



A STUDY ON CLINICOPATHOLOGICAL PROFILE OF ORAL SUBMUCOUS FIBROSIS

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ABSTRACT

Background: Oral submucous fibrosis is a leading cause of oral cancer. So it is necessary to study its clinicopathological profile for the early diagnosis and prompt treatment. **Objectives:** To assess the clinical profile and to evaluate the histological profile of oral submucous fibrosis. **Materials and Methods:** A cross-sectional observational study conducted in the Department of Otorhinolaryngology, Regional Institute of Medical Sciences, Imphal, Manipur, India for a period of 2 years from September 2018 to August 2020. 78 oral submucous fibrosis patients were enrolled for the study. Clinical features, different habits and histopathological features were studied. **Results:** Majority of the patients were in the age group 21-30 years with male to female ratio of 1:1.36. Gutkha/talab was the most common habit among the study population. The mean duration of habits was 5.51 years with a minimum duration of 2 years and maximum duration of 15 years. Majority of the patients (65.4%) had duration of habits of 1-5 years. Most of the patients (65.4%) clinically presented with difficulty in opening of mouth. Fibrosis was most commonly seen in buccal mucosa and palate. Most of the patients were in clinical stage II (57.7%) and in histopathological grade II (60.3%). There was no statistically significant correlation found between clinical staging and histopathological grading (P value – 0.627) **Conclusion:** Gutkha/talab is more responsible for the development of oral submucous fibrosis. Early diagnosis and treatment is important to prevent the progression to oral cancer.

KEYWORDS

Oral submucous fibrosis, Tobacco, Buccal mucosa, Palate.

INTRODUCTION

Oral Submucous Fibrosis (OSMF) is a well-recognized chronic insidious disease, precancerous condition, autoimmune and collagen related disorder. It is multifactorial in origin mainly associated with the practice of chewing betel quid containing areca nut. OSMF is first described by Schwartz in 1952 as atropica idiopathica (Tropica) mucosae oris. It is also known as idiopathic scleroderma of the mouth, idiopathic palatal fibrosis, sclerosing stomatitis, diffuse oral submucous fibrosis and submucous fibrosis of the palate and pillars [1].

Worldwide, estimates of OSMF show a confinement to Indians and Southeast Asians, with an overall prevalence rate in India of approximately 0.2-0.5%, and a gender prevalence of 0.2-2.3% in males and 1.2-4.57% in female [2]. Malignant transformation rate of OSMF was found to be in the range of 7-13%. According to long term follow up studies a transformation rate of 7.6% after a period of 17 years was reported. The pathogenesis of OSMF is not well established, but the cause is believed to be multifactorial. Areca nut/betel quid use is the single most important etiological factor considered in OSMF. It has been suggested that consumption of chillies, nutritional deficiency, chewing of areca nut, genetic susceptibility, altered salivary constituents, auto immunity and collagen disorders may be involved in the pathogenesis of this condition [3].

It is clinically characterized by burning of the oral mucosa, fibrosis leading to difficulty in opening the mouth, speech and swallowing [4]. In advanced cases, inability to open the mouth, whistling, blowing, and sucking movements are affected. The jaws may become inseparable and totally inelastic and patients can only maintain their nutrition by pushing food into the mouth. The buccal mucosa is frequently ulcerated and secondarily infected consequent to ischemia and constant pressure of the mucosa against the buccal aspect of the teeth [5].

OSMF is the leading cause of oral cancer and an effective medical and

surgical treatment is yet lacking, therefore it should diagnose at an early stage. To date there are many studies on OSMF in different parts of India. Only few studies on OSMF from North-East India have been documented.

MATERIALS AND METHODS

A cross-sectional observational study was conducted in the Department of Otorhinolaryngology, Regional Institute of Medical Sciences, Imphal, Manipur, India for a period of 2 years from September 2018 to August 2020 after obtaining approval from Institutional Ethics Committee. A total of 78 patients clinically diagnosed oral submucous fibrosis and confirmed by biopsy, were included in the study. Patients who were not willing to give informed consent or assent, presence of frank oral squamous cell carcinoma, severe systemic disease, lichen planus, leukoplakia, oral candidiasis, patients complaining of difficulty in opening mouth due to other reasons like trauma, infection etc were excluded from the study. Consent was obtained from all the patients included in this study. Detailed clinical examination and histopathological study was done for all the patients. Demographic details, symptoms, site involved, habits (gutkha/talab, betel quid/zarda pan, tobacco/khaini), duration of habits, frequency of habits, clinical staging, histopathological grading of patients with OSMF were recorded.

Patients were categorized into three clinical stages according to their ability to open mouth (Figure 1), taken from the study by Kumar KK et al.,[6]

- Stage I: mouth opening ≥ 45 mm.
- Stage II: restricted mouth opening 20-44mm.
- Stage III: mouth opening ≤ 20 mm.

Histopathological grading was also done according to the study by Kumar KK et al.,[6]

- Grade I: Loose, thick, and thin fibres.
- Grade II: Loose or thick fibres with partial hyalinization.
- Grade III: Complete hyalinization.

