

Review Article

Outbreak Of Nipah Encephalitis In Greater Faridpur District

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Abstract

Nipah viral encephalitis is one of the fatal re-emerging infections especially in southeast Asia. After its outbreak in Malaysia and Singapore; repeated outbreaks occurred at western part of Bangladesh especially in Faridpur region. Besides, sporadic attacks appear to occur in the country throughout the year. Here two Nipah outbreaks in greater Faridpur district in 2003 and 2004 are described along with brief review on transmission of the virus. Where the history of illness among patients are very much in favour of man to man transmission. Moreover the death of an intern doctor from Nipah encephalitis who was involved in managing such patients in Faridpur Medical College Hospital strongly suggests man to man transmission of this virus. So, aim of this review article to make the health personnel and general people be aware about man to man transmission of virus, so that they can adapt personal protection equipment (PPE) for their protection against this deadly disease.

Introduction

Nipah virus is a member of the family paramyxoviridae affecting human being & less frequently pigs. Nomenclature of this Nipah in Malaysia where epidemic was seen¹. After entry, the virus replicates at the primary sites- lung and gut associated lymphoid tissue. The viruses then enter the blood stream resulting viraemia. At this stage the viruses infect the endothelial cells of blood vessels specially small arteries & arterioles of all the organs resulting vasculitis. In the brain, the blood-brain barrier becomes disrupted resulting in encephalitis. The viruses also infect the lung tissue. Autopsy study revealed virus particles in lung parenchymal tissue, in alveolar spaces and in bronchial lining epithelium. Vascular damage also observed in kidney, spleen & in some other organs.

Depending on the presentation and for surveillance study, cases are described as probable, suspected and confirmed cases.

1. Probable case: any person, dead or alive, who developed-

- Fever and headache
- Neurological sign's (one or more of the isolated neurological signs, such as, altered mental status, confusion, convulsion, unconsciousness neck stiffness or focal weakness/paralysis) or respiratory distress.
- Living in the same area of a laboratory-confirmed case

2. Suspected case: any person with-

- Fever and headache
- Neurological sign(s) (one or more of the isolated neurological signs, such as, altered mental status, confusion, convulsion, unconsciousness, neck stiffness, focal weakness/paralysis) or respiratory distress

• History of exposure through physical contact, or sharing daily activities or living near by to a probable or laboratory-confirmed case.

3. Laboratory-confirmed case: any person with IgM serum antibody against Nipah viral antigen.

Laboratory investigations are mostly non-specific and non diagnostic. Isolation of Virus by PCR (in CSF, urine, throat and nasal secretion) and serological detection of IgM & IgG antibody against Nipah virus are the main way of specific diagnosis.

Management includes general supportive measures for an unconscious patient and for other symptoms. As there

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is no cure and high mortality rate, main importance should be given on preventive measures. Mortality rate in Bangladesh is very high – 85% in comparison to Malaysia -39%.

Outbreaks in Faridpur

Until now 6 outbreaks occurred globally. 1st outbreak in Australia – (1994-as hendra virus infection), 2nd – in Malaysia & Singapore (1998-99)², 3rd in Meherpur (April-May, 2001), 4th in Goalondo (December 2003-February 2004)³, 5th in Faridpur (March-April 2004) and 6th outbreak in Bashail upazilla, Tangail. The latest outbreak took place at Vanga upazila, Faridpur in Jan-March 2010 with 8 Nipah +ve cases where outbreak study is ongoing.

The episode in Goalondo outbreak actually began at late December 2003 in neighboring district Rajbari. Many cases were admitted at FMCH with features of encephalitis. Related health authority recognized the epidemic nature of the disease & triggered an alert. A medical team from FMCH was sent to Goalondo and a highly specialized team of IEDCR, ICDDR B & WHO rushed to the field for epidemiological investigation. Later various local medical teams & foreign team worked combinedly to manage the outbreak in Faridpur.

