

Chikungunya Fever: An Update For The Oral Health Care Practitioner

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Abstract

Chikungunya fever is an acute self limiting viral disease caused by a virus of the same name. This fever, which is transmitted by the mosquito *Aedes aegypti*, has reached epidemic proportions in the last few years, after being quiet for a few decades. The disease is characterised by a triad of fever, joint pains and maculopapular rash. Oral manifestations have been reported as a part of the spectrum of mucocutaneous findings of this disease. This article attempts to highlight these oral lesions and thus increase the awareness of the oral health care practitioner regarding this debilitating disease.

KEYWORDS: Chikungunya fever, virus, oral manifestations.

Introduction

The past few years have seen the resurgence of Chikungunya fever in many parts of the world, including India where it had reached epidemic proportions. This acute, self limiting viral disease is transmitted primarily by the mosquito *Aedes aegypti*. It is known widely for its clinicopathological manifestations of fever, rash and the now infamous joint pains (1).

However, not many in the dental profession are aware that this rapidly spreading disease can have oral manifestations. Thus, this review tries to highlight some of the oral lesions seen in this disease and increase its awareness among the oral healthcare practitioner.

HISTORY AND EPIDEMIOLOGY OF THE VIRUS IN INDIA

The first outbreak of this viral disease was reported in 1952 in the Makonde plateau along the border between Mozambique and Tanzania in Africa.(2) The disease derives its name from the Makonde verb "KUNGUNYALA" meaning that which bends up. This refers to the stooped posture that most of the patients have as a result of the severe arthralgia.(3)

After the first outbreak in Africa, the virus spread to South East Asian countries especially the city of Bangkok and finally to India where the first epidemic was reported in Calcutta in 1963 when almost 200 people lost their lives.(4) Over the next 32 years sporadic outbreaks were reported in India ,but it was in 2005-2006 that an explosive epidemic was triggered because of a re-emergence of this virus. During this epidemic about 1.3 million people were affected within the first year. Andhra Pradesh was the worst affected with about 80,000 cases being reported, followed by 12 more Indian states.(5)The epidemic lasted for three consecutive years but since then outbreaks have been reported every monsoon.

The reasons for the re-emergence of this virus are still not exactly known, though the lack of herd immunity and efficient vector control activities, globalization, emergence of new vectors and viral mutation are some of the suggestions being made.(6 , 7)

CHIKUNGUNYA VIRUS

The disease is caused by a virus of the same name. It is an arbovirus (arthropodborne virus) and belongs to the family togaviridae. It has a single-stranded RNA genome, a 60–70 nm diameter capsid and a phospholipid envelope. It is sensitive to desiccation and to temperatures above 58°C.(8) Depending upon the gene sequences of an envelope protein (E1) the virus is considered to be of three genotypes-Asian, East/Central/South African, and West African.(9) Though the first epidemic in India was attributed to the Asian genotype, the 2005-2006 epidemic is known to be caused by the East/Central/South African genotype.(10)

TRANSMISSION

The virus is transmitted by the bite of the *Aedes aegypti* mosquito which is the same mosquito responsible for dengue. This is the dominant carrier in India as well, though of late in many Asian countries *Aedes albopictus* has superseded *Aedes aegypti*. These mosquitoes mainly breed in stored fresh water (like desert coolers, flower vases, water tanks etc) in urban and semi urban environments. (8) In Asia, the virus is circulated between mosquitoes and humans as against Africa where the virus is maintained in a sylvatic cycle involving non human primates and forest dwelling *Aedes* species mosquitoes. (11, 7)

PATHOGENESIS

The exact pathogenesis of this virus is not known. Studies have suggested that the virus attacks fibroblasts explaining the involvement of muscle, joint and skin connective tissue (9). In addition epithelial, endothelial cells and macrophages were also found to be susceptible to the infection.(12)

CLINICAL MANIFESTATIONS

Chikungunya fever affects all age groups and both sexes equally.(13) It is an acute disease characterized by a clinical triad of "fever, rashes and arthralgia". The incubation period lasts for about 3-7 days with rarely any prodromal symptoms.(1) Fever ($>102^{\circ}\text{C}$) is the first symptom to develop and lasts for several days. This is followed by polyarthralgia in almost 100% of the patients who complain of severe and debilitating joint pain mainly affecting the small peripheral joints like the wrists and ankles and may also involve the knees and shoulders.(13) The joint pains may be completely immobilising and may remain for several months. Rash is the least common of the symptoms (19%) and normally is maculopapular in nature. (11,12,14) Symptoms generally resolve in 7-10 days except for the pain and stiffness which may last longer.(8) Some atypical manifestations of this disease include neurological, cardiovascular and ocular manifestations.

