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RESEARCH ARTICLE

AGE AND HABIT AS DETERMINANTS IN ORAL SUBMUCOUS FIBROSIS (OSMF)

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ABSTRACT

Background - Smokeless Tobacco, betel quid and areca in various forms are widely used in the Indian Subcontinent. The habit is not restricted to the elderly but also increasingly gaining popularity among adolescents. The association between these habit and OSMF is well proved, however the influence of age and variables related to the habit on the prognosis and behaviour needs further study.
Aim: Aim of the present study was to compare the effect of age on the clinical stage of oral sub mucous fibrosis and to compare the effect of form, dosage and frequency of habit on the clinical stage of OSMF.
Material and Methods: After due approval from the ethical committee, the present study was conducted at, School of Dental Sciences, KIMSDU, Karad. Consent was obtained and the information about the study given to the patients. Demographic data, habit related information was collected and clinical examination was performed.
Results: Stage 2 and stage 3 OSMF is most commonly seen in 26-30 years and stage 1 in 15-20 years age group. When stage is correlated with the type of habit stage 1 patients had an habit of chewing of betel quid and stage 2and 3 patients had an habit of chewing areca nut followed by betel quid. Results were found to be non significant when staging was correlated with the gender.
Conclusion: In this present study, Stage 2 and stage 3 OSMF was most commonly seen in 26-30 years and the results of the study indicate a more rapid progression when the habit is taken at an earlier age. There was a significant correlation between duration and frequency of habit with clinical staging of OSMF.

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INTRODUCTION

Oral sub mucous fibrosis is a chronic, progressive and irreversible disease of unknown aetiology. It affects oral, oropharyngeal and at times esophageal mucosa. The earliest description of the disease was by Schwartz in 1952 (Sabharwal *et al*., 2013), who coined the term atrophica idiopathic mucosa oris to describe an oral fibrosing disease. Joshi subsequently termed the condition as oral sub mucous fibrosis (OSF) in 1953, and the first Indian cases were reported from Bombay (Joshy 1952) and Hyderabad. (Rao, 1962) Worldwide, estimates of OSMF shows a confinement to Indians and Southeast Asians. (Tilakaratne *et al*., 2006) A variety of etiologic factors including capsaicin, betel nut alkaloids, hypersensitivity, autoimmunity, genetic predisposition and chronic iron and vitamin B-complex deficiency have been suggested by various authors, the most common of which is chewing areca nut. Excessive use of areca nut may cause fibrosis due to increased synthesis of collagen and induce the production of free radicals and reactive oxygen species, which are responsible for high rate of oxidation/peroxidation of polyunsaturated fatty acids which affect essential constituents of cell membrane and might be involved in tumorigenesis. (Revant *et al*., 2012) Arecanut chewing is deep rooted in Indian culture and has been used as a mouth freshening agent that has various symbolic roles throughout Indian history. (Kumar *et al*., 2007) The habit is not restricted to the elderly but also increasingly gaining popularity among adolescents. Patients complain of burning sensation while eating spice food. The

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fibrosis also leads to difficulty in mastication, speech, and swallowing and pain in throat and ears. It also may lead to relative loss of auditory acuity because of stenosis of the opening of the Eustachian tube. In advance cases, there may be severe trismus, and totally inelastic mucosa is forced against the teeth, leading to chronic ulceration and subsequent infection. (Sabharwal *et al*., 2013) In many cases, the fibrous tissue is seen which extends from the anterior pillars into the soft palate as a delicate reticulum of interlacing white strands that later become confluent. The cheek have mottled marble like appearance, with normal reddish mucosa and the floor of mouth becomes pale and thickened .If the fibrosis extends down to the esophagus , the patient has progressive dysphasia. (Tilakaratne *et al*., 2006; Revant *et al*., 2012; Kumar *et al*., 2007) Malignant transformation rates as high as 7.6% have been reported from the Indian subcontinent over a 17 year period. (Murti *et al*., 1985) Aim of our study to compare the effect of age on the clinical stage of Oral sub mucous Fibrosis and to compare the effect of form, duration and frequency of habit on the clinical stage of Oral Sub mucous Fibrosis.

