Faridpur Med. Coll. J. 2017;12(1):82-85

Review Article

Update Management of Chikungunya

KM Arif[1]

Abstract:

Chikungunya is a viral infection first detected after an outbreak in Tanzania in 1952. Chikungunya virus (CHIKV) is a mosquito-transmitted alphavirus that belongs to the Togaviridae family. Incidence increases in rainy season. Exact pathogenesis is not clearly understood. Fever and arthralgia/arthritis is the striking feature of Chikungunya fever[1]. Few patient may develop neurological and other complication. Joint pain may persist for several years. Investigations for confirmation are Real-time PCR, Virus specific IgM antibodies and IgG antibodies. Treatments are supportive. Most patients recover completely. Death is very rare. Reducing natural & artificial water filled container habitats is the principal step of prevention.

Key words: Chikungunya.

Introduction:

Chikungunya is a viral infection first detected after a outbreak in Tanzania in 1952. This mostly occurs in Asia/India & Africa. In 2013 Chikungunya was first detected in America/Caribbean island. Large outbreak in 2015 affected many American countries including USA & Mexico. In 2016 a total of 349936 suspected & 146914 laboratory confirmed cases were reported by PAN American Health Organization. In 2007 Transmission reported in Europe. In Indian sub-continent, first isolation of the virus was done in Kolkata in 1963[2,3]. The first outbreak occurred in India in 1973. In Bangladesh in this year 2017, up to the first three weeks of May 240 blood samples of clinically suspected CHIKV infection and 50 of them were laboratory confirmed by IEDCR. But studies regarding CHIKV infection in our country are yet not available. Chikungunya virus (CHIKV) is a mosquito-transmitted alphavirus that belongs to the Togaviridae family, probably originated in Africa. Transmssion occurs from human to human mainly by Aedes aegypti & Aedes albopictus. Chikungunya virus is a small (60-70 nm diameter) spherical, enveloped, single-strand RNA virus. Virion consists of an envelope and nucleocapsid. Envelope glycoproteins play a role in attachment to cells[4].

Vector

Aedes mosquitoes- Aedes aegypti & Aedes albopictus.

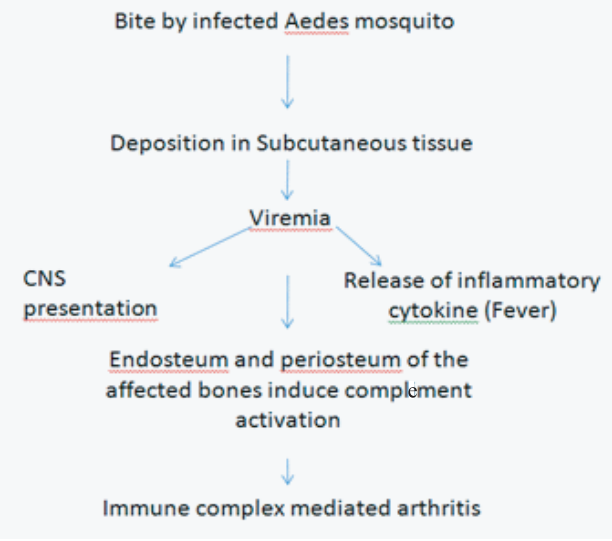
1. Dr. Khan Mohammad Arif, MBBS, FCPS (Medicine), Assistant Professor, Department of Medicine, Faridpur Medical College.

Address of correspondence :
Dr. Khan Mohammad Arif, MBBS, FCPS (Medicine), Assistant Professor, Department of Medicine, Faridpur Medical College. Phone: +8801711986724, Email:

and temperature. During the period of monsoon and post-monsoon there is an upsurge of cases. High vector density in the post-monsoon season accentuates virus transmission[5].

Pathogenesis

Pathogenesis is not clearly understood. Humans are the reservoirs of Chikungunya virus during epidemics. Other primates like monkeys, rodents, bats etc. are non-human reservoirs in inter-epidemic period[6].



Clinical manifestation of chikungunya

Incubation Period is 3-7 days (can be 2-12 days)

Clinical Feature

Common	Infrequent	Rare in Adults but seen in children
Fever (92%)	Stomatitis	Photophobia
Arthralgia/ Arthritis (87%)	Oral ulcers	Retro-orbital pain
Backache (76%)	Exfoliative dermatitis	Vomiting
Headache (62%)	Photosensitive hyperpigmentation	Diarrhoea

