

CLINICAL-PATHOLOGICAL STUDY OF PATIENTS WITH ORAL POTENTIALLY MALIGNANT DISORDERS

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Abstract

Background: Aim: To evaluate the clinical-pathological factors of patients with Oral potentially malignant disorders. **Materials and Methods:** In all, 120 OPMD patients participated in the research. Patient age and sex, lesion location, size, and clinical presentation, as well as smoking and alcohol use status, were all gleaned from the lab's patient records. Slides were examined for hematoxylin and eosin staining, and the degree of dysplasia was graded using established standards. Different degrees of dysplasia were assigned to each lesion: normal, mild, moderate, and severe. **Results:** Overall, the sample included 120 subjects with OPMD, with 65 females (57%) and 55 men (43%). Among the oral mucosal areas, the lateral border of the tongue (22.5%) was the most often afflicted region, followed by the lower lip (20.83%), buccal mucosa/vestibule (20%), mandibular alveolar mucosa (10.83%), and maxillary alveolar mucosa (9.17%). There were no instances of pure erythroplakia in this group. Thirteen people reported having ulcers. Leukoplakia's averaged 14.11 mm in size (range from 5 to 30 mm) while speckled leukoplakia's averaged 14.9 mm in size (from 5 to 30 mm) Most instances of moderate and severe dysplasia were found at the anatomical areas of the floor of the mouth and the ventral tongue. Among cases of leukoplakia and speckled leukoplakia, moderate or severe dysplasia was found in 17.5% and 40%, respectively. With respective to the form of tobacco consumed it was found that predominantly it was smokeless form of tobacco that was used. **Conclusion:** The current research found that female patients accounted for the majority of OPMD diagnoses. Lesions were more common in women than in men, and they occurred everywhere except the lips. This change of trend is mainly as females are also getting in this habit of tobacco consumption & a definitive related exist between tobacco related abuses & oral lesions.

INTRODUCTION

Cancer of the mouth and throat is the sixth most frequent form of the disease worldwide. As the prevalence of cancer in India continues to climb, it has become the leading cause of cancer.^[1,2] Tobacco and alcohol are two of many potential root causes of oral cancer.^[3] but they are the most significant. Due to the convenience of having oral locations readily available for regular screening evaluation by healthcare providers or by mouth self-examination, most malignancies in the oral cavity are susceptible to early diagnosis.^[4] Oral cancer is more likely to develop in morphologically changed tissue, such as a precancerous lesion, than in seemingly normal tissue. In contrast, a precancerous condition refers to an overarching condition that is connected with a very high risk of cancer. These lesions not only foretell cancer at the region where they are found,

but also portend an elevated risk of cancer elsewhere in the (apparently healthy) oral mucosa. The World Health Organization's working committee on oral cancer listed the following as PMDs.^[5] Oral cancers (including leukoplakia and erythroplakia), palate lesions from inverted cigar use, lichen planus, Oral Submucous fibrosis (OSMF), and discoid lupus erythematosus. A worrying new trend has emerged in recent years, with younger age groups showing a larger inclination to oral PMDs.^[6] There has been a notable increase in substance addiction among young people, and this is mostly responsible for this trend. Since most PMDs don't cause any noticeable symptoms, treating them often involves trying to stop or at least detect cancer in its early stages. By determining what causes cancer, doctors may forewarn their patients. Even after long-term usage, the chance of getting cancer is greatly reduced by

giving up cigarettes and alcohol. Cancer risk information should be disseminated to the general public via educational campaigns and media reports. Cancer rates, particularly among the young and the working class, may be reduced with the aid of early detection thanks to the presence of oral PMDs, which can be seen as a gift in disguise.^[6,7]

MATERIALS AND METHODS

The study was carried out in oral pathology department & was conducted after consulting with the concern authorities with permission from ethical committee approval. In all, 120 OPMD patients participated in the research. A detailed history was taken including the personal history & habits of the patient. Patients were kept under observation for 2 weeks of medication. After 2 weeks if the lesion did not subside & persisted despite providing the treatment a biopsy was recommended & performed to diagnose underlying lesion. By the time report comes, patient was instituted oral antioxidants & multivitamins. Patient were counselled about the ill effects of the usage of tobacco & alcohol. They were followed up for 1 year with minimum 3 follow-up. Documentation of lesion before was done

for better assessment for every visit. Excluded from the analysis were laboratory records missing clinical information, specimens that were not representative, or cases in which the OPMD diagnosis could not be confirmed.

