

A STUDY ON CHIKUNGUNYA CASES IN PALAKKAD, INDIA

Marimuthu Karthikeyan¹ and Meenakshi K. Deepa²

A study was done on Chikungunya in the Kalpathy village, Palakkad which was moderately affected. The aim of the survey was to understand the nature and magnitude of the Chikungunya fever, the clinical signs and symptoms.

A total number of 107 cases was surveyed door to door at six different localities in the Kalpathy village of the Palakkad district. The patient history, clinical signs and symptoms of the Chikungunya cases were recorded. The signs and symptoms recorded were fever, chills, arthralgia, eye pain, headache, edema, rash, oral ulcers, itch, myalgia, sore throat, distaste, nausea, vomiting, diarrhoea, neck pain, hypotension, dermatitis, dizziness and hyperpigmentation.

The major symptoms were fever (100%), arthralgia (85.04%), vomiting (32.71%) edema (30.84%), myalgia (28.97%) and chills (28.03%). Significant differences were observed in the following symptoms, like eye pain (6.54%), back pain (20.56%), headache (19.62%), rash (13.08%), oral ulcer (1.82%), itch (14.01%), hyperpigmentation (1.89%), sore throat (9.34%), distaste (16.84%), backache (20.56%) diarrhoea (2.82%) and dizziness (3.73%). Chikungunya more severely affected the age group >35 years and the above mentioned symptoms were less commonly seen in the age group <30 years compared to the above age group.

Chikungunya was found to be the major vector-borne disease in the Kerala state. The major clinical symptoms in affected cases were fever, chill, myalgia, vomiting, edema and arthralgia. Edema, myalgia and arthralgia were prolonged (>6 months). *Acta Medica Medianae* 2011;50(1):17-21.

Key words: Chikungunya, symptoms, Palakkad, India

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Introduction

Chikungunya is a viral disease caused by the alphavirus that is transmitted to humans by bite of infected *Aedes aegypti* mosquitoes. CHIKV is a member of the genus alpha virus, in the family *Togaviridae*. Chikungunya virus (CHIKV) was first isolated from the serum of a human in Tanzania in 1952 (1,2). Chikungunya was first described by Marion Robinson and W.H.R. Lumsden in 1955, in Africa at Makonde Plateau - an outbreak on the border between Tanzania and Mozambique, in 1952. According to Lumsden's initial 1955 report, the term Chikungunya derived from the Makonde root verb *kungunyala*, meaning to dry up or to become contorted. In concurrent research, Robinson glossed the Makonde term more specifically as "that which bends up" (2).

In India, Chikungunya was first reported in 1963 in Calcutta (3). The outbreak of Chikungunya virus infection occurred in India in 1971 (4). The outbreak of Chikungunya fever that started in the Indian Ocean Islands in early 2005 spread through the adjoining islands and appeared in peninsular India by late 2005 (5,6). The spread of Chikungunya is of unprecedented magnitude in India. There is no case of Chikungunya reported from the northern states like Delhi, Haryana, Punjab etc. However, except for Kerala in the southern India, other states like Tamil Nadu, Karnataka and Andhra Pradesh besides Orissa, Madhya Pradesh, Maharashtra, Gujarat and Rajasthan have been under the onslaught of the infection since December 2005 (2,6).

It was first noticed in the southern state of Andhra Pradesh in February 2006; it spread to Tamil Nadu in April 2006 and to Karnataka and Kerala in May 2006. The western state of Gujarat also reported cases in April. Later, it affected the central Indian states of Maharashtra and Madhya Pradesh (7,8). In 2006, Chikungunya fever re-emerged in as many as 16 states and Union Territories inflicting 1.39 million people, without any mortality. In November 2006, an outbreak of Chikungunya fever characterized by prolonged incapacitation occurred in the Lakshadweep Island in India Ocean (9).

In 2006, there was a big outbreak in Andhra Pradesh which still continues. The initial cases were reported from Hyderabad-Secunderabad and Anantpur district as early as November and December 2005. There have been reports on outbreak in Karnataka state since December 2005. A separate outbreak of Chikungunya fever was reported from Malegaon town in Nasik district, Maharashtra state and also Orissa in early March 2006. The last outbreaks seem to be from Bangalore and Tamil Nadu in May-June 2006 in Salem and Chennai (2).

