



Research Article

Prevalence of Chikungunya Viral Infection in a Tertiary Care Hospital, Navi Mumbai Maharashtra

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ABSTRACT

Background: *Chikungunya Fever is one of the most important arboviral infection of medical significance. It is characterized by an abrupt onset of fever with severe arthralgia followed by constitutional symptoms and rash lasting for 1-7 days. The disease is almost self-limiting and rarely fatal. Chikungunya virus (CHIKV) is a RNA virus belonging to the family Togaviridae, Genus Alpha virus. Our goal in this study was to find out the prevalence of Chikungunya viral infection in a tertiary care hospital with seasonal variation and clinical findings.*

Materials and Methods: *Serum samples from patients with febrile illness with clinically suspected signs and symptoms of Chikungunya were included in the study. All samples were screened for Chikungunya IgM antibodies by Standard Diagnostic ELISA method.*

Results: *In our study, from total 100 serum samples 16 (16%) were positive for Chikungunya virus.*

Conclusion: *From the present study it can be concluded that the Chikungunya cases are on rise. Hence, Chikungunya has become a major public health problem in India. Favorable mosquitogenic condition during monsoon period is primarily responsible for the rapid spread of Chikungunya. Which requires continuous monitoring of the viral circulation in both endemic and non-endemic areas and rapid implementation of Chikungunya control programme. For these infections early detection and access to proper medical care will cause lower fatality rate.*

Keywords: *Chikungunya virus; Immunoglobulin M; Enzyme Linked Immunosorbent Assay.*

Introduction

Chikungunya is an important viral infection in the tropics, and its importance has been underscored by a recent genetic mutation which has improved viral transmission by *Aedes albopictus*.¹ The word Chikungunya is taken from Swahili “which means bends up” which is due to the crippling

symptoms of arthralgia which renders the patient unable to walk upright.² This debilitating arthralgia is present in 80-100% of cases.³ The first epidemic occurred in Tanzania in 1952-1953. In India, documented outbreaks occurred in 1963 and 1964 in Kolkata and southern India, respectively. Thereafter, as small outbreak of

Chikungunya virus was reported from Solapur district, Maharashtra in 1973. CHIKV re-emerged in India in the states of Andhra Pradesh, Karnataka, Maharashtra, Madhya Pradesh and Tamil Nadu since December, 2005. Cases have also been reported from Rajasthan, Gujarat and Kerala. The outbreak is still continuing.⁴

Chikungunya virus is an arthropod borne virus (Arbovirus), a member of the genus Alpha virus and belong to the family *Togaviridae*. It is transmitted to humans by the bite of *Aedes* spp. mosquitoes, *Aedes aegypti* and *Aedes albopictus*.⁵ Electron microscopic study of Chikungunya virus shows characteristic alpha virus morphology: a size of 50-70 nm, icosahedral-like nucleocapsid surrounded by an envelope with embedded viral glycoproteins. The nucleocapsid contains the single stranded RNA genome of approximately 11.8 kb complexed with multiple copies of a single species of capsid protein (C) of about 30 KDa.⁶ In Africa, the virus is maintained within a sylvatic cycle with wild mosquitoes (*Aedes furcifer*, *Aedes luteocephalus*, *Aedes taylori*, *Aedes africanus*) feeding preferentially on primates. In Asia, Chikungunya virus is mainly transmitted within an urban cycle in an inter-human transmission achieved essentially by the human biting *Aedes aegypti* and the less anthropophilic *Aedes albopictus* prefers suburban and rural-areas where it colonizes both artificial and natural water containers.⁷

Material & Methods

The study was conducted in the Department of Microbiology of MGM Medical College and Hospital, over a period of one year from December 2014- December 2015. A total of 100 serum samples were included in the study. Clinically suspected cases attending the tertiary care hospital were screened for Chikungunya IgM antibodies by Standard Diagnostic ELISA method.

Sensitivity and specificity for the IgM antibody is 93.7% and 95.9% respectively.

The test were carried out the manufacturer's instructions. Inclusion criteria were set to include only patients clinically suspected of suffering from Chikungunya fever and having following symptoms i.e. fever, joint pain, rash, myalgia, headache, retro-orbital pain, Arthralgia, abdominal pain. Exclusion criteria included any other patients who were not clinically suspected of suffering from Chikungunya fever and patients with fever of known cause.

Results

A total of 100 serum samples from suspected cases were tested for Chikungunya IgM antibodies by Standard Diagnostic ELISA method. Out of which 16 (16%) samples were positive for Chikungunya Fig 1. Maximum of the cases were in the age group of 21-35 years (63%) Followed by 11-20 years (25%) Fig 2. From the total number of affected cases, (69%) were males and (31%) were females Fig 3. A seasonal peak of Chikungunya infection was seen in the months of July to September, while showing major decline in other seasonal months Fig 4. Fever was the most common presenting complaint and was seen in almost all the cases (80%), arthralgia in (47%), Myalgia in (44%) retro-orbital pain in (44%) hepatomegaly in (31%), abdominal pain in (19%), rash in (38%) Fig 5. Complications in Chikungunya cases like hypoalbuminemia, were seen in (19%) cases.

