

Oral manifestations of Chickengunya and gender difference among the patients of industrial area of Karachi, Pakistan

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Objective: To assess oral manifestations of Chickengunya among gender different ages groups and determine the association of preventive and environmental measures for occurrence in Korangi Industrial area of Karachi, Pakistan.

Methodology: This cross sectional study was conducted at General Medicine OPD of Sind Government Hospital, Korangi, Karachi from July to December 2018. All participants were the confirmed cases of Chickengunya by Polymerase chain reaction.

Results: Out of 531 patients, 331(62.3%) were female and 200 (37.2%) males. Most were (n=135; 25.4%) 45-60 years of age and had difficulty in mouth opening, jaw pain, enlarged lymph nodes followed by oral ulceration. There was statistically

difference found among gender and the oral manifestations ($p=0.021$). When patients were interrogated about the environmental factors which can likely cause chickengunya; majority were not using net door on windows, water stagnation was present nearby their residence and they were not using insecticides spray.

Conclusion: Difficulty in mouth opening was the most common oral manifestation found among the patients of 45-60 years of age followed by oral ulceration and the female were the most affected gender with the symptoms. Lack of using insecticides, net door and windows and water stagnation were found to be causative factors. (Rawal Med J 202;45:527-530).

Keywords: Chikengunya, oral manifestations, polymerase chain reaction.

INTRODUCTION

Chickengunya is a viral disease transmitted in human by the mosquito bite. It is characterized by the sudden onset of fever along with the joint pain which lasts from days to weeks.¹ The most frequently reported symptoms are fatigue, muscular pain, skin rash, nausea and headache.¹ Less frequently reported symptoms are the neurological, cardiac and gastrointestinal complications.^{1,2}

Chickengunya is belongs to genus alpha-virus and Togaviridae family and grouped in diverse sero-complexes.² It was also reported from Thailand, Cambodia, India, Srilanka, Burma, Laos, Vietnam and Phillipines.³ In Malaysia, the first outbreak was reported in 1998.⁴ Currently, it has become an extensive threat for public health due to the close involvement with larger outbreaks. The recent outbreaks were due to the evolutionary adaptation of virus in the mosquito vector.⁵

In 2006, E1; A226V envelop protein in mutation was found in viral collection and it is assumed to be actively involved inside the *Aedes albopictus* mosquito for viral fitness.⁶ The disease reemerged from many other parts of the world after many years

of its first contact; as after 39 years from Congu Republic Kinshasa and in 2001-2003 after 20 years from Indonesia.⁷ The serological and virological confirmation was reported from wider area of South, East, West and Central Africa.⁷ In 2013, its strain reemerged from Asia and was reported in Central, South and North American areas.⁸ From Pakistan, initially in 1983⁹ it was found in rodents and then later in 2011 few cases were reported from Lahore during the outbreak of dengue fever.¹⁰ Very recently, the massive outbreak was reported from Karachi in November 2016 and around 30,000 people were infected and this outbreak was prolonged till may 2017.¹¹

In Karachi, the highest numbers were from Malir, Keamari, Lyari and Ibrahim Hydri.¹² There are various breeding habitants which further deteriorated this outbreak like water stagnation in various areas of the city, poor sanitation, prolonged warm weather and less effective mosquito eradication campaign in Karachi.^{11,13} The condition is confirmed by the PCR-RT (polymerase chain reaction reverse transcriptase). PCR-RT and real-time loop mediated isothermal amplification (TR-

LAMP) methods are used for the early detection.^{14,15} In Pakistan as a low resource country, TR-LAMP can be used as an alternative to PCR-RT as PCR instruments are not used in TR-LAMP.¹⁵ The rationale of this study was to focus on the oral manifestations of Chickengunya virus apart from the systemic infections as to enhance the knowledge of dental professionals for the detection of this disease on early stage.

METHODOLOGY

It was a cross sectional study conducted at General Medicine OPD at Sind Government Hospital, Korangi Industrial area of Karachi from July to December 2018. The calculated sample size was 384 on the basis of 50% prevalence with the help of standard formula. To get more authentic data, the proposed sample size was augmented as 531 patients. The patients were examined based on clinical findings described by Centers for Disease Control and Prevention. They were all confirmed cases with the help of RT-PCR. Thick and thin films having Giemsa was performed for malaria and PCR was used for dengue to ruled out the co infection of dengue and malaria.

Purposive non probability sampling technique was used and written consent was obtained from the participants over 18 years of age. The oral manifestations were divided into three broad symptoms in which jaw pain, difficulty in moth opening and enlarged lymph nodes (LN) were the most common symptoms and gingival swelling and oral ulcerations are the accompanying oral manifestations.

