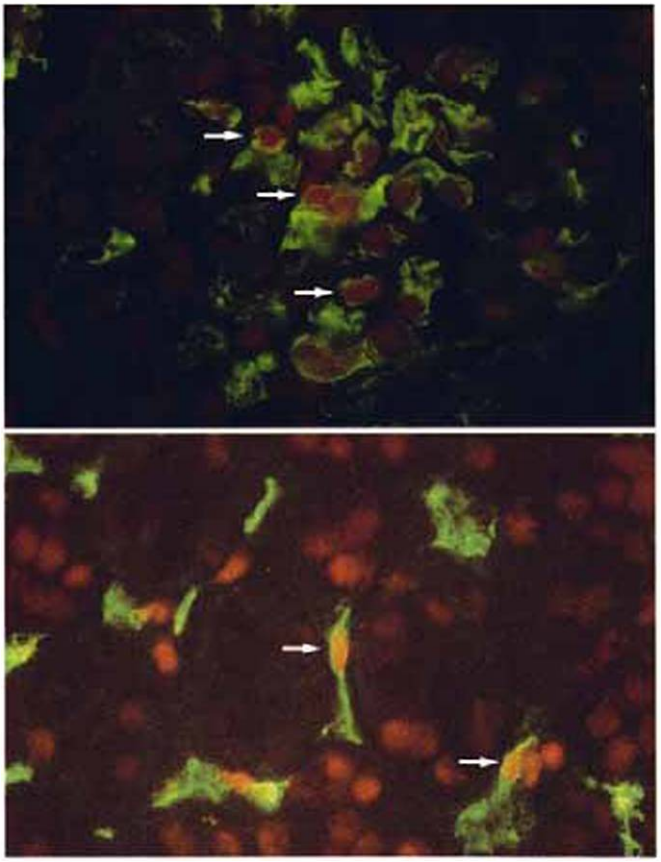

Fig. 1. IF and EB performed on normal human tissue using a monoclonal antibody to HLA-DR antigens. × 500. **a)** Normal glomerulus showing HLA-DR antigens on capillary walls around endothelial cells (arrows). **b)** HLA-DR antigens on intertubular capillaries. Occasionally, these antigens are around probably vascular endothelial cells (arrows).

in the acute or hyperacute allograft rejection [12] could explain the importance of DR compatibility in the graft survival. Second, the endothelium of renal capillaries may play an important role in the induction of immune response. It has been shown in vitro that HLA-DR antigens bearing endothelial cells are potent stimulators in mixed lymphocyte culture [13] and they can act as antigen-presenting cells [14]. Both possibilities suggest that the renal endothelial cells might play a fundamental role in transplant rejection as well as participate in local immunological reactions.

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