Table I: The comparative data profiles in two outbreaks^{4,5}

Parameter	Dec 2003-Feb 2004	Mar-April 2004
Affected district	Rajbari, Gopalganj, Faridpur	Faridpur and Madaripur.
Affected cases (No.)	29	36
Death (No.)	22	27
Case fatality rate (%)	76%	75%
Nipah + ve	14	23
Male Female ratio	3:4	18:11
Age	Mostly<19 yrs	Mostly between 16-50 yrs
Signs	Fever,unconsciousness, respiratory problem	Fever, respiratory distress, semi or unconsciousness
Predominant sign	Unconsciousness	Respiratory distress
Evidence of man to man transmission	Unclear	Almost clear

Following these two outbreaks in 2003 and 2004 , no episode of mass attack was reported from anywhere of Bangladesh till Jan 2010. An attack of Nipah outbreak as well as many sporadic cases were detected, again in, Faridpur district. Special feature of this attack is the death of an intern doctor of FMCH , the first reported Nipah encephalitis in healthcare personnel in Bangladesh.

Initial data of this attack, yet to be published, are shown below:

Table II: Patients of Encephalitis Admitted in FMCH in 2010 (Jan-March)

Months	Totaladmitted Patients	Discharge with advice	DOR	DORB	Absconded	Death	Referred
Jan	25	10	1	3	1	9	1
Feb	14	6	0	2	1	2	3
March	28	10	3	3	0	9	3
Total	67	26	4	8	2	20	7

(Source: Personal communication with Dr. Sazzad, Medical Officer, ICDDR B, 20th April, 2010)

Among them: Nipah +ve 15, 8 from Outbreak cases - Bhanga, 7 from Isolated cases

Discussion

Fruit Bats (genus - pteropus) are considered as natural host of Nipah virus. Bats are susceptible to Nipah virus but they themselves never become ill. Antibody against Nipah virus has been detected in sera of bats in Malaysia, Singapore, and Cambodia and also in Bangladesh. In Goalondo of Rajbari District, Nipah antibody was detected in 2% of bats while in Ghuolaxmipur of Faridpur district, it was 14% during Nipah-encephalitis outbreak 2004⁶.

The mode of transmission is not exactly known. It enters into human body either through respiratory or alimentary tract. Studies in Malaysia suggested that pigs became infected by ingesting the half-eaten fruits dropped by bats within the pig-farms. Indeed, Nipah viruses could be isolated from half-eaten fruits by bats⁷.The pigs in the pig farms then became sick and developed severe cough & signs of encephalitis.The workers of the pig-farm who cared those sick pigs then became infected and ultimately developed encephalitis.However, similar mode of transmission was not observed in Goalondo of Rajbari district during Nipah outbreak in 2003 and 2004. Nipah antibody was not detected in blood of pigs, dogs, horses and cows in affected area of Goalondo³. It is believed that human became infected directly from bats by ingesting half-eaten fruits like pigs in Malaysia. In Malaysia man to man transmission was not observed. In a large study in Malaysia Nipah antibody could not be detected among the health care workers who came in contact with Nipah infected patients. Similar findings were observed among doctors & nurses in Dhaka Medical College Hospital who cared the Nipah infected patients. But the history of illness among patients in Faridpur is very

much in favour of man to man transmission. Many of the affected people had previous exposure to Nipah-infected patients. The X-ray of 3 patients from this locality showed massive involvement of lung tissue in contrast to Malaysia where brain tissues were more affected. So, it is believed that in Faridpur man to man transmission probably occur through cough or nasal secretion⁸. Death of a doctor in Nipah encephalitis who was involved in managing such patients strongly suggests person –to-person transmission of the virus.

In this context, infection Control measures for Health Care Providers need special emphasis. Standard precautions e.g. hand washing between each patient, safe handling and disposal of needles, patient isolation in special ward and wearing Personal Protection Equipment (PPE) should be strictly practiced. Disinfections of body secretion, soiled linen,utensils, and proper waste disposal should be instituted.

This is a communicable viral illness, and the disease is not super-natural. People should have faith on treatment provided by trained physicians. If diagnosis and appropriate treatment can be given at initial stage, many valuable lives could be saved. When features of such illness are noted in a family or individual, she/he should be immediately brought to nearest hospital.

Conclusion

Nipah infection is present in slow epidemic form in Bangladesh. Public awareness is needed to be created. Not panic, prudence is required to face the challenge of this emerging & re-emerging disease. Panic will serve no purpose & may even be disruptive to social & public life. Further study regarding the epidemiological characteristics, transmission, diagnosis, treatment and prevention is urgently needed to reduce the morbidity and mortality from this fatal disease.

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