MATERIALS AND METHODS

After approval from the ethical committee, the present study was conducted at, School of Dental Sciences, KIMSDU, Karad. Consent was obtained and the information about the study was given to him/her. Personal information, habit related information was collected and clinical examination was performed for staging. Clinical criteria for the diagnosis of OSMF were as per the criteria described by Bailoor DN (1993). (Gupta *et al*., 1980)

Stage 1 (Mild OSMF): Mild blanching, No restriction in mouth opening, No restriction in tongue protrusion, burning sensation only on taking spicy food or hot temperature liquid.

Stage 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.

Stage 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.

Statistical analysis

The data so gathered was sorted, tabulated and statistical analyzed by Chi-square test to determine the association between variables and paired t-test was utilized to find out the mean age difference between genders.

RESULTS

In our study, subjects were divided into three groups i.e 15-20years, 21-25 years and 26-30 years. Stage 2 and stage 3 OSMF is most commonly seen in 26-30 years and stage 1 in 15-20 years age group. [Table 1] Results were statistically significant. Stage 1 OSMF is seen most commonly at the mean age of 22 years and stage 2 and stage 3 at the mean age of 25 and 26 years respectively. [Table 2] In our study, out of 50 subjects one was female and rest all were male, when correlated with gender and clinical staging it was statistically not significant. [Table 3] When history was taken 46% of subjects had an habit of chewing areca nut, 24% of subjects had an habit of chewing areca nut + betel quid, 18% of subjects had an habit of chewing betel quid, 4% of patients had an habit of chewing tobacco, tobacco + areca nut and tobacco + betel quid. [pie chart 1] When stage of OSMF is correlated with the type of habit stage 1 patients had an habit of chewing of betel quid, stage 2 patients had an habit of chewing areca nut followed by betel quid and stage 3 patients had an habit of chewing areca nut + betel quid followed by areca nut.[Bar chart 1 and Table 4]

Table 1. Frequency distribution of age of patients when compared with clinical stages of Osmf

Age groups	CLINICAL STAGES of OSMF			df	p value
	1	2	3		
15-20	2	1	1	4	0.013*
21-25	1	13	4		
26-30	1	15	12		
Total	4	29	17		

* Statistically Significant, df; degree of freedom

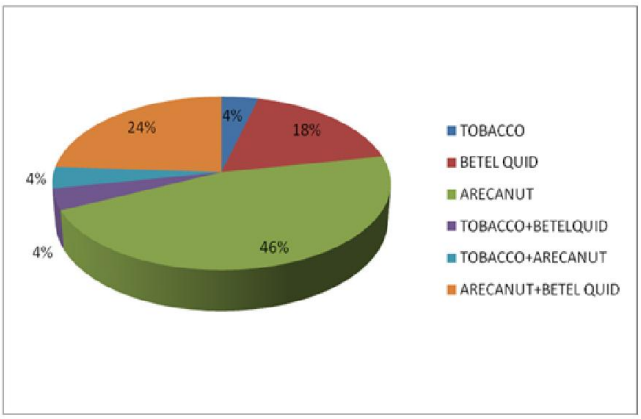
Table 2. Age distribution of patients with various stages of Osmf

Clinicstage of OSMF	Mean age	N	Std. Deviation
1.00	22.0000	4	4.32049
2.00	25.6552	29	3.27628
3.00	26.5882	17	3.70909
Total	25.6800	50	3.62778

