



ZIKA VIRUS : A CRITICAL STUDY



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Abstract :

The virus was first isolated in April 1947 from a rhesus macaque monkey that had been placed in a cage in the Zika Forest of Uganda near Lake Victoria by the scientists of the Yellow Fever Research Institute.

A second isolation from the mosquito *A. africanus* followed at the same site in January 1948. When the monkey had a fever, researchers isolated from

its serum, a transmissible agent that was first described as Zika virus in 1952. In 1968, it was isolated for the first time from humans in Nigeria. Its name is derived from the Zika Forest of Uganda.

Keywords :

Zika virus, mosquito, Zika Forest of Uganda, a rhesus macaque monkey, Nigeria

Research Paper

Introduction

The Zika virus is a flavi virus transmitted by daytime-active *Aedes* mosquitoes, such as *A. aegypti* part of the same family as yellow fever, West Nile, chikungunya and dengue. But unlike some of those viruses, there is no vaccine to prevent Zika or medicine to treat the infection.

Zika is a commanding attention because of an alarming connection between the virus and microcephaly, a neurological disorder that results into babies being newly born with abnormally small heads. It causes severe developmental issues and sometimes death.

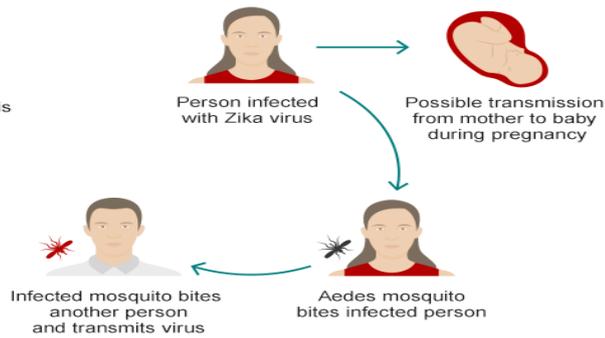
How Zika spread?

The virus is most commonly transmitted when an *Aedes* mosquito bites a person with an active infection and then spreads the virus by biting others. Those people become carriers when they have symptoms. In February 2016 three reported cases indicated that Zika virus could possibly sexually transmit. In 2015, Zika virus RNA was detected in amniotic fluid of two pregnant women, whose fetuses had microcephaly, indicating that the virus had crosses the placenta and could have caused a mother-to-child infection.

Zika virus transmission cycle

Symptoms

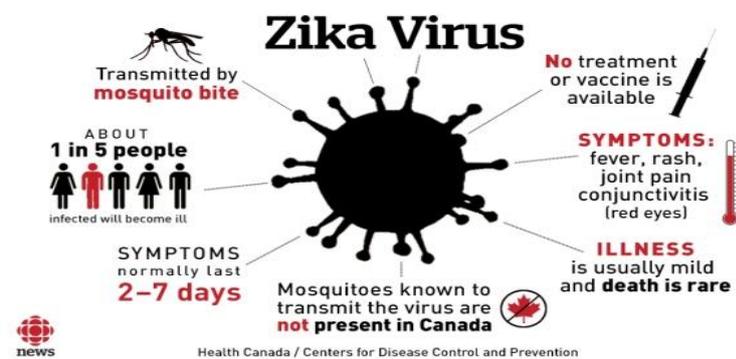
- Fever
- Rash
- Joint pain
- Conjunctivitis (red eyes)



Zika can be transmitted through blood, but this is an infrequent mechanism. The virus has also been isolated in semen, but person-to-person sexual transmission is unconfirmed.

Source: PAHO/WHO

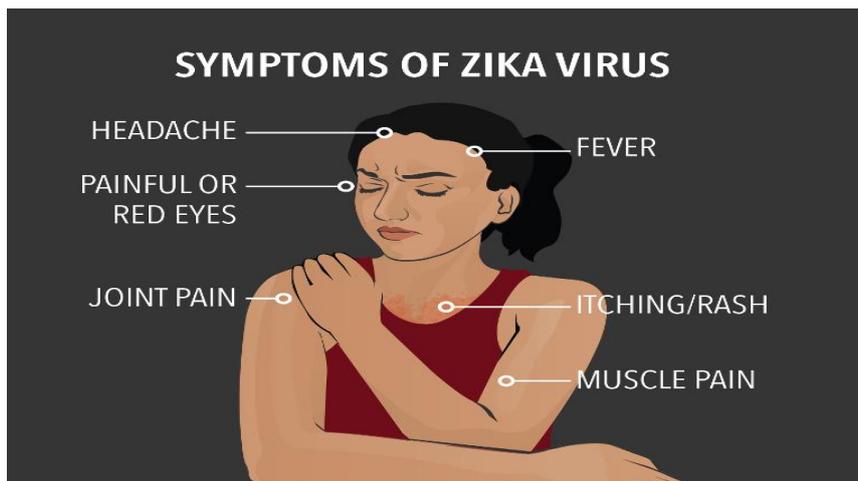
BBC



What are the Symptoms?

