

Prevalence and Risk Factors of Oral Mucosal Lesions: A Retrospective Study of Patients Attending Oral Diagnosis Department of Siohs Karachi, Pakistan

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ABSTRACT

Background: The present study was conducted to evaluate the frequency of different types of Oral Mucosal Lesions (OMLs) and to identify the associated risk factors.

Methodology: A retrospective study was conducted at the Department of oral diagnosis in collaboration with the department of oral pathology SIOHS, Karachi Pakistan between January 2017 to December 2020. All cases of lesions and ulcers of the oral cavity were included in the study. Missing data were excluded. Diagnosed cases of oral mucosal lesions were documented. The data was then stratified according to the age groups, gender, symptoms, comorbidities, marital status, etc.

Results: A mean age of 38.3 ± 11.86 years was observed. The subjects manifested multiple lesions with OSF standing as the most prevalent one at 29%, followed by aphthous ulcers at 20.2%, candidiasis at 14%, and nicotinic stomatitis at 10.4%. The majority of the patients with aphthous ulcers were significantly associated with young age while frictional keratosis was significantly associated with elderly age ($p=0.002$), respectively. 15 (93.8%) patients who were married were diagnosed with squamous cell carcinoma ($p<0.004$) and stiffening of the mouth was significantly associated with squamous cell carcinoma ($p<0.0001$).

Conclusion: In conclusion, the increased occurrence of oral mucosal lesions with age is most likely attributable to an age-related decline in health status and is highly correlated to substance abuse; its amount, duration, type, and regularity.

Keywords: oral mucosal lesion, carcinoma, gingiva, buccal, maxillofacial, tumor

INTRODUCTION

The oral mucosa (including the gingiva, buccal and palatal mucosa, retromolar area) is affected by more than 600 different systemic diseases because of the various acute and chronic irritants.[1][2] Oral Mucosal Lesion (OML) is defined as any abnormal alteration in color, surface aspect, swelling or loss of integrity of the oral mucosa surface.[3] Most common OMLs include oral candidiasis, leukoplakia/erythroplakia, oral lichen planus, vesiculobullous lesions, burning mouth syndrome, traumatic lesions, recurrent aphthous stomatitis and pigmented nevus. [1] [4-6] Rare pathologies include lesions of dermatoses (mucous membrane pemphigus/pemphigoid), benign (fibroma, papilloma, hemangioma) and malignant tumors (Squamous Cell Carcinoma) of the oral cavity.[7][8]

Epidemiological studies provide important information of the severity and prevalence of OMLs.[9] Globally the prevalence of OMLs differ significantly in general population ranging from 4.9% to 64.7%.[3] A Brazilian study showed 78.4% overall prevalence of OMLs among the patients of type 1 and 2 diabetes mellitus.[10] A study conducted among geriatric patients revealed that the most common pathology were smoker's palate (43%) followed by denture stomatitis (34%), oral submucous fibrosis (30%) frictional keratosis (23%), leukoplakia (22%) and pyogenic

granuloma (22%) while the most common affected side is hard palate (23.1%).[11]

Surveillance have demonstrated that the prevalence of OMLs varies by different variables such as age, gender, socioeconomic status, skin color, habitual chewing of carcinogenic agents (tobacco products), General health status of the populations and diagnostic criteria.[12][13] The investigation of the prevalence of OMLs in specific population groups is mandatory in order to understand its extension and characteristics for the improvement of oral health promotion and prevention programs as recommended by the World Health Organization (WHO).[14] The present study was conducted to evaluate the frequency of different types of Oral Mucosal Lesions (OMLs) and to identify the associated risk factors.

MATERIAL AND METHODS

A retrospective study was conducted at the Department of oral diagnosis in collaboration with the department of oral pathology SIOHS, Karachi Pakistan between January 2017 to December 2020. A non-probability convenience sampling technique was used. The sample size was not calculated because of the retrospective study. This retrospective study includes past 4 years data of the institute.

All patients with the complaints of lesions and ulcers of the oral cavity, patients of either gender (male or

female), patients of any age from records present in the retrospective data were included in the study. Patients presenting with missing data or records, or those requiring re-examining, had any chronic systemic disease, or those who were pregnant females were excluded. Diagnosed cases of oral mucosal lesions were documented. The data was then stratified according to the age groups, gender, symptoms, comorbidities, marital status, etc. All data analysis was performed using SPSS version 22.0. Continuous data like age was presented as mean and standard deviation while all categorical variables were presented as

RESULTS

A mean age of 38.3 ± 11.86 years was observed. The study population can be stratified into gender at a ratio of 2.4:1 for males: females. The subjects manifested multiple lesions with OSF standing as the most prevalent one at 29%, followed by aphthous ulcers at 20.2%, candidiasis at 14%, and nicotinic stomatitis at 10.4%. A major subset of subjects (34.7%) showed no association with any underlying disease whereas diabetes was recorded in 22% of the participants.

