ORIGINAL ARTICLE

Sociodemographic and Clinical Profile of Oral Submucous Fibrosis

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Abstract

Background: Oral Submucous Fibrosis is a pre-cancerous, progressive condition caused by gutkha, areca nut consumption which is characterized by limited mouth opening, burning pain inoral cavity, stiffness and blanching of oral mucosa. **Aim**: To study sociodemographic characters and clinical profile of Oral Submucous Fibrosis and to assess the association of duration of adverse habits with clinical staging of Oral Submucous Fibrosis. **Methodology**: This cross-sectional study of 70 clinically diagnosed cases of oral submucous fibrosis was carried out at the Tertiary Health Care Centre in Central India. Over the course of two years, demographic and clinical information, including specifics on addiction and its duration, was gathered. On the basis of symptoms, the presence of palpable fibrous bands, and measuring mouth opening, clinical staging was carried out. **Results**: The average age of the patients in the study was 33.2 ± 12.66 years with Male female ratio of 3:1. Significantly higher proportion of patients belonged to low socioeconomic status. The maximum number of patients were seen in stage III (62.86%) followed by Stage II (21.43%) and subjects who had the adverse habits for a period of 5 to 10 years had more severe OSMF. **Conclusion**: In the present study, frequency of OSMF was more in young age group and in males. There was higher frequency of disease in lower socioeconomic status. Longer duration addiction was highly associated with severity of clinical stage of OSMF.

Keywords Oral Submucous Fibrosis · Gutkha · Areca Nut · Restricted Mouth Opening

Introduction

Oral submucous fibrosis (OSMF) is a chronic illness, develops slowly and can affect any portion of the mouth, pharynx, or upper third of the esophagus. Although vesicle formation may rarely precede and/or be related to it, it is invariably connected to a Juxta-epithelial inflammation and lamina propria fibro-elastic change, leading to trismus and difficulty to chew [1–3]. Its most distinctive feature is the buccal mucosa blanching (marble-like look) caused by rupture of the local blood vessels [4]. OSMF has the greatest rates of malignant transformation among all precancerous oral lesions. It is now recognized as an Indian illness on a global scale [5]. Despite the fact that multiple etiopathogenesis has been recorded, eating areca nuts, in whatever formulation, has historically been thought to be the primary causal agent [2]. Nowadays, a wide range of readily available areca nut extracts are offered, mainly in the form of ghutka, supari, and pan masala. Areca nuts serve as the main component, while natural and synthetic fragrances, flavorings, chewing tobacco, catechu, lime, cardamom, etc. cause mucosal alterations [6]. The clinical features of OSMF, like a feeling of burning, discomfort, ulceration, are used to make the diagnosis. Other defining characteristics include gradual decrease of mouth opening, mucosal blanched appearance, de-papillation of the tongue and de-pigmentation. In more severe instances, dysphonia and poor hearing are also seen. As the disease worsens, the severity of the effect on quality-of-life increases [8]. There have been tried a variety of treatments, including pharmacological management, surgical intervention, and physiotherapeutic management, with varied degrees of success, but none of them has established itself as a remedy.

Aim: To study sociodemographic characters and clinical profile of Oral Submucous Fibrosis and to assess the

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association of duration of adverse habits with clinical staging of Oral.

Materials and Methods

A 2-years cross-sectional study was conducted in the Department of Otorhinolaryngology of the Tertiary Care Teaching Hospital of Central India following approval from the Institutional Ethics Committee. Patients with clinically diagnosed OSMF of any age and of either gender were included in the study. While an individual with oral squamous cell carcinoma, patients having limited mouth opening secondary to systemic disease like systemic sclerosis, rheumatoid arthritis, rhinoscleroma, and chemical burns, patient with temporomandibular joint dysfunction, odontogenic infection, congenital and developmental anomalies, and maxillofacial trauma were the exclusion criteria for the study.

