

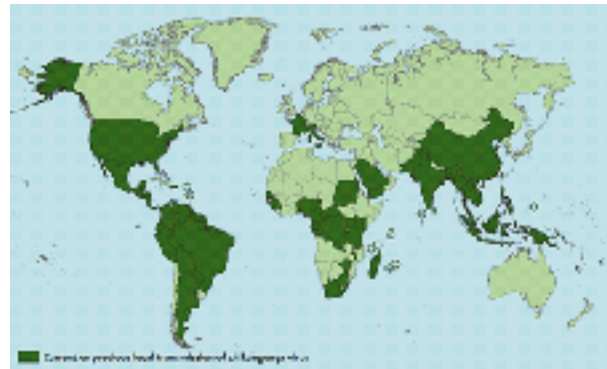
Editorial

Chikungunya- yet another mosquito borne epidemic burden for Bangladesh

Mosquito borne diseases have been an important health related issue in our country. The situation is worse with the latest addition of chikungunya. The first reported outbreak in Bangladesh was in 2008, when 32 cases were identified and labeled as an emerging risk, since then the disease is on the rise. Although some may argue that chikungunya may have been infecting earlier than that but was undiagnosed due to close resemblance with Dengue. But on this year 2017, it has struck an epidemic in the whole country and population of the capital Dhaka being mostly infected. Since 9th April to 26th July 2017, a total 830 blood sample confirmed cases have reported by the Institute of Epidemiology, Disease Control and Research (IEDCR), Bangladesh. No wonder this data is only the top of the iceberg if we have a close look at the epidemiology and clinical context of this viral disease.

Chikungunya is a mosquito-borne viral disease first described during an outbreak in southern Tanzania in 1952. Chikungunya occurs in Africa, Asia and the Indian subcontinent. Since it was found, the disease outbreak has been reported in 40 countries worldwide. Starting in February 2005, a major outbreak of chikungunya occurred in islands of the Indian Ocean. A large outbreak of chikungunya in India occurred in 2006 and 2007. Since 2005, India, Indonesia, Maldives, Myanmar and Thailand have reported over 1.9 million cases. In December 2013, France reported 2 confirmed autochthonous cases in the French part of the Caribbean island of St Martin. Since then, local transmission has been confirmed in over 43 countries and territories in the WHO Region of the Americas. In 2015, 693 489 suspected cases and 37480 confirmed cases of chikungunya were reported to the Pan American Health Organization (PAHO) regional office. WHO responded to small outbreaks of chikungunya in late 2015 in the city of Dakar, Senegal, and the state of Punjab, India. In the African region, Kenya reported an outbreak of chikungunya resulting in more than 1 700 suspected cases.

Image- worldwide geographical distribution of chikungunya



The name "Chikungunya" derives from a word in the Kimakonde language (used in Tanzania and Mozambique), meaning "to become contorted", and describes the stooped appearance of sufferers with joint pain (arthralgia). The fever locally also named as Langra Jor. Chikungunya fever is viral disease caused by virus of Chikungunya Virus (CHIKV) which an RNA virus that belongs to the family Togaviridae (genus Alphavirus) which is transmitted to humans by infected mosquitoes - including *Aedes aegypti* and *Aedes albopictus*. These two species can also transmit other mosquito-borne viruses including dengue. These mosquitoes can be found biting throughout daylight hours, though there may be peaks of activity in early morning and late afternoon. Both species are found biting outdoors, but *Ae. aegypti* will also readily feed indoors. After the bite of an infected mosquito, onset of illness occurs usually between 4 and 8 days but can range from 2 to 12 days. The outbreak occurs mostly during monsoon when there is plenty of still clear water around, the best place for *Aedes* mosquitoes to reproduce. Symptoms appear between 4 and 7 days after the patient has been bitten by the infected mosquito and these include high fever (40°C/ 104°F), joint pain (lower back, ankle, knees, wrists or phalanges), joint swelling, rash, headache, muscle pain, nausea, fatigue etc.

Acute symptoms typically resolve within 7-10 days. The joint pain is often very debilitating, but usually lasts for a few days or may be prolonged to weeks. Some patients might have relapse of rheumatologic symptoms (e.g., polyarthralgia, polyarthritis, tenosynovitis) in the months following acute illness. Hence the virus can cause acute, subacute or chronic disease. Most patients recover fully, but in some cases joint pain may persist for several months, or even years. Rare complications include uveitis, retinitis, myocarditis, hepatitis, nephritis, bullous skin lesions, hemorrhage, meningoenzephalitis, myelitis, Guillain-Barré syndrome, and cranial nerve palsies. Serious complications are not common, but in older people, the disease can contribute to the cause of death. Often symptoms in infected individuals are mild and the infection may go unrecognized. In chronic illness, the long term sequelae are persisting arthralgia or arthritis, alopecia and depression which have a significant impact on quality of life.

