

Epidemiology of chikungunya fever in srikakulam district



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Abstract

Background:

Chikungunya virus is no stranger to the Indian sub-continent. Since its first isolation in Calcutta, in 1963, the last outbreak of chikungunya virus infection occurred in India in 1971. Subsequently, there has been no active or passive surveillance carried out in the country and seemed that the virus has disappeared till the large outbreaks of fever occurred in several parts of Southern India. We report a prospective analysis of cases of chikungunya fever referred from various primary health centers of rural, tribal and semiurban areas of Srikakulam district, Andhra Pradesh.

Aims of study: To analyse the burden of Chikungunya fever in the Srikakulam district of Andhra Pradesh

Material and Methods: -A prospective descriptive study was under taken between January-2013 to December-2014 by testing clinically suspected chikungunya fever patients attending tertiary care centre in the Srikakulam district, Andhra Pradesh. The sera collected from suspected patients were analyzed for CHIK specific IgM antibody by IgM antibody capture enzyme linked immunosorbent assay (ELISA) using NIVCHIK kit. The data was analyzed.

Results:-During the study period the total number of samples screened with clinical suspicion of chikungunya fever was 127, out of which 23(18. 11%) were positive for IgM antibodies. The number of seropositive cases referred

from rural area was 3 in number and from tribal areas 20. The seasonal distribution of cases was variable.

Conclusion: Chikungunya fever is self limiting disease. Efforts have to be made through community awareness and early institution of supportive therapy. Vector control measures should be in full swing.

Key words: Chikungunya fever, IgM positivity, Srikakulam district

EPIDEMIOLOGY OF CHIKUNGUNYA FEVER IN SRIKAKULAM DISTRICT

Introduction

Chikungunya (that which bends up) is an infection caused by the chikungunya virus (arbo virus). It features the sudden onset of fever usually lasting two to seven days, and joint pain typically lasting weeks or months but sometimes years. ^[1] The mortality rate is a little less than 1 in 1000, with the elderly most likely to die. ^[2]

The arbo virus is passed to humans by two species of mosquito of the genus Aedes: A. albopictus and A. aegypti. Animal reservoirs of the virus include monkeys, birds, cattle, and rodents. This is in contrast to dengue, for which only primates are hosts. ^[3] The best means of prevention is overall mosquito control and the avoidance of bites by mosquitoes in countries where the disease is common. ^[4] No specific treatment is known, but medications can be used to reduce symptoms. Rest and fluids may also be useful.

Material and Methods: -A prospective descriptive study was undertaken between January-2013 to December-2014 by testing clinically suspected primary Chikungunya patients attending tertiary care centre in the Srikakulam District, Andhra. Pradesh. This centre receives samples from semiurban, rural and tribal areas from Srikakulam district.

Blood samples were collected from patients with clinically suspected Chikungunya fever attending the Pediatric and Medicine clinics. The patients were diagnosed as having Chikungunya fever based on standard criteria; presentation with febrile illness of 2 to 7 days duration with skin rash and features like joint pain typically lasting weeks or months but sometimes years. Mixed infection with dengue and chikungunya fever and secondary infection were excluded from the study. The exact date of sampling was not available for most of the patients. Approximately 3 ml of blood was collected, serum was separated. The sera collected from suspected patients were analyzed for CHIK specific IgM antibody by IgM antibody capture enzyme linked immunosorbent assay (ELISA) using NIVCHIK kit. The data was analyzed.

Results

During the study period (2013 and 2014), the total number of samples screened was 127 of which 23 (18.11%) were positive for IgM antibodies (Table 1&2). There was increase in the percentage positivity in the year 2014(28.78%) when compared to 2013(6.55%) with (P value of .005).

Of the 23 reactive cases, 1(4.34%) was positive in a child of four years and 22 (95.65%) were adults. The IgM positivity was 12 (52.17%) in males and
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11 (47. 82%) in females. The distribution of seropositive cases in adults was uniform in the age group ranging from 29 years to 62 years. (Table 3&4).

The observed chikungunya IgM seropositivity month wise is illustrated for the year 2013 and 2014. The percentage of IgM positivity recorded was found to be variable, high during the months of September in 2013 and May in 2014. (Table 1&2). The number of seropositive cases referred from tribal area was more 18(78. 26%).

