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EDITORIAL

Zika virus - A global concern

Maternal infection with Zika virus during the first trimester of pregnancy increases the risk of microcephaly in the baby. In late 2015, there were reports of a dramatic increase in the prevalence of microcephaly in Brazil, coinciding with an outbreak of the Zika virus several months earlier. The WHO declared a Public Health Emergency of International Concern on 28 January 2016, keeping in view the lesson learnt from the African Ebola outbreak.¹ On March 22, 2016, WHO Director-General briefs the media that the status of Zika has changed from a mild medical curiosity to a disease with severe public health implications in less than a year. Subsequently, a causal association was acknowledged by WHO and Centers for Disease Control and Prevention (CDC) in April, 2016. With the steady increase in microcephaly, the Brazilian Ministry of Health set up a surveillance system and upto June 4, 2016, 7830 suspected cases had been reported.²

Epidemiology: Zika virus (ZiV) continues to spread geographically to areas where competent vectors are present. Although a decline in cases of Zika infection has been reported in some countries, in later parts of the year, vigilance needs to remain high. Seventy-five countries and territories have reported evidence of mosquito-borne Zika virus transmission which are divided in three categories.³

The Zika virus outbreak made an unprecedented health crisis with enormous health and social costs. Marked regional differences exist in the transmission of Zika virus in different parts of the world. Evidence suggests that Zika virus has been circulating in Thailand for at least 3-4 years, and yet circulation of the virus has not been associated with outbreaks of Zika fever on the same scale as those in South America or with an increase in neurological complications. Whether this difference results from an as yet unidentified change in viral transmissibility or pathogenicity of Zika virus remains to be established.⁴ The epidemiological pattern in the USA reflects inequalities seen in the region, with low income pregnant women bearing disproportionate burdens, living without screens and in humid environment.

All countries in Asia are at Zika risk. Till May 2016, presence of Zika has not been reported from India. The Ministry of Health of Myanmar reported a confirmed case of Zika virus in November. In September 2016, our Health Minister said "There is no Zika-infected patient in Bangladesh now. However, the country is at risk due to the outbreak of the virus in neighbouring countries and the existence of the Aedes mosquito in the country.⁵ Nineteen Bangladeshi workers had been among those infected with Zika in Singapore and they had returned to work after treatment.

Aetiopathology: Zika virus is an enveloped, spherical particle classified as a member of the family Flaviviridae, the genus Flavivirus. ZiV was first isolated from a Rhesus monkey in the Zika Forest, Uganda, in April 1947 during the Rockefeller Foundation's initiative for research on yellow fever. Most of the flavivirus replication is thought to occur in cellular cytoplasm but perhaps it might not be the case with the ZiV as one of the studies detected antigens in infected cell nuclei. Only a few facts are known about the ZiV pathogenesis but most of the mosquito-borne flaviviruses are thought to replicate initially in dendritic cells near the site of inoculation. The spread of virus takes place via lymph nodes and then through bloodstream.¹

The risk of Zika virus infection to a developing fetus is not fully understood. The recent rise in such infections has coincided with an apparent increase of in birth defects – predominantly microcephaly but also ventriculomegaly, cell migration abnormalities, congenital contractures, still birth and neonatal death.² These abnormalities have largely been in case reports and case series.

A direct causal link has not been confirmed, but there is evidence of Zika virus infection in placentas of aborted fetuses and in the brains of babies with microcephaly who died soon after birth.

Transmission: Zika virus is primarily transmitted to people through the bite of an infected mosquito from the Aedes genus, mainly Aedes aegypti in tropical regions. Aedes mosquitoes usually bite during the day, peaking during early morning and late afternoon/evening. This is the same mosquito that transmits dengue, chikungunya and yellow fever.⁴ WHO reported person to person transmission other than mosquito borne transmission in several countries in Europe and America. In an outbreak in French Polynesia in 2013 and 2014, researchers found that 3% of symptomatic blood donors were infected with the Zika virus and in Brazil, several cases of possible viral transmission through blood transfusion were investigated in early 2016. Zika virus was positively identified in the semen, suggesting that sexual transmission of Zika virus through semen is a viable non-vector-borne route of infection.

Clinical Feature: Zika virus produces a mild illness with non-specific symptoms and may be symptomatic in just one in four cases. The symptoms are similar to other arbovirus infections such as dengue, and include fever, skin rashes, conjunctivitis, muscle and joint pain, malaise, and headache. These symptoms are usually mild and last for 2-7 days. The median incubation period of Zika virus disease is estimated to be 5.9 days, mean time to seroconversion was 9.1 days.

Based on a systematic review of the literature up to 30 May 2016, WHO has concluded that Zika virus infection during pregnancy is a cause of congenital brain abnormalities, including microcephaly; and that Zika virus is a trigger of Guillain-Barre syndrome. Researchers from Brazil reported on 1501 suspected cases of which 602 were deemed to be definitely or probably due to Zika virus. The sensitivity of microcephaly alone to detect definite or probable cases was 83% and this increased slightly to 87% when history of a rash was also considered.

Diagnosis: There is an absence of good evidence to guide testing and monitoring. However, expert guidance has been issued by international bodies. In essence, all pregnant women who have travelled to an area affected by Zika virus should be offered a baseline fetal ultrasound scan and should be discussed with a secondary care obstetric team. If the ultrasound is normal, scan should be done every four weeks throughout the pregnancy. Detection of any neurological abnormalities, such as a small head or intracranial calcifications warrants further investigation.⁴

A diagnosis of Zika virus infection can only be confirmed through laboratory tests on blood or other

body fluids, such as urine, saliva or semen. Blood samples should be collected from febrile illness cases and must be tested for common viral diseases; DENV and CHIKV and then ZIV. Blood samples negative for DENV, and CHIKV should be processed for detection of Zika virus aetiology. The CDC advocates that all pregnant women returning from affected areas should be tested for Zika virus, with PCR tests if symptomatic and serological tests if asymptomatic. However, The sensitivity, specificity, and applications of such serological tests (IgG or IgM) are not yet established.

Treatment: Zika virus disease is usually mild and requires no specific treatment. People sick with Zika virus should get plenty of rest, drink enough fluids, and treat pain and fever with common medicines. If symptoms worsen, they should seek medical care and advice. There is currently no vaccine available. If Zika virus RNA is detected, UK guidance suggests that the woman is offered direct referral to fetal medicine specialists.

Prevention: Protection against mosquito bites is a key measure to prevent Zika virus infection. This can be done by wearing clothes (preferably light-coloured) that cover as much of the body as possible; using physical barriers such as window screens or closing doors and windows; sleeping under mosquito nets; and using insect repellent. In a country where dengue transmission is a major problem must be under vigilance and the guidelines for the integrated vector control should be advocated. Women who are pregnant or planning pregnancy should consider avoiding travel to affected areas. Men should be advised returning from affected areas to avoid unprotected sex with female partners of childbearing potential for 28 days, and for six months if they have probable or confirmed infection.⁴

ZIV disease is now notifiable internationally and requires rigorous surveillance programme including detection of ZIV in vector mosquitoes.³ Its presence has not been detected -in Bangladesh and serious mortality and morbidity is also not associated with this virus. However the possible association of this virus infection with microcephaly and other neurological symptoms may pose untold miseries. According to Director, IEDCR, Bangladesh is at low risk of Zika virus and it has good surveillance and testing systems to detect the disease if ever found. Special measure had been taken to detect Zika infection at airports, land ports and maritime ports. Thus preparedness for Zika virus will help us in combating the invasion at the earliest possible time.

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