Differential diagnoses depend on residence, travel history and exposure during an outbreak. Physicians should consider dengue, leptospirosis, malaria, rickettsia, group A streptococcus, rubella, measles, parvovirus, enteroviruses, adenovirus, post-infections arthritis, and rheumatologic conditions. It is Difficult to distinguish chikungunya and dengue based on clinical findings alone. Both chikungunya and dengue viruses are transmitted by the same mosquitoes and the viruses can circulate in the same area and may cause occasional co-infections in the same patient. Although chikungunya virus more likely to cause high fever, severe polyarthralgia, arthritis, rash, and lymphopenia where as dengue virus more likely to cause myalgia, neutropenia, thrombocytopenia, haemoconcentration, hemorrhage, shock, and deaths. It is advised that patients with suspected chikungunya should be managed as dengue until dengue has been ruled out because proper clinical management of dengue reduces the risk of medical complications and death. Aspirin and other NSAIDs which are sometimes given to relieve joint pain in chikungunya can increase the risk of hemorrhage in patients with dengue.

Image- chikungunya versus dengue-clinical differences

Clinical and laboratory features of chikungunya virus infections compared with dengue virus infections

	Chikungunya	Dengue
Fever (>101°C)	+++	++
Arthralgia	+++	+/-
Arthritis	+	-
Headache	++	++
Rash	++	+
Myalgia	+	++
Hemorrhage	+/-	++
Shock	-	+
Lymphopenia	+++	++
Neutropenia	+	+++
Thrombocytopenia	+	+++
Hemoconcentration	-	++

During investigating of chikungunya lymphopenia, thrombocytopenia, elevated creatinine, and elevated hepatic transaminases are the most common clinical laboratory findings. 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 may be positive from 4 days of illness, highest after 3 to 5 weeks of onset of illness and may persist for about 2 months. The virus may be isolated from the blood during first week of infection by reverse transcriptase-polymerase chain reaction (RT-PCR). The viral culture may detect virus earliest in first 3 days of illness.

There is no specific antiviral drug treatment for chikungunya. Treatment is directed primarily at relieving the symptoms, including the joint pain using anti-pyretic, optimal analgesics and fluids. It is necessary to assess hydration and hemodynamic status and provide supportive care as needed. The patients should be evaluated for other serious conditions (e.g., dengue, malaria, and bacterial infections) and manage appropriately. In case of clinical doubt that the patient may have dengue, aspirin or other NSAIDs should not be used until they have been afebrile ≥ 48 hours and have no warning signs for severe dengue. In diagnosed cases of chikungunya persistent joint pain may benefit from use of NSAIDs, corticosteroids and physiotherapy.

There is no commercial chikungunya vaccine available till to date. So vector control and population awareness remains as the key to reduce and prevent outbreak of the disease. Prevention and control relies heavily on reducing the number of natural and artificial water filled container habitats that support breeding of the mosquitoes. It is done by combined effort of surveillance, source reduction, larva control, adult mosquito control and prevention of transmission. During outbreaks, insecticides may be sprayed to kill flying mosquitoes, applied to surfaces in and around containers where the mosquitoes lands and treat water in containers to kill the immature larvae. Everyone must be alert to search and empty standing water from both outdoor and indoor containers. For protection during outbreaks of chikungunya, clothing which minimizes skin exposure to the day biting vectors is advised. Repellents can be applied to exposed skin or to clothing in strict accordance with product label instructions. For those who sleep during the daytime, particularly young children, or sick or older people, insecticide-treated mosquito nets afford good protection. Mosquito coils or other insecticide vaporizers may also reduce indoor biting but may have health hazards. Another important

issue is to prevent transmission by preventing mosquito bite in already infected patients. Basic precautions should be taken by people travelling to risk areas and these include use of repellents, wearing long sleeves and pants and ensuring rooms are fitted with screens to prevent mosquitoes from entering.

The prevention and further control of chikungunya largely depends on the initiative from the government, the health sector, municipal corporations, local government officials, digital and print media and overseas logistic collaboration. Every health related stuff should aware the population at reach. Healthcare providers need to report suspected chikungunya cases to their local authority and public health department to facilitate diagnosis and mitigate the risk of local transmission. Public health departments should perform surveillance for chikungunya cases in suspected patients and be aware of the risk of possible local transmission in areas where Aedes species mosquitoes are active. Therefore every year before the monsoon starts in our country, we all should be prepared to prevent and manage chikungunya outbreak.

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