The data obtained were descriptively analysed using SPSS software version 21.0 (IBM Corp., Armonk, NY, USA). The result on continuous measurements were presented as mean and results on categorical measurements were presented in frequencies and percentage. Chi square test was used to see the association between clinical staging and histopathological grading. P value of <0.05 was taken as statistically significant.

RESULTS

In this study, a total of 78 OSMF patients were included in the study. The age ranged from 18 to 65 years, with mean age of 33.14±9.82 years. More than half (57.7%) of the study participants were females with a male to female ratio of 1: 1.36.

Gutkha/talab was the most common habit among the study population followed by betal quid/zarda pan (Table 1). The mean duration of habits was 5.51 years with a minimum duration of 2 years and maximum duration of 15 years. Majority of the patients (65.4%) had duration of habits of 1-5 years (Figure 2). 65 (83.3%) patients had frequency of habit of 1-5 times/day. The mean frequency of habits was 4.26 times/day (Table 2).

Most of the patients (65.4%) clinically presented with difficulty in opening of mouth followed by burning sensation of mouth (57.7%) (Table 3). Fibrosis (Figure 3) was most commonly seen in buccal mucosa (88.5%), followed by palate (51.3%) and retromolar trigone (48.7%) among the patients (Table 4). On clinical staging, most of the patients (57.7%) were in clinical stage II followed by clinical stage I (30.8%) (Table 5). On histopathological grading, 60.3% patients were in histopathological grade II and 35.9% patients in histopathological grade I (Table 6).

There was no statistically significant correlation found between clinical staging and histopathological grading (P value = 0.627) (Table 7).

DISCUSSION

OSMF is a potentially premalignant condition of the oral cavity and oropharynx. It occurs predominantly in Indians and people of South East Asian origin [7]. This has led to the concept that dietary or cultural habits prevalent in this regions act as the aetiological factors. Chewing areca nut and tobacco in its various forms is widely prevalent in Indian subcontinent giving rise to increase prevalence of OSMF [8].

In the present study, the age of the patients was ranging from 18 years to 65 years. Majority of the patient were in the age group of 21-30 years. This findings is different from a study conducted by Pindborg JJ et al., [9] where maximum number of OSMF cases in the age group of 40-49 years. This changing trend could be because of increased social encounters, economic liberty and widely availability of areca nut products they get at this age in a rapidly developing nation like India. Therefore during this age they indulge in various chewing habits like gutkha, betal quid, tobacco etc either to relieve stress or as a fashion [7].

Most of the patients were females (57.7%) with male to female ratio of 1:1.36. The reason for the female predominance could be explained on the ground that most female in the Indian subcontinent suffer from deficiency of iron and vitamin B complex. However, it need to be confirmed whether iron or B complex deficiency is the cause of OSMF in female or it is the effect of OSMF [10].

Difficulty in opening of mouth was the most common presenting complaint followed by burning sensation of mouth. 51(65.4%) patients presented with difficulty in opening of mouth, 45(57.7%) patient complaint of burning sensation of mouth, 7(9.0%) patients complaint of excessive salivation, 10(12.8%) patients complaint of mouth ulceration and 2(2.6%) patients complaint of difficulty in speech. Similar results were observed in a study conducted by Hazarey VK et al., [8]. Most of the patient are not aware of the presence of the disease. Patient became aware only when there is difficulty in opening of mouth, burning sensation of mouth. This might be the reason for trismus and burning sensation being the most common presenting complaint.

Buccal mucosa was the most common site involved in 69(88.5%) patients followed by palate in 40(51.3%) and retro molar trigone

38(48.7%). Uvula was involved in 7(9.0%) patients and anterior pillar in 26(33.3%) patients. Our findings was similar to a study conducted by Pandya S et al., [11] and Goel S et al., [12].

Majority of the patients were found consuming Gutkha/talab (50%) followed by Betal quid/zarda pan (24.4%), both gutkha and betal quid (12.8%). Similar results were observed in a study conducted by Kumar S., [4]. Majority of male were taking gutkha/talab and majority of female were taking betal quid/zarda pan and gutkha/talab. This findings is similar with Hazarey VK et al., [8]. Increase in the habits of consuming Gutkha/talab and betal quid/zarda is mainly attributable to the local cultural practices and easy availability.

Most of patients had a duration of habits of 1-5 years (65.4%). The overall mean duration was 5.51 years with a minimum duration of 2 years and maximum duration of 15 years. It was also observed that the mean duration of gutkha/talab was 3.8 years, betal quid/zarda pan was 8.4 years, Tobacco/khaini was 7.5 years and gutkha +betal quid was 5 years. This mean onset of OSMF occurs early in gutkha/talab chewer compared with betal quid/zarda and tobacco. Our findings is consistent with a study conducted by Kumar S., [4]. Absence of betal leaf, which has anti-oxidant properties and a consequently higher dry weight proportion of areca nut were responsible for early development of OSMF [3].

