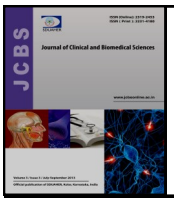

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Editorial

The Journey of Zika Virus Across the Globe

Zika virus (ZIKV) an arbovirus transmitted by Aedes mosquitoes was know until recently to cause a mild, clinically self-limiting disease with symptoms of fever, rash and arthralgia. However, since 2013 it has been increasingly associated with complications such as Guillain Barré syndrome and microcephaly. While we are all talking about the present day scenario, let us take a glimpse into the journey of the virus since it was first discovered.

The virus derives its name from the Zika forest in Uganda, where it was first isolated from a sentinel Rhesus monkey which was being used to study the sylvatic cycle of yellow fever in 1947. Subsequently, the virus was isolated from *Aedes africanus* mosquitoes from the same forest. In 1952, during a study in Uganda and Tanzania, neutralizing antibodies to ZIKV were demonstrated in human sera. The first documented report of human infection was in a researcher in Uganda who fell ill while working with ZIKV in 1964. The clinical illness was mild, limited to non-itchy rash covering most of his body and it lasted for 5 days very much like Dengue infection. The virus was isolated and re-isolated from him confirming infection due to ZIKV.

During 1969-1983, geographical distribution of the virus expanded to equatorial Asia including India and Pakistan where the virus was detected in mosquitoes. In this period, sporadic cases were seen and seroprevalence data suggested widespread exposure to the virus. As no outbreaks were reported, the disease in humans was regarded as rare with mild symptoms.

In 2007, the first outbreak of ZIKV was seen in Yap islands of Micronesia. Around 73% of the residents of Yap islands were infected as shown by PCR studies and demonstration of neutralizing antibodies. No complications or deaths were reported. The finding on Yap Island showed that even in the absence of Rhesus monkeys on the island, there was an outbreak of ZIKV infection. This makes us postulate the possibility of infected mosquitoes either windblown or through travel could be the likely source of outbreaks. Moreover, due to clinical similarity in Dengue, Chikungunya and Zika infection, possibility of underreporting of outbreaks should be considered.

In 2008, an US scientist conducting field work in Senegal fell ill with ZIKV infection and on returning home to Colorado infected his wife. This is the first documented case of sexual transmission of ZIKV. At Tahiti Island in French Polynesia, during 2013 isolation of ZIKV from semen of a patient seeking treatment for bloody semen has further strengthened the evidence that ZIKV can be sexually transmitted.

Retrospective investigations of outbreaks in four groups of Pacific island during 2013-2014 indicate a possible association between ZIKV and severe neurological complications. There was a rise in the incidence of Guillain Barré syndrome towards the end of 2013 which coincided with an increase in the incidence of ZIKV infection. As there was also an outbreak of Dengue infection at the same time, the association between Guillain Barré syndrome and ZIKV was suggested but remained unproven. During the outbreak in Pacific Islands in 2014, ZIKV infection was confirmed by PCR in the sera of two mothers and also in their new-borns showing the possibility of transmission of the virus either transplacentally or during labour. During the same outbreak, 1,505 asymptomatic blood donors were found to be positive for ZIKV by PCR. This has led to the worry of a possibility of post transfusion ZIKV infection.

In March 2015, Brazil notified WHO about 7000 cases of illness with skin rashes whose clinical profile did not fit into the case definition of Dengue, Chikungunya, Measles or Rubella. As infection due to ZIKV was not suspected at that stage, no tests for ZIKV were carried out. However, in May 2015, Brazil's National Reference Laboratory confirmed ZIKV circulation in the country by PCR. Following this, Pan American Health Organization (PAHO) and WHO issued an epidemiological alert to ZIKV infection.

Towards the end of October 2015, Brazil also reported an unusual increase in the number of cases of microcephaly. Following this, there was detection of ZIKV in amniotic fluid from 2 pregnant women whose ultrasound examination confirmed that their foetuses had microcephaly. On the 11th of November 2015, Brazil declared a national public

health emergency and further reported three deaths associated with ZIKV infection on 28th of November. Furthermore, in January 2016, severe ocular malformations in three infants born with microcephaly were reported in Brazil. El Salvador also reported an unusual increase of Guillain-Barré syndrome. The virus has since then spread, and by January 2016, many countries in South America and the Caribbean have reported PCR confirmed cases of locally acquired ZIKV infection.

In February 2016, WHO declared that the recent association of ZIKV infection with clusters of microcephaly and other neurological disorders constituted a Public Health Emergency of International Concern. The WHO Director General conducted Zika Emergency Committee meeting on 8th of March 2016 and in view of the substantial new clinical and epidemiological research, it underscored the likely association between Zika infection and occurrence of foetal malformations and neurological disorders.

In conclusion, over the years, Zika virus, first reported only in Asia and Africa has since been reported in over 30 more countries. Human ZIKV infection appears to have changed in character while expanding its geographical range from a mild endemic mosquito borne illness to large outbreaks linked to complications such as foetal malformations and neurological disorders across the pacific region and the Americas.

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