In Kerala, outbreak of Chikungunya began for the first time in 2006 affecting nearly 70,000 persons from 14 districts. In May 2007, another outbreak surfaced affecting almost all the districts (10). In 2009, maximum number of cases was reported in Kozhikode district. Cases were reported in Kasargod Trichur, Palakkad, Trivananthapuram, Kottayam and Wayanad districts. The latest outbreaks seem to be from May 2009. In Kozhikode district, the cases recorded an increase throughout the study period (2006–09) and a major outbreak of Chikungunya was reported during 2009 in many rural and plantation regions (11). Survey was carried out during 2009-2010 in moderately affected Kalpathy village of Palakkad district to understand the nature, magnitude, clinical signs and symptoms of Chikungunya fever.

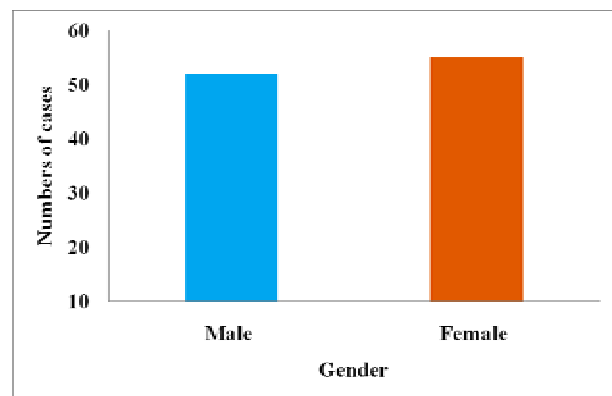
Examinees and Methods

The present study was based on the reports obtained from the district general hospital. We selected Kalpathy village of Palakkad district based on the confirmed cases reported by the health authorities. The present study was conducted during May 2009 to February 2010. Our survey team visited the affected area of Kalpathy village and examined the inmates of the households. We conducted a door-to-door search of all households for case-patients who had acute onset of febrile illness and joint pain. The survey was conducted after obtaining informed oral consent from case-patients prior to the study. From the Kalpathy village, six areas were selected for the study. Suspected Chikungunya cases were identified based on the clinical symptoms guidelines provided by the National Institute of Communicable Diseases (NICD). Questionnaire developed by authors was used for the survey.

Whenever such a case was found in a household, the questionnaire having information about their personal data such as name, age, sex, location and date of onset of illness, medical history, acute or chronic, enquiring about the presence or absence of symptoms, onset and duration was filled up. Special attention was drawn to note any new found symptoms and medical treatment taken.

Results

A total number of 550 individuals were surveyed, of which in 107 Chikungunya was reported. Out of 107 patients, 52 were male and 55 female (Graph 1). There were no significant symptom differences between the two genders. The age distribution of Chikungunya-affected population was shown in Graph 2. The major symptoms were fever (100%), arthralgia (85.04%), vomiting (32.71%) edema (30.84%), myalgia (28.97%) and chills (28.03%) (Graph 3). The symptoms were reported to be lower in the younger age group than in older one. Arthralgia and myalgia were mainly peripheral, involving wrists, ankles, hands, foot and phalanges in all patients. The other symptoms like eye pain (6.54%), back pain (20.56%), headache (19.62%), rash (13.08%), oral ulcer (1.82%), itch (14.01%), hyperpigmentation (1.89%), sore throat (9.34%), distaste (16.84%), backache (20.56%), diarrhoea (2.82%) and dizziness (3.73%) were also reported. In the present study, we did not find new symptoms. Fever, joint pain and myalgia were highly seen in children; all the other symptoms were seen in adults and in elderly groups.

