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Prevalence of Oral Submucous Fibrosis (Osmf) Among Patients Visiting an Institutional Hospital Set Up

Research Article

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Abstract

Oral Submucous fibrosis (OSMF) occurs in young adults, who are in the habit of chewing tobacco mixed with areca nut and its various commercially available preparations. The disease results in progressive inability to open the mouth due to the submucosal fibrosis initiated by chronic inflammation affecting mainly oral mucosa. Oral Submucous Fibrosis (OSMF) is a disease that frequently occurs among the Indian population. The present study aims to evaluate the prevalence of OSMF among the population visiting an institutional hospital set up. This retrospective study was conducted among the patients visiting the Oral Medicine and Radiology (OMR) department of a private dental college. The data was collected by reviewing the case sheets of the patients diagnosed with OSMF. The collected data was statistically analysed using IBM SPSS Software (20.0). Within the limits of the study, it can be concluded that OSMF was more prevalent among males. It can be seen that the Grade- I, III, IV of OSMF are the most prevalent among males and Grade II is more prevalent among females. The association between gender and OSMF is statistically significant (p-value: 0.016<0.05). It is the most prevalent among the age group of 20-29 years and 40-49 years; Grade I OSMF was the most prevalent among all the age groups. This association between age and the prevalence of different grades of OSMF shows a high statistical significance (p-value: 0.008<0.01).

Keywords: Age; Chennai; Male; OSMF; Grading; Prevalence.

Introduction

Oral submucous fibrosis is a chronic insidious disease affecting any part of the oral cavity and sometimes the pharynx [1]. It causes trismus and difficulty to eat due to its association with juxta epithelial inflammatory reaction. This is followed by fibroelastic changes of lamina propria along with epithelial atrophy, leading to stiffness of oral mucosa [2].

The first case of oral mucosa was seen occurring in Indian in East Africa by Schwartz (1952) as "atropa idiopathica mucosae oris" [3]. The four consecutive histological changes of OSMF was reported by Pindborg and Sirsat (1966) [4]. The irreversible nature of OSMF was described by Seedat and Van Wyle (1968)[5]. They state that OSMF is induced by the habit of chewing betel nuts and the reversal of the disease after the cessation of the habit does not occur.

It has been suggested that consumption of chillies, nutritional deficiency, genetic susceptibility, chewing of areca nut, autoimmunity, altered salivary constituents and collagen disorders may be involved in the pathogenesis of this condition [3]. OSMF is a well-recognized, potentially premalignant condition. Malignant transformation rates as high as 7.6% have been reported from the Indian subcontinent over a 17 year period [6].

With 75,000-80,000 cases per year, India ranks the highest among all the registries for the highest number of oral cancer cases in the world. Initially these cases were reported in countries like India, Bangladesh and Pakistan, but with the increasing amount of immigration, it is now prevalent in the weatern countries as well [7-11]. Since 1980, there has been vigorous advertising of products like gutka and pan masala and sudden increase in the number of factories involved. One of the main reasons why the government has not been able to successfully curb this disease is due to the dependency of the livelihood of farmers and others involved in the

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industry. About 65% of the total produce of the country's supply of areca nuts is produced from Karnataka. The only possible way to change this would be to educate the farmers about it's harmful effects and encourage them to grow other plants which will also benefit them [12-16].

Previously our team has a rich experience in working on various research projects across multipledisciplines [17-31]. Now the growing trend in this area motivated us to pursue this project. The aim of the present study was to evaluate the prevalence of OSMF among the population visiting an institutional hospital set up.

Materials and Methods

Study Setting:

The present retrospective study was carried out in an institutional setting study with an advantage of a wide range of data available and disadvantage being the assessment of single location only. It was conducted to correlate age and OSMF among the male population visiting Saveetha Dental College from June 2019 to March 2020. Ethical clearance for this study was obtained from the Institutional Ethical Committee with the ethical approval number being SDC/SIHEC/2020/DIASDATA/0619-0320. The population included in the study were 145 patients who were diagnosed to have OSMF by the Oral Medicine and Radiology Department. A signed consent was taken from the patients who were included in the study. Two examiners were involved in the study.

