

Zika Virus: The mosquito menace continues

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Abstract

The mosquito borne infections have devastated the tropical countries. The re-emerging cases due to the Zika virus has resulted in panic and fear among the general public. The absence of clear management guidelines and definitive treatment has led to chaos. In the present article the authors highlight this re-emerging mosquito borne infection that has ransacked Americas and has also set its foot in Asia.

Keywords: Epidemic; Microcephaly; Mosquito; Zika virus

Introduction

The Zika virus (ZIKV) illness is the recent re-emerging disease in the list of the worldwide presence of the mosquito menace and has received a lot of attention from the medical fraternity due to the recent ongoing outbreak in the American continent, spreading to the Asia^[1,2]. It was declared a public health emergency by the World Health Organization on 1st February 2016^[3]. The ZIKV brings great concern to the physicians due to its association to cause congenital anomaly (microcephaly) in the infants born to the infected mothers^[4,5].

ZIKV is a single-stranded RNA arbovirus belonging to the genus flavivirus and is transmitted by the *Aedes aegypti* mosquito^[2-5]. It has been clinically and symptomatically related to the other flavivirus including yellow fever virus, dengue virus (DENV), Chikungunya virus and West Nile virus (WNV). The ZIKV got its name after it was first identified in the Zika Forest in Uganda in 1947 in rhesus monkeys during yellow fever surveillance and was reported in humans as early as in 1952^[2-5].

Epidemiology

There had been only few sporadic human cases reported of ZIKV infection in the Asian and African continents, since its initial isolation in Uganda. The illness got its major recognition after the Zika fever epidemics that took place in 2007 in the Yap Island, Micronesia, the largest epidemic of 2013 in French Polynesia and then in 2014 in New Caledonia^[2,4,5]. The recent ongoing epidemic

in the American countries is believed to have originated in Brazil in May 2015, which by the end of January 2016 had spread to major parts of the Americas and now is being reported in the Asian continent^[2,4,5].

The 2015 outbreak in Brazil has been speculated to be the continuation of the 2013 epidemic of the French Polynesia^[6]. The ZIKV is supposed to have reached Brazil during the hosting of the World Cup Soccer and the Va'a World Sprint Championship canoe race, the major sports events of 2014 hosted by Brazil^[6]. The soon upcoming Summer Olympics in August 2016 to be hosted by Brazil is going to be a major challenge for the healthcare workers and the local and international government health authorities to keep a check on the epidemic. Also the ease of spread can be attributed to the rapid globalization and improved means of transport through the air, water and land and the ongoing urbanization in the developing countries, giving the right breeding place for the *Aedes* mosquito vector^[7].

Transmission

The transmission of ZIKV to humans is primarily via the bite of an infected *Aedes aegypti*, which is a daytime biting mosquito and breeds in standing water^[2,5,7]. Researchers have isolated ZIKV RNA from blood, urine, semen, cerebrospinal fluid, and amniotic fluid^[4,5].

Mother to fetal transmission occurs in pregnancy, including intrauterine transmission resulting in congenital infection, as well as peripartum transmission from a viremic mother to

her newborn. ZIKV transmission through breast milk has not been described till now, therefore the affected mothers are advised to continue with the breast feeding^[4,5,7]. Few infrequent, cases of sexual transmission of ZIKV have also been described^[7].

Clinical manifestations and complications

The majority of the infected patients is asymptomatic or show very mild symptoms. The severe symptoms and signs of ZIKV infection occur in about 20 percent infected patients^[2,4,5]. The symptoms include acute onset of low-grade fever with maculopapular rash, arthralgia (involves the small joints of hands and feet), and conjunctivitis (non-purulent)^[2,4,5]. These symptoms resemble those of dengue virus and Chikungunya virus infections, and occur typically approximately two to twelve days after the Aedes mosquito bite and mostly resolve within two to seven days^[4,5].

ZIKV infection has been associated with various complications like congenital microcephaly and fetal losses among women infected during pregnancy and Guillain-Barré syndrome^[2,4,5]. ZIKV infection in pregnant mothers can occur in any trimester and is reported to cause microcephaly in infants with many confirmed reports coming from Brazil showing the association of the virus infection with microcephaly in the newborn and even infant death. Cases of muscular atrophy have also been observed in children with microcephaly born after the onset of the ZIKV outbreak in Brazil^[2,4,5]. There are few cases of ZIKV infection who reported to have ankle and hand swelling, hematospermia, axillary and/or inguinal lymphadenopathy, leukopenia with monocytosis, thrombocytopenia and subcutaneous bleeding^[2,4,5].

Diagnosis and management

ZIKV infection is diagnosed by clinical symptoms and history of visit in an area of the prevalence of Aedes mosquito during an ongoing epidemic. Definitive diagnosis of ZIKV infection is established by serum RT-PCR for detection of ZIKV RNA, done in the acute phase of the disease onset^[2,4,5]. RT-PCR is positive if done on serum which is collected within one to three days of onset of symptoms or on saliva or urine samples collected during the first three to five days^[2,4,5]. Specific antibody against ZIKV in serum (IgM antibodies) is detectable after four days of symptom onset^[2,4,5].

The course of the disease is mostly self-limiting and the management is primarily bed rest and supportive care, including intake of fluids to prevent dehydration and administration of acetaminophen for relief of fever and pain^[2,4,5]. At present, there is no vaccine or antiviral therapy available for ZIKV. The preventive measures include the prevention of the vector (Aedes mosquito) growth and its elimination and prevention of mosquito bite play the major role in the disease control^[2,4,5].

The dissemination of knowledge about the disease (its symptoms, treatment and mode of transmission) to the general public and the healthcare workers plays a significant role in its prevention, especially in resource poor settings where the annual health care budget is scarce^[8-12]. This can be achieved by the joint efforts of the various government agencies, clinicians, non-government organizations like HIFA, etc.^[2,13-15]. The government of India has recently issued guidelines regarding the Zika virus, due to the fact that it is rapidly expanding epidemic and India is an endemic country for breeding of Aedes aegypti mosquitoes^[16].

Conclusions

The recent outbreak of Zika virus infection in the Americas and its rapid spread to the other continents including, Asia have again brought to light the menace caused due to the inadequate control of the mosquito vector. ZIKV as a cause of congenital anomaly (microcephaly) in infants holds a great threat to the future generation.

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