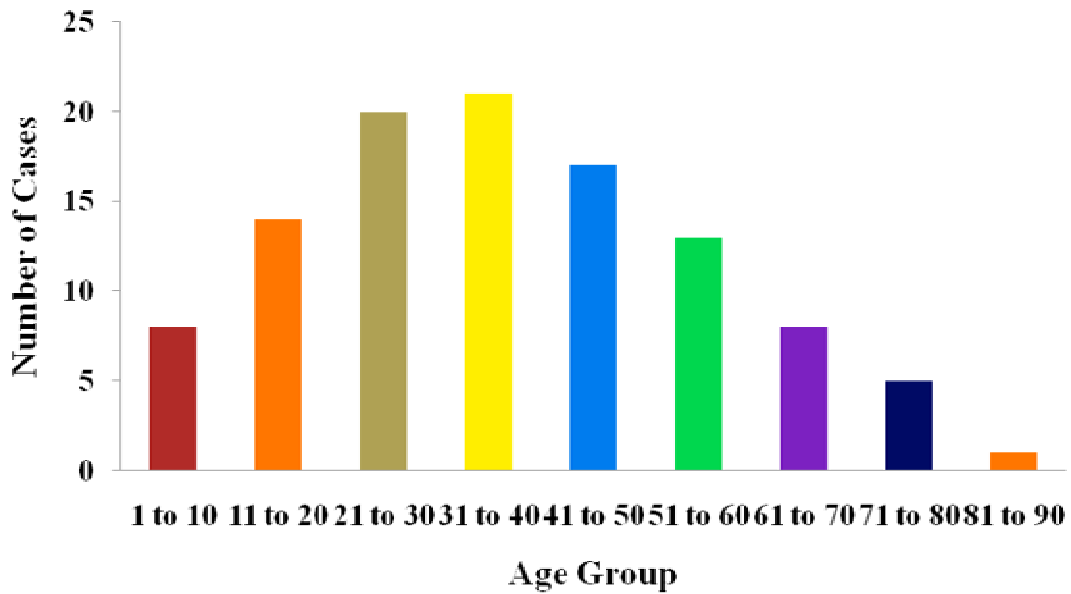


Graph 1: Gender distribution

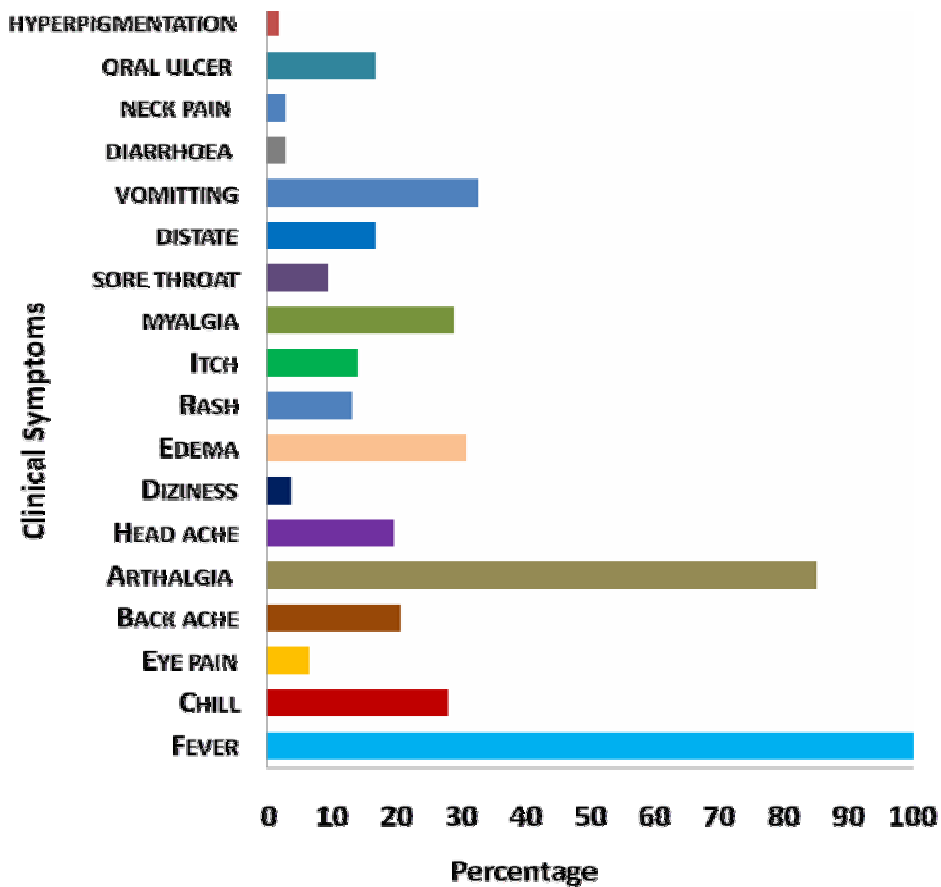
Discussion

The survey was conducted in the seven areas of Kalpathy village of Palakkad districts of Kerala. Fever, arthralgia, myalgia, headache, backache, itch, rash, distaste and edema were found in the majority of patients. Infants Chikungunya cases were found to have only fever and joint pain and myalgia. In this study, distaste, nausea, vomiting diarrhoea, eye pain were found to be much less manifested in children's age groups.

