

Research Article

Clinical Characteristics of Patients with Oral Submucous Fibrosis: A Single Institute Study

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Abstract: Background: Oral Submucous Fibrosis (OSMF) is a well-established oral potentially malignant disorder (OPMD) affecting people of Pakistan, India, Bangladesh and Sri Lanka because these nations have a long-standing history of chewing areca nut.

Objective: The primary objective of the current study was to assess the clinical features of OSMF in patients presented to the Department of Oral Medicine, Ziauddin University, Karachi, Pakistan.

Materials and Methods: This study was done on OSMF patients who came to the Oral Medicine department of Ziauddin University, Karachi, Pakistan from June 2020 to July 2021. Clinicopathological parameters of OSMF like age, gender, habits and its frequency and duration, clinical signs and symptoms and stages were recorded.

Result: There were a total of 60 patients of which 35 were males and 25 were females. The mean age of study subjects was calculated to be 36.46±11.96 years. More than 50% of the participants were using a combination of various tobacco products. Most of the patients in our study were of stage III followed by stages II, I and IV. 70% of patients had buccal fibrous bands bilaterally, 36.66% of patients had tongue restriction and 60% of patients complained of burning sensation in the mouth.

Conclusion: OSMF becomes a disease of the young generation with a slight male predilection. The majority of individuals suffered from a severe and advanced form of the disease. The development of diagnostic aids is necessary to stop the disease in its early stages.

Keywords: OSMF, Fibrosis, Habits, OPMD, Disease, Burning sensation.

INTRODUCTION

OSMF is a fibrotic disease of the oral cavity that occurs mainly in the Southeast Asian population [1]. Due to the progressive fibrosis of the affected areas, it is also referred to as a potentially malignant disorder and can be debilitating [2]. OSMF has several clinical and histological features [3]. Although it is multifactorial, the primary factor responsible for bringing about these changes is considered to be the continuous use of areca or betel nut [4]. Gutka, a commercially available areca nut product, is associated with the early presentation and progression of OSMF. Pan and Gutka consumption has been reported to be commonly associated with OSMF in India's northern parts [5]. According to a study done in rural Sindh, Pakistan, consumers of areca nuts and associated products were more likely to have OSMF [6]. Additionally, studies on teenagers have documented an association between OSMF and areca nut usage, showing that 50-79.6% of users developed OSMF [7]. The increasing incidence of OSMF, its irreversible nature and its malignant transformation make it imperative to study the clinic-pathologic factors such as patient age, gender, habits and stages of OSMF. Therefore, the goal of this current research was to evaluate the clinical char-

acteristics of OSMF cases reported in out-patient department of Oral Medicine, Ziauddin University, Karachi, Pakistan.

MATERIALS AND METHODS

A retrospective study was conducted at Department of Oral Medicine, Ziauddin University from June 2020 to July 2021. Patients visiting the Oral Medicine Outpatient Department (OPD) for oral diseases were screened for OSMF. After receiving Institutional ethics approval, this study was conducted. A total of 60 cases of OSMF who have been clinically diagnosed were included in the study. An appropriate format was designed to collect detailed information on all the subjects such as age, gender, habits (such as areca nut, betel quid or Gutka usage), duration and frequency of habit, clinical examination and stages of OSMF were documented.

The participants underwent a clinical examination, during which factors like the burning sensation of mouth and tongue, inter-incisal mouth opening, fibrous bands in the buccal mucosa (unilateral or bilateral), blanched or opaque appearance of the mucosa, movement of the tongue and soft palatal fibrosis were examined.

Staging of OSMF was done based on clinical classification proposed by Chandramani More *et al.* [8]. They categorized classifi-

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cation into clinical staging and functional staging where clinical staging was based on clinical features and functional staging was based on mouth opening.

STATISTICAL ANALYSIS

Data were evaluated using SPSS (Statistical Package for Social Services) version 23. For Descriptive statistics, frequency and percentage were used. The mean and standard deviation were calculated for continuous data. Kruskal Wallis test was used to analyze the association between mean mouth opening and stages of OSMF.

RESULT

The mean age of study participants was calculated as 36.46±11.96 years. Fifty eight percent (n=35) were males and 41.66% (n=25) were females. Out of 60 OSMF cases, 22 (36.66%) patients were chewing betel nut only, 1 (1.66%) exclusive pan user, 3 (5%) gutka users and 34 (56.66%) patients were using a combination of various tobacco products. The frequency of habits taken per day and duration of habits in years can also be seen in Table 1.

