



ASSESSING RISK FACTORS FOR ORAL SUBMUCOUS FIBROSIS
- A CROSS-SECTIONAL SURVEY

Shridevi Adaki^{1*}, Amol Karagir², Kaushal Shah³, Raghavendra Adaki⁴,
Samruddhi Metha⁵ and Dr. Umesh⁶

^{1,2,3,4}Department of Oral Medicine and Radiology, B. V. D. U. Dental College and Hospital,
Sangli - 416414

⁵Department of Prosthodontics, B. V. D. U. Dental College and Hospital,
Sangli - 416414

⁶Department of Community Dentistry, B. V. D. U. Dental College and Hospital,
Sangli - 416414

ARTICLE INFO

Article History:

Received 5th November, 2016
Received in revised form 17th
December, 2016
Accepted 26th January, 2017
Published online 28th February, 2017

Key words:

Form of Tobacco, Duration of Habit,
Frequency of Habit, Severity of Osmf

ABSTRACT

Background: Oral submucous fibrosis is chronic disease affecting oral cavity and pharynx because of habit of arecanut along with tobacco. The severity of the disease depends on the form, duration and frequency of the habit. But in recent days we have observed more severe form of the disease in younger age group individuals, who had the habit since one or two years and in older age group individuals less severe form of the disease. So this study was planned to correlate the etiological risk factors to the severity of clinical grading along duration and frequency of chewing habit.

Material and methodology: Clinical details were retrieved from the departmental files of 2014 to 2015. Proper evaluation of the records was done and age, gender and different habits, duration of habit in years, frequency of habit per day were recorded. The data so gathered was sorted, tabulated and subjected to statistical analysis.

Results: Out of all the 199 OSMF cases, 196 patients (98.4%) were males and 3 patients (1.6 %) were females. The minimum age reported was 19 years and maximum 70 years with a mean age of 33.28 years. 82 patients (41%) are below the age 30 years, 66 patients (33%) are in the range of 31-40 years, 36 patients (18%) are in the range of 41-50 years and 15 patients (8%) are above 50 years of age. Below the age of 30 and above 51 years maximum patients (51% and 60%) had grade I OSMF, in range of 31-40 and 41-50 years maximum patients had grade I and II OSMF.

Conclusion: In the present study the frequency of the habit showed statistical significance indicating that as frequency of habit increases severity of the disease also increased. But duration and form of tobacco did not show any significance. By this we conclude that the severity of the disease more depends on the frequency of the habit.

Copyright © 2017 Shridevi Adaki et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Oral sub mucous fibrosis (OSMF) is an oral precancerous chronic progressive disorder which presents with an intolerance to spicy food, rigidity of lip, tongue, and palate leading to varying degrees of limitation of mouth opening and tongue movement. The hallmark of the disease is sub mucosal fibrosis that affects most parts of the oral cavity, pharynx, and upper third of the oesophagus. [Karthik H, et al 2012, Pindborg JJ, et al, 1968] The prevalence of OSMF in India varies from 0.03% to 3.2%. [3] The main clinical features are blanching of the mouth, restriction of tongue movements and mouth opening which worsen as the condition progresses. The

cheek mucosa becomes rigid and vertical bands can be palpated making it difficult to blow air or open the mouth. [Bailoor D, Nagesh KS, 2005]

Worldwide, estimates of OSMF shows a confinement to Indians and Southeast Asians, with overall prevalence rate in India to be about 0.2% to 0.5 % and prevalence by gender varying from 0.2-2.3% in males and 1.2-4.57% in females. [Phatak A, 1979] The age range of patients with OSMF is wide ranging between 20 and 40 years of age. [Rajendran R, et al, 1986] It has been suggested that ingestion of chillies, genetic susceptibility, nutritional deficiencies, altered salivary constituents, autoimmunity and collagen disorders may be

involved in the pathogenesis of this condition.[Aravindh L, et al 2012] The condition is well recognized for its malignant potential rate of 7.6% and is particularly associated with use of areca nut in various forms with significant duration and frequency of chewing habits.[Canniff J, et al 1986, Sinor P, et al 1990] The alkaloids and flavonoids (arecoline, arecaidine, tannins and catechins) stimulate collagen synthesis and proliferation of fibroblasts and can act both as a chemical and physical irritant to oral mucosa. Furthermore, the micro trauma produced by the friction of coarse fibers of areca nut also facilitates the diffusion of betel quid alkaloids and flavonoids into sub epithelial connective tissue, resulting in juxta-epithelial inflammatory cell infiltration.[Sirsat S, et al 1962]

Since several decades, researchers reported different aspects of OSMF. But still, there is a gap in the present scenario of evidence based dentistry which correlates the role of critical components of a habit such as duration, frequency to the clinical grading of OSMF. The present study was carried out to correlate the etiological risk factors to the severity of clinical grading along duration and frequency of chewing habit.