Table 1. Baseline characteristics of Study Population

Age	38.3 11.86
Age groups	
<30 years	48 (24.9%)
30-40 years	54 (28%)
40-50 years	59 (30.6%)
50> years	32 (16.6%)
Gender	
Female	56 (29%)
Male	137 (71%)
Marital Status	
Married	141 (73.1%)
Single	52 (26.9%)
Carries	
Yes	138 (71.5%)
No	55 (28.5%)
Gingivitis	
Yes	143 (74.1%)
No	50 (25.9%)
Type of Lesion	
Aphthous Ulcers	39 (20.2%)
Candidiasis	27 (14%)

Epulis	2 (1%)
erythroplakia	12 (6.2%)
fibrous epulis	2 (1%)
frictional keratosis	7 (3.6%)
lichen planus	1 (0.5%)
minor aphthous ulcer	3 (1.6%)
mucocele	8 (4.1%)
nicotinic stomatitis	20 (10.4%)
OSF	56 (29%)
SCC	16 (8.3%)
Site of lesion	
buccal mucosa	94 (48.7%)
buccal mucosa, palate	2 (1%)
buccal mucosa, tongue	10 (5.2%)
gingiva	1 (0.5%)
gingiva, palate	2 (1%)
lower lip	21 (10.9%)
lower lip, buccal mucosa	4 (2.1%)
maxillary gingiva	2 (1%)
palate	25 (13%)
palate, tongue	6 (3.1%)
right cheek	1 (0.5%)
tongue	24 (12.4%)
tongue, lower lip	1 (0.5%)
Comorbid Disease	
None	67 (34.7%)
Arthritis	3 (1.6%)
Cancer	1 (0.5%)
Cardiovascular Disease	1 (0.5%)
Diabetes Mellitus type 2	46 (22%)
Gastrointestinal Disorder	5 (2.6%)
Heart Disease	15 (7.7%)
Hypertension	31 (15.1%)
Joint Problem	34 (16%)
Liver Disease	5 (2.6%)
Stress	7 (3.6%)

Prevailing complain	
Burning Sensation	21 (10.9%)
Cannot Eat Properly due to Ulcers	6 (3.1%)
Difficulty in Eating	1 (0.5%)
Limited Mouth Opening	23 (11.9%)
Generalized Pain	4 (2.1%)
Pain in Lower Arch	3 (1.6%)
Pain in Upper Arch	2 (1%)
Recurrent Gum Swellings	2 (1%)
Recurrent Swelling on Lower Lip	2 (1%)
Recurrent Ulceration	17 (8.8%)
Red Spots on Palate	13 (6.7%)
Redness on Buccal Mucosa	3 (1.6%)
Redness on Cheek	8 (4.1%)
Redness on Palate	5 (2.6%)
Stiffening of Mouth	18 (9.3%)
Swelling on Lower Lip	6 (3.1%)

Swelling on the Tongue	2 (1%)
Tenderness	1 (0.5%)
Ulcers due to Denture	1 (0.5%)
Ulcers in Mouth	9 (4.7%)
Ulcers on Cheeks	4 (2.1%)
Ulcers on Lips	2 (1%)
Ulcers on Lower Lips	3 (1.6%)
Ulcers on Tongue	4 (2.1%)
Ulcers since One Month on Cheek	4 (2.1%)
White Patch	28 (14.5%)

The majority of the patients with aphthous ulcers were significantly associated with young age while frictional keratosis was significantly associated with elderly age ($p=0.002$), respectively. 15 (93.8%) patients who were married were diagnosed with squamous cell carcinoma ($p<0.004$) and stiffening of the mouth was significantly associated with squamous cell carcinoma ($p<0.0001$) (Table 2).