70 subjects who met the criteria of inclusion were enrolled in the study. A comprehensive history was obtained including demographics, presenting complaints, adverse habits (such as chewing gutkha, betel quid, tobacco, mawa, smoking and spicy food) along with its duration, frequency, the sites of oral mucosa affected, the range of mouth opening, and the clinical stage of OSMF.

The patients according to their presentation were divided into different grades of the disease. The grading of the disease was done according to the classification given by Khanna and Andrade [7] as follows.

> Stage I: Earliest stage, burning sensation in mouth, acute ulceration, but with no restriction on mouth opening with distance between the incisors of > 35mm mouth opening.
> Stage II: Presents with a 26–35mm interincisal gap, blanched buccal mucosa, fibrosed regions, and pink normal mucosa in between.
> Stage III: Instances that are moderately advanced and have an inter incisal gap of 15 to 26 mm. At this point, the patient's premolar region has extensive and perceptible fibrous bands, making it impossible for them to whistle or blow cheeks.
> Stage IVA: The interincisal distance is less than 15 mm, the oral mucosa has widespread fibrosis, and the tonsils and uvula are likewise fibrosed and shorter. The mouth opening is also severely constricted.
> Stage IVB: Most advanced stage of OSMF, with premalignant changes, throughout the mucosa.

A detailed history was taken from the patients about the type of substance they consumed so that an idea could be obtained about the main causative substance and an association could be formed if any. Patients were also divided according to modified Kuppuswami socioeconomic class so that it could be found out whether this condition was more prevalent in a specific socioeconomic class [8].

There was a thorough clinical evaluation of the patient. The patients' mouth opening was measured with a Vernier Caliper as part of the oral examination. Sites of development of fibrosis, or mucosal changes, ulcerations were noted (Fig. 1, 2, 3 & 4).

Statistical Analysis- The information was gathered and entered into an excel sheet in a tabular fashion. Epi Info Version 7 was used to conduct all statistical analyses. For continuous data, descriptive measures including mean values, standard deviations, and percentages for categorical

Fig. 1 Fibrotic bands of OSMF involving Buccal mucosa

Fig. 2 Fibrotic bands of OSMF involving Palate

Fig. 3 Fibrotic bands of OSMF involving Retromolar Trigone

Fig. 4 Fibrotic bands of OSMF involving lower lip

variables were calculated. Chi-square test was used to find out the association between two variable. Statistical significance was defined as a level of 5% or less.

Results

In our study 70 patients diagnosed with OSMF were assessed for their clinical profile of the disease. Most of the patients (35.71%), as seen in Table 1, were between 26–35 years age. The study's participants were 38.21 +/-12.66 years old on an average. Male preponderance in the study population was evident from the male female ratio of 2.89:1, with 52 (74.29%) males and 18 females.

Table 1 Demographic characters of Oral Submucous Fibrosis Subjects

Study Variables	N	%
Age group (Years)		
15–25	9	14.29
26–35	25	35.71
36–45	17	22.86
46–55	11	15.71
56–65	8	11.43
Gender		
Male	52	74.29
Female	18	25.71

Most of the patients of OSMF belonged had Primary education (31.43%) followed by Secondary School education (25.71%). On evaluation of the distribution of patients according to Modified Kuppuswamy Socioeconomic Status, we found that majority of the patients had lower (47.14%) and upper lower Socioeconomic class (27.14%) as shown in Table 2.

As shown in Table 3, all the patients had multiple (more than one) adverse habits. Gutkha chewing was main habit seen in (74.29%) followed by tobacco chewing (41.43%) and spicy food (31.43%). While, the least number of patients had adverse habit of betal quid chewing (14.29%).

There were multiple sites involved in majority of patients. 53(75.71%) had involvement of buccal mucosa (Fig. 1) followed by retromolar trigone (Fig. 3) in 43 patients (61.42%) While, the least sites involved by OSMF were Floor of mouth (4.29%) and pharynx (2.86%) as shown in Table 4.

