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ZIKA VIRUS

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Zika virus is a single-stranded RNA virus and belongs to the *Flaviviridae* family (which also includes dengue, yellow fever and West Nile viruses). It was first discovered in a rhesus monkey in the Zika forest in Uganda in 1947. Since then outbreaks of Zika virus disease in humans have been recorded in Africa, Southeast Asia, Central and South America and the Pacific Islands.

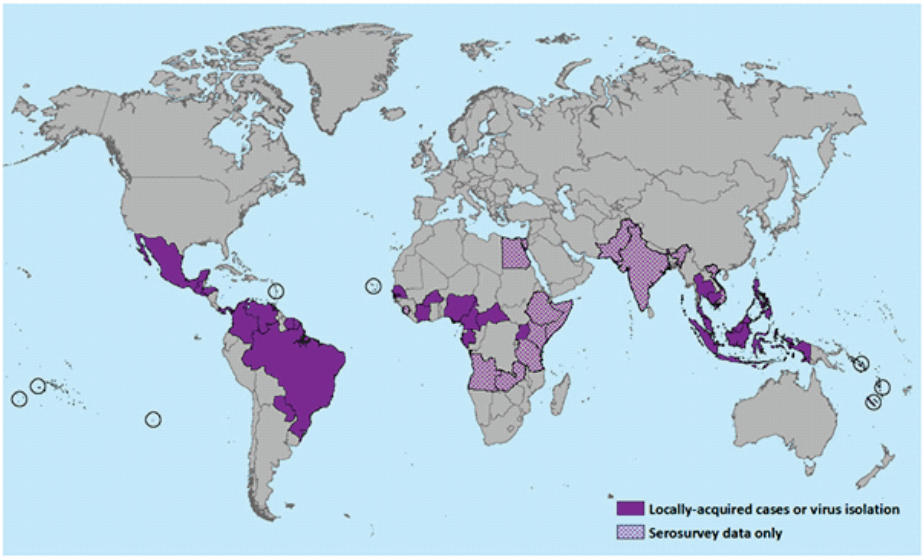

Figure 1. Countries with past or current evidence of Zika virus transmission. (Image: CDC)

How is Zika virus transmitted?

Zika virus is transmitted to people through the bite of infected *Aedes* species mosquitoes. These mosquitoes are more active during the daytime, feed both indoors and outdoors, and breed in water-filled containers around the house. *Aedes* mosquitoes are also the main vectors for yellow fever, dengue and chikungunya viruses. The reservoir of Zika virus is currently unknown.

Human-to-human transmission can occur in utero, perinatally, possibly via sexual contact and potentially through blood transfusion.

What are the signs and symptoms of Zika virus infection?

Only about 1 in 5 patients infected with Zika virus develop symptoms. The incubation period is currently unknown, but is likely to be a few days up to a week. The main symptoms that have been reported are fever, headache, a maculopapular rash, myalgia, arthralgia and conjunctivitis. Symptoms are usually mild and last for a few days up to 1 week. Severe disease requiring hospitalisation is rare and the case fatality rate is very low.

During a large outbreak in 2013 - 2014 in French Polynesia several cases of Guillain-Barre syndrome and other neurologic complications were reported, but they were not definitively linked to Zika virus. More recently, an increase in the number of infants born with microcephaly have been reported during an ongoing Zika virus outbreak in northeast Brazil. Investigations are currently underway to determine whether there is a causal relationship between Zika virus infection and microcephaly.

Diagnosis

Based on the typical clinical features mentioned above, the differential diagnosis of Zika virus infection should include other arboviruses (such as dengue and chikungunya), malaria, leptospirosis, rickettsia, group A streptococcus, rubella, measles, enterovirus, parvovirus B19 and adenovirus.

During the first week after symptom onset, Zika virus infection is diagnosed by RT-PCR on a blood sample. After the first week, viraemia decreases quickly and thus diagnosis via RT-PCR will not be useful. Zika virus-specific IgM typically develop towards the end of the first week of illness. Unfortunately cross-reactions with antibodies produced against related flaviviruses, such as yellow fever, dengue or West-Nile, may lead to a false-positive IgM result.

Testing for Zika virus infection is only recommended if a person presents with two or more symptoms compatible with Zika virus disease within 2 weeks of travel to an area with ongoing Zika virus transmission.

Zika virus and pregnancy

Currently there is no evidence to suggest that pregnant women are more susceptible or experience more severe disease than the general population. Mother-to-child transmission has been documented in all three trimesters. As mentioned above, congenital microcephaly have been reported in infants whose mothers were infected with Zika virus whilst pregnant. Studies are currently underway to investigate this association, including the role of other contributory factors (e.g. other infections, nutrition and the environment).

The Centers for Disease Control and Prevention (CDC) currently recommend that all pregnant women, irrespective of the trimester of the pregnancy, should avoid travelling to areas with ongoing Zika virus transmission. If she does elect to continue with the trip, all precautions to prevent mosquito bites should be taken, including wearing long-sleeved shirts and long pants, sleeping in screened-in or air-conditioned rooms, and using insect repellents.

Which pregnant women should be tested for Zika virus infection?

The CDC recommends that the following patients should be tested for Zika virus infection:

- Pregnant women with a **history of travel** to an area with ongoing Zika virus transmission **AND**
- Who report **two or more symptoms** compatible with Zika virus disease during or **within 2 weeks** of travel **OR**
- Who have **ultrasound findings** of foetal microcephaly or intracranial calcifications

Who should be offered amniocentesis?

The CDC recommends that amniocentesis should be offered to pregnant women who fulfil the criteria stated above for testing for Zika virus **AND** with a positive RT-PCR or serology result.

The timing of amniocentesis in relation to the possible acquisition of Zika virus has not been established. A positive Zika virus RT-PCR result from amniotic fluid would be suggestive of intrauterine infection, but it is not known how many of these infected foetuses will subsequently develop abnormalities. If there is sonographic evidence of foetal microcephaly, a negative Zika virus RT-PCR result from amniotic fluid may prompt a work-up for other causes of microcephaly.

Treatment

There is no specific antiviral treatment available for Zika virus. People with Zika virus infection should be treated symptomatically, including bedrest, adequate fluid intake and paracetamol for the relief of fever and pain. To reduce the risk of haemorrhage, aspirin and other non-steroidal anti-inflammatory medications should be avoided until dengue can be ruled out. To reduce the risk of spread to other people, patients should avoid mosquito bites during the first week of illness when the viraemia is at its peak.

Prevention

There is currently no vaccine available against Zika virus. The mainstay of prevention is through mosquito vector control and avoiding mosquito bites.

References:

1. Centers for Disease Control and Prevention. Zika Virus. Available at: http://www.cdc.gov/zika/index.html
2. World Health Organisation. Zika Virus Fact Sheet. Available at: http://www.who.int/mediacentre/factsheets/zika/en/
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