Maximum number of patients had frequency of habits of 1-5 times/day (83.3%) followed by frequency of habits of 6-10 times/day (15.4%). Overall mean frequency of habits was 4.26 times/day. The mean frequency for gutkha chewer was 4.68 times/day, betal quid was 3.9 times/day, tobacco/khaini was 4.5 times/day and both gutkha and betal quid was 4.6 times/day. It was observed that patient who used gutkha/talab with a greater frequency/day developed OSMF with a shorter duration of habit.

Clinically maximum no. of patients (57.7%) were found in stage II. Similar findings were observed by Goel S et al., [12]. The reason for this could be attributed to the wide range of mouth opening in clinical stage II. OSMF is a disease of altered collagen metabolism. The lesion is characterized by increase collagen fibre formation in the initial stages followed by formation of dense collagen fibre bundles and different degrees of hyalinization. This alters the flexibility of the mucosal tissue leading to restriction in the ability to open the mouth [12].

Histopathologically, most of the patients (60.3%) were in grade II followed by grade I (35.9%). 62.22% of female patients and 57.57% of male patients were in histopathological grade II. 40.42% of patients in grade II had a habit of chewing gutkha/talab, 31.91% of patients in grade II had habit of chewing betal quid/zarda pan. 71.42% of patients in grade I had a habit of chewing gutkha/talab. Majority of the patients in histopathological grade I and II had a habit of chewing gutkha/talab. So, gutkha/talab and betal quid/zarda pan is more responsible for the development of OSMF, this could be probably due to use of more dry weight of areca nut and tobacco. On comparison between clinical staging and histopathological grading, there was no statistical significance observed.

Since the present study was on a relatively smaller sample size, it would be worthwhile to conduct a similar study with a larger sample size and long study duration.

CONCLUSION

Gutkha/talab is more responsible for the development of oral submucous fibrosis. Difficulty in opening mouth and burning sensation in mouth was the most common symptoms. Buccal mucosa and palate were the most frequent site involved. Early identification of the disease and avoidance of habits is important to prevent the progression to oral cancer.

Table 1: Distribution of patients according to habits (N=78)

Habits	No. of patients	Percentage
Gutkha/Talab	39	50.0%
Betal quid/Zarda pan	19	24.4%
Tobacco/Khaini	10	12.8%
Gutkha+Betal quid	10	12.8%
Total	78	100%

Table 2: Distribution of patients according to frequency of habits (N=78)

Frequency of habits	No. of patients	Percentage
1-5 times/day	65	83.3%
6-10 times/day	12	15.4%
>10 times/day	1	1.3%

Table 3: Clinical presentation of patients (N=78)

Symptom	No. of patients	Percentage
Burning sensation of mouth	45	57.7%
Difficulty in opening of mouth	51	65.4%
Excessive salivation	7	9.0%
Mouth ulceration	10	12.8%
Difficulty in speech	2	2.6%

Table 4: Distribution of the patients according to the site involved (N=78)

Site Involved	No. of patients	Percentage
Buccal mucosa	69	88.5%
Palate	40	51.3%
Uvula	7	9.0%
Retromolar trigone	38	48.7%
Anterior pillar	26	33.3%

Table 5: Distribution of the patientss according to clinical staging (N=78)

Clinical Stage	No. of patients	Percentage
Stage I	24	30.8%
Stage II	45	57.7%
Stage III	9	11.5%

Table 6: Distribution of patients according to histopathological grading (N=78)

Histopathological grading	No. of patients	Percentage
Grade I	28	35.9%
Grade II	47	60.3%
Grade III	3	3.8%

Table 7: Comparison of clinical staging and histopathological grading

Histopatholo gical grading	Clinical staging			Total n (%)	P- value
	Stage I n(%)	Stage II n(%)	Stage III n(%)		
Grade I	10(12.8%)	15(19.2%)	3(3.8%)	28(35.9%)	0.627
Grade II	14(17.9%)	28(35.9%)	5(6.4%)	47(60.3%)	
Grade III	0(0.0%)	2(2.6%)	1(1.3%)	3(3.8%)	



Figure 1: Mouth opening assessment using Vernier caliper

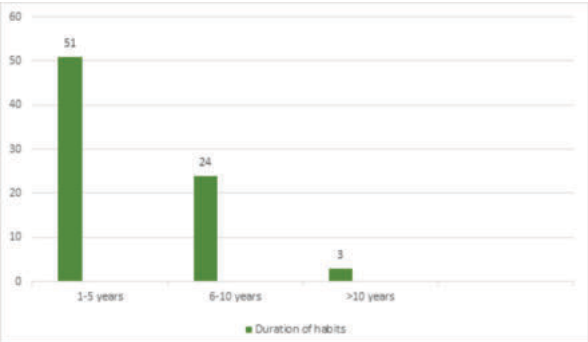


Figure 2: Distribution of patients according to the duration of habits (N=78)



Figure 3: Clinical appearance of oral mucosa in oral submucous fibrosis

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