Statistical Analysis: Data were analyzed using SPSS version 23. Descriptive statistics were calculated through frequencies and percentages for qualitative variables. The association of categorical variables was assessed via chi square. $p < 0.05$ was considered as statistically significant.

RESULTS

From the total 550 distributed questionnaire, 531 were filled in all aspects and were included for data analysis. The response rate was 96.5%. Majority of patients were female 331(62.3%) and 200 (37.2%) were males. Difficulty in mouth opening, jaw pain

and enlarged lymph nodes were the most common oral manifestation observed in this age group followed by oral ulceration. Statistically difference was found among gender and oral manifestations ($p=0.021$) (Table 1).

In our study, 393(74%) patients had oral ulceration along with the jaw pain, difficulty in mouth opening, enlarged LN, which was quite higher among the entire sample and gingival swelling was observed in ($n=71:13.4\%$) patients. When they were interrogated about the environmental factors which can likely cause chickengunya, majority were not using net door on windows, water was stagnant nearby their houses and were not using insecticides spray.

Table 1. Oral manifestations of Chickengunya in different age Groups.

Age Startum	Oral Ulceration	Jaw Pain	Diff in MO	Gingival Swelling	Enlarged LN
2-15 Years	0	0	4	3	1
16-30 Years	6	8	11	41	12
31-45 Years	7	10	38	32	20
46-60 Years	20	20	74	15	6
61-75 Years	13	14	82	6	6
Above 75 Years	10	11	52	3	6

Table 2. Oral Manifestations of Chickengunya and gender association of preventive measures of chickengunya.

Oral manifestations	Male	Female	P-value
Jaw pain ,difficulty in moth opening, enlarged LN	15	52	0.021*
Jaw pain ,difficulty in moth opening, Gingival swelling, enlarged LN	27	44	
Jaw pain ,difficulty in moth opening, Oral Ulceration, enlarged LN	158	235	
*Chi square			
Preventive Measures	Male	Female	P-value
Used preventive measures	200	331	0.0001*
Used net doors & windows			0.0001*
Yes	24	32	
No	176	299	
Use of Insecticides			0.0001*
Yes	9	13	
No	191	318	
Water Stagnation			0.0001*
Yes	142	239	
No	58	92	

Statistically significant difference was found between using of preventive measures and gender difference, as majority of females were using net door/windows and using insecticides in their home as compared to males ($p=0.0001$). Water stagnation was present among both male and female patients in this study. As a preventive measure, more than 50% of study population were using coil for the prevention of mosquito bite in their home (Table 2).

DISCUSSION

Geographically, Karachi is the densely populated city of Pakistan; humidity and tropical weather has an impact on its habitants as it is located at the coastline of Arabian Sea. In 2016, significant variation in climate created excellent medium for nurturing the arbovirus infections like chickengunya, malaria and dengue in the city.^{11,13}

In our study females were affected more as compare to male gender with oral manifestation and these results were congruent with the other study in which oral symptoms were observed more in patient of 50 years and above.¹⁶

Participants with 46-60 years of age had difficulty in mouth opening observed in 74(54.81%) followed by 20(14.81%) with oral ulceration and this figure was very higher than the study conducted in India in which 12(11.64%) participants were suffering from trismus.¹⁷

In our study, oral ulceration along with the jaw pain, difficulty in mouth opening, oral ulceration, enlarged LN were quite higher among the entire sample as compared to the study conducted by Riyaz et al in Kerala, India in which 13.64% had multiple apthae.¹⁸ In another study, oral ulceration was found in 17.46%¹⁸ and or results were comparable with another study.¹⁹ In our study, gingival swelling was observed in 13.4% patients and these results are similar to study from Kerala India.¹⁸

There has not been any vaccination or antiviral drug available for chickengunya till date.¹⁹ Breeding climate for mosquitos has been observed in industrial area of Karachi with poor waste disposal, water stagnation, open sewerage system and lack of spraying insecticides.^{13,20}

The strength of this study was to educate dental

professional regarding the oral manifestations of chickengunya. A comparative study can be conducted to compare the oral manifestations of the diseases caused by arbovirus mosquitoes such as malaria, dengue and chickengunya. The results of the study can be generalized to the entire population of Korangi industrial area of Karachi.^{13,20}

CONCLUSION

Difficulty in mouth opening was the most common oral manifestation of chickengunya found among 45-60 years of patients followed by oral ulceration. Female were the most affected gender. Lack of using insecticides, net door on windows and water stagnation were found to be more common causative factors among this sample however majority of participants were using mosquito coil to protect themselves from chickengunya.

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