Study design:

The study was designed based on the set inclusion criteria of patients from the oral medicine department who were diagnosed with OSMF. Patients were divided into four groups according to severity, following the criteria from a study done by Ranganathan et al[(32)]. The criteria taken was mouth opening as follows:
Grade I: Only symptoms, with no demonstrable restriction in mouth opening
Grade II: Limited mouth opening. 20 mm and above
Grade III: Mouth opening less than 20 mm.
Grade IV: OSMF advanced with limited mouth opening. Precancerous or cancerous changes seen throughout the mucosa.
Cases which did not fall under this inclusion criteria were excluded from the study.

Sampling:

The study was based on non-probability convenience sampling. To minimize the sampling bias, all the case sheets of patients with OSMF were reviewed and included.

Data Collection and Tabulation:

It is a retrospective study where the data was collected by reviewing the case records of the patients visiting the Oral medicine and Radiology department of a private dental college from June to March. A total of 100 case sheets were reviewed. Cross verification of the data was done by a reviewer. The collected data was tabulated based on the following parameters: Patients details-Name, Age, Gender, Patient identification number and if the patient was diagnosed with OSMF or not. The age of the patients was categorised for convenience purposes into the following: 20-29 years, 30-39 years, 40-49 years, 50-59 years and 60-69 years.

Statistical Analysis:

The data were entered and analysed using Statistical Package for the Social Sciences Software (SPSS) by IBM Version 20.0. Descriptive Statistics (eg. frequencies and percentages) were calculated to explore the general features of the data. Independent variables were age and gender and the dependent variable was OSMF.

Results & Discussion

A total of 100 subjects participated in the study of which 93.4% were males and 6.6% were females [Table 1]. Grade I OSMF was the most (67.0%) prevalent among the population, followed by grade II(22.0%), grade III (7.0%). The least prevalent was grade IV OSMF [Figure 1]. Grade I OSMF was the most prevalent among all the age groups (20-29 years,30-39 years- 21; 40-49 years-14; 50-59 years-8; 60-69 years-4)[Figure 2]. The age groups which show a high percentage of prevalence (25.5%) of OSMF are 20-29 years

Table 1. This table shows the prevalence of different grades of OSMF with relation to age and gender.

Variable	Grade (%)					Statistical values		
	I	II	III	IV	Total(%)	Pearson chi-square value	df	p-value
Age								
20-29 years	30.90%	20.80%	10.00%	0.00%	25.50%			
30-39 years	30.90%	12.50%	10.00%	0.00%	23.60%			
40-49 years	20.60%	37.50%	10.00%	75.00%	25.50%	26.781	12	0.008*
50-59 years	11.80%	25.00%	40.00%	25.00%	17.90%			
60-69 years	5.90%	4.20%	30.00%	0.00%	7.50%			
Gender								
Male	66.70%	19.20%	10.10%	4.00%	100.00%	10.348	3	0.016*
Female	28.60%	71.40%	0.00%	0.00%	100.00%			

***(Since the p value is lesser than our chosen significance level (α=0.05), it is statistically significant).**

Figure 1: This frequency distribution graph shows prevalence of different grades of OSMF. X axis is the grade of OSMF and Y axis represents the percentage of patients with OSMF. Grade I (Green); Grade II(Yellow); Grade III(Pink); Grade IV(Red). It can be seen that the highest percentage of prevalence is seen with Grade I OSMF (67.00%).

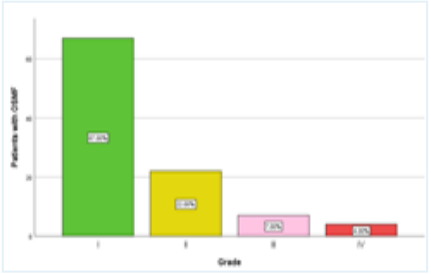


Figure 2: This bar graph shows the association between age and different grades of OSMF. X axis is the grade of Age and Y axis represents the number of patients with OSMF. Grade I(Green); Grade II(Yellow);Grade III(Pink); Grade IV(Red). Pearson chi-square test, p-value: 0.008<0.01. It can be seen that Grade I OSMF is the most prevalent (20-29 years, 30-39 years- 21; 40-49 years-14; 50-59 years-8; 60-69 years-4) among all the age groups and this association shows a high statistical significance.