According to Table 5, the majority of patients (62.86%) belonged to OSMF's clinical stage III, which was followed

Table 2 Distribution of Patients of OSMF according to Educational and Socioeconomic Status (n = 70)

Study Variables	N	%
Education		
Illiterate	13	18.57
Primary education	22	31.43
Secondary education	18	25.71
Graduate	12	17.14
Modified Kuppuswamy Socioeconomic Status		
Upper	0	0
Upper Middle	5	7.14
Lower Middle	13	18.57
Upper Lower	19	27.14
Lower	33	47.14

Table 3 Distribution of Patients according to adverse Habits (n = 70)

Adverse habits	N	%
Gutkha chewing	52	74.29
Tobacco chewing	29	41.43
Betel quid	10	14.29
Spicy food	22	31.43

*Multiple observations allowed

Table 4 Distribution of patients according to sites involved by OSMF (n = 70)

Sites involved	N	%
Buccal Mucosa	53	75.71
Retro molar trigone	43	61.42
Palate	38	54.29
Lips	7	10
Floor of mouth	3	4.29
Tongue	5	7.14
Pharynx	2	2.86

*Multiple observations allowed

Table 5 Distributing patients according to clinical stage of OSMF (n = 70)

Clinical stage of OSMF	N	%
I	3	4.29
II	15	21.43
III	44	62.86
IV	8	11.43

Table 6 Association between Duration of Adverse habits (addiction) and clinical stage of Oral Submucous Fibrosis (n = 70)

Clinical stage of OSMF	Duration of adverse habit (years)			Chi Square	P value
	0–5	5–10	≥ 10		
I (N = 3)	1 (9.09%)	2 (4.88%)	0 (0%)	23.06	0.006
II (N = 15)	5 (45.45%)	8 (19.51%)	2 (11.11%)		
III (N = 44)	5 (45.45%)	30 (73.17%)	9 (50%)		
IV (N = 8)	0 (0%)	1 (2.44%)	7 (38.89%)		

by stage II (21.43%). Clinical stage I patients made up the least number of patients (4.29%).

41 patients were having adverse habit for 5–10 years followed by 18 patients for more than 10 years. Average duration of addition was for 8.5 ± 3.18 years which varied from 3 to 16 years. In OSMF Stage I, 2 patients had addiction for 5–10 years and 1 for less than 5 years. Maximum patients of Stage II OSMF (19.51%) and Stage III (73.17%) were having adverse habits for 5–10 years. Stage IV patients had addiction for more than 10 years. A statistically significant association was observed between duration of adverse habit and clinical stage (p-value = 0.033). (Table 6)

Discussion

Oral Submucous fibrosis (OSMF) is a chronic disorder of the oral mucosa that mostly affects persons of Indian descent whether residing in India or outside of India, intermittently affects other Asians, and rarely affects Europeans [9]. It was initially explained by Schwartz and Joshi about thirty years ago.[103,104]

In our study Males (74.29%) outnumbered the study population and our findings were consistent with others. Male predominance was noted by Memon et al. with a male-to-female ratio of 1.95:1, which is in agreement with the results of the present study [10]. Munde et al. discovered a greater frequency of OSMF among men (16.5:1)[11]. Biradar et al. also observed the same [12].

Ages 26 to 35years accounted for the majority of patients in the current study (35.71%), followed by ages 36 to 45years (22.86%). The findings of the current study are comparable to those of Munde et al., who found that the oldest patient was 88 years old and the youngest patient was 15 years old. The patients in the research had an average age of 32.8 ± 11.8 years [11]. A large proportion of patients, according to Hosein et al., were between the ages of 21 and 30 (31.1%) and 31 and 40 (19.2%) [13]. In contrast, Pindborg et al. reported that the age range of 40 to 49 years had the highest number of patents [14].

