Evaluation of Clinical and histopathological diagnosis of Oral potentially malignant disorders.

Zehra Ahmed[1] ,Mukesh Kumar[2] , Zaheer Hussain[3], Shabir Ahmed[4], Qasim Khalid[5], Aijaz Ali[6]

1. **Syeda Zehra Ahmed (corresponding author)**
   Department of Pathology, Ziauddin Medical University, Karachi, Pakistan

2. **Mukesh Kumar**
   Department of Pathology, Ziauddin Medical College, Karachi, Pakistan

3. **Zaheer Hussain chachar (Assistant professor)**
   Department Of periodontology,Altmash institute of dental medicine,Karachi,Pakistan

4. **Shabir Ahmed jagirani (Associate Professor)**
   Department of Prosthodontics, bibi aseefa dental college, Larkana, Pakistan

5. **Qasim Khalid (Senior Registrar)**
   Department of Orthodontics, Avicenna Medical and Dental College, Lahore,Pakistan

6. **S Aijaz Ali Zaidi (Assistant Professor)**
   Department of Oral Medicine, Baqai Dental College, Karachi, Pakistan

Abstract:

Objective

To determine the prevalence of OPMDS and to assess the association between their clinical and histopathological features.

Methodology:

This cross sectional study was conducted on patients with OPMDs visiting abbasi Shaheed hospital and ziauddin university hospital. OPMD lesions include OSF, leukoplakia, erythroplakia,

lichenplanus and actinic keratosis. All lesions were examined and diagnosed clinically as well as histopathologically. Written informed consent was obtained and all data was analyzed on SPSS version 20.0.

Result

Oral potentially malignant lesions were significantly associated with gender (p-value 0.002) and habit (p-value0.007). Among all lesions, the buccal mucosa was the most prevalent site but no significant association was observed with sites. However smoking was significantly higher among all patients(p-value 0.007) .Moreover the comparison of clinical and histopathological diagnosis showed the importance of histopathological confirmation of OPMD lesions.

Conclusion

Diagnosing oral lesions in early stage may aid in preventing the transformation of these OPMDs into malignancy.As most of the lesions remain undiagnosed due to their asymptomatic nature and similar appearances. Therefore histopathological confirmation is necessary with clinical examination.

Key words

Oral potentially malignant disorder, clinical diagnosis, histopathology

INTRODUCTION:

Oral squamous cell carcinoma is the most common type of head and neck cancer (SCC). Over the last few decades, the 5-year survival rate for oral SCC has remained around 50%, accounting for more than 300,000 cases worldwide each year.[1] The lack of improvement in prognosis over time is significantly attributed to the fact that majority of oral SCCs are not discovered or treated until they have grown to an advanced stage. Such delays are expected to be longer for asymptomatic lesions.[1] This diagnostic lag could be caused by patients (who may fail to report unusual oral features) or healthcare professionals (who may not adequately analyze detected lesions).[2]The World Health Organization combined the oral premalignant lesions (such as leukoplakia and erythroplakia) and premalignant conditions (such as submucous fibrosis, lichen planus and actinic keratosis) and it is now termed as oral potentially malignant disorders (OPMD). It is defined as,

"a lesion's or condition's risk of malignancy, whether it exists at the time of first diagnosis or in the future."[3]

Oral potentially malignant disorders can manifest as multiple oral lesions. The field cancerization theory explains a potential mechanism for the development of multiple oral premalignant lesions by postulating that simultaneous genetic abnormalities on the upper respiratory and digestive tract epithelium caused by carcinogenic exposures put the epithelium at a greater risk for developing numerous lesions.[4] The lesions are assumed to be distinct from one another and to be the result of separate genetic occurrences.[5]

Patients with oral SCC who receive early therapy have a significantly better prognosis, with 5-year survival rates as high as 80%. [2]Furthermore, early treatment improves quality of life because cure is possible with less sophisticated and invasive treatment than is required for advanced lesions. [6]Furthermore, it is believed that many oral SCCs develop from precancerous lesions in the mouth. Early diagnosis and treatment of high-risk oral premalignant lesions could be one of the keys to reducing SCC morbidity, mortality and treatment costs.[6] Individuals, particularly those who use alcohol or cigarettes and those who are older, are known to have a higher risk of developing head and neck cancer. The primary goal of identifying oral potentially malignant disorders is to prevent malignant transformation by initiating an appropriate intervention.[4] The most frequent OPMD found in clinical diagnoses is leukoplakia. (58.9%). Leukoplakia and erythroplakia, two prominent premalignant lesions of the mouth, are well known for their proclivity to progress to cancer. [7]The association between clinical and histopathologic diagnosis was most consistent in atypical ulcers and erythroplakia . Six pathologists made diagnoses ranging from hyperkeratosis to severe dysplasia, and only half correctly identified mild-to-moderate dysplasia.[8]

Because premalignant and malignant lesions vary in prevalence and type across different societies, consistency of histopathological and clinical diagnoses becomes important for ultimate and accurate diagnosis of premalignant disorders as the primary objective of treatment.[8] Additionally, certain lesions cannot be definitively diagnosed based on clinical criteria. Therefore this study was aimed to evaluate the prevalence and to associate the clinical and histopathological diagnosis of oral potentially malignant disorders.

