

EPIDEMIOLOGY OF CHIKUNGUNYA FEVER IN SRIKAKULAM DISTRICT

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ABSTRACT: BACKGROUND: Chikungunya fever is a self-limiting viral fever spread by mosquito bite and has become an epidemic. The proportion of cases has increased in Andhra Pradesh. 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 blood collected from suspected patients was analyzed for CHIK specific IgM antibodies by ELISA method using Nivchik kit. The data was recorded and 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.

KEYWORDS: Chikungunya fever, IgM positivity, Srikakulam district.

INTRODUCTION: Chikungunya fever outbreak first occurred in 1779 on the Makonde plateau, along the border between Tanganyika and Mozambique. In Makonde language "kungunyala" means to dry up or become folded which refers to stooped posture developed due to arthritis or arthralgia.^[1] It causes more morbidity than mortality. The virus is transmitted to humans by two species of mosquito: *Aedes Albopictus* and *Aedes. Aegypti*. Vertical maternal fetal transmission has been documented in pregnant women affected by chikungunya fever. The best means of preventing the disease is to know the burden of the disease and develop good strategies to control them.^[2]

MATERIAL AND METHODS: A prospective descriptive study was under taken 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 pains typically lasting weeks or months but sometimes years. Mixed

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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 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: Chikungunya fever is caused by alpha virus of the family Togaviride. There is three strains with different antigenic characteristics causing the infection. They are West African; East, Central and South African (ECSA) phylogroup and Asian phylogroup. In India till 1973 Asian genotype was responsible for the epidemics, but in recent outbreaks ECSA phylogroup is responsible for the epidemics. Vertebrates such as monkeys, rodents, and birds are reservoirs of the virus except during epidemics; human beings are the reservoirs of the virus^[3]

The first Indian report of chikungunya outbreak was documented by Shah KV et al^[4] at Kolkata in the year 1964. Since then several outbreaks of chikungunya fever have been documented from different parts of India. After the last outbreak in 1971 it was assumed that virus had vanished from this region.^[2]

Yergolkar PN et al^[5] in the year 2005-2006, analyzed the prevalence of IgM positive chikungunya and dengue fever in the districts of Andhra Pradesh, Karnataka and Maharashtra and their observations were that the proportion of chikungunya fever was more than dengue fever with more number of cases in Andhra Pradesh.(Table 6). Since then Chikungunya become a major public health problem in Andhra Pradesh.

In primary health centers and most of the Government Medical colleges in Andhra Pradesh, lab diagnosis of chikungunya fever is based on detecting the CHIK specific IgM antibodies by ELISA method. Kashyap RS et al^[6] compared the sensitivity of antigen detection assay to that of ELISA method for detection of IgM and IgG antibodies, his observations were the sensitivity of antigen detection assay was 85%, which was significantly higher than that of IgM (17%) or IgG (45%) detection especially during acute phase. The cases in the prodromal and subclinical phase are frequently missed as antigen detection is a costly affair.

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Chikungunya fever is self-limiting disease and treatment is mainly supportive. Mass education of the community by medical and paramedical staff at primary health centers, effective vector control measures throughout the year as there is seasonal variation, clearing stored water (mainly in construction sites) and personal protective measures would decrease the prevalence of the disease.

In the present study 127 cases presented with clinical features of chikungunya fever out of 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. Detection of virus antigen has to be stressed upon and implemented at the primary level.

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Months	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

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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 1: Distribution of cases month wise in the year-2013

Months	Clinically suspected cases of Chikungunya fever	IgM Positive Cases	IgM 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	-	-
September	27	-	27
October	No Cases	-	-
November	No Cases	-	-
December	08	03	05
Total	66	19	47

Table 2: Distribution of cases month wise in the year-2014

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

Table 3: Sex wise distribution of Igm positive cases

Year	IgM +ve cases	Children	19-28 years	29-38 years	39-48 years	49-58 years	>58 years
2013	04	-	-	-	-	03	01
2014	19	01	01	06	04	05	02
Total	23	01	01	06	04	08	03

Table 4: Age wise distribution of Igm positive cases

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

Table 5: Distribution of Igm positive cases as per habitat

Tests	States		
	Karnataka	Maharashtra	Andhra Pradesh
Number of blood samples	900	473	565
Anti ChiKV IgM%	33.7%	35.7%	44.4%
Anti-Dengue IgM%	9.9%	4.9%	0.9%

Table 6: Results of serologic testing and virus isolation India, October 2005-march 2006 by Kashyap Rs et al.

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