

Chikungunya - A Mosquito Borne Viral Arthritis Emerging in the United States

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Chikungunya virus infection causes a febrile illness with severe and painful joint symptoms. The name chikungunya comes from the African Kimakonde language and means “that which bends up” or “to become contorted,” describing the stooped appearance of sufferers.¹ Well known in Africa, India, and Asia, where it causes both large-scale outbreaks and sporadic cases between epidemics, chikungunya virus is transmitted by mosquitoes, principally *Aedes* species. The illness has spread to Europe and the Western hemisphere in recent years as the virus adapted to additional mosquito species and the mosquito range spread with climate change. Monkeys, baboons, and some bat species are known animal reservoirs in Africa. During outbreaks, humans are the major reservoir. Although infection is still usually transmitted by mosquitoes, maternal-fetal transmission may result in severe neonatal infection.

Outbreaks typically develop after heavy rains. In urban settings, outbreaks can be explosive.² The global emergence of this disease is exemplified by outbreaks in Réunion Island, Bhutan, Papua New Guinea, Italy, and recently in the Caribbean islands and Latin America. In the summer of 2014, U.S. cases were reported in travelers returning from the Caribbean and Latin America.³ Several patients in Florida had no travel history and presumably were infected in Florida.⁴

After a bite by an infected mosquito, the incubation period is typically 3 to 7 days but ranges from 1 to 12 days.⁵ Chikungunya has an explosive onset with high fever and severe joint pain, commonly accompanied by chills, headache, red eyes, sensitivity to light, pain behind the eyes, sore throat, nausea, vomiting, abdominal pain, swollen lymph nodes, and muscle pain. A rash often appears on the trunk and extremities, and occasionally on the face, palms, and soles, 1 to 10 days after onset of the illness. The joint pain is migratory and predominantly affects the small joints of the hands, wrists, feet, and ankles, with less prominent involvement of the large joints. Previously injured joints may be more severely affected. Stiffness and swelling may occur, but large joint fluid collections are uncommon. Although the acute illness typically lasts 7 to 10 days, joint symptoms, including arthralgia, arthritis, and tenosynovitis, may persist for months in a substantial proportion of patients.^{5,6} Animal studies suggest that the virus can persist in the joint.⁷

Following the outbreak on Réunion Island in 2006, 70% of affected patients had episodic arthralgia, typically symmetric and incapacitating, with joint swelling in 63% at 3 years post-infection.⁸ Thus, chronic chikungunya arthritis needs to be differentiated from rheumatoid arthritis (RA).⁹ In children, chikungunya-associated arthralgia and arthritis

are generally milder and briefer in duration. However, while rare, maternal-fetal transmission may result in severe neonatal infection.

Chikungunya infection is diagnosed shortly after onset by testing for the virus's RNA in patient blood by a polymerase chain reaction (PCR) method. Anti-chikungunya IgM antibody may be detected in the blood for 6 months or longer and is diagnostic of a recent infection. Anti-chikungunya IgG antibody may be present from past infection.¹⁰ All three tests are available in a commercial diagnostic reference laboratory and in government laboratories.

Treatment is supportive. Nonsteroidal anti-inflammatory drugs are useful in controlling pain and inflammation. Range-of-motion exercises lessen stiffness. Methotrexate and TNF inhibitor drug therapy has been used in chronic cases.¹¹ An initial report suggests that individuals with RA being treated with anti-TNF drugs when infected do not have a worse course of chikungunya.¹²

References

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