In this study, the majority of the patients were from the lower socioeconomic class (47.14%) and upper lower socioeconomic strata (27.14%). Munde et al. discovered that the majority of OSMF patients (62.2%) belonged to the lower middle and lower economic background [11]. Other studies documented that the majority of cases amongst Indian population were from lower economic backgrounds [15, 16].

According to several epidemiological and intervention research, areca nuts are the primary etiological cause. It can be eaten raw or dried, having been baked, roasted, or sundried. According to Panda who conducted research that was consistent with the current study, 66.74% of patients consumed gutka, 12.47% of patients chewed betel and areca nuts, and 20.79% of patients chewed gutkha and smoked [17] According to Hosein et al., the vast number of patients (54.5%) consumed either plain or packaged areca nuts, with 26.1% also consuming betel quid along with cigarettes. 14.6% of people chewed betel quid without tobacco, 2.2% used naswar, and just 0.4% utilised other sorts of chew [13].

Majority of patients in the current research (75.1%) had involvement of the buccal mucosa. retromolar trigone was the 2nd most affected site with (61.42%). According to Angadi et al., the majority of patients (60%) had involvement of the buccal mucosa, followed by patients (40%) who had involvement at numerous sites (including the tongue, palate, and uvula) [18]. Furthermore, Nanavati et al., found that 98.82% of subjects had buccal mucosa involvement followed by involvement of palatal mucosa (92.94%) and lip mucosa (63.53%) [19].

Most of the patients in the current research had clinical stages III (62.86%) and II (21.43%). Only 4.29% patients presented in Clinical stage I. In line with the findings of the current study, Hazarey et al. discovered that stage II patients represented the largest proportion of cases (48.3%)

[20]. Munde et al. discovered that stage II (37%) and III (34%) were the most common stages in which patients were observed [11]. In their study, Kumar et al. observed that stage II OSMF was more common, followed by stage IV, III, and stage I [21].

In the present study, majority of the patients had adverse habit for 5–10 years (58.57%) followed by > 10 years (25.71%). The average habit's duration was $8.54 + 3.18$ years, ranging from 3 to 16 years. Similar to the present study, Munde et al. found that duration of addiction of 59.8% of the patient was for more than 5 years [11]. Similarly, Bhatta et al. observed that 82.35% patients were consuming these preparations for more than 5 years. We discovered a significant statistical relationship between the duration of addiction and the severity of OSMF in the current study [22]. Our findings are consistent with Ara SA et al. study. In their study, In OSMF stage II, the majority of patients had been addicted for at least 8 to 10 years and used the products 5 to 10 times per day, according to a correlation between clinical symptoms and frequency and the duration of addiction. Most OSMF stage III patients had been dependent on the drugs for at least 15 to 20 years and used them 10 to 15 times a day. This clinical staging-addiction duration and frequency association was statistically significant [23]. Ahmad et al. observed a direct, notable relationship between the frequency of addiction, the length of chewing time with style of keeping the gutkha and other products in minutes, and the severity of the condition [24]. However, the research conducted by Rajendran et al. revealed that frequency of areca nut and tobacco quid use has a significant correlation with the severity of OSMF but that duration has no relationship even if the patient uses gutkha for the rest of his life [25].

Conclusion

In the present study, frequency of OSMF was more in young age group and in males. There was higher frequency of disease in lower socioeconomic status. Longer duration addiction was highly associated with severity of clinical stage of OSMF. Primary prevention for a condition like OSMF, which has the potential to be cancerous, needs to be strengthened at the local, state and national level.

Declarations

Conflict of Interest The authors declare that they have no competing interests.

Disclosure This Original Article has never been published and is not currently under evaluation in any other peer reviewed publication.

Research Involving Human Participants In our study we have included human participants after informing them about the study in detail through Patient Information Sheet and after obtaining their Written Informed Consent. This study was a Cross Sectional Study and methods of measurement of data are not harmful to the participants.

Informed Consent Written informed consent was obtained from all the subjects participated in this study for inclusion in the study and for publication of this article. Clearance for the research project was obtained from Institutional Ethics Committee.

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