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Letter To Editor

Nipah Virus: A Call for Enhanced Public Health Readiness

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Abstract

We are writing this letter to highlight the outbreak of the RNA virus; member of the Paramyxoviridae family called Nipah virus (NiV). It is a member of the genus Henipavirus, which also includes Hendra virus (HeV). The WHO's priority list of diseases that are likely to cause epidemics, requiring immediate research and development action includes NiV. Since its initial appearance in Malaysia in 1998, it has triggered multiple epidemics throughout South and Southeast Asia. Due to its zoonotic and person-to-person transmission, NiV is extremely harmful to a wide variety of mammals and to has pandemic potential. Human-to-human transmission via respiratory droplets has been documented in nosocomial and home environments.[1] Since virus study requires a Biosafety level-4 (BSL-4) laboratory facility, the epidemiology of NiV has not been completely explored. Pteropus fruit bats, sometimes referred to as flying foxes (order Chiroptera and genus Pteropus), are the primary animal reservoirs for NiV. Flying foxes served as the virus's native host, whereas pigs served as a mediator host for humans. NiV can infect humans through flying foxes without the involvement of pigs, although there is evidence that the virus can spread from person to person.

Keywords: Nipah Virus

Introduction:

We are writing this letter to highlight the outbreak of the RNA virus; member of the Paramyxoviridae family called Nipah virus (NiV). It is a member of the genus Henipavirus, which also includes Hendra virus (HeV). The WHO's priority list of diseases that are likely to cause epidemics, requiring immediate research and development action includes NiV. Since its initial appearance in Malaysia in 1998, it has triggered multiple epidemics throughout South and Southeast Asia. Due to its zoonotic and person-to-person transmission, NiV is extremely harmful to a wide variety of mammals and to has pandemic potential. Human-to-human transmission via respiratory droplets has been documented in nosocomial and home environments.[1] Since virus study requires a Biosafety level-4 (BSL-4) laboratory facility, the epidemiology of NiV has not been completely explored. Pteropus fruit bats, sometimes referred to as flying foxes (order Chiroptera and genus Pteropus), are the primary animal reservoirs for NiV. Flying foxes served as the virus's native host, whereas pigs served as a mediator host for humans. NiV can infect humans through flying foxes without the involvement of pigs, although there is evidence that the virus can spread from person to person. Up till June 2018, five nations—Malaysia, Singapore, Bangladesh, India, and the Philippines—were impacted by NiV, which caused 59% human deaths and 643 laboratory-confirmed cases.[2]

According to study conducted by Ang et al, in humans, the incubation period varied from 4 days to 2 months, with over 90% occurring in 2 weeks or less.The patients' symptoms, which included fever, headache, lightheadedness, and vomiting, eventually turned into a picture of acute encephalitis. Signs of brainstem dysfunction and cerebellar symptoms were not infrequent.[3] There was varying degrees of involvement from other organ systems. Respiratory involvement was reported in 14 to 29% of patients in the Malaysian series, however it was unclear if this was a result of aspiration or ventilator-associated pneumonia, or if it was part of the initial presentation. Two of the eleven individuals in Singapore had only respiratory symptoms and no encephalitis, whereas the other patients had encephalitis.

Respiratory involvement accounted for half to two thirds of cases in Bangladesh and India, and some of these children developed acute respiratory distress syndrome.

This discrepancy could be linked to variations between the two strains.[3]

Reverse transcriptase Polymerase Chain Reaction (PCR) is the recommended and most sensitive diagnostic technique for NiV. NiV can be detected by PCR using

cerebrospinal fluid (CSF), blood, nasal/throat swabs, and urine samples taken during the acute stage of infection. Patients with NiV have been shown to have thrombocytopenia, leukopenia, and abnormal liver function tests, and their CSF chemistry is similar to that of other non-hemorrhagic viral CNS infections. NiV's

neuroradiological characteristics have been reported. Magnetic resonance imaging (MRI) studies have demonstrated substantial cortical involvement, particularly in the temporal lobe and pons.[4] NiV outbreaks are more potent when they spread quickly through nosocomial and zoonotic routes and have an asymptomatic incubation period. According to case studies, the death rate for NiV is remarkably high, ranging from 40 to 91%. Since there are currently no specific antivirals or antibodies that are effective against the virus, NiV infection requires close supervision. Supportive therapy with broad range RNA virus antivirals like Ribavirin together with other medicines for deep vein thrombosis, anticonvulsive during convulsions and

mechanical ventilation for respiratory system failure are administered to rescue patients with NiV problems . During the previous NiV outbreaks in Malaysia and Singapore, two medications were used: ribavirin and acyclovir.[5]

To conclude,Given the lack of clear management options, prevention and containment of NiV epidemics is critical. Central to this is ensuring clinicians have a high index of suspicion for NiV cases and then undertake comprehensive contact tracing and quarantining of possibly infected persons. Given its propensity for nosocomial and home spread through droplet transmission, everyone who comes into contact with suspected NiV cases should wear personal protective equipment with aerosol filtering masks when caring for NiV patients. Reducing transmission requires educating people about the spread of NiV. Lastly, in order to guarantee that this pathogen with pandemic potential is not overlooked, professionals must be made more aware of the warning signs, symptoms, and risk factors for NiV.

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