The symptoms and infection are developed in one among five people and infection is usually mild. The most common symptoms are fever, rash, joint pain or red eye. Other common symptoms include muscle pain and headache.

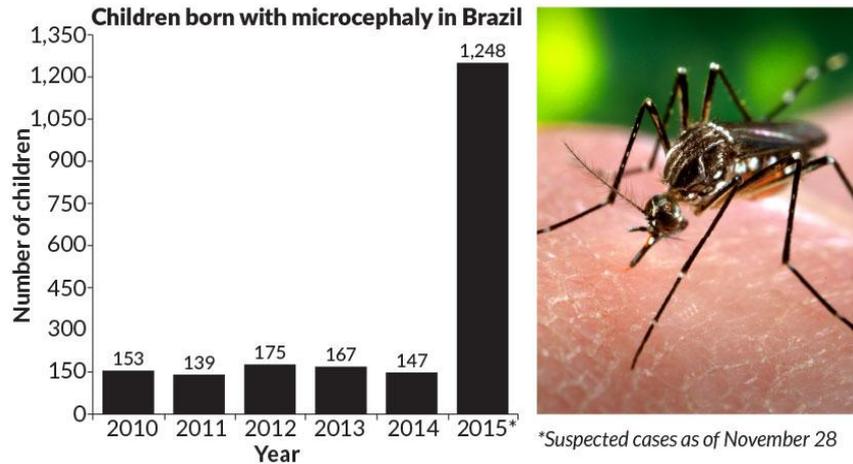
Symptoms usually begin 3-12 days after being bitten by an infected mosquito and last several days to a week. Hospitalization and deaths from Zika are rarely found.



Current status of Zika virus linked to birth defects

A 20-fold increase in a number of babies born with this condition is known as microcephaly since Zika first appeared in Brazil in May 2015, the researchers said.

Since the virus had spread across more than a dozen countries in South and Central America and up into Mexico, a case was confirmed in Puerto Rico in December in an individual who had not recently travelled meaning he or she was bitten by a local infected mosquito.



Treatments

There is no specific treatment for Zika. Symptoms are treated by getting rest, drinking fluids to prevent dehydration and taking medicines such as acetaminophen or paracetamol to relieve fever and pain. Aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) like ibuprofen and naproxen should be avoided until dengue can be ruled out to reduce the risk of increased bleeding.

- According to Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, work has begun in the USA towards developing a vaccine for the Zika virus
- An Indian company, Bharat Biotech International, reported in early February 2016 that it was working on vaccines for the Zika virus.

Prevention

No vaccine or preventive drug is available at this time. The best way to prevent Zika is to avoid mosquito bites when travelling to an area where Zika is present.

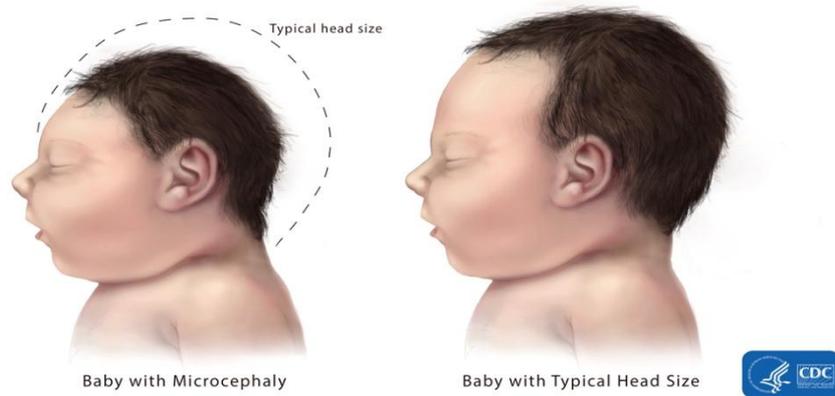
- Use insect repellent. Repellents like oil of lemon eucalyptus PMD provides long lasting protection against mosquitoes that may transmit virus such as Zika, dengue and chikungunya.
- When you are indoors, use air conditioning, window screens or insecticide-treated mosquito netting to keep mosquitoes out of the home.
- Reduce the number of mosquitoes outside the home or hotel room by emptying or routinely changing stagnant water from containers such as flowerpots, pet dishes and bird baths.
- Wear long sleeves and pants when you are outdoors, as per the climate change.
- A clinician with expertise in travel medicine is recommended before a planned trip, for information on how best to be protected against all diseases related to travel visiting.
- Women who are going to be conceived should consult with their physicians before travelling in the suspected area.

