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- A SURVEY REPORT

A STUDY ON CHIKUNGUNYA PREVALENCE DURING 2009 IN THE STATE OF ANDHRA PRADESH, SOUTH INDIA

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ABSTRACT

The first chikungunya fever case was observed in the state of Andhra Pradesh during the year 2004-05, followed by large outbreaks emerged in India at 2006 and starting from the state of Andhra Pradesh the disease spread to 16 other states infecting more than 1.39 million people before the end of the year. Three of the worst affected districts viz, Cuddapah (Coordinates: 14°30′36″N 078°46′22″E14.51°N 78.77278°E), Kurnool (Coordinates: 15°50′N 78°03′E15.83°N 78.05°E) and Nellore (Coordinates: 14°26′N 79°58′E14.43°N 79.97°E) were surveyed during 2009-10 to understand the magnitude of the problem of chikungunya fever, clinical signs and symptoms and effective therapy. A total of 146 physicians from three districts were surveyed for their opinion on the prevalence of disease, clinical signs, symptoms and effective therapy were recorded. The symptoms recorded were fever (94%), headache (54%), arthralgia (96.2%) and myalgia (90%). The physicians were preferred 4th generation cephalosporin's (Cefixime) for the treatment of infection, a paracetamol and aceclofenac is used for the therapy of fever. No gender wise difference was observed for any of the symptoms.

Key words: Chikungunya, Clinical spectrum, Paracetamol, India, Andhra Pradesh.

INTRODUCTION

Chikungunya is a mosquito-borne viral disease first described during an outbreak in southern Tanzania in the year 1952. It is an alpha virus of the family Togaviridae. The major symptoms were fever, severe joint pain and also include muscle pain, headache, nausea, fatigue and rash. The virus is transmitted from human to human by the bites of infected female mosquitoes most commonly the mosquitoes involved are *Aedes aegypti* and *Aedes albopictus*, two species which can also transmit other mosquito-borne viruses including

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dengue. The disease occurs in Africa, Asia and the Indian subcontinent. In recent decades mosquito vectors of chikungunya have spread to Europe and the Americas. In 2007, disease transmission was reported for the first time in Europe in a localized outbreak in north-eastern Italy[1]. Chikungunya fever epidemics are characterized by explosive and unpredictable outbreaks involving large population simultaneously, interspersed by periods of disappearance that may last from several years to a few decades[2]. In south India, chikungunya fever was first appeared in an epidemic form the year 1964 and (Chikungunya virus) CHIKV isolation was made from human and mosquitoes[3-5]. The emergence of CHIKV appeared in an unprecedented magnitude in the Indian Ocean islands with a large number of suspected chikungunya cases, viz., La Reunion (2,04,000), Mayotte (2833), Mauritius (6000), and The Seychelles (8818)[6,7]. In India during the year 2006-07, almost majority of the states includes Lakshadweep Island peoples were suffering from chikungunya fever[8,9]. Chikungunya fever is caused by virus or in short, the chikvirus, which is an RNA virus that belongs to the alpha virus genus of the *Togaviridae* family, comprising a number of viruses that are mostly transmitted by arthropods[10]. It is a single strand RNA virus, heat labile and sensitive to temperature above 58 c a sub genomic positive-strand RNA referred to as 26s RNA, identical to the 3 of the genomic RNA, is transcribed from a negative strand RNA intermediate. This RNA serves as the mRNA for the synthesis of viral structural proteins[11]. In Andhra Pradesh, outbreak of chikungunya began for the first time in 2006 affecting nearly 70,000 persons from 14 districts. In Dec 2009, another outbreak surfaced affecting almost all the districts. Clinical investigations carried out during 2009-10 epidemics in the three severely affected districts of Andhra Pradesh, viz., Kadapa, Kurnool and Nellore to understand the magnitude of the problem caused and the clinical signs and symptoms of chikungunya fever are reported.

EXPERIMENTAL

Material and methods

Designing of survey form

A well prepared survey questionnaire is distributed randomly to the physicians in the affected three districts, which comprised of closed/open ended questions. Those physicians are interested to participate in the survey were asked to answer the questions.