Patient age and sex, lesion location, size, and clinical presentation, as well as smoking and alcohol use status, were all gleaned in the lab's patient records. Slides were examined for hematoxylin and eosin staining, and the degree of dysplasia was graded using established standards.^(8, 9) Different degrees of dysplasia were assigned to each lesion: normal, mild, moderate, and severe. In SPSS 25.0, we used a significance threshold of 5% ($p < 0.05$) to tabulate and compare data using chi-square and T student tests.

RESULTS

Overall, the sample included 120 people with OPMD, with 65 females (57%) and 55 men (43%). Patients had a mean age of 59.85 ± 8.36 , with a statistically significant gap between the sexes (mean ages of male patients being 57.85 ± 7.52 years and mean ages of female patients being 61.52 ± 9.66 years; $p < 0.001$). Nearly half (41.67%) of the patients were in their forties.

Table 1: Gender and age of the patients

Gender	Number	%	P value
Male	65	54.17	0.22
Female	55	45.83	
Age			
below 30	15	12.5	
30-40	20	16.67	0.36
40-50	50	41.67	
50-60	18	15	
Above 60	17	14.17	

The predisposing risk factors included predominantly smokeless tobacco (50%) form followed by betel chewing with betel nut (10%). In female a form of tobacco called "tambaku" was found exclusively which they consume while doing their work mixed with slaked lime. 50% of patient has habit of consuming smokeless tobacco, 11.66% percent of the patients smoked or had smoked in the past, betel chewing with betel nut (10%), Dental abnormalities 10%, Multiple factors (12.5%), khaini (5.84%).

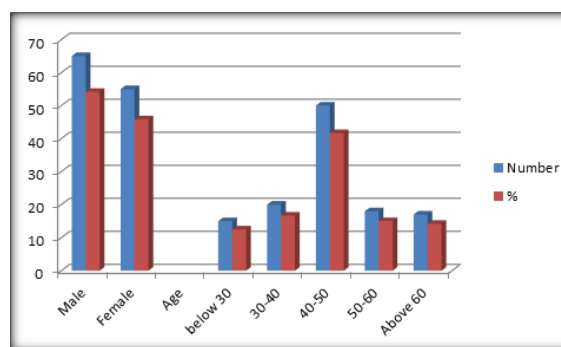


Figure 1: Gender and age of the patients

Table 2: The risk factors predisposing to oral potentially malignant disorders

risk factors	Number	%
Smokeless tobacco	60	50
Cigarettes	14	11.66
Betel chewing with betel nut	12	10
Dental abnormalities	12	10
Multiple factors	15	12.5
Khaini	7	5.84

Tobacco use was reported by 60% of men and 40% of women ($p = 0.001$), while alcohol use was

recorded by 50% of men and 10% of women ($p < 0.0001$). Of the patients examined, 50% (60) had

no dysplasia, whereas 30% (36), 10% (12), and 10% (12) had mild, moderate, and severe epithelial dysplasia, respectively. Patients of different sexes exhibited statistically significant variations in the anatomical distribution of lesions ($p < 0.0001$). Other predisposing factors include dental abnormalities like the sharp cusp, ill-fitting dentures.

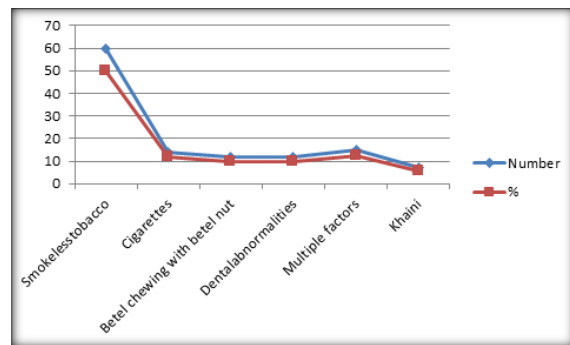


Figure 2: The risk factors predisposing to oral potentially malignant disorders

Table 3: Anatomical location

Parameter	Number	Percentage	P Value
Border of the tongue	27	22.5	
Lower lip	25	20.83	
Buccal mucosa/Vestibule	24	20	0.003
Mandibular alveolar mucosa	13	10.83	
Maxillary alveolar mucosa	11	9.17	
Palate/Tonsillar pillar	10	8.33	
Floor of mouth/Ventral tongue	6	5	
Upper lip	4	3.33	
Total	120	100	

In the oral cavity the most prominent clinical presentation was a white patch on oral mucosa (70%) other manifestation includes mixed presentation of white & red patch. Among the oral mucosal areas, the lateral border of the tongue (22.5%) [Figure 1] was the most often afflicted region, followed by the lower lip (20.83%), buccal mucosa/vestibule (20%), mandibular alveolar mucosa (10.83%), and maxillary alveolar mucosa (9.17%). There were no instances of pure erythroplakia in this group. Thirteen people reported having ulcers. Leukoplakia was the commonest underlying pathology comprising of the study population followed by speckled leukoplakia Oral submucous fibrosis, actinic cheilitis, lichenplanus [Figure 2], lichenoid reaction. [Figure 3].