Table 1. Oral Habits Frequency and Duration among Cases.

CASES (n=60)		Frequency (number of times per day)	Duration (in years)
S.No	Type of Tobacco User n (%)	Mean ± SD	Mean ± SD
1.	Betel nut user 22 (36.7%)	11.33 ± 22.91	10.96 ± 6.76
2.	Pan 1(1.7%)	3	10
3.	Gutka user 3 (5%)	7.66 ± 6.35	13 ± 1.73
4.	Combination of habits 34 (56.7%)	10.20 ± 9.52	11.75 ± 5.75
5.	Overall Tobacco Use	11.66 ± 18.14	11.89 ± 6.01

The mean mouth opening was recorded as 26.17±8.28 mm. Table 2 shows the mean mouth opening of different stages of cases and a significant association was observed (p=0.000).

Table 2. Association between Mouth Opening and Functional Stages of OSMF.

Mouth Opening Mean ± SD	CASES				P value
	Stage 1	Stage 2	Stage 3	Stage 4	
	38.87 ± 3.09	30.541 ± 3.43	20.98 ± 2.47	6.95 ± 4.03	

*P-value < 0.05 is considered significant. Kruskal Wallis test was applied.

From the total of 60 cases, 14 (23.33%) patients had unilateral, 42 (70%) patients had bilateral and 4 (6.66%) patients had no fibrous bands. 22 cases (36.66%) had tongue restriction, 24 cases (40%) were with fibrotic soft palate, whereas 36 (60%) cases complained of a burning sensation (Table 3).

Table 3. Clinical Characteristics of OSMF.

Clinical Characteristics	n (%)
Buccal fibrous bands	Bilateral 42 (70%)
	Unilateral 14 (23.33%)
	No fibrosis 4 (6.66%)
Tongue Restriction	22 (36.66%)
Soft Palatal Fibrosis	24 (40%)
Burning Sensation	36 (60%)

Among 60 OSMF cases, 10 (16.66%) patients were of stage I, 20 (33.33%) patients of stage II, 26 (43.33%) patients of stage III and 4 (6.66%) patients of stage IV. Clinical and functional stages of OSMF cases are shown in Figs. (1, 2).

PERCENTAGES OF OSMF STAGES

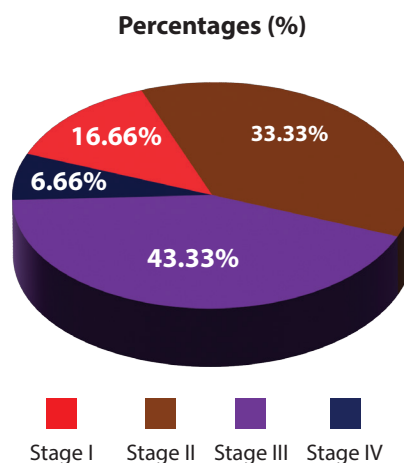


Fig. (1). Percentages of Clinical OSMF Stages.

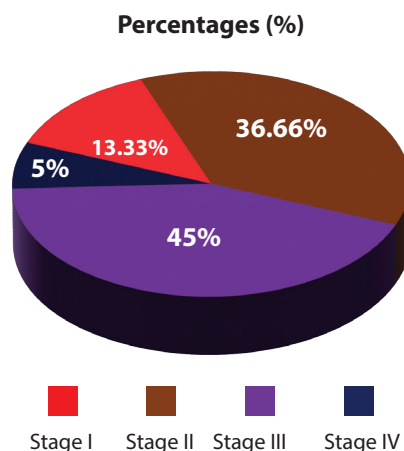


Fig. (2). Percentages of Functional OSMF Stages.

DISCUSSION

In the present study, the mean age for the OSMF group was estimated as 36.46 ± 11.96 years. Similar mean ages have been reported in other studies as well [9, 10]. Given the aforementioned findings, it can be suggested that OSMF is more common in the second and third decades of life. Epidemiological studies showed that consumption of areca nut in young people is mainly associated with low to middle socioeconomic status, use by peers/family members, media influence, attractive packaging with flavored/sweetened products and most importantly these products are inexpensive and easily available [11].

