Review Article

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Zika virus disease

Rashmi Aggarwal¹*, Hemant Aggarwal², Mitra Basu³, Pradeep Chugh¹

¹Department of Health, Endocrine and Thyroid Research, Institute of Nuclear Medicine and allied Sciences, Brig S K Majumdar Marg, Timarpur, Delhi -54, India

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*Correspondence:

Dr. Rashmi Aggarwal,

E-mail: drarashmi@yahoo.co.in

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ABSTRACT

Zika virus infection is caused by Zika virus which was first isolated in Zika forest of Uganda in 1947 in Rhesus monkey. It is transmitted through the bite of an infected Aedes mosquito, the infamous mosquito, which also transmits infections like Dengue and Chikungunya. Although Zika virus infection has not been reported in India so far, but given the widespread presence of Aedes mosquito in India along with a huge volume of international travel, the Zika virus infection does have the potential of further spread. Although Zika virus infection is asymptomatic in 80% cases but its association with microcephaly and Gullian Barre syndrome has created a sort of panic in people residing in South American continent. On 1st February World Health Organization declared Zika virus infection to be a public health emergency of international concern.

Keywords: Zika, Aedes, Microcephaly

INTRODUCTION

Zika virus is a mosquito borne flavi virus transmitted primarily by bite of an infected Aedes mosquito. The virus was first isolated in 1947 in Zika forest of Uganda in Rhesus monkey. The first human case was detected in Uganda in 1952.

In 2007, the first major epidemic of Zika virus disease was reported on the Pacific Island of Yap (Micronesia) where approximately 75% of the total population was infected.² Yap Island has a small population of 11250 people and house to house survey identified 185 cases of suspected Zika virus disease. Of these, 49 cases were confirmed by PCR to be Zika Virus infection.

In May 2015, The Pan American Health Organization (PAHO) issued a warning regarding the first confirmed

case of Zika virus infection in Brazil. After Zika virus infection emerged in Brazil, a 20 fold annual increase in cases of microcephaly has been observed.³ In 2015, there has been 1248 new suspected cases, a prevalence of 99.7 per 100000 live births.³ The Brazilian ministry of Health confirmed the relation between Zika virus infection and microcephaly, and WHO issued an epidemiological alert about the association of Zika virus infection with congenital malformation and neurological syndromes.⁴

Clinical manifestations

Most Zika virus infections are mild and asymptomatic. Symptoms are similar to other arbo virus infections like dengue and chikingunya. When present, symptoms are mild and characterized by acute onset of fever, maculopapular skin rash, headache, arthralgia, non purulent conjunctivitis, asthenia, myalgia and malaise.

²Medical Officer, B K Hospital, Faridabad, India

³Department of CBRN, Institute of Nuclear Medicine and allied Sciences, Brig S K Majumdar Marg, Timarpur, Delhi - 54, India

Less commonly reported symptoms of Zika virus include retro orbital pain, anorexia, vomiting, diarrhea and abdominal pain. Symptoms usually develop 3-12 days after being bitten by an infected mosquito. Symptoms are mild and may last for 2-7 days. About 80% people infected with Zika virus disease may remain asymptomatic. Zika virus infection is usually mild and self-limiting. Severe form of disease needing hospitalization has not been reported so far. Zika virus disease is not known to be fatal so far.

Diagnosis

Diagnosis of Zika virus infection is done using RT –PCR of RNA isolated from patient's blood sample. Apart from blood, viremia has also been reported from serum, saliva and urine samples of patients infected with Zika virus. It is recommended that the serum samples should be collected within the first five days of the onset of symptoms. Diagnosis by serology is difficult because the virus can cross react with other Flavi virus such as dengue, chikungunya, west nile fever and yellow fever.

Nucleic acid detection by reverse transcriptase – polymerase chain reaction is the primary method for diagnosing Zika virus infection. The RT-PCR test available in National Institute of Virology, Pune is standardized from published primers.⁸

Who should be subjected to test?

Patients who develop two or more of primary symptoms of Zika virus infection as mentioned above (mainly fever and rash) within two weeks of being in an area where Zika virus is circulating should be subjected to test for Zika virus. Women who have travelled to an area where Zika virus is circulating any time during pregnancy should also be tested for Zika virus. Women who have delivered an infant with occipito frontal circumference less than third percentile on standard growth charts may also be benefitted by Zika virus testing.

Diagnosis of Zika virus infection in pregnant females

RT-PCR can be used to detect Zika virus in blood of pregnant females during the first week of illness. Serology is less reliable due to potential cross reaction with antibodies against similar viruses. So, serology is not recommended for assessing pregnant women with suspected Zika virus infection. Zika virus RT-PCR can also be performed on amniotic fluid although it is currently not known how specific or sensitive this test is for congenital infections. Testing of asymptomatic pregnant women is not recommended in the absence of fetal microcephaly or intracranial calcification.

Treatment

At the moment there is no antiviral drug available for the treatment of Zika virus infection. Symptomatic treatment

is provided to the affected patients. Following therapeutic measures can be adopted while dealing with a symptomatic patient of Zika virus disease:

- Take adequate rest
- Take plenty of fluids to avoid dehydration
- Paracetamol can be safely taken to treat fever and joint pains.
- Aspirin and non-steroidal anti-inflammatory drugs should be avoided until dengue has been ruled out.
- Prevent mosquito bites during first week of illness.
 This is because during the first week of infection
 Zika virus can be found in blood and can be passed from an infected to a healthy person through mosquito bite.

Prevention

At the moment, no vaccine exists for the prevention of Zika virus infection although an Indian Biotech company claims to have developed a vaccine which is in preclinical stage. Therefore prevention becomes the most crucial and the most important method of controlling the Zika virus epidemic. Following preventive methods can be adopted

Prevent mosquito bite

- Mosquito bite can be prevented by wearing long sleeve shirts and full pants.
- Using window and door shields to keep the mosquito away.
- Using Mosquito net and mosquito repellent

Travel precaution

- Pregnant women should avoid travel to countries which have been affected by Zika virus infection.
- Travellers visiting countries already affected by Zika virus should carry personal protective measures like mosquito net and repellents etc. to avoid mosquito bite
- Travellers returning from areas infested with Zika virus should observe themselves for the development of symptoms like fever, rash or body and joint pains.
 In case these symptoms develop, health care professionals should be approached immediately.
- Pregnant women who have travelled to areas with Zika virus transmission should mention about their travel during antenatal visits in order to be assessed and monitored appropriately.

CONCLUSION

World Health Organization has declared Zika virus infection to be a public health emergency of international concern on February 2016. Although this disease has not been reported in India, but given the wide spread prevalence of its vector namely Aedes mosquito in India,

we should be vigilant and keep ourselves updated regarding this infection. At present there is neither a specific antiviral therapy nor a vaccine to treat or prevent Zika virus infection. So, great emphasis should be laid on vector control strategies to counter Zika virus outbreak in the world. Zika virus infection has been confirmed in infants with microcephaly and in current outbreak in Brazil, a marked increase in number of infants born with microcephaly has been reported.

Given the current endemic scenario of Zika virus infection in Brazil and other neighbouring countries of South America, there is urgent need for further systematic studies looking at the pathogenesis, transmission and treatment of Zika virus infection. The most important issue which needs immediate addresal is to scientifically confirm the association between microcephaly and Zika virus infection.

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