Vertical transmission from infected mothers to their offspring has also been reported.(15)

DIAGNOSIS

Though it is self-limiting, the diagnosis of Chikungunya fever is important because of the similarity it has with dengue fever. Diagnosis can be based upon the presence of an acute febrile illness with arthralgia /arthritis in an appropriate epidemiological setting which cannot be explained by any other medical conditions. Confirmation, however, can be based upon laboratory diagnosis which includes virus isolation, reverse transcriptase polymerase chain reaction (RT – PCR) and demonstration of virus specific IgM antibodies and Ig G in the sera. (16,17)

There is a dearth of literature regarding the oral lesions seen in Chikungunya fever. Most oral lesions have been noticed mainly by dermatologists as a part of the spectrum of mucocutaneous manifestations of this disease. However, a review of literature by this author has revealed some interesting findings which could be of use to the oral health practitioner.

ORAL MANIFESTATIONS

The most prominent complaint of patients with Chikungunya fever in relation to the oral cavity is the presence of distaste or dysgeusia. This is seen as reported in 75% to 85% of patients. (18)

Another significant finding is the occurrence of minor aphthous like oral ulcers. They are multiple and found to involve almost every part of the oral cavity, especially the tongue and the palate. (17, 19) Erosions, erythema and angular cheilitis along with crustations at the angles of the mouth are also observed. Some rare findings are the presence of depigmented macules as well as oral mucosal pigmentations. Most of these oral lesions tend to last for 7-10 days and subside completely without any sequelae. (17, 20)

Haemorrhagic manifestations are uncommon in Chikungunya. But when present they are mild and could be in the form of gingival bleeding. This was confirmed by Kannan who found that 1.4% of his patients complained of bleeding gums. (18) These haemorrhagic findings are more common in Indian outbreaks than those occurring in other countries.(14)

Kumar also reported of oral pseudomembranous candidiasis in several Chikungunya positive individuals. He postulated that the viral fever induced a transient immune depression which may lead to the development of this opportunistic infection.(21)

As described earlier, arthralgia of the peripheral joints, mainly the wrists and ankle, is a characteristic feature of this disease. Reports of pain involving the temporomandibular joint too have been reported. This is an interesting finding as it is a non weight bearing joint. (22)

Most studies have neither mentioned oral lesions or consider them to be an uncommon manifestation of this disease. Only one study in literature has dealt exclusively on determining the oral manifestations of this viral fever. The findings of Gowri Sankar are quite contrasting to 66 other studies. They found that oral lesions, in some form or the other, were found in 95.46 % of the patients. They found in their study of 110 patients that a majority of the patients complained of burning mouth and erythema along with recurrent aphthous like ulcers. They also found that TMJ arthralgia was a significant finding. They recommended the introduction of the term "GUNYA STOMATITIS" to indicate TMJ arthralgia along with mucosal erythema and oral ulcers in a Chikungunya positive individual. (23)

The numerous oral lesions seen in Chikungunya fever have been summarised in Table 1.

Acute Chikungunya fever has to be differentiated from a large number of viral exanthems which occur along with arthralgia. Dengue is the main disease which has to be distinguished as many of the clinical features overlap and the vector is also the same. Oral ulcers, a common finding in Chikungunya were not noticed in dengue fever though erythema and crusting of the lips was seen. (17) Riyaz also noted that vesicles and bullae are seen to be occurring on the skin of Chikungunya affected patients but the mucosa was however spared.(20) In contrast small vesicles were found on the soft palate in patients suffering from dengue fever.(24) Thus in developing countries where laboratory procedures may prove to be expensive, it should be considered that some of these oral lesions can help in the differential diagnosis of this disease.

Dysgeusia
Oral aphthous like ulcers
Gingivitis
Gingival bleeding
Crusted lesions on the lips and angles of mouth
Depigmented macules on the lips
Oral mucosal pigmentation
Oral candidiasis
Erosions
Erythema
Arthralgia of temporomandibular joint

Table 1 : List of oral signs and symptoms seen in Chikungunya fever

TREATMENT AND PREVENTION

Chikungunya is a self limiting infection and elicits a lifelong immunity.(8) Treatment is mainly palliative involving nonsteroidal anti-inflammatory drugs, rest and fluids. Corticosteroids are considered only in chronic

cases. Antiviral therapy is not available and trials are still being carried out with respect to a vaccine. Thus prevention of this viral disease is mainly related to vector control activities. (4)

CONCLUSION

Chikungunya fever has raised its ugly head after a period of three decades .Though the epidemic is over, frequent outbreaks are being reported. There is a strong possibility that oral lesions may be more common than have actually been reported, as many a times they have not been studied exclusively but rather as a part of other manifestations. The oral healthcare professionals should be aware of this acute febrile illness the oral manifestations may help in differential diagnosis of this disease.