Table 2. Correlation between oral mucosal lesion with sociodemographic and clinical parameters

	Aphthous Ulcers	Candidiasis	Epulis	Erythra oplakia	Fibrous Epulis	Frictional keratosis	Lichen planus	Minor aphthous ulcer	Mucocoele	Nicotinic stomatitis	OSF	Squamous Cell Carcinoma	p-value
Age groups													0.002
<30 years	16 (41%)	3 (11.1%)	2 (100%)	2 (16.7%)	-	2 (28.6%)	1 (100%)	-	3 (37.5%)	5 (25%)	14 (25%)	-	
30-40 years	11 (28.2%)	3 (11.1%)	-	8 (66.7%)	1 (50%)	-	-	2 (66.7%)	3 (37.5%)	8 (40%)	14 (25%)	4 (25%)	
40-50 years	8 (20.5%)	14 (51.9%)	-	1 (8.3%)	1 (50%)	1 (14.3%)	-	1 (33.3%)	1 (12.5%)	5 (25%)	21 (37.5%)	6 (37.5%)	
> 50 years	4 (10.3%)	7 (25.9%)	-	1 (8.3%)	-	4 (57.1%)	-	-	1 (12.5%)	2 (10%)	7 (12.5%)	6 (37.5%)	
Gender													0.105
Female	11 (28.2%)	11 (40.7%)	2 (100%)	2 (16.7%)	-	3 (42.9%)	-	1 (33.3%)	4 (50%)	2 (10%)	18 (32.1%)	2 (12.5%)	
Male	28 (71.8%)	16 (59.3%)	-	10 (83.3%)	2 (100%)	4 (57.1%)	1 (100%)	2 (66.7%)	4 (50%)	18 (90%)	38 (67.9%)	14 (87.5%)	
Marital status													0.004

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Married	22 (56.4%)	26 (96.3%)	-	8 (66.7 %)	2 (10 0%)	4 (57.1%)	-	3 (100%)	6 (75%)	14 (70%)	41 (73.2 %)	15 (93.8%)	
Single	17 (43.6%)	1 (3.7%)	2 (100%)	4 (33.3 %)	-	3 (42.9%)	1 (100 %)	-	2 (25%)	6 (30%)	15 (26.8 %)	1 (6.3%)	
Presenting Complaint													<0.0 001
Bleeding gums	-	-	2 (100%)	-	-	-	-	-	-	1 (5%)	1 (1.8 %)	-	
Burning sensation	-	-	-	-	-	2 (28.6%)	-	-	-	-	22 (39.3 %)	-	
Cannot eat properly due to ulcers	6 (15.4%)	-	-	-	-	-	-	-	-	-	-	-	
Difficulty in eating	-	-	-	-	-	-	-	-	-	-	3 (5.4 %)	-	
Limited mouth opening	-	1 (3.7%)	-	-	-	-	-	-	-	-	24 (42.9 %)	-	
Pain	-	-	-	-	-	-	-	-	-	-	4 (7.1 %)	-	
Pain in lower arch	-	-	-	-	-	-	-	-	-	-	3 (5.4 %)	-	
Pain in upper arch	-	-	-	-	-	-	-	-	-	-	2 (3.6 %)	-	
Recurrent Gum swellings	-	-	2 (100%)	-	-	-	-	-	-	-	-	-	
Recurrent swelling on lower lip	-	-	-	-	-	-	-	-	2 (25%)	-	-	-	
Recurrent ulceration	16 (41%)	-	-	-	-	1 (14.3%)	-	-	-	-	-	-	
Red spots on palate	-	-	-	-	-	-	-	-	-	13 (65%)	-	-	
Redness on buccal mucosa	-	-	-	3 (25%)	-	-	-	-	-	-	-	-	
Redness on cheek	-	-	-	8 (66.7 %)	-	-	-	-	-	-	-	-	
Redness on palate	-	-	-	-	-	-	-	-	-	5 (25%)	-	-	
Stiffening of mouth	-	-	-	1 (8.3%)	-	-	-	-	-	-	5 (8.9 %)	12 (75%)	

