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History of ZIKV infections in India and management of disease outbreaks

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Abstract

© 2007-2018 Frontiers Media S.A. All Rights Reserved. Zika virus (ZIKV) is an emerging arbovirus infection endemic in multiple countries spread from Asia, Africa to the Americas and Europe. Previously known to cause rare and fairly benign human infections, ZIKV has become a major international public health emergency after being linked to unexpected neurological complications, that includes fetal brain damage/death and microcephaly in babies born to infected mothers and Guillain-Barre syndrome (GBS) in adults. It appears that a single genetic mutation in the ZIKV genome, likely acquired during explosive ZIKV outbreak in French Polynesia (2013), made virus causing mild disease to target fetus brain. The Aedes mosquitoes are found to be the main carrier of ZIKV, passing the virus to humans. Originally isolated from patients in Africa in 1954 (African lineage), virus disseminated to Southeast Asia (Asian lineage), establishing new endemic foci, including one in India. Numerous cases of ZIKV infection have been reported in several locations in India and neighboring countries like Pakistan and Bangladesh since mid of the last century, suggesting that the virus reached this part of Asia soon after it was first discovered in Uganda in 1947. Although, the exact means by which ZIKV was introduced to India remains unknown, it appears that the ZIKV strain circulating in India possibly belongs to the "Asian lineage, " which has not yet been associated with microcephaly and other neurological disorders. However, there still exists a threat that the contemporary ZIKV virulent strain from South America, carrying a mutation can return to Asia, posing a potential crisis to newborns and adult patients. Currently there is no specific vaccine or antiviral medication to combat ZIKV infection, thus, vector control and continuous monitoring of potential ZIKV exposure is essential to prevent the devastating consequences similar to the ones experienced in Brazil. However, the major obstacle faced by Indian healthcare agencies is that most cases of ZIKV infection have been reported in rural areas that lack access to rapid diagnosis of infection. In this review, we attempt to present a comprehensive analysis of what is currently known about the ZIKV infection in India and the neighboring countries.

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Keywords

ADEs, Aedes aegypti, Emerging infections, Epidemiology, India, Zika virus (ZIKV)

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