Distribution of questionnaires

Around three months of the calendar year 2009 are spent to know the magnitude of prevalence in affected three districts. Survey form were distributed to the selected physicians in the areas, where there is more density of affected cases. The physicians, who cooperated

were also interviewed and information was collected from physicians through survey form. A total of 146 physicians from the selected three districts were surveyed. Physicians were selected based on their qualification viz., M.S. (Gen), M.S. (Ortho), M. D., D. C. H., M. B. B. S. and their opinion on the prevalence, symptoms and effective therapy were recorded. The main symptoms were recorded. They are arthralgia, fever, myalgia, headache, edema and itch/rashes

Data analysis

Data collected during survey were analyzed by using online Chi-square test. The P-values were obtained and interpreted[12].

RESULTS AND DISCUSSION

A total of 146 physicians representing 80,438 occupants were surveyed. The major symptoms are fever (93.61%), headache (53.4%), arthralgia (96.2%) and myalgia (89.74%). The arthralgia and myalgia (92.97%) were mainly peripheral involving wrists, ankles, hands, foots and phalanges in all patients. The other symptoms like oedema (28.14%), itch with rashes (22.86), nausea (14.49%) and vomiting (28.61%) were also observed. Vomiting, oral ulcers, eye congestion and eye pain were reported in (8.4%) of the surveyed patients. A Hemorrhagic (bleeding gums) manifestation (2.5%) was the lowest recorded (Fig. 1). Of the 80,438 patients, 35, 573 were women and 39, 310 men. There was no significant symptomize difference between the two genders (Fig. 2). Arthralgia, myalgia, oedema and weakness was reported to persist even after the fever subsided. Prevalence was found to be 45%. The chikungunya disease is treated chiefly with cefixime and chloroquine 70% and 15.3% respectively, followed by an alternative therapy with ofloxacin (31.7%). Arthralgia being a major symptom in the patients, it is conveniently treated with paracetamol (83.5%), aceclofenac (64.8%) and tramadol (17.5%), in random case with the use of corticosteroids like prednisolone (17.1%), (Fig. 3). Results are analyzed by using chi-square test. If $p > 0.05$, hypothesis is accepted.

Intense arthralgia affecting mainly the extremities (ankles, wrists, phalanges) and the large joints have been reported[13]. Similar feature was also observed in this study with affected people first describing their site of pain at the ankle, wrist and phalanges and later in the large joints. Epidemic polyarthritis has been known to be related to various mosquito-borne viral diseases 20. Hence, the need to distinguish clinically between each of the viral diseases[14] causing arthritis should be carefully observed while discussing the differential diagnosis for chikungunya. Hemorrhagic manifestations including petechiae and/or skin rashes were generally uncommon in the chikungunya cases during earlier outbreak episodes

worldwide. However, travelers returning from Indian ocean islands during 2006 were reported to profusely exhibit rash (53.2%)[15]. In another study, itching was reported in 19.3 per cent cases from Reunion islands with peeling of the skin in a few cases[16]. In yet another study bulbous rashes and blisters were reported from children suffering with chikungunya; they had even demonstrated CHIKV from the blister fluid by PCR[17]. Such cases were not encountered during the present survey.