Patients' mean age did not vary significantly by lesion site ($p = 0.36$). There was a statistically significant difference between leukoplakia and speckled leukoplakia in the anatomical distribution of the lesions as determined by the final diagnosis [Table 1]. Forty (72.73%) of the 55 cases of OPMD in male patients were leukoplakia, three (5.45%) were speckled leukoplakia, and twelve (21.82%) were actinic cheilitis. There was a statistically significant difference between female and male patients ($p < 0.001$), with 57 instances (87.69%) identified as leukoplakia, 4 (6.15%) as speckled leukoplakia, and 4 (6.15%) as actinic cheilitis. Ulceration was found in 10% of patients with

leukoplakia, 12.5% with speckled leukoplakia, and 20% with actinic cheilitis ($p = 0.02$). There was a statistically significant difference ($p = 0.003$) in the distribution of dysplasia severity across different anatomical areas. Few cases reported were mild dysplasia, Most instances of moderate and severe dysplasia (Figure 4) were found at the anatomical areas of the floor of the mouth and the ventral tongue. Among cases of leukoplakia and speckled leukoplakia, moderate or severe dysplasia was found in 17.5% and 40%, respectively ($p < 0.0001$). Moderate and severe dysplasia were seen in 26%, 33.33%, and 17.65% of the lesions, respectively, in patients aged 40-50 years, 50-60 years, and longer than 60 years, in contrast to the patients younger than 30 years old.

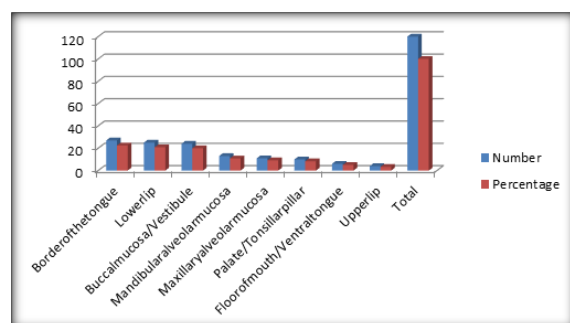


Figure 3: Anatomical location

Table 4: The dysplasia's are located anatomically and severity

Location	Degree of dysplasia				Total	P value *
	Absence of dysplasia	Mild	Moderate	Severe		
Border of the tongue	15	8	2	2	27	0.002
Lower lip	14	7	2	2	25	
Buccal mucosa/Vestibule	13	7	2	2	24	
Mandibular alveolar mucosa	6	5	1	1	13	

Maxillary alveolar mucosa	6	3	1	1	11	
Palate/Tonsillar pillar	3	4	1	2	10	
Floor of mouth/Ventral tongue	2	1	2	1	6	
Upper lip	1	1	1	1	4	
Total	60	36	12	12	120	

Table 5: Degrees of dysplasia based on age group

Location	Degree of dysplasia			Total	P value *	
	Absence of dysplasia	Mild	Moderate			Severe
below 30	14	1	0	0	15	<0.001
30-40	10	8	1	1	20	
40-50	21	18	7	6	50	
50-60	6	6	3	3	18	
Above 60	11	3	1	2	17	
Total	60	36	12	12	120	