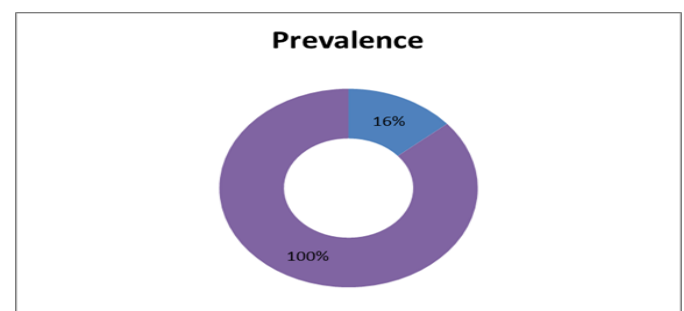


Figure 1: Prevalence of Chikungunya IgM positive cases.

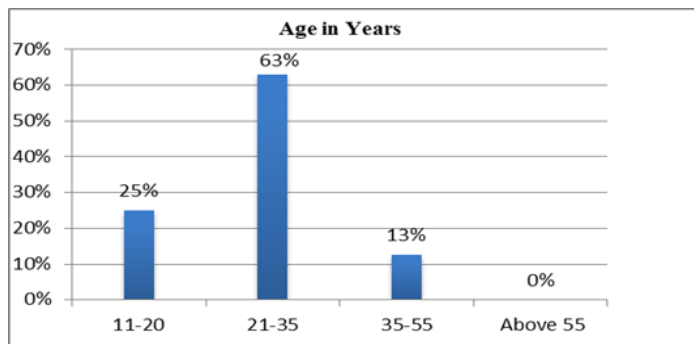


Figure 2: Age wise distribution of Chikungunya IgM positive cases.

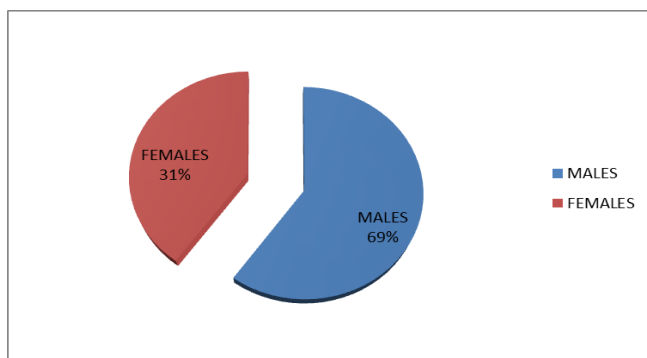


Figure 3: Sex distribution of Chikungunya IgM positive cases

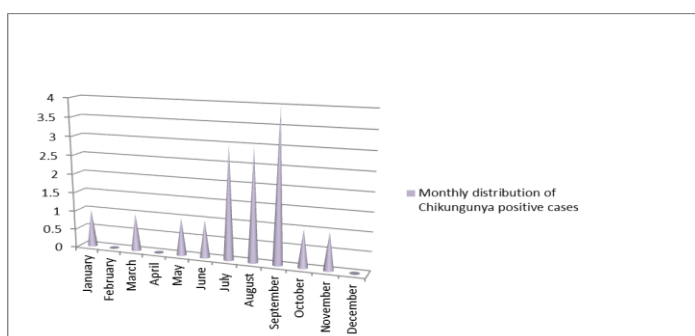


Figure 4: Monthly distribution of Chikungunya IgM positive cases

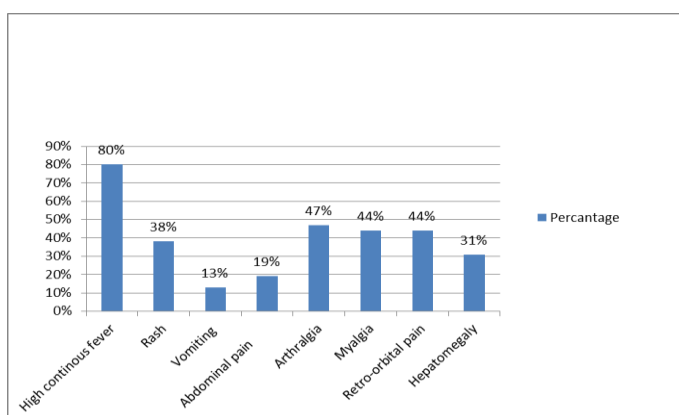


Figure 5: Percentage of clinical features of Chikungunya IgM positive cases.

Discussion

After a quiescence of about three decades, outbreak of Chikungunya is being reported from different parts of India. Chikungunya viral infection is becoming more prevalent due to increased transmission of virus in various areas of India. In our study 16% patients were reactive for Chikungunya is similar to study carried out by Gandhi S Bhoosan et al.⁸ Thus in clinically suspected cases of Chikungunya fever, it is advisable to test immediately. The number of cases was Chikungunya maximum reported between July to September, while major decline in other seasonal months from November to February and from March to June months. This type of seasonal variation was seen in most of the studies, because transmission intensifies at the start of the rainy season when infected vector mosquitoes are more abundant. This finding correlated with similar findings of Bharti N et al⁹ reported that a seasonal peak of Chikungunya was seen in months of June to September. The age group 21-35 years was mostly affected whereas least no of cases were seen in elderly persons > 55 years in our study. In the gender distribution, the number of affected males was more than females. These findings were similar to the study by Kalawat U et al.¹⁰

Conclusion

With the urbanization that is occurring in India, the incidence of Chikungunya infection is increasing dramatically, with the expectation that cases of Chikungunya virus will become more prevalent in the future due to increased transmission of virus in various areas of India. The present study emphasizes that enhanced surveillance to clinically and diagnostically differentiate Chikungunya virus infection is needed for early recognition of virus invasion and local transmission. Clinical examination of Chikungunya patients has not yet allowed the identification of specific symptoms, such observation should be interpreted with cautions.

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