METHODOLOGY:

This crossectional study comprised of 130 samples of patients having Oral potentially malignant disorders (including Oral submucous fibrosis, Lichen planus,Oral leukoplakia, Erythroplakia and actinic keratosis).All the data was recruited from abbasi Shaheed hospital and ziauddin university hospital. A written informed consent was obtained from all participants.All OPMD cases were diagnosed on the basis of clinical and histopathological examination. Data were gathered using a checklist, which also contained information on the patients' demographics (name, age, and gender), as well as clinical factors such location, clinical diagnosis, and histopathologic diagnosis.

Statistical Analysis:

For numeric variables mean and standard deviation and for categorical data frequencies and percentages was calculated.To determine the association Chi square test was applied. The results were considered to be statistically significant at $p < 0.05$. Statistical Package for Social Sciences version 20.0 software was used to analyzed the data.

RESULT:

We evaluated the 130 cases oral potentially malignant disorder. To determine the significance of histopathological examination of OPMDs, all the oral lesions were assessed and diagnosed by clinical and histopathological examination as shown in **Table1**.Out of all the lesions, oral submucous fibrosis was most commonly observed lesion whereas actinic keratosis and erythroplakia was equally found.

Table 1. Clinical and histopathological diagnosis of oral potentially malignant lesions

Lesions	Clinical Diagnosis	Histopathological Diagnosis
Actinic Keratosis	**20**	**18**
Lichen planus	**23**	**25**
Leukoplakia	**21**	**22**
Oral submucous Fibrosis	**43**	**46**
Erythroplakia	**22**	**18**

Table 2 depicted the association of oral potentially malignant disorders with gender and observed that all the lesions were comparatively increased in male population.However Oral lichen planus showed female predominance. All the lesions were significantly associated within male and female population with p- value of 0.01in OSF, 0.02 in Oral leukoplakia and 0.001 in actinic keratosis. Whereas, Erythroplakia and oral lichen planus did not show any significant with gender.

Table 2. Association of Potentially malignant lesion with Gender

OPMD	N	Gender	Mean ±SD	P-value
Oral submucous fibrosis	35	MALE	1.24±3.21	0.01
	11	FEMALE		
Oral Leukoplakia	14	MALE	1.36±0.49	0.02
	8	FEMALE		
Erythroplakia	9	MALE	1.50±0.5	0.13
	9	FEMALE		
Actinic keratosis	14	MALE	1.22±0.4	0.001
	4	FEMALE		
Oral Lichen planus	10	MALE	1.60±0.5	0.5
	15	FEMALE		

P-value less than 0.05 considered statistically significant.

Table 3. represents the association of potentially malignant lesions with site and buccal mucosa was observed to be the most commonest site found in all lesions, followed by retromolar area , tongue and lip.However no significance was found among these lesions (p-value 0.67).

Table 3.Association of OPMD with site

		OPMD cases				
		oral submucous fibrosis	leukoplakia	erythroplakia	actinic keratosis	P-value
SITE	Tongue	13	4	3	4	0.67
	Buccal mucosa	26	6	7	6	
	Retromolar area	22	6	5	6	
	Lip	10	2	3	2	

OPMD:Oral potentially malignant disorder.

P-value less than 0.05 considered statistically significant.

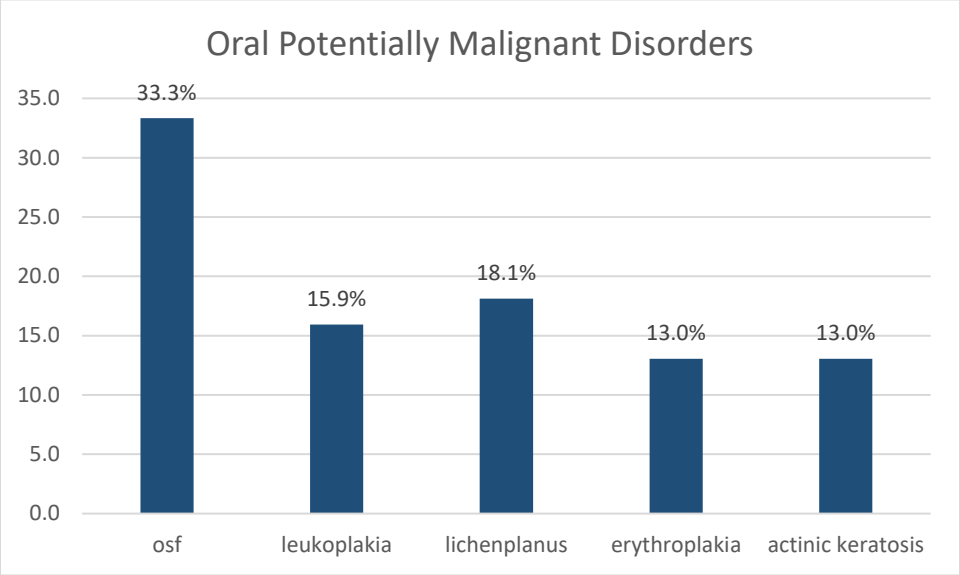

Figure 1. Frequency of Oral potentially malignant disorders

The frequency of oral potentially malignant disorders showed oral submusos fibrosis was higher among all lesions, followed by lichen planus, leukoplakia, erythroplakia and actinic keratosis .The mean ± SD of age in males was 43.6±8.8 and in females was 43.4±8.9.