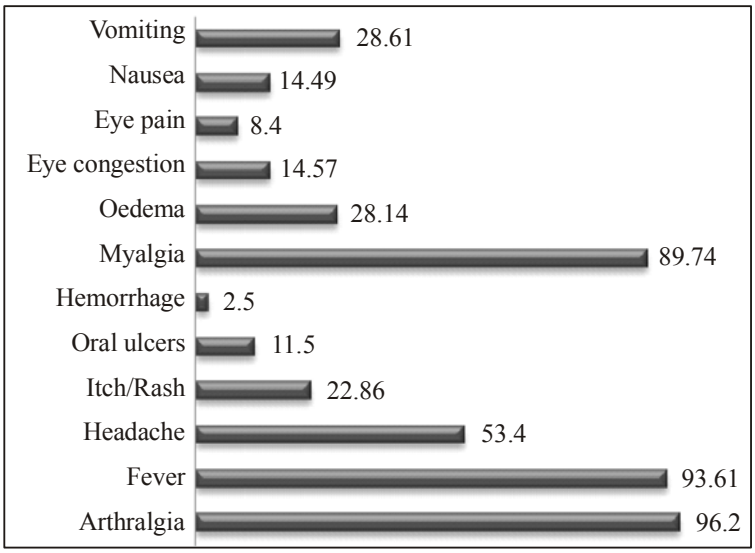

Fig. 1: Percentage distribution of symptoms

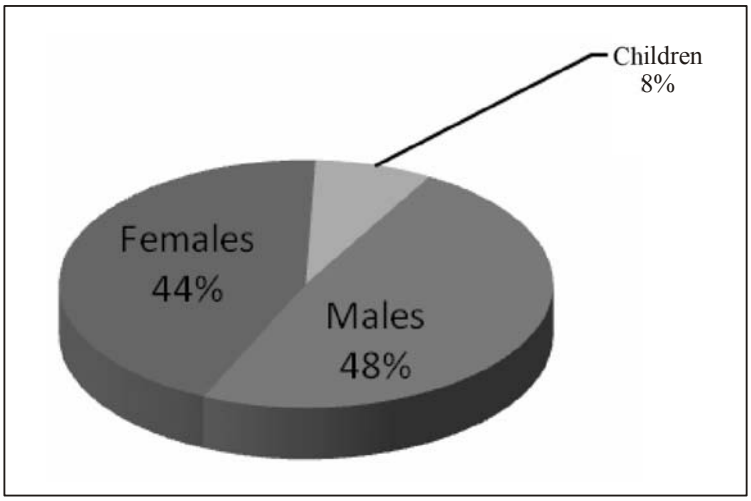

Fig. 2: Percentage of distribution among the patients

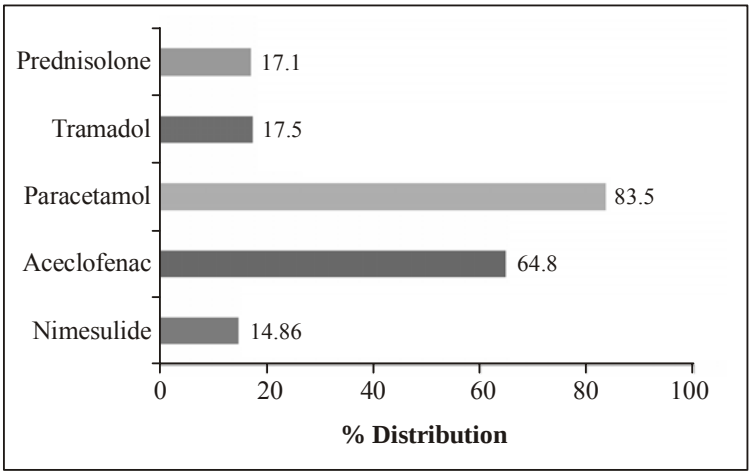

Fig. 3: Percentage of distribution of the drugs

In India neurological complications such as meningoencephalitis have been reported in a few patients during the outbreak in 1973, and during the ongoing outbreak[18,19]. The neurovirulence and neuroinvasiveness of several other alpha viruses is well established, and chikungunya virus had been isolated from two children with clinical signs of encephalitis and meningitis[20]. In our survey, we have not come across any cases of meningo-encephalitis along with chikungunya.

CONCLUSION

The chikungunya outbreak in Andhra Pradesh state was severe and the impact on human health generally long lasting particularly with reference to prolonged arthralgia or joint pain, but also due to certain other associated illnesses such as skin rashes, eye pain, edema, etc. Chikungunya is a mosquito-borne infection, in Andhra Pradesh state where *Aedes albopictus* is predominant; it is yet to corroborate as to whether *Ae. aegypti* and *Ae. albopictus* is involved in the transmission.

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