Editorial

Chikungunya Virus Infection in Bangladesh

Uddin MS*

Chikungunya fever is a viral illness caused by chikungunya virus (CHIKV), that is a member of the alphavirus genus, and Togaviridae family. It was first isolated in 1953 in Tanzania and is an RNA virus with a positive-sense single-stranded genome of about 11.6 kb. It is transmitted by arthropods, namely mosquitoes, Aedes aegypti and Aedes albopictus. They mainly bite during the day. The Virus may circulate from mosquitoes and man and also within a number of animals including monkey, birds and rodents. The disease has now been reported from various World Health Organization (WHO) regions including South East Asia.

The word 'chikungunya' is believed to have been derived from a description in the Makonde language, meaning "that which bends up", of the contorted posture of people affected with the severe joint pain and arthritic symptoms associated with this disease. The disease was first described by Marion Robinson and W.H.R. Lumsden in 1955, following an outbreak in 1952 on the Makonde Plateau, along the border between Mozambique and Tanganyika (the mainland part of modern-day Tanzania).

Since its discovery in Tanganyika, Africa, in 1952, chikungunya virus outbreaks have occurred occasionally in Africa, South Asia, and Southeast Asia, but recent outbreaks have spread the disease over a wider range. The first recorded outbreak of this disease may have been in 1779. This is in agreement with the molecular genetics evidence that suggests it evolved around the year 1700.

Chikungunya is generally transmitted from mosquitoes to humans. Less common modes of transmission include vertical transmission, which is transmission from mother to child during pregnancy or at birth. Transmission via infected blood products and through organ donation is also theoretically possible during times of outbreak, though no cases have yet been documented.

Since 1960, the outbreaks of the disease in South Eastern Asia were reported from India, Sri Lanka, Myanmar, Thailand, Indonesia, Philippines and Malaysia. Chikungunya outbreaks typically result in large number of cases but deaths are rarely encountered. Chikungunya cases start appearing in post-monsoon season period that is in the month of May onwards with a peak between the month of July and August as during this period vector density remains very high. In the Indian sub-continent, first isolation of the virus was done in Calcutta during 1963. Chikungunya infection in 20th century occurred in India during 1973. Thereafter, a quiescence of 2-3 decades during 2006, 2007, 2015, 2016, 2017 reports of large scale outbreaks of fever caused by Chikungunya in several parts of India have confirmed the re-emergence of this virus in the country with 13.9 million clinically. While the disease typically occurs in Africa and Asia, outbreaks have been reported in Europe and the Americas since the 2000s. In 2014, more than a million suspected cases occurred. It was occurring in 2014 at Florida in the continental United States but as of 2016 there was no further locally acquired cases.

During December 2008, an investigation team from the Institute of Epidemiology, Disease Control and Research (IEDCR) and International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR, B) investigated the first outbreak of chikungunya fever in the Rajshahi and Chapainawabganj districts of Bangladesh, which was in fact the third outbreak in the whole of Bangladesh. We identified six cases of chikungunya fever in the year 2008 and another outbreaks occurred in 2011. In Bangladesh, rate of Chikungunya virus (CHICK V) is increasing at a quick pace in the recent years. The Institute of Epidemiology, Disease Control and Research (IEDCR) has received a total of 10,264 chikungunya cases have so far been reported to the IEDCR from hospitals and clinics in Dhaka since May 2017 to 10th August 2017 of which 939 PCR positive. A few cases of chikungunya have also been reported to the IEDCR form Bangladesh's eastern Narsingdi and southwestern Gopalganj district and also other district of Bangladesh. We are in apprehension about 1 in 11 person affected by chikungunya in Dhaka city.

CHIK virus causes an acute febrile illness with an incubation period of 2-12 days. Viremia persists for up to 5 days from the onset of symptoms. Fever and arthralgia are the hallmark of Chikungunya fever. In Chikungunya mostly symptoms have an abrupt onset with high grade fever up to 102°F to 104°F (92%). Poly-articular Arthritis (87%) involving predominantly small joints of hands and feet. Ankles, wrists are also are affected. 50% of cases maculopapular rash commonly appear within five days of onset of the disease. Headache and myalgia also present. Clinical presentation of Chikungunya

usually follows 3 phases which are as follows: a) Acute phase: Less than 3 weeks b) Sub-acute phase: >3 weeks to 3 months c) Chronic phase: >3 months. Clinical presentation may be mild, moderate or severe and most of the symptoms subside within 3 weeks from the onset of symptoms. Some of the symptoms may persist for 3 months and even more. Usually 10-15% of the patient those who present with severe Chikungunya progress to Sub-acute or chronic phase. Rare in adults but seen sometimes in children photophobia, retro-orbital pain, vomiting, diarrhea, meningeal syndrome, acute encephalo-pathy may be presenting symptoms. Pregnant woman can get Chikungunya infection at any stage of pregnancy. Chikungunya virus can also be transmitted from the mother to the child. The time of greatest risk of Chikungunya virus transmission from a mother to a fetus appears to be during birth. Fever in general can trigger uterine contractions miscarriages or fetal deaths.

Diagnosis of Chikungunya should be suspected when epidemic occurs with the characteristic of abrupt onset of fever, arthralgia and myalgia, with or without rash. A patient meeting the clinical criteria and also at least one of the following tests done in the acute phase of illness. Direct evidence of Virus isolation / Presence of viral RNA by RT-PCR (within fast week) positive within 1-2 days. Indirect evidence of Presence of virus specific IgM antibodies (from 5th day on wards) in single serum sample collected in acute or convalescent stage. Four-fold increase in IgG values in samples collected at least three weeks apart (after 02 weeks of illness).

Management is mostly symptomatic for this self-limiting illness. Paracetamol 4-6 gm per day are commonly used for symptomatic relief of fever and for severe arthritis NSAIDs (Ibuprofen and Naproxen) can be used. Avoid acetyl amino salicylic acid (Aspirin). During epidemic, every patient clinically suspected need not to undergo serological testing. Promptly refer the case to higher centre as and when indicated (persistent high grade fever, severe joint pain, persistent vomiting and diarrhea, altered sensorium, bleeding manifestations and shock due to persistent vomiting and diarrhea). Protect against mosquito bite during febrile phase for prevention for transmission (mosquito net, mosquito repellent etc.). Systemic manifestation is rare. Relapse or reinfection is not seen. Mortality rate in chikungunya is less than 1 in 1000 affected patient. Protection against mosquito bite is the best solution. Co-infection with Dengue, Zika Virus and malaria can occur concurrently. No specific antiviral drug is available. Up to 2017 no approved vaccine exits. Chikungunya was one of more than a dozen agents researched as potential biological weapons. We are expecting newer Antiviral drugs and new vaccine for treatment and prevention of chikungunya infection.

* Professor Dr. Md. Shahab Uddin, Professor & Head, Department of Medicine, Eastern Medical College, Kabila (Dhaka-Chittagong Highway), Burichang-3520, Comilla, Bangladesh. Mobile: +8801711721535, Email: msuahmed2011@gmail.com