REFERENCES

1. Mohan A, Kiran DH, Manohar IC, Kumar DP. Epidemiology, clinical manifestations, and diagnosis of Chikungunya fever: lessons learned from the re-emerging epidemic. *Indian J Dermatol* 2010; 55(1):54-63.
2. Robinson Marion. An Epidemic of Virus Disease in Southern Province, Tanganyika Territory, in 1952-53; I. Clinical features. *Trans Royal Society Trop Med Hyg* 1955; 1: 28-32.
3. Mohan A. Chikungunya fever: Clinical manifestations & management. *Indian J Med Res* 2006; 124: 471-474.
4. Sudeep AB, Parashar D. Chikungunya: an overview. *J Biosci* 2008; 33:443-9.
5. Bhatia R, Narain JP .Re-emerging chikungunya fever: Some lessons from Asia. *Trop Med Int Health* 2009; 14: 940-6.
6. Ravi V. Re-emergence of chikungunya virus in India. *Indian J Med Microbiol* 2006; 24: 83-4.
7. Chhabra M, Mittal V, Bhattacharya D, Rana U, Lal S. Chikungunya fever: A re-emerging viral infection. *Indian J Med Microbiol* 2008; 26:5-12.
8. Pialoux G, Gaüzère BA, Jauréguiberry S, Strobel M .Chikungunya, an epidemic arbovirolosis. *Lancet Infect Dis* 2007; 7:319-27.
9. Thiboutot MM, Kannan S, Kawalekar OU et al. Chikungunya: a potentially emerging Epidemic? *PLoS Negl Trop Dis* 2010; 4: e623.
10. Yergolkar PN, Tandale BV, Arankalle VA et al . Chikungunya outbreaks caused by African genotype, India. *Emerg Infect Dis* 2006; 12:1580-3.
11. Powers AM. Chikungunya. *Clin Lab Med* 2010; 30:209-19.
12. Cavrini F, Gaibani P, Pierro AM, Rossini G, Landini MP, Sambri V. Chikungunya: an emerging and spreading arthropod-borne viral disease *J Infect Dev Ctries* 2009; 3:744-52.

13. Mohan A, Sharma SK. Chikungunya Fever. In: Singhal RK, Editor. Medicine update. Mumbai: Association of physicians of India; 2007. p. 634-638.
14. Lahariya C, Pradhan SK. Emergence of chikungunya virus in Indian subcontinent after 32 years: A review. *J Vect Borne Dis* 2006; 43:151-160.
15. Rajapakse S, Rodrigo C, Rajapakse. A Atypical manifestations of Chikungunya infection. *Trans R Soc Trop Med Hyg* 2010; 104: 89-96.
16. Proposed case definition of Chikungunya Fever (WHO, SEARO)
http://www.searo.who.int/LinkFiles/Chikungunya_Def_Chikungunya_Fever.pdf accessed on 1 st September 2010.)
17. Bandyopadhyay D, Ghosh SK. Mucocutaneous manifestations of Chikungunya fever. *Indian J Dermatol* 2010 ; 55 : 64-7.
18. Kannan M, Rajendran R, Sunish IP, et al. A study on chikungunya outbreak during 2007 in Kerala, south India. *Indian J Med Res* 2009; 129:311-5.
19. Suryawanshi SD, Dube AH, Khadse RK, Jalgaonkar SV, Sathe PS, Zawar SD, Holay MP. Clinical profile of chikungunya fever in patients in a tertiary care centre in Maharashtra, India. *Indian J Med Res* 2009; 129: 438-41.
20. Riyaz N ,Riyaz A, Rahima, Abdul Latheef EN, Anitha PM, Aravindan KP, Nair AS, Shameera P. Cutaneous manifestations of Chikungunya during a recent epidemic in Calicut, north Kerala, South India. *Indian J Dermatol Venereol Leprol* 2010; 76: 671-76.
21. Kumar JC, Vivek Y, Sudhindra P, Dhananjaya B, Kumar AT, Guru K, Kumar A, Hegde MB. Oral candidiasis in Chikungunya viral fever: a case report. *Cases J* 2010; 3:6.
22. Staikowsky F, Talarmin F, Grivard P, Souab A, Schuffenecker I, Le Roux K, Lecuit M, Michault A. Prospective study of Chikungunya virus acute infection in the Island of La Réunion during the 2005-2006 outbreak. *PLoS One* 2009; 4: e7603.
23. Gowri Sankar Singaraju, Emani Vanaja, Sathe PS. Oral Manifestations Of Chikungunya Fever In Clinically Diagnosed Chikungunya Cases (CDCG)-A Purposive Study. *Annals and Essences of dentistry* 2010; 2: 25-9.
24. Thomas EA, John M, Kanish B. Mucocutaneous manifestations of Dengue fever. *Indian J Dermatol* 2010 ;55:79-85.