Detection of Human Cytomegalovirus-DNA in IgA Nephropathy

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Dear Sir,

Although IgA nephropathy is a very common type of glomerulonephritis, its pathomechanisms are still an unresolved issue. Since the first description of mesangial staining of polyclonal antihuman cytomegalovirus (anti-HCMV) antibodies by Gregory et al. [1] several conflicting reports [2–5] about the presence of HCMV in kidneys and its role in the pathogenesis of this nephropathy were published. Serological analysis of humoral immune responses as well as staining of renal tissues with anti-HCMV monoclonal antibodies and also the use of in situ hybridization technique by Okamura et al. [4] were not able to solve this problem. For a further evaluation of the HCMV-DNA association with IgA nephropathy the polymerase chain reaction (PCR) and slot-blot hybridization assay were used to detect HCMV-DNA in renal biopsies of 10 patients with histologically proven IgA nephropathy in comparison to 9 normal controls and 7 patients with focal segmental glomerulosclerosis (FSGS).

Cryostat sections of all biopsies were used for DNA extraction after proteinase K digestion. PCR amplification of a 147-bp DNA fragment of the immediate early gene of HCMV was performed in 32 cycles as described elsewhere [6]. 10-µl aliquots of the PCR product were fixed on nylon membranes using the slot-blot technique and cytomegalovirus-DNA was detected by hybridization with digoxigenin-labelled probes. In this assay the sensitivity for detecting HCMV-DNA is down to 0.1 fg.

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Table 1. Detection of HCMV in renal tissue using (PCR) technique

Diagnosis	Number of biopsies	
analyzed	positive	
IgA nephropathy	10	10
FSGS	7	0
Normal kidneys	9	3

Experiments included DNA of adeno- and herpesvirus from infected cultured cells as negative and titrated concentrations of a well-defined cloned HCMV-DNA fragment of the immediate early region as positive controls. Careful pipeting precautions were taken to avoid any contaminations.

The results are summarized in table 1. In all renal biopsies from patients with IgA nephropathy HCMV-DNA was detected in a range from 0.1 up to 1.0 fg. In the control group of 9 normal kidneys which were offered for kidney transplantation also 3 biopsies were positive for HCMV-DNA, indicating that these kidneys were also HCMV-infected. However, in none of the biopsies from patients with FSGS tested so far was HCMV-DNA detectable. Although the number of analyzed biopsies is still small, these data clearly show for the first time that HCMV-DNA is present in renal tissue in primary IgA nephropathy. Furthermore, the results reveal that also cadaveric kidneys offered for transplantation may be infected with HCMV. Extended analyses on a greater number of renal biopsies are currently being performed to further evaluate these results.

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