

Hendra Virus

Susceptible species

Hendra Virus (HeV) can cause infection, often severe, in humans and horses. In rare cases, infection has also been detected in dogs. Experimental infection of cats, dogs, guinea pigs and hamsters has been successful.

Distribution area

In 1994, first cases of a severe febrile respiratory disease in horses occurred near Brisbane, Australia, in some cases in combination with central nervous disorders. Since then, more cases of infection in horses have been observed; so far, more than 90 cases have been recorded. The majority of these infections have been isolated outbreaks and have so far been limited to the states of New South Wales and Queensland. A total of seven humans have been infected through direct contact with infected animals or their excreta/organs, four of these infections were fatal. Flying foxes of the genus *Pteropus* have been identified as the virus reservoir. It is assumed that the virus is transmitted from flying foxes through excreta containing infected fruit that are licked or ingested by horses. Due to the low number of HeV infections in humans, direct transmission from horses to humans is assumed to be very inefficient.

Causative agent

Hendra Virus belongs to the genus *Henipavirus* of the family *Paramyxoviridae* and is closely related with Nipah Virus. Based on the regulation on biological substances HeV is classified into risk group 4.

Transmission

Transmission to humans occurs through direct or indirect contact with nasal excretions, blood, saliva or urine of infected horses. So far, there is no indication for direct transmission of HeV from flying foxes to humans or between humans. The incubation period is between 5 and 21 days.

Clinical picture

Infected horses develop fever, anorexia, agitation, nasal discharge, respiratory distress and/or possibly symptoms of colic, sometimes with an acute or peracute course. Later on, central nervous disorders such as ataxia may occur.

In infected humans, initially non-specific influenza-like symptoms such as fever and headache and/or respiratory symptoms occur, which within a few days may develop into fatal pneumonia or encephalitis. Encephalitis can also develop months or years after an initially survived HeV infection. Although HeV infections are very rare, the mortality rate is high at 57 %.

Diagnostics

Virus detection is performed by RT-PCR and virus isolation from blood or other clinical material during the acute stage of disease. In the acute stage or during convalescence, combined specific antibody detection from serum or cerebrospinal fluid (CSF) and RT-PCR detection from serum, CSF or pharyngeal swabs is

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possible. Test materials are highly contagious. In general, laboratory diagnostics of animal samples should be done at the FLI (National Reference Laboratory for Henipaviruses of Animals) and of human samples at the Bernhard Nocht Institute for Tropical Medicine (National Reference Laboratory).

Similar clinical pictures

Similar symptoms may occur in viral infections associated with pneumonia and/or encephalitis.

Control

Currently, there is no licensed vaccine or therapy to protect potentially exposed or infected humans. To prevent HeV infection in horses, a subunit vaccine enabling DIVA (Differentiating Infected from Vaccinated Animals) diagnostics was licensed in Australia in 2012. A human monoclonal antibody m102.4 directed against Hendra Virus G can be used as post exposure prophylaxis. Furthermore, ribavirin has been shown to be efficient in vitro, its clinical efficacy however is unclear.