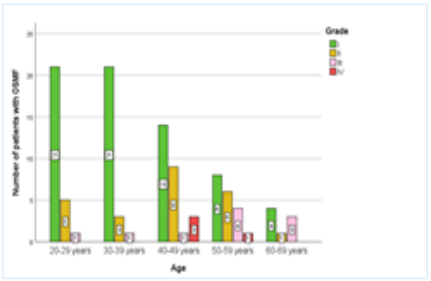
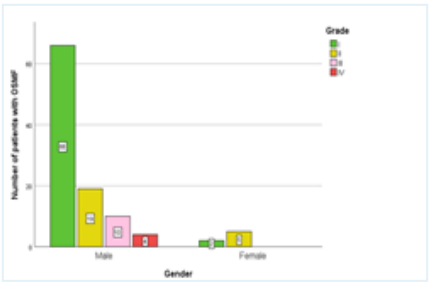


Figure 3: This bar graph shows the association between gender and different grades of OSMF. X axis is the grade of gender and Y axis represents the number of patients with OSMF. Grade I(Green); Grade II(Yellow);Grade III(Pink); Grade IV(Red). Pearson chi-square test, p-value:0.016<0.05. It can be seen that the Grade- I,III,IV of OSMF are the most prevalent (66.7%,10.1%,4.0% respectively) among males and Grade II is more prevalent (71.4%) among females and this association is statistically significant.



and 40-49 years. Chi-square analysis was performed and it can be seen that there is a high statistical significance between the age and the grade of OSMF (Pearson chi-square test, p-value: 0.008<0.01) [Table 1]. It can be seen that the Grade- I,III,IV of OSMF are the most prevalent (66.7%,10.1%,4.0% respectively) among males and Grade II is more prevalent (71.4%) among females and this association is statistically significant (Pearson chi-square test, p-value:0.016<0.05) [Table 1] [Figure 3].

There is compelling evidence that the habit of chewing areca nuts is associated with OSMF and is predominantly seen in the Indian subcontinent [33-36]. The alkaloid present in areca nut- arecoline, is converted into arecadaine which stimulates fibroelastic activity in oral mucosa resulting in excessive collagen which is seen in OSMF [37-39].

From our results we can observe that Grade I OSMF is the most prevalent among the population, across all the age groups. This finding is similar to the observations by Nigam et al.,[40]. Studies by Srivatsava et al.,[41]and Bajoria et al.,[42] shows that Grade II OSMF was more predominant which is contradictory to our study.

In this retrospective study there were 100 subjects who were diagnosed clinically for having OSMF. Although OSMF affects both sexes, a clear male predominance was seen in our study (93.4%). This observation is similar to the findings of studies by Ali et al [(43)], Ahmad et al.,[44], Wahi et al.,[45] and Tang et al.,[46]. Certain studies by Pindborg et al.,[47] and Gupta et al.,[48] have shown that there is a female predilection. Certain other studies by Hosein et al.,[49]and Bajoria et al.,[42] have shown that there was no significant association between age, gender and the OSMF grading.

It is observed in our study that the age groups which show a high percentage of prevalence (25.5%) of OSMF are 20-29 years and 40-49 years. There is wide variation in age as reported by other authors which include Pinborg et al[(50)], who stated that the average age of a patients who are diagnosed with OSMF ranges from 40-49 years, Babu et al.,[51]and Trivedy et al.,[52] reported 23% between 14-19 year olds. Other populations have reported younger populations ranging from 20-30 years [32, 40, 52]. Another study by Jha et al.,[53] shows similar results where a greater fraction of patients were seen in the 21-30 and 31-40 years group. The easy availability and promotions of the areca nut products specially gutkha and pan masala outside the schools colleges and social places has led to the occurrence of OSMF to a greater extent among the younger population. Our institution is passionate

about high quality evidence based research and has excelled in various fields [54-64]. We hope this study adds to this rich legacy.

Limitations of the present study could be the sample size and geographical isolation. Future studies with more number of participants and studies involving different factors could be conducted.

Conclusion

Within the limits of the study, it can be concluded that OSMF was more prevalent among males. It can be seen that the Grade- I, III, IV of OSMF are the most prevalent among males and Grade II is more prevalent among females. It is the most prevalent among the age group of 20-29 years and 40-49 years; Grade I OSMF was the most prevalent among all the age groups.

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