In our previous survey conducted at Balussery, Kozhikode was a very severely affected village during May 2009 outbreak. In that study, we found new symptoms like hypotension and dizziness (12). Compared to previous study, we found that Chikungunya cases in Kalpathy village were not that much severe and the number of cases reported is low. This may be due to the altitude differences and favorable environment for mosquitoes.



Graph 2 : Age groups of Chikungunya cases



Graph 3. Symptoms observed in Chikungunya cases

Age seemed to play a significant role in the manifestation of symptoms with infants experiencing an abrupt onset of fever followed by flushing of the skin and a generalized maculo-papular rash, and older children experiencing an acute fever, myalgia, and arthralgia involving various joints. Similar results were recorded in this study as well. In Andhra Pradesh, Chikungunya fever

affected all the age groups and both genders. Arthralgia affecting mainly the extremities (ankles, wrists, phalanges) and the large joints has been reported in the present and previous study. Hence, the need to distinguish clinically between each of the viral diseases causing arthritis should be carefully observed while discussing the differential diagnosis for Chikungunya.

Conclusion

The Chikungunya outbreak in Kalpathy village of Palakkad District in Kerala State was severe and long-lasting, particularly with the reference to prolonged arthralgia or joint pain, associated with edema and myalgia. Chikungunya is a mosquito-borne infection, and in Kerala state where *Aedes albopictus* is predominant it is yet to corroborate as to whether *Ae. aegypti* and *Ae. albopictus* are involved in the transmission.

Outbreaks occurred during May 2009 may be explained by favorable environment for mosquitoes in the form of water storage; most of

these containers and the drainage were either uncovered or partially covered or fully open and were not cleaned at regular intervals. Thus, a regular water supply that negates the need for water storage, education of the public for safe water storage measures, and environmental control are much needed public health measures to combat future Chikungunya outbreaks. The drugs presently available are only for the symptomatic cure of the disease. The government has to take a step to discover newer drugs and vaccines to cure and prevent of Chikungunya. By vaccine development we can prevent the further outbreaks.

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STUDIJA O POJAVI BOLESTI IZAZVANE CHIKUNGUNYA VIRUSOM U PALAKKAD-U, INDIJA

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Studija je pratila pojavu chikungunya groznice u selu Kalpathy, okrug Palakkad, koje je bilo umereno zahvaćeno. Cilj istraživanja bio je razumevanje prirode i obima pojave Chikungunya groznice, njenih kliničkih znakova i simptomatologije.

Ispitivan je ukupan broj od 107 slučajeva od vrata do vrata na 6 različitih lokacija u selu Kalpathy u okrugu Palakkad. Istorija bolesti, klinički znaci i simptomi slučaja Chikungunya-e bili su beleženi. Beleženi znaci i simptomi bili su: povišena temperatura, jeza, artralgija, bol u očima, glavobolja, otok, osip, ulceracije usne duplje, svrab, mijalgija, upala grla, gađenje, mučnina, povraćanje, dijareja, bol u vratu, hipotenzija, dermatitis, vrtoglavica i hiperpigmentacija.

Glavni simptomi bili su povišena temperatura (100%), artralgija (85.04%), povraćanje (32.71%), otok (30.84%), mijalgija (28.97%) i jeza (28.03%). Značajne razlike zapažene su u sledećim simptomima, kao što su bolovi u očima (6.54%), bolovi u leđima (20.56%), glavobolja (19.62%), osip (13.08%), ulceracije usne duplje (1.82%), svrab (14.01%), hiperpigmentacija (1.89%), upala grla (9.34%), gađenje (16.84%), diareja (2.82%) i vrtoglavica (3.73%). Chikungunya se u ozbiljnijem obliku javljala u starosnoj grupi (>35 godina) a gore pomenuti simptomi su se ređe pojavljivali u starosnoj grupi (<30 godina) u poređenju sa starosnom grupom iznad.

Pronađeno je da je Chikungunya glavna vektorski prenosiva bolest u državi Kerala. Glavni klinički simptomi kod obolelih bili su povišena temperatura, jeza, mijalgija, povraćanje, otok i artralgija. Otoci, mijalgija i artralgija produženo su trajali (>6 meseci). *Acta Medica Medianae 2011;50(1):17-21.*

Ključne reči: *Chikungunya, simptomi, Palakkad, Indija*