FRIEDRICH-LOEFFLER-INSTITUT
FLI
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Federal Research Institute for Animal Health

FAQ

Hantavirus diseases

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What are hantavirus diseases?

'Hantavirus diseases' include two clinical pictures: 'Hemorrhagic Fever with Renal Syndrome' (HFRS) occurs in Europe and Asia, while in the Americas both HFRS and Hantaviral Cardiopulmonary Syndrome have been described. The occurrence of both syndromes is associated with the presence of specific rodent species.

What is the clinical picture of these diseases?

The virus infection often causes no or only very mild symptoms. The severity of HFRS depends, among others, on the type of hantavirus. The hantavirus species occurring in this country cause flu-like infections with high fever over three to four days as well as headache, abdominal and back pain. In a subsequent phase of the disease, a drop in blood pressure and finally kidney dysfunction up to acute kidney failure may occur. Very rarely, the disease may affect the lungs or cause clearly visible external bleeding.

Which animals can transmit hantaviruses?

Hantaviruses are transmitted to humans by specific rodents. They are the natural hosts of hantaviruses. In Germany, these are primarily bank voles and striped field mice. Recently, however, human infections caused by hantaviruses occurring in Norway rats and common voles also have been found. Hantaviruses also have been detected in shrews, moles, and bats; their human pathogenicity is as yet unclear. To date, there is no evidence of hantaviruses in house mice and guinea pigs.

How are the diseases transmitted?

Once the respective hosts have become infected, they excrete the virus via saliva, urine and feces. Humans can then become infected through contact with excretions of infected rodents, e.g. when contaminated dust is stirred up and the pathogens are inhaled. Infection through bites from infected rodents is also possible.

Human-to-human transmission and infection via pets or vectors such as mosquitoes and ticks are unlikely. Human-to-human transmission only has been reported for Andes virus, which is highly virulent in South America. Images and descriptions of bank voles and other rodents are available under the following link: https://kleinsaeuger.at/willkommen.html

Where and when do hantavirus diseases occur in Germany?

In Germany, over 90 % of cases of human hantavirus diseases are caused by Puumala virus (PUUV) occurring in bank voles. These infections mainly occur in certain regions of Northwestern, Western and Southern Germany. In addition to these mostly rural regions, there are individual urban regions where increased numbers of human infections occur. In Northeastern and Eastern Germany, the distribution area of the striped field mouse, human infections with Dobrava-Belgrade virus (DOBV) have also been reported. Last year, a case of hantavirus infection (Seoulvirus) caused by a pet rat has first been described. Other hantaviruses occurring in Germany are Tulavirus (TULV) associated with common voles, Seewis and Asikkala virus associated with shrews, and Bruges virus associated with moles. Recently, the first molecular detection of TULV infection in a patient has been successful, following previous detections of TULV-reactive antibodies in various human serum samples.

Hantavirus infections can occur year-round. However, for PUUV the risk of infection is particularly high from April to September. After an infection, hantavirus-reactive antibodies persist for a long time and protect from re-infection with the same and closely related hanta-

viruses. The Robert Koch Institute provides the current number of reported hantavirus cases at SurvStat: https://www.rki.de/DE/Content/Infekt/SurvStat/survstat_node.html

How long are viruses stable in the environment?

According to current knowledge, hantaviruses can remain infectious outside the rodent host in the environment, in feces and urine for several weeks to months.

How can the viruses be inactivated?

In most cases, the pathogens can be inactivated very well with household cleaners. The following leaflet on the FLI website provides information on how to avoid infection with hantaviruses in your own home and the surrounding area: https://www.openagrar.de/servlets/MCRFileNodeServlet/openagrar_derivate_00020232/Hantavirus-Informationsblatt_2019.pdf

How can you protect yourself from hantavirus diseases?

The risk of hantavirus infection can be reduced by avoiding contact with the relevant rodents and their excreta. Other precautions include, most importantly, preventing the hosts from entering your home. Measures should be implemented primarily in known outbreak areas and among risk groups (forestry workers, pest controllers, and others). Detailed advice on the prevention of human hantavirus infections and on particular risk groups is also provided in the fact sheet on the FLI website: https://www.openagrar.de/servlets/MCRFileNodeServlet/openagrar_derivate_00020232/Hantavirus-Informationsblatt_2019.pdf

How is the hantavirus situation monitored?

For surveillance of the hantavirus situation, monitoring of rodent reservoir hosts is conducted as part of the Network “Rodent-Borne Pathogens”. This monitoring focuses specifically on wild rodents from hantavirus outbreak areas.

How are hantaviruses diagnosed?

For the diagnosis of hantaviruses, blood and tissue samples are required. Hantavirus detection is performed using a molecular method that detects the genetic information of the virus. At the same time, this makes it possible to identify infection chains. Contact data of the National Reference Laboratory for Hantaviruses can be found on the FLI website: https://www.fli.de/en/institutes/institute-of-novel-and-emerging-infectious-diseases-innt/reference-laboratories/nrl-for-hantaviruses/

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