Fever is low grade to high grade (39-40^{0}C). Fever rises abruptly, lasts for few days to week, sometimes upto 10 days. Continued in nature with saddle back/bi phagic pattern, associated with chills and rigor[7]. Joint pain nearly always involved more than one joints. Previously damaged joints are affected more. Peripheral joints are commonly involved, central joint involvement is less common. Joint pain may be symmetrical/ asymmetrical and sometimes migratory in nature. Joint pain may also have saddle back pattern & worse in the morning. The classical bending phenomenon was probably due to the lower limb and back involvement which forced the patient to stoop down and bend forward[8]. Transient maculopapular rash is seen in up to 50% patients after 3-5 days of starting fever, usually disappear within 48-72 hrs. Aphthous-like ulcers, vesiculo bullous eruption, nasal blotchy erythema followed by photosensitive hyperpigmentation is observed more commonly in the recent epidemic in Bangladesh. Epidermolysis bullosa may be seen in children. Stomatitis and oral ulcers are also observed. Most skin lesions recovered completely except photosensitive hyperpigmentation that may persist. Few patient develop neurological complications like Meningo-encephalitis, Encephalitis, Acute encephalopathy, Guillain-Barre syndrome & Myelitis. Granulomatous and nongranulomatous anterior uveitis, Optic neuritis, Retrobulbar neuritis are ocular manifestations. These can involve one or both eyes[9]. Based on clinical presentation cases are divided into 3 groups: Mild, Moderate, and Severe. Mild features includes Low grade fever, mild arthralgia, mild focal myalgia, general weakness and skin rash/itching. Features of moderate group are low to high grade persistent fever, moderate joint pain, generalized myalgia, hypotension, mild bleeding, retro-orbital pain, oliguria. Severe disease have persistent high grade fever, severe Joint pain, persistent vomiting / diarrhoea, altered sensorium, bleeding (GI bleeding due to use of Analgesics), Shock due to persistent vomiting and diarrhoea[10,11].

Clinical Course and Outcomes:

Natural history of Chikungunya have three phases: (a) Acute phase: Less than 3 weeks. (b) Sub-acute phase :> 3 weeks to 3 months. (c) Chronic phase : > 3 months. Acute symptoms typically resolve within 7-10 days. More than 90% of the symptoms resolve completely. Some patient have either episodic stiffness or pain persistent stiffness without pain, persistent joint pain, These symptoms are collectively known as post Chikungunya Rheumatism. Rare complications may develop like meningoencephalitis, hepatitis, hemorrhage. Death is very rare. High Risk Group includes New born, >65 yrs of age, patient with Hypertension, DM and Heart disease[12].

Differential Diagnosis

Dengue fever

	Chikungunya	Dengue
Fever (>39^{0}C)	+++	++
Arthralgia	+++	+/-
Arthritis	+	-
Headache	++	++
Rash	++	+
Myalgia	+	++
Hemorrhage	+/-	++
Shock	-	+
Lymphopenia	+++	++
Neutropenia	+	+
Thrombocytopenia	+	+++
Hemoconcentration	-	++

Malaria, Meningitis: All cases of meningo-encephalitis during an outbreak of Chikungunya must be suspected to have Chikungunya related meningoencephalitis. Rheumatic fever, Leptospirosis, Rickettsial disease[13] may also considered as differential diagnosis.

Investigation:

In Acute phase CBC shows Leucopenia (below 5000 cells/cu. mm, Lymphopenia is common, Mild thrombocytopenia, Peripheral smear for malarial

parasite, ESR- usually elevated. C-reactive protein, increased during the acute phase. ALT / AST are raised. Confirmation by RT-PCR, Virus specific IgM antibodies, Four-fold increase in IgG values in samples collected at least three weeks apart, Virus isolation (Cell culture).

In Chronic Phase following investigation may be done like Autoantibodies: Rheumatoid factor, Anti-citrullinated peptide antibody, Anti-nuclear antibodies, HLA-B27, Joint fluid aspiration. Serum creatinine, eGFR, Serum Electrolytes in renal failure. Serum amino transferases, Alkaline phosphatase, Serum Bilirubin, Prothrombin time in Hepatic insufficiency. ECG, Chest X-ray and CSF study as necessary[15].

Treatment

Mild and moderate cases can be managed at home. Severe case should be managed at hospital. Home management includes adequate rest in a warm environment, plenty of water with electrolytes, Cold compresses may help in reducing joint pain and damage. Tablet paracetamol during the periods of fever. Avoid self-medication with aspirin or other NSAID. Indications for hospitalization are intractable pain, oliguria, bleeding manifestations, pregnancy, high risk group, hemo-dynamically unstable, comorbid conditions (CLD, CKD, CVD, Diabetes) and any serious complication (CNS, Hepatic, Renal)[16]. In sub-acute state objective of treatment is to relieve pain and inflammation, Limit the consequences of the inflammatory process. Treatment options are paracetamol, NSAID for joint pain. Amitryptiline, pregabalin, Gabapentin and physiotherapy for neuropathic pain. Prednisolone and DMARD can be used when refractory to NSAID. Chronic phase/chronic joint pain have several categories: Post Chick Rheumatoid Arthritis, Post-CHIK Spondyloarthritis, Post-CHIK undifferentiated polyarthritis, Post-CHIK Musculoskeletal Disorder. Post Chick Rheumatoid Arthritis can be treated by Methotrexate, Leflunomide and Sulfasalazine. Post-CHIK Spondyloarthritis can be treated by NSAID. Methotrexate/Sulfasalazine is the second line drugs. Post-CHIK undifferentiated polyarthritis treated with Hyroxychloroquine in excess to NSAID in first line, Corticosteriod and Methotrexate are 2nd line and 3rd line therapy respectively. Post-CHIK Musculoskeletal Disorder is treated with the same principles as the management of sub-acute presentations[17,18].

Prevention

Reducing natural & artificial water filled container habitats. Measurement during outbreak: insecticides spraying to kill flying mosquitoes, long clothing minimizes skin exposure, repellents can be applied to exposed skin, insecticides treated mosquito nets & mosquito coil[19].

Conclusion:

Chikungunya is re-emerging disease. Appropriate preventive measure can reduce incidence and prevalence of the disease. Increase awareness of general people is necessary.

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