



Development of structural dynamics diseases caused by hendra virus among veterinary horse

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DESCRIPTION

Hendra virus is a virus that primarily infects fruit bats (flying foxes) and can be transmitted to horses. The infection is occasionally transmitted to people who have had close contact with infected horses. Hendra virus is a zoonotic disease and can be transmitted from animals to humans. Although the Hendra virus can cause disease in horses, it rarely causes disease in humans. The exact mode of transmission is unknown, but contact and droplet transmission to horses is suspected. This can be done by ingesting material contaminated with the body fluids and excreta of infected flying foxes. Hendra virus can be spread from horse to horse through direct contact with infectious body fluids or indirect contact through equipment contaminated with infectious body fluids. Hendra virus was first reported in 1994 after an outbreak of acute respiratory illness in a Thoroughbred training stable in Australia that killed a horse. Hendra virus has been classified as a Biosafety Level 4 pathogen (defined as having a high risk of life-threatening human illness) and safe work practices and the use of personal protective equipment are critical to human health. The previous names equine morbillivirus and acute equine respiratory syndrome are no longer appropriate.

A retrospective study identified a subspecies of the Hendra virus. The samples used in this study were from horses euthanized in Queensland in 2015. Evidence of this virus variant, called HeV-g2, has been found in Grayheads, the fruit bats in Victoria and South Australia. These results indicate that all areas of Australia where fruit bats and horses coexist are at risk of Hendra virus infection. Hendra virus can cause a variety of symptoms in horses. Hendra virus infection should be considered if the cause of the disease is unknown, especially if symptoms progress and worsen rapidly. In animals, evidence of spontaneous clinical disease at this stage is limited to horses. Hendra virus can cause a variety of symptoms in horses. There is usually the rapid onset of illness, fever, increased heart rate, and rapid deterioration

with respiratory and/or neurological (nervous system) signs. Spontaneous disease caused by the Hendra virus has been reported only in horses, dogs, and humans (Chadha et al., 2006)

Experimentally, the disease was induced in cats, hamsters, ferrets, monkeys, pigs, and guinea pigs, but not in mice, rats, rabbits, and hens. Horses are the only known species reported to be naturally infected with pterygoid bats.

Occurrences of this disease in humans have only been associated with infection of intermediate species such as horses. Early detection of disease in intermediate host animals is perhaps the most important means to limit future human cases (Chua, 2003). Hendra virus infection can be prevented by avoiding sick horses or horses that may be infected with the HeV and by using appropriate personal protective equipment when contact is necessary, such as for veterinary procedures. Hendra virus infection should be considered in cases of acute fever and rapid death, but nonfatal results should not preclude consideration of the Hendra virus (Field et al., 2000).

The Rockhampton data show that the overall pattern of Hendra virus survival declines over the four-day simulation period, with the fastest rate of decline in summer and the slowest in winter. Although Hendra's disease has not yet been identified in Victoria, precautions should always be taken in areas where flying foxes live near horses. There are effective vaccines available from veterinarians that protect horses against the Hendra virus (Hyatt et al., 2001). The vaccine has been shown to be effective against known variants of the Hendra virus, including the recently discovered HeV-g2. Vaccination has been shown to protect horses from Hendra infection and reduce the shedding of the virus in clinical cases. This reduces the risk to other nearby animals and handlers (McFarlane et al., 2011). There is currently no cure or specific treatment for Hendra virus

infection. Treatment is aimed at relieving symptoms and reducing the risk of complications while the person or animal recovers.

Laboratory tests used to diagnose Hendra Virus (HV) and Nipah Virus (NV) include detection of antibodies by ELISA (IgG and IgM), real-time polymerase chain reaction (RT-PCR), and virus isolation assays (Plowright et al., 2008). In most countries, handling of the Hendra virus must be done in highly contained laboratories. Laboratory diagnosis in patients with a history of HV or NV includes detection of antibodies in serum or Cerebrospinal Fluid (CSF), viral RNA detection (RT-PCR), virus isolation from serum, CSF or throat swabs, and Virus isolation from CSF or throat swabs (Reynes et al., 2005). Infection with the Hendra virus causes severe damage to its human or equine host. Viral replication and release from endothelial cells and neurons can contribute to injury and symptoms.

CONCLUSION

From the age of 4 months, a healthy horse can be vaccinated with two doses at intervals of 21 days, followed by a booster every 12 months. There is no specific treatment for Hendra virus infection, and patients receive supportive care in a hospital or intensive care unit. Antiviral drugs have not been proven effective in treating Hendra virus infection.

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