MATERIALS AND METHODS

Study population

Sample for the study was collected from the Department of Oral Medicine, Diagnosis and Radiology BVDUDC Sangli, Maharashtra. Clinical details were retrieved from the departmental files of 2014 to 2015. Proper evaluation of the records was done and clinically diagnosed OSMF cases were considered for the study. Clinical details included age, gender and different tissue abuse habits like, chewing panmasala with or without tobacco, gutkha chewing, areca nut chewing, plain tobacco, mawa, smoking, alcohol and also duration of habit in years, frequency of habit per day were recorded. A clinical criterion which was considered for the diagnosis of OSMF was as per the criteria described by Bailoor DN (1993) [Gupta D, et al 1980] along with that if OSMF seen with other precancerous lesions and conditions it was considered as grade 4 OSMF. Patients with the habits who fit into the criteria for diagnosis Oral submucous fibrosis were included in the study. Cases which were not according to the criteria to diagnose it as Oral submucous fibrosis were excluded from the study. The data so gathered was sorted, tabulated and subjected to statistical analysis.

Clinical criteria for the diagnosis of OSMF described by Bailoor DN (1993)

Grade 1 (Mild OSMF): Mild blanching, No restriction in mouth opening, Central incisor tip to tip of the same side, Normally in Males 5.03 cm. Females 4.5 cm, No restriction in tongue protrusion, mesio-incisal angle of upper central incisor to the tip of the tongue when maximally extended with mouth wide open (Normally Males 6.73cm and Females 6.07cm), Cheek flexibility, CF= V1-V2. Two points measured between at one third the distance from the angle of the mouth on a line joining the tragus of the ear and the angle of the mouth, the subject is then asked to blow his cheeks fully and the distance measured between the two points marked on the cheek V1. CF =V1-V2. Mean value for males- 1.2 cm, females- 1.08 cm, burning sensation only on taking spicy food or hot temperature liquids, etc.

Grade 2 (Moderate OSMF): Moderate to severe blanching, Mouth opening reduced by

33%, tongue protrusion reduced by 33%, flexibility also demonstrably decreased, burning sensation even in absence of stimuli, Palpable bands felt, Lymphadenopathy either unilateral or bilateral.

Grade 3 (Severe OSMF): Burning sensation very severe, patient unable to do day to day work, more than 66% reduction in the mouth opening, cheek flexibility and tongue protrusion, in many the tongue may appear fixed, Ulcerative lesions may appear in cheek, thick palpable bands felt, lymphadenopathy is bilaterally evident.

RESULTS

Out of all the 199 OSMF cases, 196 patients (98.4%) were males and 3 patients (1.6 %) were females. The minimum age reported was 19 years and maximum 70 years with a mean age of 33.28 years. Percentage of 47.2 (n =94) cases were clinically categorized as OSMF grade I, 40% (n = 81) as OSMF grade II, 10% (n =20) with OSMF grade III and 2% (n=4) as advanced OSMF with other precancerous lesions and conditions (table I).

Table I Distribution of OSMF cases according to grade

Grade	N	%
1	94	47.2
2	81	40.7
3	20	10.1
4	4	2.0
Total	199	100.0

Table II distribution of cases according to form of tobacco consumed

Grade	Tobacco	Gutka	Mava	Smoking	Total
I	44	26	22	2	94
II	33	22	24	2	81
III	8	7	5	0	20
IV	1	1	2	0	4
Total	86	56	53	4	199

Table III Age wise distribution of OSMF cases along with grades.

Age	Grade	Frequency	%
<30	1	42	51.2
	2	33	40.2
	3	6	7.3
	4	1	1.2
30-40	Total	82	100.0
	1	29	43.9
	2	27	40.9
	3	9	13.6
40-50	4	1	1.5
	Total	66	100.0
	1	14	38.9
	2	15	41.7
>50	3	5	13.9
	4	2	5.6
	Total	36	100.0
	1	9	60.0
>50	2	6	40.0
	Total	15	100.0

Majority of the sample 54.8% (n = 109) ate tobacco with areca nut, followed by 43.2% (n = 86) who consumed plane tobacco. Percentage of 2 (n = 4) had habit of smoking tobacco (table II). The frequency of consumption ranged from once in a day to 8 times in a day. The duration of habit in years ranged from 0 to 30.

Linear regression analysis showed statistical significance for the frequency of the habit per day with clinical grading of OSMF indicating an increased risk of severity of OSMF with

increase in frequency per day. However, form of tobacco and duration of the habit were found to be statistically insignificant with no effect on severity of OSMF.

In the descriptive analysis, 82 patients (41%) are below the age 30 years, 66 patients (33%) are in the range of 31-40 years, 36 patients (18%) are in the range of 41-50 years and 15 patients (8%) are above 50 years of age. Below the age of 30 and above 51 years maximum patients (51% and 60%) had grade I OSMF, in range of 31-40 and 41-50 years maximum patients had grade I and II OSMF (table III).

