



RESEARCH ARTICLE

MICROBIOLOGY

EPIDEMIOLOGICAL STUDY ON CHIKUNGUNYA OUTBREAK IN MANGALORE DISTRICT, KARNATAKA**PRASANNA CHANDRA*¹, BISWAJIT DAS¹, SOWMYA.M.K²,
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ABSTRACT

Chikungunya is an arboviral disease, which affected more than 1 million people during large scale epidemic outbreak of 2005- 2006 in the Indian Ocean Island and India. This Study aims at analysing the gender, age group distribution, illiteracy rate, socio economic status, signs and symptoms of the out break of Chikungunya. A total of 180 people were selected from epidemic area of Mangalore district. The history and examination findings from clinically diagnosed Chikungunya cases were recorded. The symptoms recorded were fever, headache, arthralgia, swelling and stiffness of joints, itching, maculopapular rash, peeling, discolouration and oral ulcers. Mainly, females were involved in the present epidemic. Most affected age group was 47-56 years who to the maximum of 72.2% had ankle joint involvement and the swelling of joints who reported to be the maximum of 89.4% cases.



KEY WORD

Chikungunya, Outbreak, Gender, Socio-economic status

INTRODUCTION

Chikungunya had been reported in late May 2008 in and around Mangalore district. This viral fever was caused by genus alpha virus in the family Togaviridae and transmitted to humans by the bite of *Aedes aegypti* mosquito¹. This outbreak which occurred in 2006 appeared to be the more severe and one of the biggest outbreaks caused by virus in India affecting over 13 lakhs people^{2, 3}. The disease was first described by Marion Robinson and WHR Lumsden⁴.

In 1953, following an outbreak of chikungunya on the Makonde Plateau, along the border of Tanganyika⁵, large scale outbreaks of fever caused by chikungunya virus infection in several parts of Southern India confirmed the re-emergence of the viruses⁶.

Chikungunya is a self-limiting febrile illness. Clinical features include fever, joint pains, headaches and rashes⁷. Petechial or maculopapular rash usually involving the limbs and trunks are the characteristic symptoms of the disease. Orally, lichenoid eruptions, aphthous ulcer and freckled pigmentation over the facial area are noted in some cases⁸. Migratory polyarthritis, mainly affects the small joints of the hands, wrists, ankle and feet with lesser involvements of the large joints¹. Arthralgia may persist for month or years. Some other patients continue to experience stiffness, joint pains and recurrent effusion for several years⁹.

Patient develops leukocytosis rather than leucopenia. In addition, thrombocytopenia is more marked and develops earlier in cases with a fatal outcome¹. The renal circulation is congested and compromised from local and systemic circulatory changes resulting in necrosis of tubules, particularly at the corticomedullary junction and oliguria. The oliguria persists for 3-10 days before the returns

of renal function marks the onset of the polyuric stage, which causes the danger of dehydration and electrolyte abnormalities¹. Hypokalemia which is also seen in 2006 had an outbreak in Rajasthan¹⁰. Severe complications associated with chikungunya such as neurological sequelae had been described^{11, 12}, as earlier thought fatal, But in 2006 outbreaks the associated death was 260 in Reunion islands and India^{13, 14}.

MATERIAL AND METHODS

The present study was conducted in 180 clinically suspected cases of chikungunya fever during the epidemic period of May 2008 to July 2008. Patients who presented with an acute febrile illness characterized by high fever, arthralgia and maculopapular rash were included for screening¹⁵. The patients were selected from OPD and IPD of clinics and private nursing homes of Mangalore (Karnataka). The age groups of 7 yrs to 76 yrs, comprising of 68 males and 112 females were included in the study group.

Out of 180 suspected chikungunya fever cases, only 50 samples were subjected to the chikungunya IgM card test¹⁶. Of the 50 samples tested, 33 were reported positive (confirmed) by the Chikungunya IgM rapid card test and remaining 147 were suspected cases¹⁷. The suspected and confirmed cases were subjected to detailed clinical history after obtaining proper consent from the patients. As the study was conducted in private nursing homes and hospitals, ethical clearance was taken from the hospital administrative staff. History included name, age, sex, education, income, occupation, area, sudden onset of fever, itching and skin rashes, incapacitating arthralgia¹⁸, no and type of joints affected.

Swelling, redness, numbness and stiffness of affected joints were noted. Oral cavities were examined for ophthous ulcers. Detailed nervous System, cardiovascular, respiratory and abdominal examination were done. Cases were studied in details and followed up in outdoor.

