

Zika Virus, An Emerging Global Threat: Agree Or Disagree?

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ABSTRACT

Zika virus (ZIKV), an emerging arthropod-borne virus (arbovirus); is a flavivirus belonging to family Flaviviridae which is related to West Nile, Dengue and Yellow fever viruses. ZIKV was known to be reported from places like Nigeria, Tanzania, Uganda, Egypt, Central African Republic, Sierra Leone and Gabon and also from Asian countries like India, Malaysia, Philippines, Thailand, Vietnam and Indonesia. As of 2007, certain major outbreaks and epidemics have been reported from Yap Island, Federated States of Micronesia, French Polynesia and cases were also reported from New Caledonia in 2013 and Brazil in 2015. In America, the first local transmission was reported in 2015 and by 2016 cases have been reported from Puerto Rico and 19 other territories of the America. This indicates rapid spread of the virus in recent years even to regions where it was previously uncommon. Transmission in humans is mainly via infected mosquitos. Other modes of transmission include intrauterine, transplacental and via breastfeeding and blood transfusions. Symptoms include fever, arthralgia, headache, myalgia, ocular pain and maculopapular rash. Fetal complications include wide range of neurological and ocular abnormalities, the most concerning being microcephaly in newborns of ZIKV infected pregnant women. Intrauterine growth retardation (IUGR) and fetal deaths are also reported. The diagnosis can be made clinically in a pure epidemic. No specific test for ZIKV is available but ZIKV can be evaluated via reverse transcription polymerase chain reaction (RT-PCR) on serum samples. The treatment is mainly supportive. The growing number of cases of ZIKV infection, difficulty in its diagnosis and the detrimental consequences and complications posed by the virus lead us to the conclusion that ZIKV has become an emerging global threat. The best preventive strategy is to avoid mosquito bites. As a means of precaution, pregnant women should also postpone traveling to any ZIKV prone area and perinatal ZIKV infection transfer should also be monitored closely. Vast and integrated researches should be carried out on ZIKV, including understanding of the complex ecosystems in which the virus proliferates and also focusing on preventable vaccines for this virus.

Keywords: Zika Virus; Epidemic; Global threat; Pakistan; Arbovirus; Diagnosis; Preventive measures.

INTRODUCTION

Sir,

Zika virus (ZIKV), an emerging arthropod-borne virus (arbovirus); is a flavivirus belonging to family Flaviviridae which is related to West Nile, Dengue and Yellow fever viruses. It was isolated in 1947 from a rhesus monkey in the Zika forest of Uganda.^[1]

ZIKV was known to be reported from places like Nigeria in 1968 and 1971 to 1975. From 1951 to 1975, cases were reported from other African countries like Tanzania, Uganda, Egypt, Central African Republic, Sierra Leone and Gabon and also from Asian countries like India, Malaysia, Philippines, Thailand, Vietnam and Indonesia.^[2] In 2007, ZIKV outbreak occurred on Yap Island,

Federated States of Micronesia and this was the first outbreak outside Asia and Africa. In 2013-2014, ZIKV also caused a major epidemic in the French Polynesia and cases were also reported from New Caledonia in 2013 and Brazil in 2015.^[3] In America, the first local transmission was reported in 2015 and by 2016 cases have been reported from Puerto Rico and 19 other territories of the America.^[4] This indicates rapid spread of the virus in recent years even to regions where it was previously not common.

Transmission to humans is mainly believed to be via infected mosquitoes of the genus *Aedes*, including *Aedes africanus*, *Aedes luteocephalus* and *Aedes aegypti*.^[1] Recent studies have shown that ZIKV can be transmitted intra uterine as well as perinatal transmission including transplacental route,^[5] contamination during delivery and breastfeeding may also be possible.^[6,7] Moreover, there is data indicating that ZIKV transmission can also occur sexually as well as by blood transfusions.^[7]

Symptomatically, ZIKV infection has been labelled as a mild disease resembling dengue fever and chikungunya, with symptoms of fever, arthralgia,

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headache, myalgia, ocular pain and maculopapular rash. There is no clinically significant link between ZIKV and hemorrhagic fever. However, there has been evidence of Guillian Barre syndrome (GBS) and other neurological manifestations thereby representing complications of ZIKV. Fetal complications are particularly debilitating and include wide range of neurological and ocular abnormalities, the most concerning being microcephaly in newborns of ZIKV infected pregnant women.^[5,8,9] Intrauterine growth retardation (IUGR) and fetal deaths are also reported.^[9]

The diagnosis can be made clinically in a pure epidemic. But ZIKV shares same vector and clinical features as other arboviruses like Dengue and Chikungunya, making the clinical diagnosis difficult.^[8,9] Diagnosis should hence be based on the serum detection of ZIKV RNA and absence of nucleic acid of other related arboviruses.^[1] No specific test for ZIKV is available but ZIKV can be evaluated via reverse transcription polymerase chain reaction (RT-PCR) on serum samples. Immunoglobulin M and neutralizing antibody testing can also be performed but these serologic samples may cross react in tests with other related flaviviruses. The treatment is mainly supportive, including bed rest, adequate fluid, analgesics and antipyretics, as no antiviral treatment is yet available against ZIKV. There are no available vaccines for ZIKV.^[4,8]

Hence, with the growing number of cases of ZIKV infection, difficulty in its diagnosis, and the detrimental consequences and complications posed by the virus, one should agree that ZIKV has forced us to confront an emerging global threat. The threat is increasing as in the modern era; vector control has been difficult due to factors like logistics, public resistance, expense, overcrowding and poor sanitation. Furthermore, increasing international travel and human behavior disrupting the ecologic balance can cause these opportunistic viruses to rise unexpectedly.^[8]

The best preventive strategy is to avoid mosquito bites by using air conditioning, installing window and door screens, wearing long sleeves and pants, using permethrin-treated clothing and insect repellants, removing yard and household debris and potential breeding sites of mosquitoes. Most of the Environmental Protection Agency (EPA) registered repellants can be used on children >2 months and are considered even safe for pregnant and lactating mothers. As a means of precaution, pregnant women should also postpone traveling to any ZIKV prone area and if absolutely needed, they should seek advice from their health care provider prior to travel and follow all preventive strategies to avoid mosquito bites. If pregnant women develop clinically apparent illness within 2 weeks of returning from a ZIKV prone area, they should undergo tests for ZIKV. Perinatal ZIKV infection transfer should be closely monitored and fetuses of infected pregnant

women should also be evaluated for possible abnormalities. Furthermore, vast and integrated researches should be carried on ZIKV, including understanding of the complex ecosystems in which the virus proliferates and also focusing on preventable vaccines for this virus. Health care providers should report suspected ZIKV cases to their local or state health department in order to facilitate in diagnosis and to alleviate the risk of transmission.^[4,6,8] Special attention should be given to the spread of infection among pregnant women as the adverse outcomes in fetuses and newborns of ZIKV infected mothers, not only affects the woman, but may consume family's resources and drain out the health systems, owing to the need of special care, especially damaging in resource-deprived areas.^[9]

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