DISCUSSION

Oral submucous fibrosis is a chronic disease of the oral cavity characterized by juxtra-epithelial inflammatory reaction which progress leading to fibrosis of the sub-mucosa, and it is well recognized for its malignant potential and is associated with areca nut and tobacco chewing habit. The present study was carried out to study the role of different variables which play a vital role in the clinical grading of OSMF.

Literature survey of gender distribution has shown wide variations in the occurrence of OSMF. Some epidemiological surveys in India have shown a female predominance [Sinor P, et al 1990, Murti P et al, 1990] another study reported 30% prevalence in female patients [Vanaja R. et al 2011]. In the present study, prevalence of OSMF in female patients is very less (1.6%). The reason for male predilection may be the accessibility and acceptability of gutka and tobacco use along with changing lifestyles. However there is one more possibility of a selection bias as it was a hospital based study and women with the condition may not have sought treatment in the hospital.

In the present study maximum number of patients were below the age 30 (41%) which was similar to that of studies done by Borle RM, Borle SR. [Borle R, Borle S, 1991] followed by 33% are in the range of 31-40 years. This suggests that OSMF is seen more in younger patients compared to elder patients.

In the present study, OSMF is seen in 86 patients who were consuming plane tobacco and 56 patients consuming gutka and 53 patients consuming mava. This suggests that, in this part of India, the consumption of plane tobacco is more seen compared to commercially available tobacco products and prevalence rate of OSMF and severity is not much different in both groups. This is in contrast with other studies [Mervyn H et al, 2015] where prevalence and sever OSMF is much high with commercially available products.

CONCLUSION

In the present study the frequency of the habit showed statistical significance indicating that as frequency of habit increases severity of the disease also increased. But duration and form of tobacco did not show any significance. By this we conclude that the severity of the disease more depends on the frequency of the habit.

References

1. Karthik H, Nair P, Gharote HP, Agarwal K, Ramamurthy Bhat G, Kalyanpur Rajaram D. Role of hemoglobin and serum iron in oral sub mucous fibrosis: a clinical study. *Scientific World Journal* 2012; 2012: 254013; doi: 10.1100/2012/254013.
2. Pindborg JJ, Barmes D, Roed-Peterson B. Epidemiology and histology of oral leukoplakia and leukoedema among Papuans and New Guineans. *Cancer* 1968; 22(2):379-84.
3. Aravindh L, Jagadesh P, Mahesh Kumar P, Ramasubramaniam, Raj Vikram N. Oral lesions associated with Tobacco. *Indian Journal of Drugs and Diseases* 2012; 1(1):10-1..
4. Bailoor D, Nagesh KS. Fundamentals of oral medicine and radiology. 1st ed. New Delhi: *Jaypee Brothers medical Publishers* 2005. p.185.
5. Phatak A. Fibrin producing factor in Oral Sub-Mucous Fibrosis. *Indian Journal of Otolaryngology and Head & Neck Surgery* 1979; 31(4):103-4.
6. Rajendran R, Sugathan C, Remani P, Ankathil R, Vijayakumar T. Cell mediated and humoral immune responses in oral submucous fibrosis. *Cancer* 1986; 58(12):2628-31.
7. Canniff J, Harvey W, Harris M. Oral submucous fibrosis: its pathogenesis and management. *British Dental Journal* 1986; 160(12):429-34.
8. Sinor P, Gupta P, Murti P, Bhonsle R, Daftary D, Mehta F, Pindborg J. A case control study of oral submucous fibrosis with special reference to the etiologic role of areca nut. *Journal of Oral Pathology & Medicine* 1990; 19(2):94-8.
9. Sirsat S, Khanolkar V. The effect of arecoline on the palatal and buccal mucosa of the Wistar rat. An optical and electron microscope study. *Indian Journal of Medical Sciences* 1962; 16:198-202.
10. Gupta D, Gupta M, Golhar B. Oral submucous fibrosis; clinical study and management by physiofibrolysis. *J Indian Dent Assoc* 1980; 52: 375-8.
11. Murti P, Gupta P, Bhonsle R, Daftary D, Mehta F, Pindborg J. Effect on the incidence of oral submucous fibrosis of intervention in the areca nut chewing habit. *Journal of Oral Pathology & Medicine* 1990; 19(2):99-100.
12. Vanaja R, Wanjari PV, Naveen RB, Prashanti R, Oral Submucous Fibrosis: Correlation of Clinical Grading to various habit factors. *International Journal Of Dental Clinics* 2011; 3(1): 21-24.
13. Borle R, Borle S. Management of oral submucous fibrosis: a conservative approach. *Journal of Oral and Maxillofacial Surgery* 1991; 49(8): 788-91.
14. Mervyn H, Sidra M, Nazish F. Association between grading of oral submucous fibrosis with frequency and consumption of areca nut and its derivatives in a wide age group: a multi-centric cross sectional study from Karachi, *Pakistan J Cancer Prev* 2015; 20:216-222..