Recommendation for men and their pregnant partners

- Men who reside in or have travelled to an area of active zika virus to transmission having a pregnant partner should abstain from sexual activity or consistently and correctly use condoms during intercourse.
- The CDC noted: "There have been no reports of sexual transmission of Zika virus from infected women to their sex partners."

We do not know how long the zika virus is present in semen. One report found the virus in semen at least two weeks after symptoms of infection began. No follow-up testing was experimented to determine when the man no longer had zika virus in his semen.

Prior to this month Brazillion health officials confirmed two cases of zika transmission through blood transfusion from donors who carry the virus.



Other Bodily Fluids

Scientists have detected evidence that zika virus can be found in breast milk, saliva and urine samples. However, at this time there have been no reports of transmission in any of these ways, and the CDC has not issued any cautions about breast feeding or kissing.

Current status of Zika Virus in India

The Zika virus is spreading explosively in the USA and can infect up to four million people. World Health Organization (WHO) warned us as it issued a warning to all countries including India which have the vector of Aedes mosquito that also causes Dengue and Chikungunya. We must use the dengue dynamics as the reference point where you have the dengue outbreaks in the previous years and the mosquito Aedes is present. Dr. Sylvain Aldighieri opines that people have a risk of zika transmission wherever there is the epidemics dengue caused by Aedes mosquito.

My dear readers, I always think "Prevention is better than cure".

References :

- Sirohi, D.; Chen, Z.; Sun, L.; et al. (31 March 2016). The 3.8 Å resolution cryo-EM structures of Zikavirus. *Science* **352** (6284):467–70. Bibcode: 2016Sci...352. 467S. doi :10.1126/science.aaf5316. ISSN 0036-8075. PMID 27033547.
- Etymologia: Zika Virus. *Emerging Infectious Diseases* **20** (6): 1090. June 2014. doi: 10.3201/eid2006.ET2006. PMC 4036762. PMID 24983096.
- Malone, Robert W.; Homan, Jane; Callahan, Michael V.; et al. (2 March 2016). "Zika Virus:Medical Countermeasure Development Challenges". *PLOS Neglected Tropical Diseases* **10** (3): e0004530. doi: 10.1371/journal.pntd.0004530. ISSN 1935-2735.
- Sikka, Veronica; Chattu, Vijay Kumar; Popli, Raaj K.; et al. (11 February 2016)."The emergence of zika virus as a global health security threat: A review and a consensus statement of the INDUSEM Joint working Group (JWG)". *Journal of Global Infectious Diseases* **8** (1): 3–15. doi:10.4103/0974-777X.176140. ISSN 0974-8245.
- Chastain, Mary (30 January 2016). "National Institutes of Health: Zika Virus Is a 'Pandemic'". *Breitbart*. Retrieved 13 February 2016.
- Symptoms, Diagnosis, & Treatment". *Zika virus*. Atlanta: Centers for Disease Control and Prevention. 3 March 2016. Retrieved 4 March 2016.
- Petersen, Emily E.; Staples, J. Erin; Meaney-Delman, Dana; et al. (22 January 2016)."Interim Guidelines for Pregnant Women During a Zika Virus Outbreak — United States, 2016". *MMWR. Morbidity and Mortality Weekly Report* **65** (2): 30–33. doi:10.15585/mmwr.mm6502e1. ISSN 0149-2195. PMID 26796813.
- Zika virus: Advice for those planning to travel to outbreak areas". *ITV Report (ITV News)*. 22 January 2016. Retrieved 24 January 2016.
- Pierson, TC; Diamond, MS (April 2012). Degrees of maturity: the complex structure and biology of flavivirus. *Current opinion in virology* **2** (2):168-75. doi:10.1016/j.coviro.2012.02.011. PMC 3715965. PMID 22445964.
- Gubler, DJ (2011). "Dengue, Urbanization and Globalization: The Unholy Trinity of the 21st Century". *Trop Med Health* **39**: 3–11. doi:10.2149/tmh.2011-S05. PMC 3317603. PMID 22500131.
- Ayres, Constância F J (4 February 2016). Identification of Zika virus vectors and implications for control. *The Lancet Infectious Diseases* **16** (3):278-279. doi:10. 1016/S1473-3099 (16)00073-6. ISSN 1473-3099. PMID 26852727.