RESULT

Out of 180 cases of chikungunya fever cases, 33 cases Ig card test positive and 143 suspected cases were included in this study. Most of them (70.6%) were from rural area and 58.3% of them were illiterate.

The age group ranges from 7- 76 years were included in our study group. The age group of 47-56 years were affected to the maximum than the other age groups and male to female ratio was 0.6:1 as shown in table No.1.

Table 2 describes the percentage of different type of occupation which are found to be maximum (25%) of population of this study group who were beedi workers followed by farmers, house wives, labour and others. In our study group 70.6% workers were from low socio-economic group as describe in Table No. 3.

Table- 1
Distribution of cases according to age and sex

Age Group (years)	No of cases	Percentage	Male	Female	M:F
7-16	07	3.9	03	04	0.6:1
17-26	28	15.6	10	18	
27-36	31	17.2	11	20	
37-46	38	21.1	16	22	
47-56	41	22.8	15	26	
57-66	25	13.9	09	16	
67-76	10	5.5	04	06	

Table: 2
Distribution of cases according to occupation

Serial No.	Occupation	No. of workers	Percentage
1.	Beedi workers	45	25
2.	Farmers	42	23.3
3.	House wives	40	22.3
4.	Labourers	29	16.1
5.	Others	24	13.3

Table- 3
Distribution of cases according to income

Serial No.	Income	No. of workers	Percentage
1.	Nil	15	8.3
2.	< 2,000	127	70.6
3.	10,000 or above	38	21.1

Out of total, maximum (72.2 %)of cases were suffering from ankle joint pain followed by knee joint (60%), wrist joint (45%), Interphangeals joints (16.7%), elbow joints (15%) and shoulder joints (8.3%) (As shown in Table No.4).

Table- 4
Distribution of chikungunya cases according to joint involvement.

Serial No.	Joints	No. of cases	Percentage
1.	Knee joints	108	60
2.	Ankle joints	130	72.2
3.	Wrist joints	81	45
4.	Elbow joints	27	15
5.	Interphangeals joints	30	16.7
6.	Shoulder joints	15	8.3

Swelling, stiffness and numbness of affected joints can be seen in 89.4%, 15% and 2.8% of cases respectively. Dermatological manifestation like Itching, Peeling & discoloration and Rash were involved in 32.8%, 17.2% and 8.3% respectively. Partial disability and no disability would be found in 16.8% and 83.3% cases as shown in Table No 5.

Table 5
Distribution according to presence of symptoms in cases of chikungunya.

Serial No.	Other finding	No. of cases #	Percentage
1.	Swelling	161	89.4
2.	Itching	59	32.8
3.	Peeling & discoloration	31	17.2
4.	Stiffness	27	15
5.	Rash	15	8.3
6.	Disability (ND*)	150	83.3
7.	Disability (PD*)	30	16.8
8.	Numbness	05	2.8

* ND: No disability, * PD: Partial disability.
Multiple Response

DISSCUSION

Alpha viruses are known to give rise to a spectrum of disease in humans ranging from febrile illness to devastating encephalitis¹⁹. Like the dengue virus (DENV), the CHIKF is also transmitted by *Aedes Aegypti* which is endemic to the urban and rural areas of India²⁰. Similarly, our study finds that most of the affected persons are rural population and they are illiterate. Rural population is affected more due to the lack of knowledge related to the disease and poor reporting of the public health authority. Earlier, it has been reported that poverty may influence the epidemiology of

CHIKF²¹. In India, the *Aedes Aegypti* mosquitoes are primary vectors for DENV and CHIKV which are more prevalent in the low socio-economic conditions and high population density²². Our study shows that nearly 70.6% populations are low socio-economic conditions and they are beedi workers, farmers, house wives, coolies and others.

In our research, most of the sufferers were from the age group ranging from 47-56 years. These findings are similar to other authors^{7, 23, 24}. In musculoskeletal and dermatological symptoms ankle joints pain (72.2%) and swelling (89.4%) was the major finding in our study. Suryawanshi et al.²⁵ also found similar finding in their study.



CONCLUSION

This study suggests that chikungunya is prevalent among the rural population due to the lack of knowledge about the disease. The impact of disease could be minimized by providing health education regarding early reporting, prevention and control. The devastating effects are seen as low socioeconomic category which would be

controlled by proper sanitation and vector control.

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