

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/mjafi

Contemporary Issue

Dengue, chikungunya . . . and the missing entity – Zika fever: A new emerging threat



Rina Tilak^{a,*}, Surg Capt Sougat Ray^b, Maj Gen V.W. Tilak (Retd)^c,
Air Cmde Sandip Mukherji^d

^a Scientist 'F', Department of Community Medicine, Armed Forces Medical College, Pune 411040, India

^b SSO (Health), Head Quarters, Western Naval Command, Mumbai, India

^c Academic Adviser, Symbiosis Institute of Health Sciences, Pune 411004, India

^d Professor & Head, Department of Community Medicine, Armed Forces Medical College, Pune 411040, India

ARTICLE INFO

Article history:

Received 28 December 2015

Accepted 29 February 2016

Available online 16 April 2016

Keywords:

Aedes aegypti

Congenital malformities

Dengue

Neurological syndrome

Zika

ABSTRACT

Zika virus (ZIKV), a relative newcomer from the flavivirus group that includes dengue, Japanese encephalitis and yellow fever, is one of the emerging pathogens that is fast transcending geographical boundaries. It is a vector-borne disease transmitted by the same *Aedes aegypti* and *Aedes albopictus*, which cause dengue and chikungunya. In addition to the vector-mediated transmission of Zika fever, probable human-to-human transmission through exchange of body fluids, including sexual and perinatal transmission and through blood transfusion, makes containment of this new entity more challenging. Moreover, a high index of suspicion by an astute physician is necessary for diagnosis of Zika fever in view of the similarity of symptoms with dengue and chikungunya, especially in areas, where these two diseases are already endemic.

Zika, till recently, has had minimal impact, but its true potential is unfolding with increasing detection of congenital malformities, Guillain–Barré syndrome and other neurological and autoimmune syndromes in patients with recent history of ZIKV infection, or when mothers get infected with Zika during first or second trimester of pregnancy. The association, however, needs to be established, nonetheless it is important that we keep a close vigil on this emerging vector borne disease – the 'ZIKA' fever.

© 2016 Published by Elsevier B.V. on behalf of Director General, Armed Forces Medical Services.

Introduction

Zika fever, an emerging zoonotic disease is caused by Zika virus (ZIKV), a Flavivirus member of the Spondweni serocomplex, which shares limelight with the other well-known

members of the Flavivirus family i.e. dengue, yellow fever, West Nile and Japanese encephalitis (Fig. 1).^{1,2} ZIKV is a positive sense single-stranded RNA molecule 10,794 bases long containing a nucleocapsid approximately 25–30 nm in diameter, which is surrounded by a host-membrane derived lipid bilayer that contains envelope proteins E and M and seven

* Corresponding author. Tel.: +91 9822071546.

E-mail address: rinatilk@hotmail.com (R. Tilak).

<http://dx.doi.org/10.1016/j.mjafi.2016.02.017>

0377-1237/© 2016 Published by Elsevier B.V. on behalf of Director General, Armed Forces Medical Services.

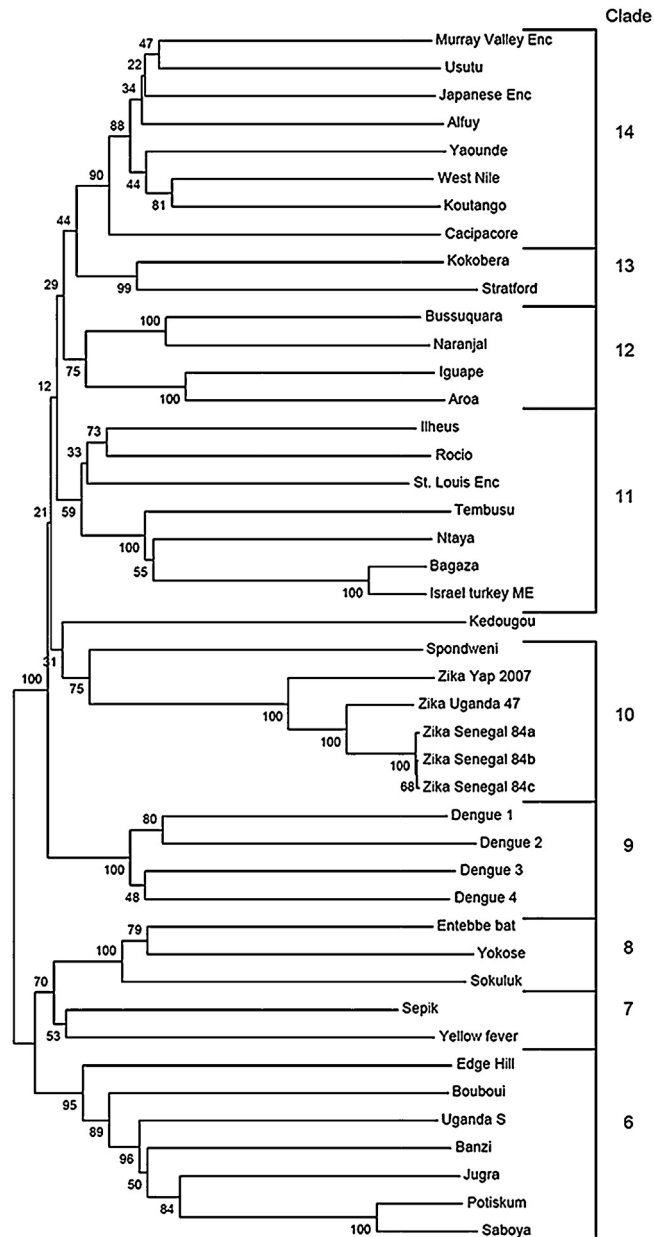


Fig. 1 – Phylogenetic relationship of Zika virus to other flaviviruses based on nucleic acid sequence of nonstructural viral protein 5.

non-structural proteins; of which NS5 is the largest. The virion is approximately 40 nm in diameter with surface projections that measure roughly 5–10 nm. The surface proteins are arranged in an icosahedral-like symmetry.^{3,4} Zika is one of the emerging arboviral diseases that is transcending geographical boundaries at a very fast rate. The recent reports of Zika activity from across the continents (Fig. 2)⁵ have attracted the attention of public health specialists, as it too is a vector mediated disease transmitted by *Aedes aegypti* and *Aedes albopictus*, the vectors of dengue and chikungunya, which are already on a global rampage. The global predicted distribution of *A. aegypti*, the principal vector of Zika is presented in Fig. 3.⁶ Till date, the *Aedes* species, which have been implicated in the transmission of ZIKV are *A. aegypti*, *A. vitattus*, *A. furcifer*,

A. africanus, *A. apicoargenteus* and *A. luteocephalus*. However, *A. aegypti* and *A. albopictus* are considered to be the major players in the transmission of the virus due to their ubiquitous global presence. The evidence so far implicates monkeys and humans as the sole reservoirs of the disease.⁷⁻⁹

Outbreaks of ZIKV

ZIKV was first described in April 1947, when a sentinel rhesus monkey fell sick in the Zika Forest of Uganda while participating in a jungle Yellow fever research programme of the United States.⁷⁻⁹ Report of Human ZIKV was for the first time published in 1964 by a scientist, who described his own

Download English Version:

<https://daneshyari.com/en/article/3160914>

Download Persian Version:

<https://daneshyari.com/article/3160914>

[Daneshyari.com](https://daneshyari.com)