Table 4. depicted the significant association of oral potentially malignant disorders with habit (p-value 0.007). Smoking was the common habit found among all patients followed by pan And betel quid chewers.

Table 4. Association of habits with OPMDs

		OPMD Cases				
		oral submucous fibrosis	leukoplakia	erythroplakia	actinic keratosis	P-value
HABIT	SMOKING	32	6	8	10	
	BETEL QUID	6	3	1	0	
	PAN	7	1	2	1	
	PAN AND BETEL QUID	19	4	0	0	

	NONE	7	9	7	7	**0.007**

P-value less than 0.05 considered statistically significant.

DISCUSSION:

About 5–18% of cases of OPMD have been shown to have developed into carcinoma. The mean age of patient in the our study was 43.6±8.8years in males and 43.4±8.9years in females. Similar investigations revealed that OPMD patients on average were 56.09 and 55 years old.[4]

Our study showed that out of 130 oral potentially malignant disorders, twenty cases were clinically diagnosed as actinic keratosis , out of which two were histopathologically confirmed as oral lichen planus. Similarly out of forty six confirmed cases of oral submucous fibrosis, three were clinically diagnosed as leukoplakia and erythroplakia before biopsy. This suggests that the histopathological confirmation is required for accurate diagnosis of oral potentially malignant lesions. Similarly, previous studies showed that most of the clinically suspicious lesions had a histological diagnosis of dysplasia. [9, 10]

The clinicopathological association of 100 white lesions was found to be 78 percent in Abdullah et al study's while 78.1 percent of potentially malignant oral lesions were found in Maia et al study[11] [12] [13] .This discrepancy could be due to the study design. It's difficult to discern if oral lesions are cancerous, especially in the early stages of the disease. Diagnosing dysplasia of oral lesions, particularly leukoplakia, is also problematic. Because lesions in the oral cavity occur in places that may be adequately viewed, the most popular method for detecting Oral epithelial dysplasia is still the Conventional Visual and Tactile Examination [14].

In our study, OSF was found in 33.3% of cases, was the most prevalent potentially malignant disorder observed. Whereas ,in other studies actinic chelitis was the most frequent lesion found [15, 16] [17]. We found that OSF is more common in males than in females.

Lichen planus was shown to be more common in females than males in our study, with a mean age of 43 yrs., which is consistent with previous studies [16, 18, 19]. In a research study of 7806 cases of oral lichen planus and 4 cases of lichenoid lesions, 85 cases of oral lichen planus and all 4 cases of lichenoid lesions advanced to SCC. In several trials, the malignancy progression rate

ranged from 0% to 3.5 percent [20]. However, leukoplakia and erythroplakia was found to be common in men than women. It is consistent with the findings of another study[21, 22].This disparity can be explained by the study population and methodology. The probability of malignancy development was observed to range between 0.13 percent and 34 percent [22].

In terms of habit, smoking was the most common habit found in all lesions and buccal mucosa was the frequently affected site. Whereas according to earlier research, tobacco chewing significantly increases the risk of oral submucous fibrosis, oral leukoplakia, and erythroplakia, whereas tobacco smoking may increase the risk of oral leukoplakia. There was evidence that drinking alcohol increased the risk of oral leukoplakia by 1.5 times, oral submucous fibrosis by 2 times, and erythroplakia by 3 times. Almost all cases of OSCC is preceded by clinically conspicuous but varied alterations in the oral mucosa, including oral leukoplakia, oral lichen planus, oral sub mucous fibrosis and actinic keratosis. The efficient treatment of such premalignant disorders at an early stage could greatly benefit in the prevention of OSCC progression. As a result, early detection of high-risk OPMD is critical in order to reduce both morbidity and mortality rates.[23, 24]

CONCLUSION:

In conclusion, majority of oral potentially malignant lesions were predominant in males. In our investigation, buccal mucosa was frequently affected site , with oral submucous fibrosis being the most common lesion discovered.. In 75% cases clinical diagnosis is consistent with histopathologic diagnosis. Diagnosing oral lesions in early stage may aid in preventing the transformation of these OPMDs into malignancy. As most of the lesions remain undiagnosed due to their asymptomatic nature and similar appearances. Therefore histopathological confirmation is necessary with clinical examination.

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