

Editorial

Nipah virus- Reemergence in Bangladesh

Importance

Nipah virus infection is an emerging disease endemic in Southeast Asia. The virus is named after the Malaysian village where it was first discovered in 1999¹. This virus along with Hendra virus comprises a new genus designated Henipavirus in the subfamily Paramyxovirinae.² This virus is carried in fruit bats of the genus Pteropus, a host to which it seems well adapted. It emerges periodically to affect humans, pigs and occasionally other domesticated animals. Nipah virus infections were first described during widespread outbreaks that occurred in Malaysia in 1998-1999.

Since 2001, human outbreaks and clusters of cases have been reported periodically in Bangladesh and a neighboring region of northern India. In some of these outbreaks, Nipah virus seems to have been transmitted directly from bats to humans, with person-to-person transmission the most significant means of spread. Why Nipah virus periodically emerges into humans and domesticated animals is not known; however, fruit bat populations in Southeast Asia are being disrupted by various factors that may alter their foraging patterns and behavior, and bring them into closer contact with domesticated animals and humans⁽³⁾.

Reservoir of virus

Fruit bats of the genus Pteropus have been identified as natural reservoirs of NiV. A seroepidemiologic study in Malaysia implicated four fruit bat species, Pteropus hypomelanus, P. vampyrus, Cynopterus brachyotis, Eonycteris spelaea, and an insectivorous bat, Scotophilus kuhlii.⁴ Nipah virus has been isolated from the brain and spinal fluid of victims in Malaysia.⁵ Infective virus has also been isolated from environmental samples of bat urine and partially-eaten fruit in Malaysia.⁶ Antibodies to henipaviruses have also been found in fruit bats in Madagascar (Pteropus rufus, Eidolon

dupreanum)⁷ and Ghana (Eidolon helvum)⁸, indicating a wide geographic distribution of the viruses. No infection of humans or other species has been observed in Cambodia, Thailand or Africa.

The mode of transmission

Infected bats shed virus in their excretion and secretion such as saliva, urine, semen and excreta but they are symptomless carriers. The NiV is highly contagious among pigs, spread by coughing. Direct contact with infected pigs was identified as the predominant mode of transmission in humans when it was first recognized in a large outbreak in Malaysia in 1999.⁹

There were focal outbreaks of NiV in Bangladesh and India in 2001 during winter. Drinking of fresh date palm sap, possibly contaminated by fruit bats (P. giganteus) during the winter season, may have been responsible for indirect transmission of Nipah virus to humans.¹⁰

During the Bangladesh outbreak the virus is suggested to have been transmitted either directly or indirectly from infected bats to humans. Strong evidence indicative of human-to-human transmission of NiV was found in Bangladesh in 2004.¹¹

Clinical presentation

Nipah virus is a recently described zoonotic paramyxovirus that causes a highly fatal encephalitis in humans. Symptoms of NiV infection in humans are similar to that of influenza such as fever and muscle pain. In some cases, inflammation of the brain occurs leading to disorientation or coma. Encephalitis may present as acute or late onset. The latter may be difficult to diagnose since exposure may have taken place several months earlier. Further, those who may have recovered from an acute episode may also have a relapse. Nevertheless, magnetic resonance

of the brain is helpful in differentiating. Sequelae such as convulsion and personality may be persists. The case fatality rate ranges from 9 to 75%. Incubation period: 4 to 18 days.

Laboratory diagnosis

Most countries in the South-East Asia Region do not have adequate facilities for diagnosing the virus or on ways of controlling it. Bangladesh, India and Thailand have developed laboratory capacity for diagnostic and research purposes.

Procedures for the laboratory diagnosis of NiV include serology, histopathology, PCR and virus isolation. Serum Neutralization Test, ELISA, RT-PCR are used for laboratory confirmation.

Prevention and control

There is no effective treatment for Nipah virus disease, but ribavirin may alleviate the symptoms of nausea, vomiting, and convulsions.¹² Treatment is mostly focused on managing fever and the neurological symptoms. Severely ill individuals need to be hospitalized and may require the use of a ventilator.

Human-to-human transmission of NiV has been reported in recent outbreaks demonstrating a risk of transmission of the virus from infected patients to healthcare workers through contact with infected secretions, excretions, blood or tissues. Healthcare workers caring for patients with suspected or confirmed NiV should implement Standard Precautions when caring for patients and handling specimens from them.

A vaccine is being developed. A recombinant sub-unit vaccine formulation protects against lethal Nipah virus challenge in cats. ALVAC Canarypox vectored Nipah F and G vaccine appears to be a promising vaccine for swine and has potential as a vaccine for humans.¹³

Disinfection Like other paramyxoviruses, Nipah virus is readily inactivated by soaps, detergents and many disinfectants. Routine cleaning and disinfection with sodium hypochlorite or commercially available disinfectants is expected to be effective. Sodium hypochlorite was recommended for the disinfection of pig farms in Malaysia.

Prevention Preventing infections in pigs can decrease the risk of infection for humans. In endemic areas, pigs and fruit bats should be avoided whenever possible. Unpasteurized juices should be not be drunk, and fruit should be washed thoroughly, peeled or cooked. Good personal hygiene, including hand washing, also reduces the risk of infection.

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