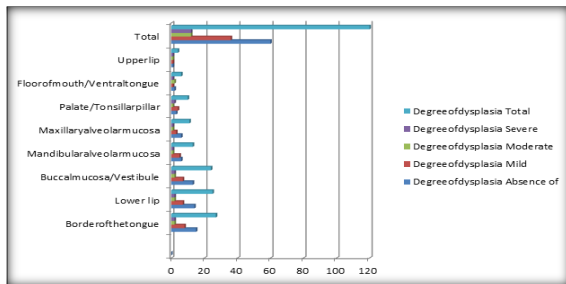


Figure 4: The dysplasia's are located anatomically and severity



Figure 3: LICHENOID REACTION on right buccal mucosa

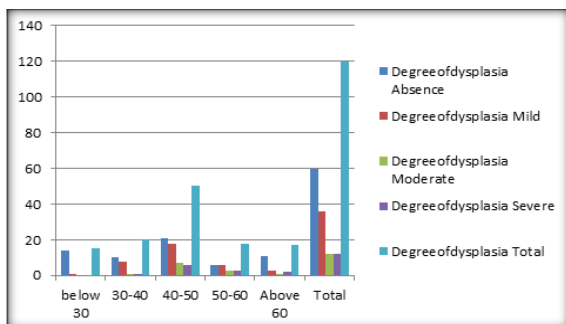


Figure 5: Degrees of dysplasia based on age group

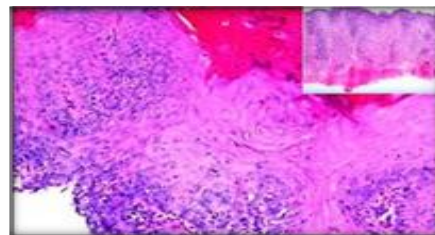


Figure 4: Severe Dysplasia



Figure 1: Leukoplakia on LATERAL BORDER OF TONGUE



Figure 5: Toulidine blue staining



Figure 2: LICHEN PLANUS: Reticular type on

DISCUSSION

As a whole, OPMD have a global prevalence of 4.4%, whereas the prevalence of leukoplakia alone is 4.1%.^[10] Around the last several years, researchers all over the globe have undertaken a plethora of studies on OPMD. ^[11] Understanding the most frequent risk factors and detailing preventative and early diagnostic techniques relies on familiarity with the basic profile of individuals with OPMD in a specific group. Approximately half (54.7%) of the participants in this analysis were female patients. Brazilian populations.^[9,10] and other international research.^[14] have also shown a female preponderance; nevertheless, this trend has not been

shown in a number of studies including other communities.^[8-10] There may be more women than men that are getting affected by this disorder since more women are starting to consume tobacco in both smoke & smokeless form and alcohol also.^[12] Because of the additive effects, tobacco and alcohol use contribute to single most important risk factor for both OPMD and oral malignancies globally.^[13,14] In the current study male consuming tobacco and alcohol is more prevalent than female consuming the same. In our study Lesions in women are identified and treated than lesions in men, which may help explain why OPMD is more often diagnosed in women than in men. Another reason for this which could be attributed is female's orientation & concern about any changes occurring in oral cavity or for that matter on face. Porter Set et al (2018).^[15] Mello FW (2018).^[16] Pires FR (2013).^[17] in their studies found that 70.84 percent of the patients were over the age of 40, supporting the link between ageing and OPMD risk reported in the literature. The current research's findings on age distribution were consistent with those of a descriptive study carried out by above mention studies author's that analysed the cases.

In studies carried on this potentially malignant lesions came put with this observation that the etiology factors were found to be this tobacco abuse & alcohol abuse. Alcohol abuse has a synergistic effect along with the tobacco consume both in smoke & smokeless form, by degrading the oral mucosal cells & creating a pathway between cell through which the carcinogens of the tobacco sweep through causing its ill effect on the oral epithelial cells & underlying connective tissue(OSMF). With a focus on Etiological factors both smoke form like cigarettes, bidi & smokeless tobacco was most common substances misuse in different forms like supari, mishri, gutkha wit slaked lime, tobacco with betel nut, khaini. In fames supari, tobacco with betel nut slaked lime & plain tobacco was the common abuse. In males both smoke & smokeless form was seen largely with females consuming predominantly smokeless form of tobacco habit along with dental factor like sharp cusp, ill-fitting denture. Our findings are in accordance with the existing literature. Mello FW (2018).^[16] reported that 55% of patients with OPMDs were habituated to tobacco habit & alcohol while Pires FR (2013).^[17] observed that 72% of having these habits. Incidence rates for leukoplakias, the most frequent kind of oral OPMD, range from 2% to 4% globally.^[10] The prevalence of leukoplakia comparable between the current research and the previous one, with 80.83 percent of patients being diagnosed.^[16] Pure erythroplakia was not detected in any of the instances in our sample, which may be owing to the fact that the clinical correlation necessary to characterize a lesion as such was lacking. Due to the challenges in identifying its clinical symptoms from other OPMD, we did not include cases with oral lichen planus in our sample.