In our study, we report male predominance (58% affected) in our study population. Several local and Indian studies have shown similar findings confirming our results [12, 13]. A most possible reason for this male predominance and addiction could be the easy approach to the marketplace, the use of areca nut-based products by coworkers (peer pressure) or in the neighborhood [14]. Recently some researchers have however reported an increased consumption of areca nut and associated products by females as well [15, 16]. It is because of the social tolerability in the use of areca nut-based products by females, additionally because of the lack of awareness and fake knowledge of areca nut and related products being harmless which is the reason it has led to the increased consumption of SLCT by females [17].

Our study reported the highest frequency of the combination of habits (areca nut, betel quid and gutka) use by OSMF patients followed by consumption of areca nut alone. The aforementioned findings are in accordance with other studies which reported a higher intake of areca nut-based products having a direct association with OSMF development and with the progressive stages of the disease [18, 19]. A survey performed on the frequency of habit use from various Asian populations (i.e., from India, Nepal and Pakistan) reported craving for areca nut and CSLT to be around 20%-40% per day for people with an age range of 15 years and above [20].

We also calculated the mean daily frequency and duration of habit use (in years) in our study population. Most of our OSMF patients reported the highest mean daily frequency of intake for areca nut use, followed by a combination of habits and gutka consumption. A study conducted in India also reported the highest frequency of gutka usage (60%) among OSMF patients, while Shivam *et al.* reported the frequency of intake to be the highest for areca nut supporting our result [21]. In the present study, the highest mean duration of habit use among OSMF cases was recorded for a combination of habits (11 years) followed by areca nut. Many studies have reported the duration of habit use ranging between 2 years to 10 years [22, 23]. An Indian study reported that both frequency and duration of habit have a significant effect on the severity of fibrosis in patients with OSMF, especially gutka consumption [24].

Areca nut carries a number of biologically active alkaloids and flavonoids that stimulate fibroblast cells to promote collagen production while reducing collagen degradation because of

increased collagen structural support and reduced activity of collagenase [25]. These changes also affect the buccal mucosa, tongue and surrounding soft tissue thus accounting for the most common clinic-pathological presentation of this disease. In our study, most of the cases of OSMF were affected by bilateral fibrosis of the buccal mucosa. These findings are consistent with the findings of a study on 765 OSMF patients carried out in Karachi, Pakistan [26].

Patients with OSMF suffer from the increased cross-linkage of the collagen and replacement of fatty and fibro-vascular connective tissue elements with resilient and thick bands of fibrous tissue that leads to the restriction in tongue movement and fibrosis of soft palate [27]. In our study 36.66% patients were affected by restriction of tongue movement and 40% patients had fibrosis of the soft palate. The aforementioned findings are in accordance with studies performed by other researchers [28, 29].

Burning mouth sensation is one of the most common complaints of patients suffering from OSMF mostly in the initial stages of the disease. Burning sensation is due to oral mucositis which leads to epithelial atrophy leading to difficulty in food consumption [30]. In our study, we found 60% of cases to be affected by burning mouth sensation whereas 40% had never experienced a burning sensation in their life. Multiple studies also report burning mouth sensations in OSMF patients but the percentages varies from 67.5% to 100% [31, 32].

Oral Submucous Fibrosis is mainly classified based on the extent of mouth opening and clinicopathological features. In our study, we classified the cases based on the classification proposed by Chandramani More *et al.* [8], which is also based on the extent of interincisal mouth opening in combination with the patient's signs and symptoms i.e., oral soft tissue changes and complaint of burning mouth sensation. In the present study, a maximum number of patients were of stage III OSMF (43.33%) followed by stage II (36.66%), stage I (13.33%) and stage IV (6.66%). Singh *et al.* also used this classification but the maximum number of patients in their study were of stage II (46.7%) followed by stage III, I and IV [33]. In this study we found a significant association of disease severity with mouth opening i.e., there was a decrease in the inter incisal mouth opening of the patients from stage I of OSMF to stage II, stage III and IV respectively.

CONCLUSION

The current study assesses the several clinical characteristics of OSMF and underlines the important associations observed in these patients. OSMF is increasingly affecting younger individuals with a slight male predilection. Most patients present with an advanced and severe form of disease. The mouth opening of patients is decreasing with increased severity of the disease. A history of intake of Gutka or more than two substances was observed in patients of OSMF. The majority of patients were present as buccal fibrous bands bilaterally and complained of a burning sensation in the mouth.

AUTHORS' CONTRIBUTION

- **Kanwal Iqbal:** Conceptualization of study, Literature search, Data collection, Article writing.
- **Saima Butt and Afifa Razi:** Proof reading, Overall evaluation.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Declared none.

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