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Editorial

Chikungunya Fever

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Chikungunya fever is an acute febrile illness caused by an arthropod- borne alphavirus, Chikungunya virus (CHIKV). The virus is primarily transmitted to humans via the bite of an infected *Aedes* species mosquito. CHIKV was first recognized as a human pathogen during the 1950s in Africa, and since then, cases have been identified in many countries in Africa and Asia.[1,2]

CHIKV likely originated in Central/East Africa,[2,3] where the virus has been found to circulate in a sylvatic cycle between forest-dwelling *Aedes* species mosquitoes and nonhuman primates. *Aedes aegypti* and *Aedes albopictus* mosquitoes are the main vectors responsible for urban transmission of CHIKV. A high vector density is seen in the post monsoon season that enhances the transmission. Chikungunya fever epidemics display cyclical and seasonal trends. Outbreaks are most likely to occur in post-monsoon period when the vector density is very high.[4]

After an extensive outbreak during the beginning of current millennium in the French territory of Reunion Islands in the Indian Ocean, the disease has been reported from almost 40 countries from various WHO regions including South-East Asia. The spread of the disease in South India from 2004 has affected millions of people and left many with crippling disabilities.

The first case series of patients infected with CHIKV, published in 1955, described 115 hospitalized patients in Tanzania with acute onset of high fever, severe joint pain, and rash (1).

The illness was initially diagnosed as a "dengue-like" disease until laboratory evaluation confirmed CHIKV as the source of illness. Since then, many CHIKV outbreaks have occurred that have helped to further characterize chikungunya fever.[4,5,6,7,8]

Symptoms of CHIKV infection start abruptly with fever (temperature, usually e"38.9^{0}c). The fever typically last from several days up to 2 weeks and can be biphasic in nature. Shortly after the onset of fever, the majority of infected persons develop severe, often debilitating polyarthralgias. Published reports suggest that rash is another common symptom. When it occurs, the rash appears after fever onset and is typically maculopapular involving the trunk and extremities but can also involve palms, soles, and the face. Additional symptoms that can occur during the acute illness include headache, fatigue, nausea, vomiting, and conjunctivitis; myalgias, although not specific for febrile illnesses, occur very commonly. Cervical lymphadenopathy can also occur in the acute illness; however, it is not seen as frequently as with o'nyong nyong fever, another alphavirus infection also associated with fever and arthralgias.[9,10]

Following the acute phase of the illness, some patients develop prolonged symptoms, lasting several weeks to months, including fatigue, incapacitating joint pain, and tenosynovitis or edematous polyarthritis of their digits.[11] CHIKV infections are often confused with dengue viral infection, because both diseases can present with high temperatures and myalgias in people living in or returning from tropical areas. In addition, both viruses are transmitted by the same species of mosquitoes and may cocirculate, leading to dual infections and concurrent epidemics. Although these diseases share similar clinical features, prominent and prolonged arthalgias affecting multiple joints are more consistent with CHIKV, and hemorrhage is more common in cases of dengue virus infection.[12,13]

Several methods can be used for diagnosis. Serological tests, such as enzyme-linked immunosorbent assays (ELISA), may confirm the presence of IgM and IgG anti-chikungunya antibodies. IgM antibody levels are highest 3 to 5 weeks after the onset of illness and persist for about 2 months. Samples collected during the first week after the onset of symptoms should be tested by both serological and virological methods (RT-PCR). The virus may be isolated from the blood during the first few days of infection. Various reverse transcriptase–polymerase chain reaction (RT–PCR) methods are available but are of variable sensitivity. Some are suited to clinical diagnosis. RT–PCR products from clinical samples may also be used for genotyping of the virus, allowing comparisons with virus samples from various geographical sources.[14]

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There is no specific antiviral drug treatment for chikungunya. Treatment is directed primarily at relieving the symptoms, including the joint pain using anti-pyretics, optimal analgesics and fluids. There is no commercial chikungunya vaccine.[14]

The proximity of mosquito vector breeding sites to human habitation is a significant risk factor for chikungunya as well as for other diseases that these species transmit. Prevention and control relies heavily on reducing the number of natural and artificial water-filled container habitats that support breeding of the mosquitoes. This requires mobilization of affected communities. During outbreaks, insecticides may be sprayed to kill flying mosquitoes, applied to surfaces in and around containers where the mosquitoes land, and used to treat water in containers to kill the immature larvae.[14]

Although a fair amount of knowledge has been gained from the recent outbreaks and subsequent investigations, further studies are needed. Sensitive and specific models incorporating ecologic, entomologic, and virologic factors could be explored as a way to help predict factors contributing to the spread of the disease and ultimately help predict future outbreaks of CHIKV. Such models have already been developed for other arboviral diseases, such as Rift Valley Fever.[15] Research should continue into the pathogenesis of persistent arthralgias and into possible therapeutics, such as antivirals, which can treat the disease and potentially curb the high viremia and significant morbidity associated with CHIKV infection.

Through the recent outbreaks, CHIKV has demonstrated its ability to spread and infect large proportions of the population. Our experience with such large outbreak is almost nil. We were not prepared to face such huge number of population affected.

Recently an outbreak of chikungunya infection is spreading in urban areas of Bangladesh especially in Dhaka city. Many cases are being diagnosed as Chikungunya infection by RT-PCR (IEDCR) and by serology. There is a very good chance that CHIKV will continue to spread unless measures are taken to improve the recognition of the disease, to control the vectors responsible for the transmission, and to rapidly communicate epidemiological information to vector control experts and other public health officials. Hopefully, timely sharing of accurate information will help control the spread and magnitude of future outbreaks.

It is also a notable observation that, prevalence of dengue infection has reduced significantly during this chikungunya outbreak. Epidemiological, virological and zoonotic characteristics should be assessed which may be responsible for decrease in the case number of dengue due to the outbreak of chikungunya as because both the viruses have been carried by the same vector (aedes mosquito).

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