Discussion

The word ' chikungunya' is thought to derive from a description in theMakondelanguage, meaning " that which bends up", of the contortedpostureof people affected with the severe joint pain andarthriticsymptoms 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 theMakonde Plateau, along the border betweenMozambiqueandTanganyika(the mainland part of modern dayTanzania). According to the initial 1955 report about theepidemiologyof the disease, the term ' chikungunya' is derived from the Makonde root verb kungunyala, meaning to dry up or become contorted. 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. [5]

In India first outbreak of Chikungunya was documented in Kolkata during 1963 and after that 4 to 5 outbreaks had occurred. [6] The last outbreak was

reported in 1971 and after that no such outbreak occurred. ^[7] It was assumed that virus had vanished from this region. Surprisingly since December 2005, more than 1, 80, 000 cases of Chikungunya was detected in India which clearly indicates re-emergence of Chikungunya in India. ^[8] Since then Chikungunya become a major public health problem in India. An estimate of prevalence of infection due to Chikungunya from several surveys conducted during an outbreak gives us an idea of burden of problem in a specific region which seems crucial for initiating any intervention strategy. ^[9] It is evident from prior survey that the main reason for this outbreak is lack of herd immunity, in-appropriate vector control strategy, emergence of rapid mutation of the virus. ^[7, 9] Another issue with such outbreak is non-availability of proper laboratory diagnosis. ^[6, 7] The reasons for outbreak for Chikungunya virus is unclear and yet to be explored

Andhra Pradesh (AP) was the first state to report this disease in December 2005, and one of the worst affected (over 80, 000 suspected cases). Several districts of Karnataka state such as Gulbarga, Tumkur, Bidar, Raichur, Bellary, Chitradurga, Davanagere, Kolar and Bijapur districts have also recorded large number of chikungunya virus related fever cases. Over, 2000 cases of chikungunya fever have also been reported from Malegaon town in Nasik district, Maharashtra state, India between February-March 2006. During the same period, 4904 cases of fever associated with myalgia and headache have been reported from Orissa state as well. According to the National Institute of Virology, Pune, out of 362 samples collected from different places in AP such as Kadapa, Secunderabad, Chittoor, Anantapur,

Nalgonda and Prakasam, Kurnool and Guntur districts, 139 were found positive for chikungunya. [10]

Laboratory diagnosis of Chikungunya poses a great threat as most commonly practiced test like ELISA for detection of IgM antibodies is not standardized and interpretation of test results should be done with caution. Diagnosis is usually done based on triad of clinical symptoms like sudden onset of fever, skin rash and arthralgia. [11]

As Chikungunya is self-limiting disease and treatment is mainly supportive. The best strategy for control of such outbreak is raising awareness of the community through mass education by public health officials. Vector control measures like spraying insecticides for example temephos, fenthion, malathion and DDT, clearing stored water and personal protective measures is also a key element in control of such outbreak. Research has shown that most important reservoir of vector of Chikungunya is in stored water in plastic or metal container and also available at construction sites. During this present survey community received education regarding safe water storage practices and personal hygiene which seems important issues in control of such outbreak. [12]

In the present study 127 cases presented with clinical features of chikungunya fever out which IgM positive cases were 23(18. 11%). The ratio of IgM positive dengue fever to chikungunya fever was 2. 2: 1 in 2013 and 1: 3. 3 in 2014. Maximum number of cases presented beyond 28 years of age

with only one case in a four year old boy with male preponderance. Cases recorded were more from tribal area (78.26%).

Conclusion:

Seasonal transmission of chikungunya fever is highly variable and more cases are recorded from the tribal area in the present study. Intensive efforts have to be made through community awareness and vector control measures should be in full swing throughout the year. Education regarding safe water storage practices is very much essential.

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TABLES

TABLE 1: DISTRIBUTION OF CASES MONTH WISE IN THE YEAR-2013

	Clinically suspected cases of Chikungunya fever	IgM positive Cases	IgM Negative Cases
January	No cases		-
February	No cases		-
March	16	-	16
April	No cases	-	-
May	01	-	01
June	14	-	14
July	No cases	-	-
August	12	-	12
September	13	04	09
October	05	-	05
November	No cases	-	-

December	No cases	-	-
Total	61	04	57

TABLE-2: DISTRIBUTION OF CASES MONTH WISE IN THE YEAR-2014

Months	Clinically suspected cases of Chikungunya fever	IgM	IgM
		positive Cases	Negative Cases
January	No Cases	-	-
February	No Cases	-	-
March	No Cases	-	-
April	No Cases	-	-
May	31	16	15
June	No Cases	-	-
July	No Cases	-	-
August	No Cases	-	-
Septem	27	-	27

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October	No Cases	-	-
November	No Cases	-	-
December	08	03	05
Total	66	19	47

TABLE 3: SEX WISE DISTRIBUTION OF IgM POSITIVE CASES

Year	IgM+ve cases	Male	Female
2013	04	02	02
2014	19	10	09
Total	23	12	11

TABLE 4: AGE WISE DISTRIBUTION OF IgM POSITIVE CASES

Year	IgM +ve Children	19-29 year olds	29-39 year olds	39-49 year olds	49-58 year olds	> 58 year olds
		28	38	48	58	

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TABLE 5: DISTRIBUTION OF IgM POSITIVE CASES AS PER HABITAT

Habita	Total Cases (IgM +ve)	Percentage
Tribal	18	78.26
Rural	05	21.74
Total	23	100