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Review Article

**A REVIEW ON ZIKA VIRUS (ZIKV) -A DREADFUL MEMBER OF
THE VIRUS FAMILY FLAVIVIRIDAE****¹Rafiya Begum, ²Raafia Aseena, ³Nuha Rasheed and ⁴Abdul Saleem Mohammad**¹Department of Pharma.D, Nizam Institute of Pharmacy, Deshmukhi (V), Pochampally (M), Behind Mount Opera, Yadadri Bhuvanagiri (Dist)-508284, Telangana, India.²Department of Pharma.D, Nizam Institute of Pharmacy, Deshmukhi (V), Pochampally (M), Behind Mount Opera, Yadadri Bhuvanagiri (Dist)-508284, Telangana, India.³Department of Pharmaceutics, Nizam Institute of Pharmacy, Deshmukhi (V), Pochampally (M), Behind Mount Opera, Yadadri Bhuvanagiri (Dist)-508284, Telangana, India.⁴Department of Pharmaceutical Analysis and Quality Assurance, Nizam Institute of Pharmacy, Deshmukhi (V), Pochampally (M), Behind Mount Opera, Yadadri Bhuvanagiri (Dist)-508284, Telangana, India.**Abstract:**

Research on zika virus examine the virus that is spread to humans through a mosquito bite, with symptoms that include fever, rash, joint pain, and conjunctivities. For most people zika virus is not necessarily anything to worry, as it is not fatal and symptoms are generally mild for period up to a week. Hospitalization because of zika virus is almost always not necessary. However, the zika virus can be extremely dangerous to pregnant womes.

Key Words: *Zika, virus, transmission, fatal, flaviviridae, pathogenesis, diagnosis, NSAIDS.***Corresponding Author:****Abdul Saleem Mohammad,***Department of Pharmaceutical Analysis and Quality Assurance,**Nizam Institute of Pharmacy, Deshmukhi (V),**Pochampally (M), Behind Mount Opera,**Yadadri Bhuvanagiri (Dist)-508284, Telangana, India.***Phone number: - 9700880519****E-mail address: - mohdsaleempharma@gmail.com**

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INTRODUCTION:

Zika virus (ZIKV) is a member of the virus family *Flaviviridae*. It is spread by daytime-active *Aedes* mosquitoes, such as *A. aegypti* and *A. albopictus*. Its name comes from the Zika Forest of Uganda, where the virus was first isolated in 1947. Zika virus is related to the dengue, yellow fever, Japanese encephalitis, and West Nile viruses. Since the 1950s, it has been known to occur within a narrow equatorial belt from Africa to Asia. From 2007 to 2016, the virus spread eastward, across the Pacific Ocean to the Americas, leading to the 2015–16 Zika virus epidemic. In January 2016, the United States Centers for Disease Control and Prevention (CDC) issued travel guidance on affected countries, including the use of enhanced precautions, and guidelines for pregnant women including considering postponing travel [1,2].

Transmission:

The vertebrate hosts of the virus were primarily monkeys in a so-called enzootic mosquito-monkey-mosquito cycle, with only occasional transmission to humans. Before the current pandemic began in 2007, Zika "rarely caused recognized 'spillover' infections in humans, even in highly enzootic areas". Infrequently, however, other arboviruses have become established as a human disease and spread in a mosquito-human-mosquito cycle, like the yellow fever virus and the dengue fever virus (both flaviviruses), and the chikungunya virus (a togavirus). Though the reason for the pandemic is unknown, dengue, a related arbovirus that infects the same species of mosquito vectors, is known in particular to be intensified by urbanization and globalization. Zika is primarily spread by *Aedes aegypti* mosquitoes, and can also be transmitted through sexual contact or blood transfusions.

Zika is primarily spread by the female *Aedes aegypti* mosquito, which is active mostly in the daytime. The mosquitoes must feed on blood in order to lay eggs.[44]:2 The virus has also been isolated from a number of arboreal mosquito species in the *Aedes* genus, such as *A. africanus*, *A. apicoargenteus*, *A. furcifer*, *A. hensilli*, *A. luteocephalus* and *A. vittatus*, with an extrinsic incubation period in Mosquito about 10 days.[2,3].

Pregnancy: The Zika virus can spread by vertical (or "mother-to-child") transmission, during pregnancy or at delivery.

Pathogenesis:

Virus replicates in the mosquito's midgut epithelial cells and then its salivary gland cells. After 5–10 days, the virus can be found in the mosquito's saliva. If the mosquito's saliva is inoculated into human skin, the virus can infect epidermal

keratinocytes, skin fibroblasts in the skin and the Langerhans cells. The pathogenesis of the virus is hypothesized to continue with a spread to lymph nodes and the bloodstream. Flaviviruses replicate in the cytoplasm, but Zika antigens have been found in infected cell nuclei [3,4].

