

Hantavirus Infections

Susceptible species

Hantavirus infections can cause severe disease in humans. In addition, infections have been described in non-human primates, domestic and farm animals, and pets. At present, little is known about possible clinical pictures of disease in dead-end hosts. Various rodent, insectivore and bat species act as reservoirs.

Distribution area

Hantaviruses are distributed worldwide. They are named for the Korean border river Hantangang, where the prototype virus, the Hantaan virus, was found. In Germany, hantaviruses have been known since the mid-1980s. Most human infections occur in predominantly rural areas of Baden-Wuerttemberg, Bavaria, North Rhine-Westphalia, Hesse, Lower Saxony, and Western Thuringia. In addition, there are individual urban areas where hantavirus infections have been reported. The incidence of hantavirus diseases varies annually and probably depends on the density and infestation of the local rodent reservoir population. More information:

[Web-based query on data reported \(SurvStat Robert Koch Institute\)](#).

Causative agent

The causative agents are enveloped, single-stranded RNA viruses. In Germany, there are at least three different human pathogenic hantaviruses. The Puumala

orthohantavirus (PUUV) causes the majority of human hantavirus diseases in Germany. In the northern and eastern part of Germany, the distribution area of the striped field mouse, human infections with the Dobrava-Belgrade orthohantavirus (DOBV), genotype Kurkino, are also observed. Little is known about the Tula orthohantavirus (TULV). In Germany, three further hantavirus species have been described in shrews and mole, whose pathogenicity for humans or other animals has not been assessed yet. Hantaviruses have also been identified in individual bat species in Africa, Asia, and Europe.

Transmission

The above-mentioned hantaviruses are transmitted by persistently infected rodent reservoirs. Each orthohantavirus species is associated with a specific reservoir host, PUUV with the bank vole, DOBV with the striped field mouse, and TULV with the common vole. More rarely, infections have been described in field and water voles (TULV) and yellow-necked mice (DOBV), which however in all likelihood are not transmitted to humans. The viruses remain stable in the environment for several weeks. Humans become infected indirectly through the air when dust contaminated with rodent excreta is whirled up and inhaled. In rare cases, the virus may also be transmitted by bites from infected rodents. On the other hand, there is no evidence so far of human-

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to-human transmission of the hantaviruses occurring in Germany, or of transmission by pets or vectors such as ticks or mosquitoes.

Clinical picture

Currently, only little is known about hantavirus infections in farm and zoo animals. In most cases, only the detection of hantavirus-reactive antibodies has been reported. Symptoms in humans are often very mild or non-specific. Usually, the course of infection is flu-like, with high fever and headache, abdominal and back pain. In a subsequent stage of the disease, renal dysfunction or acute renal failure may occur. So far, only very few fatal cases of infection have been documented with the hantaviruses occurring in Central Europe.

Diagnostics

Molecular detection of hantavirus infection is done by various RT-PCR procedures using rodent lung tissue. The serological diagnosis is based on the detection of hantavirus-specific antibodies in the rodent blood by ELISA.

Similar clinical pictures

Flu-like diseases may be taken into account.

Control

Human hantavirus disease is notifiable. To reduce the risk of infection, contact with rodents and their excreta should be avoided completely or a dust mask should be worn. In addition, the intrusion of rodents into living quarters and their immediate vicinity should be prevented. Adequate preventive measures should be implemented in particular in known endemic areas. Further information on preventive measures: [Information sheet](#).