Letter to the Editor

Nephron 1994;67:252

Immunohistochemical Detection of Hantaan Virus Antigen in Renal Tissue from Patient with Hemorrhagic Fever with Renal Syndrome

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Dear Sir,

Hemorrhagic fever with renal syndrome (HFRS) is an acute infectious illness characterized by fever, hemorrhage, and renal failure. The disease has increased in prevalence in recent years and now also occurs in many parts of the world where HFRS was not known to exist previously. At least three different types of viruses of the genus Hantavi-rus of the Bunyaviridae family are considered as etiologic agents of HFRS: Hantaan, Seoul, and Puumala [1].

The pathogenesis of this disease is still unclear. To date, there have been only a few reports of direct visualization of the hanta-viruses in the organs of HFRS patients [2,3]. A likely explanation for this lies in the fact that it is difficult to find an acute phase HFRS cadaver, especially in Europe. To assess the direct involvement of the virus in the pathogenesis of renal failure in HFRS, we attempted to demonstrate virus antigen in renal autopsy tissue obtained from a 35-year-old serologically confirmed HFRS patient who died on the 5th day after onset of the disease [4].

Formalin-fixed paraffin-embedded renal tissue specimens were stained with the avidin-biotin horseradish peroxidase method with ten monoclonal antibodies (McAb) against Hantaan virus (strain 76-118): HC02, JD04, 8E10, 20D3, 16E6, EB06, 11E10, 3D7, 6D4, 3G5; three McAb against Puumala virus (strain Hallnes): 3H9, 4E5, 3G5; and two McAb against Seoul virus (strain B-1): D95-8 and A74-4. A positive granular cytoplasmic immunohistochemical reaction was observed in epithelial cells of the distal nephron limited nearly exclusively to collecting ducts and was particularly intensive in papillary ductules of the inner medulla. This type of staining was
obtained only by Hantaan-specific McAb. On the other hand, with McAb against Puumala and Seoul viruses we were unable to detect any specific signals.

In addition, control studies which were performed using all fifteen McAb on five normal autopsy kidney samples, five needle kidney biopsies of patients with acute tubular necrosis and five ischemic infarcts associated with vascular rejection in cadaveric kidney allografts also gave completely negative results.

The demonstration of Hantaan virus antigen in association with severe destructive pathological changes in the kidney of our HFRS patient indicated that the kidney is indeed a direct target organ for Hantaan virus. Further studies of acute HFRS patients will be

necessary to explain and precisely define the role of hantaviruses in the pathogenesis of HFRS.

References

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