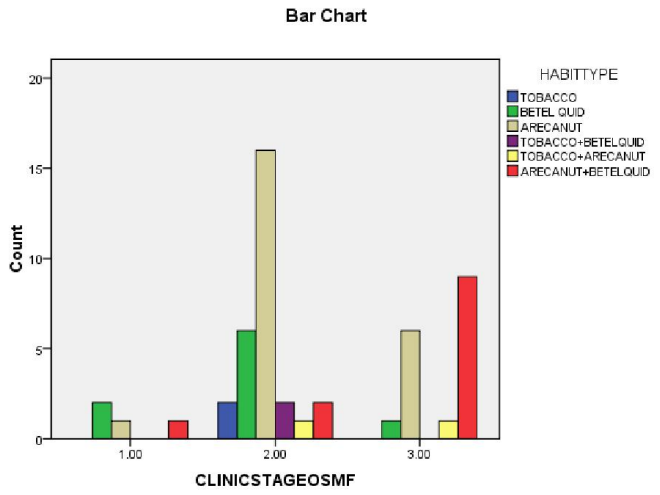
Table 3. Frequency distribution of Gender of patients when compared with clinical stages of Osmf

Clinical staging	Sex		p value
	Male	Female	
1.00	4	0	0.691^{ns}
2.00	28	1	
3.00	17	0	
Total	49	1	

Ns: Statistically non significant



Pie Chart 1. Distribution of habits among the study subjects



Bar Chart 1. Stage distribution versus type of habit

DISCUSSION

OSMF, a crippling disease of the oral mucosa, evokes the interest of dental professionals in different parts of the world. Its occurrence in various parts of India, South Africa and among Indian emigrants has been reported in dental literature. The peculiarity of the disease is that it is confined to a particular geographic region. This has led to the concept that dietary or cultural habits prevalent in this regions act as the aetiological factors. Case reports, epidemiological studies, animal experiments and in vitro culture studies all tried to explain the aetiopathogenesis, clinical and histopathological features. The present study is undertaken to correlate effect of age on the clinical stage of Oral sub mucous Fibrosis and to compare the effect of form, duration and frequency of habit on the clinical stage of Oral Sub mucous Fibrosis. (Kiran Kumar *et al*., 2007) Pindborg *et al*. (1985). who reported the maximum number of OSMF cases in the age group of 40-49 years in their study, in contrast to that our study has three groups i.e 15-20years, 21-25 years and 26-30 years. Stage 2 and stage 3 OSMF is most commonly seen in 26-30 years and stage 1 in 15-20 years age group. Of the 50 cases of OSMF studied, 49 cases were males and one case was female. A literature survey shows a wide variation in sex distribution of OSMF. Some of the epidemiological surveys in India have shown a female predominance in the occurrence of this entity. A male predominance in OSMF cases was shown by Sinor *et al*. (1990)

Similar to our study. Kumar *et al*. concluded that epidemiological studies in India showed habit of chewing areca nut as the major aetiological factor of OSMF. In recent years, commercial preparations like paanmasala have become available in India. The main ingredient of these products is areca nut along with lime and catechu wrapped in a betel leaf with or without tobacco. In our study when history was taken 46% of subjects had an habit of chewing areca nut, 24% of subjects had an habit of chewing areca nut + betel quid, 18% of subjects had an habit of chewing betel quid, 4% of patients had an habit of chewing tobacco, tobacco + areca nut and tobacco + betel quid. When stage of OSMF is correlated with the type of habit, stage 1 patients had an habit of chewing of betel quid, stage 2 patients had an habit of chewing areca nut followed by betel quid and stage 3 patients had an habit of chewing areca nut + betel quid followed by areca nut. Maher *et al*. who stated that the daily consumption rate appears to be much more significant with respect to risk than the lifelong duration of the habit. (Maher *et al*., 1994) Absence of betel leaf, which has anti-oxidant properties and a consequently higher dry weight proportion of areca nut were responsible for early development of OSF. These findings are of great concern because younger individuals are at greater risk as it has been well established that OSF is a premalignant and crippling condition of the oral mucosa. (Pindborg *et al*., 1980)

Conclusion

In this study, Stage 2 and stage 3 OSMF was most commonly seen in 26-30 years and the results of the study indicate a more rapid progression when the habit is taken at an earlier age. OSMF, a potential malignant disease is a preventable life style disease. Rampant and early use of smokeless forms of tobacco in the Indian society has resulted in an epidemic of a rapidly spreading potentially malignant, lifestyle disease that is engulfing our youth and that warrants serious actions that need to be taken in order to safe guard our future generations.

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