Diagnosis:

If you have a symptomatic patient who lives in or recently traveled to an area with risk of Zika, he or she may have been infected with other mosquito-borne viruses like dengue or chikungunya that often circulate in the same geographic regions and present with a similar clinical illness. The FDA has issued Emergency Use Authorization (EUA) for several diagnostic tools for Zika virus, including the Triplex Real-Time RT-PCR (rRT-PCR) assay and the Zika MAC-ELISA, which are being distributed to qualified laboratories [1,2].

Molecular Test for Zika Virus

For symptomatic persons with Zika virus infection, Zika virus RNA can sometimes be detected early in the course of illness. RNA NAT (nucleic acid testing) testing should be performed on serum collected during the first two weeks after symptom onset. RNA NAT testing should also be conducted on urine samples collected less than 14 days after symptom onset. Urine should always be collected with a patient-matched serum specimen. A positive RNA NAT result on any sample confirms Zika virus infection and no additional testing is indicated. A negative RNA NAT result does not exclude Zika virus infection and serum should be analyzed by IgM antibody (serological) testing.

For asymptomatic pregnant women who have traveled to areas with CDC Zika travel notices, RNA NAT testing is recommended on serum and urine within 2 weeks of the date of last possible exposure. RNA NAT testing is also indicated for pregnant women who present for care ≥ 2 weeks after exposure and have been found to be IgM positive. In areas with CDC Zika travel notices, asymptomatic pregnant women should undergo IgM testing as part of routine obstetric care in the 1st and 2nd trimester. Reflex RNA NAT testing is included as a subsequent test for women who are IgM positive [2,3].

Triplex Real-time RT-PCR Assay

The Triplex rRT-PCR is a laboratory test designed to detect Zika virus, dengue virus, and chikungunya virus RNA. The Food and Drug Administration (FDA) has not cleared or approved this test. However, FDA has authorized the use of this test under an Emergency Use Authorization (EUA) [3,4].

Serologic Test for Zika Virus

Zika virus-specific IgM and neutralizing antibodies typically develop toward the end of the first week of illness. IgM levels are variable, but generally are positive starting near day four post onset of symptoms and continuing for 12 weeks. Therefore, if RNA NAT is negative on serum and urine, serum IgM antibody testing for Zika, dengue, and chikungunya virus infections should be performed. In addition, serum samples collected ≥ 14 days after symptom onset, with no earlier samples collected, should be tested for anti-Zika virus, anti-dengue virus, and anti-chikungunya virus IgM antibodies [1,2].

Zika MAC-ELISA

The Zika IgM Antibody Capture Enzyme-Linked Immunosorbent Assay (Zika MAC-ELISA) is used for the qualitative detection of Zika virus IgM antibodies in serum or cerebrospinal fluid; however, due to cross-reaction with other flaviviruses and possible nonspecific reactivity, results may be difficult to interpret. Consequently, presumed positive, equivocal, or inconclusive tests must be forwarded for confirmation by plaque-reduction neutralization testing (PRNT). PRNT is performed by CDC or a CDC-designated confirmatory testing laboratory to confirm presumed positive, equivocal, or inconclusive igm result[2,3].

Treatment [1,2]:

There is no specific medicine or vaccine for Zika virus

- 1) Treat the symptoms.
- 2) Get plenty of rest.
- 3) Drink fluids to prevent dehydration.
- 4) Take medicine such as Acetaminophen (Tylenol®) to reduce fever and pain.
- 5) Do not take aspirin and other Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) until dengue can be ruled out to reduce the risk of bleeding.
- 6) If you are taking medicine for another medical condition, talk to your healthcare provider before taking additional medication.

Precaution:

- 1) Take medical steps to protect yourself from exposure to the person's blood and body fluids (urine, stool, vomit). If you are pregnant, you can care for someone with Zika if you follow these steps.
- 2) Do not touch blood or body fluids or surfaces with these fluids on them with exposed skin.
- 3) Wash hands with soap and water immediately after providing care.
- 4) Immediately remove and wash clothes if they get blood or body fluids on them. Use laundry

detergent and water temperature specified on the garment label. Using bleach is not necessary.

- 5) Clean the sick person's environment daily using household cleaners according to label instructions.
- 6) Immediately clean surfaces that have blood or other body fluids on them using household cleaners and disinfectants according to label instructions.
- 7) If you visit a family member or friend with Zika in a hospital, you should avoid contact with the person's blood and body fluids and surfaces with these fluids on them. Helping the person sit up or walk should not expose you. Make sure to wash your hands before and after touching the person [2,3].

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