

How much the Nipah threat reduced in Bangladesh?

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The community awareness for Nipah virus infection (Nipah) is supposed to be increased in Bangladesh, especially citizens' high risk behaviours like consumption of raw date palm sap or partially eaten fruits by bats have been observed reduced significantly. But the recent report of Nipah in neighbouring India again increased the concern of the infection. As of May 2018, thirteen deaths due to Nipah were reported from Malappuram and Kozhikode Districts of Kerala State, India.^{1,2} Three among the deaths occurred in a family cluster and a fourth death was subsequently reported in a health care worker who was involved in treatment of the family in the local hospital, indicating person-to-person transmission of the virus.¹ The field investigation team found bats living in an abandoned water well on the premises of a new house and initially, it was suspected that the Nipah infection in Kerala was due to fruit bats. Although specimens collected from the droppings, saliva and blood of bats were tested negative for Nipah virus (NiV) initially in May 2018, subsequently it was found that the specimens were from insectivorous wrong bats.^{3,4} On July 4, 2018 issue of the Times of India mentioning that wrong bats were trapped and tested in May and confirmed, giving reference with Indian Council of Medical Research (ICMR) that fruit bats were the primary source of the Kerala outbreak.⁴ There were few more outbreaks of Nipah or Nipah-like viral encephalitis in India during January-February of 2001 in Siliguri (with 68% mortality) and during April, 2007 in Nadia (with 100% mortality) showing the same person-to-person transmissions,² which are geographically more close to Bangladesh.

In Bangladesh, the first identification of NiV as a cause of an outbreak of encephalitis was reported in 2001 in Meherpur district. Since then, outbreaks of NiV encephalitis have been reported almost every year in some districts of Bangladesh. Since 2001, the Nipah outbreaks in Bangladesh have been reported from 23 districts mostly from the north-western and central part of the country constituting the so-called "Nipah belt". Among the districts, some were frequently hit by repeated attacks of outbreaks include: Rajbari (2004, 2008, 2009, 2010, 2011, 2014, 2015), Faridpur (2004, 2010, 2011, 2014, 2015), Naogaon (2003, 2007, 2012, 2014, 2015), Nilphamari (2009, 2011, 2014, 2015), Mankganj (2008, 2013, 2014), Natore (2007, 2013) and Pabna (2007, 2013).^{2,5-9} Up to February, 2015, a total of 261 human cases of Nipah has been identified in Bangladesh of which 198 (75.8%) died, although the case-fatality was reported to range from 0-100%.⁶⁻⁹

All of the index cases of the outbreaks in Bangladesh have been reported to be transmitted by consumption of raw date palm sap and few others were reportedly transmitted through direct contact with the primary cases during nursing indicating again the person-to-person transmission.^{7,10,11} In the affected areas, it has been observed that consumption of raw date palm sap during the winter evening and early morning hours was very popular. The unparallel sweet taste of palm sap has an irresistible attraction. There are some village fairs and even in cities where drinking raw date palm juice is a celebration. Perhaps they could not understand

the fact that the juice-extracting head-ends of the date trees were found contaminated by fruits bats several times of their movements during the nights. The bats were caught by Infrared cameras during the nights and found to taste secreting juices from the extracting areas and the collecting tubes. They were also found to leave excreta over the juice extracting areas of the trees.¹⁰ Therefore, it is very obvious that the viruses, they were carrying in their saliva or urine, could easily contaminate the date juices which were drunk raw during the morning by some people. An intervention study to prevent the transmission of NiV from bat to date palm sap revealed that physical barrier may prevent the contact of sap from bat if properly covered the sap area.¹² Drinking Tari, a traditional liquor made from date palm sap, is also found as one of the potential pathways of transmission.¹³ Though alcohol act as the sterilizer of the virus but the alcohol concentration in Tari that is only 5-8 percent might not be high enough to sterilize NiV and the ambient temperature which is 15° to 28°C in Winter is also a factor for the survival of virus.¹⁰ There was no involvement of pigs in NiV transmission in Bangladesh, as was observed in the village Kampung Sungai Nipah of Malaysia or in Singapore during outbreaks in 1998-99.¹⁴ Nipah is a rapidly progressive disease affecting the central Nervous system and Respiratory system. The median incubation period ranges from 6-11 days after exposure to an infected person.¹⁵ Fever, altered mental status, headache, cough or cold, respiratory difficulty, vomiting and convulsion are the most common clinical features.¹⁵ But the epidemiological linkage is very important for the primary suspicion of patient with Nipah.¹⁶

The clinical data from different outbreaks of Nipah in Bangladesh and outbreaks in Malaysia revealed significant differences; with shorter and more narrow range of incubation period in patients from Bangladesh outbreaks.¹⁷ The respiratory symptoms are more common in Bangladeshi patients. There were two distinct strains of virus affecting Bangladeshi and Malaysian population. There is difference in

pathogenicity and transmission pattern and mortality rate, which suggests the virus isolated from Bangladesh are more pathogenic than Malaysian strains.¹⁷ According to the Times of India on 30th May, 2018, scientist of National Institute of Virology, Pune confirmed that the virus responsible for the outbreak in Kerala has the genetic makeup similar to Bangladeshi strain. They reached the conclusion by decoding the full genome sequence of the virus identified from throat swab specimens of the patients.¹⁸

Now, considering the currently available information, it can be concluded that the existence of NiV in the Nipah belt of Bangladesh as well as in other Southeast Asian countries could not be contained adequately. The Malaysian outbreak was contained immediately after the 1998 outbreak by mass culling of the suspected pig population and no other reports have been found, although the identified source of infection of pig industry is still in its full blown growth. Whereas in Bangladesh, the infection is occurring repeatedly in almost every year claiming some lives in spite of all the efforts. Identification of reservoirs of the infection and modes of transmission of NiV requires much more efforts to adopt the effective measures for containment of Nipah in Bangladesh.

In the meantime, the Institute of Epidemiology Disease Control and Research (IEDCR) with the support of Health Education Bureau under Ministry of Health and family welfare in Bangladesh have developed health messages regarding the date palm sap consumption, where instructed to avoid drinking raw date palm juice.¹⁹ Now it appears that we have to work more intensively with the Nipah cases- more careful contact-tracing can explore the exact nature of transmissions in Bangladesh and explore any other possible modes. If consumption of raw date palm sap be the only significant mode of transmission, more aggressive programs involving inter country endeavours to include all possible measures like (i) compulsory addition of barriers on juice extracting areas of date tree to impede contamination by bats²⁰, (ii) banning of

consumption of sale or consumption of raw date palm sap, (iii) extensive health education program in the Nipah belt, etc should be adopted as soon as possible to exclude repeated attacks of Nipah outbreaks in Bangladesh or in the other South East Asian countries.

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