

Surveying Distribution of Different Types of Hantavirus in Hungary: A Preliminary Assessment

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Haemorrhagic fever with renal syndrome has long been known in the Old World, particularly in Europe and Asia. The characterization of the disease was carried out in the former Soviet Union in the early 1930's. Following World War II, the occurrence of the disease continued to be explored in the European part of the Soviet Union. The same disease group was recognized in Hungary in 1953. Since then, the presence in Hungary of many different strains of Hantavirus has been confirmed by clinical virological methods. While isolation of the virus in Hungary has been successful, the particular strain to which the Hungarian Hantavirus belongs has yet to be determined. Parallel studies in other European countries suggest that health officials have to consider the presence of four or five different types of hantaviruses; in nearby and adjacent geographic areas, the following viruses have been described: Hantaan, Puumala, Dobrava and Tula; the presence of Seoul virus also is suspected. The aim of this study was to isolate the Hungarian Hantavirus, determine its identity, and identify the host species in Hungary. Rodent trapping was carried out in several locations in Hungary. The locations were chosen on the basis of epidemiological data of human HFRS cases. Rodents were successfully caught, and representative tissue samples were collected from possible host species of Hantavirus, namely *Clethrionomys glareolus*, *Microtus arvalis*, *Apodemus sylvaticus*, *A. flavicollis*, and *A. agrarius*. Among the samples taken from these animals, antibodies to more than one Hantavirus were identified with Hantadia (Hantaan), ELISA (Puumala and Hantaan), and immunofluorescent tests specific to Puumala and Hantaan viruses. The smears of spleens prepared from several *Clethrionomys glareolus* and *Apodemus flavicollis* individuals also were found to be positive using indirect immunofluorescent assay to human Hantaan-specific antisera. Our results confirm the hypothesis that human HFRS cases in Hungary are due to Hantaviruses derived from distinct rodent reservoirs, and so are presumably from different Hantaviruses. Our continuing studies focus on sequencing the viruses to clarify their relationship with other known European virus strains.