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Nipah Virus Encephalitis: A Newly Emerging Disease

The cause of death of three people, who were suffering from acute viral encephalitis, in Kozhikode has been confirmed to be due to the Nipah virus by the National Virology Institute in Pune.

Nipah and Hendra viruses are two related zoonotic pathogens that have emerged in the Asia-Pacific region. Both are RNA viruses that belong to the *Paramyxoviridae* family. The viruses jump the species barrier and infect a secondary animal host (e.g., pigs or horses), and transmit infections to humans.

Here are some key facts about Nipah virus infection.

- Nipah virus infection is a newly emerging zoonosis, which causes severe disease in both humans and animals. The associated mortality is high.
- The natural hosts for the Nipah virus are the fruit bats of the *Pteropus* genus, which are symptomless carriers. Mainly four species have been demonstrated to have serologic evidence of infection with this virus. The virus is shed in the saliva, urine, semen and excreta of the infected bats.
- Nipah virus spreads to humans through direct contact with infected bats, infected pigs or other people who are infected with the virus. People have been also cautioned to avoid eating fruits that have fallen to the ground.
- Nipah virus was first identified in 1998 as the cause of an outbreak of viral encephalitis among pig farmers in Malaysia, where pigs were the intermediate hosts. The virus derives its name from Sungai Nipah, a village in the Malaysian Peninsula where the pig farmers became ill with encephalitis. Since then, several outbreaks of acute Nipah encephalitis have been reported from Bangladesh, West Bengal (Siliguri), India with reports of person-to-person transmission in hospital settings and in the Southern Philippines. Raw date palm sap that had been contaminated by infected fruit bats was identified as the source of infection in an outbreak that occurred in Bangladesh in 2004.
- The incubation period is 5-14 days.
- Clinically, the main presentation of Nipah virus infection is as an encephalitic syndrome characterized by onset of nonspecific symptoms - sudden onset of fever, headache, myalgia, nausea and vomiting followed by drowsiness, disorientation and mental confusion. The infected person can become comatose within 24-48 hours.
- The case fatality rate of Nipah encephalitis ranges from 9% to 75%.
- Meningismus is seen in approximately one-third of patients although marked nuchal rigidity and photophobia are uncommon.
- Patients infected with Hendra virus have presented with fever and influenza like illnesses, or with meningoencephalitis.
- Nipah virus infection can be diagnosed by enzyme-linked immunosorbent assay (ELISA) test.

- On magnetic resonance imaging (MRI), typically multiple, small (<5 mm), asymmetric focal lesions in the subcortical and deep white matter without surrounding edema are seen.
- There is no effective treatment for Nipah virus infection. The mainstay of treatment is supportive care focusing on managing fever and the neurological symptoms. Infection control practices and barrier nursing are important as person-to-person transmission may occur. Severely ill patients need intensive care.
- Ribavirin, a nucleoside analog, can be given empirically as it has a broad-spectrum of antiviral activity against both RNA and DNA viruses. In the Malaysian outbreak, 140 treated patients were compared to 54 control patients who did not receive ribavirin. Fewer treated patients died (32% vs. 54%). However, treated patients were identified later in the outbreak, so it is possible that they were given better general medical care compared to untreated patients seen earlier. Subsequent animal models found that ribavirin, as well as chloroquine, were ineffective.
- Antithrombotic agents, aspirin and pentoxyfylline, were administered in some patients based upon the recognition that arterial thrombosis may play an important role in the central nervous system (CNS) disease.
- Nipah virus is classified internationally as a biosecurity level (BSL) 4 agent. Biosafety Level 4 is required for work with dangerous and exotic agents that pose a high individual risk of aerosol-transmitted laboratory infections and life-threatening disease that is frequently fatal, for which there are no vaccines or treatments, or a related agent with unknown risk of transmission (*CDC*).

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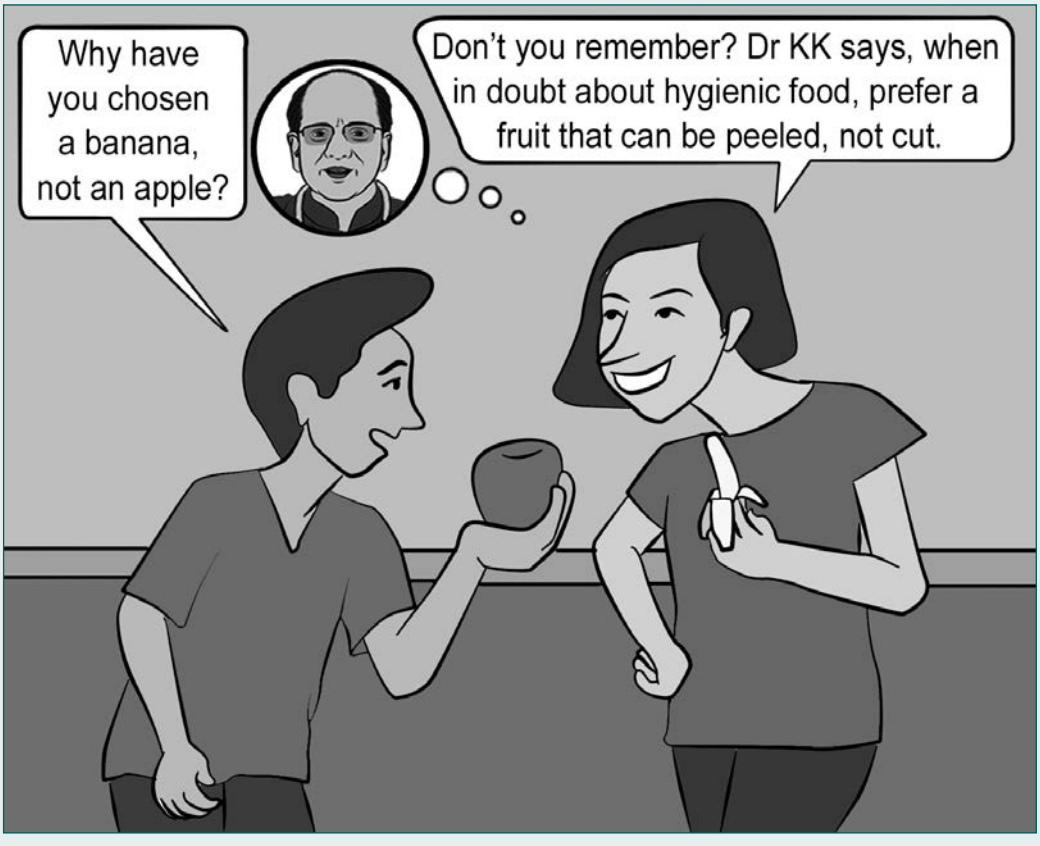
CHAT WITH DR KK

Heat it, Boil it, Cook it, Peel it or Forget it



IJCP SUTRA 2: Eat mindfully. Emphasize colorful, vitamin-packed vegetables and fruits; whole grains; fish, lean poultry, tofu and beans and other legumes as protein sources plus healthy fats.