Dysplastic oral lichen planus has been included in several previous research, but individual histology data documenting the malignant transformation process in these lesions was lacking.^[14] Leukoplakia and speckled leukoplakia were more common in females than men in our sample, with the exception of the lips. Actinic cheilitis occurred more often in male patients (21.82%), perhaps because of the greater frequency of occupational exposure to UV radiation and the lower incidence of sunscreen usage among males.^[18] Untreated actinic cheilitis, as shown by the findings of the current investigation, may progress to an ulcerated lesion in 10.83% of patients. Consistent with prior research, we found that moderate to severe dysplasia was more common in lower lip lesions than in lesions of any other anatomical region.^[19]

There was no statistically significant difference between the average size of leukoplakia's and that of speckled leukoplakia's. Based on these results, it seems that erythroplakia is not a typical progression for OPMD. Therefore, the size of the lesion is not a reliable predictor of whether or not it would become cancerous. Nonetheless, lesion size more than 200 mm² was cited by Speight et al.^[20]

In accordance with the studies carried out Liu W (2011) 14 Pires FR (2013) 17 earlier the most common location of injury was the tongue, namely its lateral border. According to a previous research conducted on the same population, this location was also where SCC was diagnosed most often. However, research studies done by Pereira JS (2011).^[12] Mello FW (2018).^[16] has shown that the buccal mucosa and the alveolar mucosa are more often be the affected site.^[12,16]

The degree of dysplasia, which is based on structural and cytological features of the epithelium, has been used as a reliable indicator of the potential of malignant transformation in OPMD.^[8-12,14,20] Although histological investigation failed to reveal epithelial dysplasia in half of the lesions in this research, they were nevertheless classified as OPMD since their clinical presentation was consistent with leukoplakia or leukoerythroplakias and they were indistinguishable from these conditions. The majority of lesions on the lateral border of the tongue in the current research were either completely dysplasia-free (55.56% of cases) or only mildly dysplastic (29.53% of instances), as determined by a comparison of anatomical location and degree of dysplasia. The highest rates of moderate (33.33%) and severe (16.67%) dysplasia were seen on the floor of the mouth and ventral tongue, respectively. These findings corroborate the findings of some earlier research of Pereira JS (2011).^[12] and provide support to the idea that OPMD found on the tongue and the floor of the mouth are more likely to undergo malignant transformation.^[20] Due to the prevalence of squamous cell carcinoma (SCC) in various areas, particular consideration must be given to them.^[17] Severe epithelial dysplasia was more common in

older patients, but mild and moderate dysplasia were not related to patient age at all in the examined lesions. This data lends credence to the idea that malignant transformation is a lengthy and protracted process that occurs mostly in the elderly, who are at a higher risk for malignant transformation than younger patients.^[15,20]

Many tools are available for the detection of OPMDs such as toluidine blue, brush cytology, tissue chemiluminescence & autofluorescence. The most common chair side method used to demarcate the lesion prior to excisions is toluidine blue [Figure 5]. A latest review by Epstein et al.^[21] proposes that toluidine blue has the utility as a support tool in assessing & managing the lesions by enhancing the clinician decision making ability to go for the biopsy & channelizes the selection of the site of biopsy. Chaturvedi et al.^[22] in their review has put forth that with respect to oral potentially malignant disorder clinical examination & histopathology examination is the gold standard & all these adjunct methods has not much role. As it known fact that most of the OPMD doesn't manifest any symptoms & the main aim of treatment is to prevent and or detect early cancer development.^[23] Treating these entities can be placed in 3 categories observing it closely, excising and medical treatment. Small lesions looking innocent can be kept under observation. Conservative surgical excision with negative margins remains the treatment of choice for leukoplakia to remove areas at high risk, attempts to remove all clinically apparent areas of leukoplakia or histopathologically diagnosed areas of dysplasia. Apart from these surgical intervention laser & cryotherapy have been done.^[24] In medical management include carotene lycopene, vitamin A or retinoid associated with rates of resolution. Marginal transformation is paramount important in cases of OPMD and it has to be under strict vigilance. Without proper intervention, this disorder will progress to invasive carcinoma in 60-90% of cases within period of 5-10 years after basic diagnosis. Recurrence rate is variable for these lesions.^[24]

CONCLUSION

In conclusion, the current research found that female patients accounted for the majority of OPMD diagnoses. Lesions were more common in women than in men, and they occurred everywhere except the lips. Leukoplakia and actinic cheilitis were the most common OPMD diagnoses, respectively. The lower lip, the buccal mucosa/vestibule, and the lateral edge of the tongue were all impacted. Lesions on the floor of the mouth/ventral tongue, as well as older individuals, showed the highest frequency of severe epithelial dysplasia.

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