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What is Zika?

Zika is a virus transmitted by mosquitoes that recently spread to the Americas. Symptoms are usually mild, but severe complications including serious birth defects and various neurological and autoimmune complications can result from infection with the virus. Currently, there are no vaccines or medications available to prevent infection. Avoiding mosquito bites is the best defense against Zika virus infection.

History

Zika is a virus related to dengue, yellow fever, Japanese encephalitis, and West Nile viruses that was discovered in 1947 in Africa. It is named after the Zika Forest in Uganda (zika means "overgrown" in Lugandan), where the virus was first recovered from a sentinel rhesus monkey that was being used in a yellow fever research project; the agent was eventually described as Zika virus in 1952. It was first isolated from a human in Nigeria in 1954.

Figure 1. Adult female yellow fever mosquito, *Aedes aegypti* (Linnaeus), in the process of seeking out a penetrable site on the skin surface of its host. Photograph by James Gathany, Center for Disease Control Public Health Image Library.

Until 2007, Zika was a relatively obscure virus, confined to a narrow zone around the equator in Africa and parts of Asia. In Africa, it was known mostly from forest monkeys, but subsequent work indicates that humans were often infected but not diagnosed with the virus. In 2007, a disease outbreak on the Yap Islands in Micronesia, at first believed to be dengue or Chikungunya, turned out to be caused by the Zika virus. Later, outbreaks of Zika occurred in Polynesia, Easter Island, the Cook Islands, and New Caledonia.

In 2015 a large outbreak started in Bahia, Brazil and spread throughout South and Central America and the Caribbean. Large outbreaks of the disease have been reported from many countries in the area including Brazil, Colombia, El Salvador, and probably others that have not yet reported accurate statistics. In the continental United States, travel-related cases of the disease have been reported from several states, including Florida.

Transmission

Zika is an arthropod borne virus (arbovirus) principally transmitted by mosquitoes of the genus *Aedes*. In the Americas, the principal vector is the yellow fever mosquito, *Ae. Aegypti* (Figure 1), but the Asian Tiger Mosquito *Ae. albopictus*, is a potential vector as well. Both of these mosquitoes are common in tropical and subtropical regions, and can be very common in some areas of North America. These mosquitoes live in close association with humans, and occur in immature stages in numerous water-holding containers such as buckets, plastic containers, discarded tires and many others often found around human dwellings. In contrast with other familiar arboviruses such as dengue, Chikungunya and West Nile, the Zika virus can be frequently transmitted from mother to fetus, and there is one documented case of the virus being transmitted sexually.

Symptoms of Zika virus infection

Only about 1 in 5 persons infected with the virus develops symptoms, which are considered "mild". Primary symptoms include headaches, skin rash, fever, pink eye, general malaise, and muscle/joint pain. However we know very little about potential after effects of infection including long term neurological effects. Although the incubation period is not well characterized, symptoms develop from two to 10 days after exposure and last approximately from 2 days to a week. Zika virus can be detected in the blood of infected patients via antibody tests, but these may cross react with those of other related viruses including dengue and yellow fever. Advanced molecular techniques can more effectively detect the virus in blood samples taken early in the infection cycle of patients.

The fact that a large proportion of those infected are asymptomatic means that the daily routine of these infective persons will not be interrupted by the infection, potentially exposing them to mosquito bites and serving as a source for mosquito infection that can further spread the virus. The virus is usually present in the blood of an infected person for a few days during which a mosquito may acquire the infection by bite.

Complications related to infection with the Zika virus

There is more unknown than known about complications resulting from Zika virus infection. For this reason alone, infection with the virus should be taken very seriously, and appropriate precautions should be taken to avoid infection.

Zika virus infection in pregnant women can result in serious, even lethal consequences for the fetus. During the current Zika pandemic, a very high incidence of babies born with abnormally small heads and significant brain damage, a condition known as microcephaly, is being documented in mothers

that were infected with the virus during pregnancy. Various health organizations, including the U.S. Centers for Disease Control and Prevention, recommend that pregnant women avoid travel to destinations where Zika is found. As of January 27, 2016, the following countries were included in the advisory: Bolivia, Brazil, Colombia, Ecuador, El Salvador, French Guiana, Guatemala, Guyana, Honduras, Mexico, Panama, Paraguay, Suriname, and Venezuela. In the Caribbean: Barbados, Dominican Republic, Guadeloupe, Haiti, Martinique, St. Martin, Puerto Rico, U.S. Virgin Islands, Cape Verde, off the coast of western Africa; and Samoa in the South Pacific.

As with other viral infections, there also appears to be a connection between Zika infection and development of Guillain—Barré syndrome, a condition where the body's immune system attacks the peripheral nervous system. Other neurological and autoimmune complications related to Zika virus are suspected but not well documented.

Treatment

There is no specific treatment for Zika virus infection. Given that the primary symptoms, if any, are usually mild, only supportive treatment (rest, fluids, and medications such as acetaminophen for fever and pain) are recommended. Patients should not take aspirin or other non-steroidal anti-inflammatory drugs until dengue has been ruled out because these drugs may aggravate bleeding associated with some forms of dengue.

Protection

As with other mosquito-transmitted pathogens, prevention involves limiting exposure to mosquito bites. The most important preventive action is personal protection, which means using protective clothing (e.g., long pants and sleeves) and an approved mosquito repellent, preferably one containing DEET. Because the mosquitoes that transmit the virus can reproduce in a variety of water holding containers, eliminating such potential mosquito developmental sites from the home is also important. This can be done by draining, removing, or covering any water holding container. Examples include buckets, garbage cans, bird baths, boats, tarps, and similar objects.

Adapted from articles by Dr. Roxanne Connolly and Jorge Rey, Ph.D., the UF/IFAS Florida Medical Entomology Laboratory. For additional information go to http://fmel.ifas.ufl.edu/Zika/Zika-FAQ.htm