Swelling on lower lip	-	-	-	-	-	-	-	-	-	6 (75%)	-	-	-	
Swelling in mouth	-	-	-	-	-	1 (14.3%)	-	-	-	-	-	-	-	
swelling on the tongue	-	-	-	-	2 (100%)	-	-	-	-	-	-	-	-	
tenderness	-	-	-	-	-	1 (14.3%)	-	-	-	-	-	-	-	
ulcers due to denture	-	-	-	-	-	1 (14.3%)	-	-	-	-	-	-	-	
ulcers in mouth	7 (17.9%)	-	-	-	-	2 (28.6%)	-	-	-	-	-	-	-	
ulcers on cheeks	4 (10.3%)	-	-	-	-	-	-	-	-	-	-	-	-	
ulcers on lips	3 (7.7%)	-	-	-	-	-	-	-	-	-	-	-	-	
ulcers on lower lips	-	-	-	-	-	-	-	3 (100%)	-	-	-	-	-	
ulcers on tongue	4 (10.3%)	-	-	-	-	-	-	-	-	-	-	-	-	
ulcers since 1 month on cheek	-	-	-	-	-	-	-	-	-	-	-	-	4 (25%)	
white patch	-	26 (96.3%)	-	-	-	-	-	-	-	-	2 (10%)	-	-	
Caries														0.019
Yes	23 (59%)	23 (85.2%)	2 (100%)	12 (100%)	2 (100%)	3 (42.9%)	1 (100%)	3 (100%)	4 (50%)	11 (55%)	40 (71.4%)	14 (87.5%)		
No	16 (41%)	4 (14.8%)	-	-	-	4 (57.1%)	-	-	4 (50%)	9 (45%)	16 (28.6%)	2 (12.5%)		
Gingivitis														<0.001
Yes	15 (38.5%)	25 (92.6%)	1 (50%)	12 (100%)	-	7 (100%)	-	-	4 (50%)	17 (85%)	46 (82.1%)	16 (100%)		
No	24 (61.5%)	2 (7.4%)	1 (50%)	-	2 (100%)	-	1 (100%)	3 (100%)	4 (50%)	3 (15%)	10 (17.9%)	-		

DISCUSSION

Oral health is a critical determinant of the quality of life. Oral diseases affect people of all ages, and no one is ever immune to dental/oral disorders, each one of us tends to contract a certain infection or problem at some point during our lives. [15] The epidemiological studies suggest that oral lesions have a varying manifestation of prevalence rates in different groups due to differing lifestyle practices.

Encompassing the retrospective data, our study records various types of oral lesions. The subset of 40-50 years were frequently observed with oral lesions, accounting 30.6% of the study population. The study stratifies the population based on gender to find greater prevalence among males. The findings reflect different habits acquired with age in Pakistan and relatively higher addiction rates among males. In addition, gingivitis was a commonly recorded condition among three-fourths of the

subjects. The subjects manifested multiple lesions with OSF standing as the most prevalent one at 29%, followed by aphthous ulcers at 20.2%. A major subset of subjects showed no association with any underlying disease whereas diabetes was recorded in some of the participants. The implication it holds is that addictive practices of alcohol, betel nuts consumption, or other parafunctional oral habits profoundly enhance the susceptibility of an individual to manifest mucosal oral lesions.

Amadori (2017) analysed the data of a younger population set. Out of the known cases of oral mucosal lesions; 36 different types of mucosal alterations were discovered, with aphthous ulcers (18%) and traumatic ulcerations (14.3%) as the most common findings. [16] Coinciding with our analysis, multiple other studies including Aishwariya (2017) highlight the association of smoking, tobacco and other ways of substance abuse with the likelihood to develop oral mucosal lesions. [17] The type of tobacco product, duration, and frequency of tobacco use were all determinants in the onset and development of oral lesions, according to studies. [17, 18, 19, 20] Pratik and Desai (2015) discovered that the addictive practices were prevalent in 51.4% of the Indian population, including both sexes, and that OMLs were widespread in 9.9% of them. [21] Between the ages of 65 and 70, oral lesions were most frequently observed. [22, 23]

The varied socio-demographic features of the samples, distinct clinical diagnostic strategies, and techniques make the comparison with other publications difficult. On the contrary of our data, an Italian research established a relatively greater frequency of 31% of oral lesions among teenagers thereby highlighting the significant variability of OMLs among different populations. [16] Another study based in Turkey by Parlak (2006) also flaunts approximately 26.2% of mucosal alterations in adolescents [24] as opposed to most affected age groups of our study i.e 30-50 years.

This study bears the limitation of being a single-center study as it only represents a small section of the entire population. As an epidemiological study, the present research could not evaluate the relevance of socioeconomic status and genetic, racial, or ethnic predisposition in developing oral lesions. Another potential limitation could be the possibility of information bias due to patients misreporting their addiction history.

CONCLUSION

In conclusion, the increased occurrence of oral mucosal lesions with age is most likely attributable to an age-related decline in health status and is highly correlated to substance abuse; its amount, duration, type, and regularity.

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