RESEARCH ARTICLE

Clinico-pathological features of oral squamous cell carcinoma and oral potentially malignant disorders: A comparative study from a tertiary care hospital of Karachi

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Abstract

Objective: To compare the clinicopathological features of oral squamous cell carcinoma and oral potentially malignant disorders.

Method: The analytical, cross-sectional study was conducted at the Dow University of Health Sciences, Karachi, from July 2022 to April 2023, and comprised cases of oral squamous cell carcinoma in group A and those of oral potentially malignant disorders in group B. Data, including detailed clinical history, radiological findings and histopathology reports, was collected using a predesigned questionnaire. Data was analysed using SPSS 21.

Results: Of the 90 patients, 45(50%) were in group A; 34(75.6%) males and 11(24.4%) females with mean age 49.44±11.53 years. The remaining 45(50%) patients were in group B; 35(77.8%) males and 10(22.2%) females with mean age 50.82±13.34 years (p>0.05). The most common oral habit reported in both the groups was tobacco in smokeless form; 33(73.3%) in group A and 37(82.2%) in group B. The most reported site in group A was the buccal mucosa of the cheek 29(64.4%), followed by the tongue 14(31.1%). Most cases in group A were of moderately differentiated tumours 38(84%), and 21(46.7%) were in advanced stage IV at the time of presentation. Majority of the cases in group B showed mild dysplasia on histology 29(65%).

Conclusions: There were no significant differences patients of oral squamous cell carcinoma and oral potentially malignant disorders except that oral cancer cases presented in the advanced stage at the time of diagnosis.

Keywords: Clinicopathological features, Oral cancer, Oral squamous cell carcinoma, Oral epithelial dysplasia.

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Introduction

Worldwide, head and neck cancers are among the common cancers. The total number of lip and oral cavity cancer was reported to be 377,713 with a mortality of 177,757. Most oral cancer cases were documented in Asian countries, like Pakistan, India, the Taiwanese region, and Bangladesh.[1] In Pakistan, oral cancer is the second most common cancer reported, and histologically, it is oral squamous cell carcinoma (OSCC).[2]

In underdeveloped countries like Pakistan, the most common causative factor is smokeless tobacco, including betel quid (paan) and gutka. The traditional chewable tobacco forms have acquired widespread acceptability due to low cost and easy availability. These include betel quid, gutka, areca nuts, main puri and paan-masala. These products have about 28 recognised carcinogens, including arecoline, non-volatile alkaloid-derived nitrosamines, volatile aldehydes, flavonoids and tannins. These chemicals affect the cell's normal shape and may result in cytogenetic or genetic changes.[3]

Clinically, oral cancer is presented as necrotic, exophytic ulcer with distorted margins. Specific oral lesions have an increased rate of malignant transformation into OSCC. These lesions are oral leukoplakia (OL), oral erythroplakia (OE) and oral submucous fibrosis (OSF).[3,4] In 2005, the World Health Organisation (WHO) termed these oral lesions as oral potentially malignant disorders (OPMDs).[5]

OL has been reported to occur in patients aged 18-86 years. It most commonly involves cheeks, alveolar mucosa and lower lip. However, OL of the floor of the mouth, lower lips and cheeks pose a more significant risk of dysplasia and malignant transformation.[6]

OE is more prevalent in middle-aged to older men, and frequently involves the soft palate, floor of the mouth, ventral surface of the tongue and the retromolar region.[7] At the time of diagnosis, majority of lesions either exhibit high-grade epithelial dysplasia or invasive cancer.[8]

OSF is characterised by fibrosis of the oral mucosa of the buccal region, which leads to restricted mouth-opening.[9]

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It has been associated with the intake of areca nuts with and without tobacco, nutrient deficiencies, autoimmunity and consumption of spicy food.[10] The usual course includes inflammation, which results in compensatory hyperkeratosis, acanthosis and basal cell hyperplasia. In the later stage, there is progressive fibrosis and hyalinisation that ends up clinically as trismus.[11]

The current study was planned to compare the clinicopathological features of OSCC and OPMDs.

Patients and Methods

The analytical, cross-sectional study was conducted at the Dow University of Health Sciences (DUHS), Karachi, from July 2022 to April 2023 and comprised cases enrolled using non-probability purposive sampling technique from among those visiting the Otolaryngology ward or outpatient department (OPD) of Dr Ruth Pfau Civil Hospital Karachi (CHK), Dr Ishrat-ul-Ebad Khan Institute of Oral Health Sciences (DIKIOHS), and the histopathology section of the Dow Diagnostic Reference and Research Laboratory (DDRRL). After approval from the DUHS ethics review committee, the sample size was calculated using PASS 11 with 95% confidence interval (CI), 80% power of test, and effect size 0.345[12] between tumour-node-metastasis (TNM) stage and spindle and kinetochore associated complex subunit 1 (SKA1) gene with degree of freedom 1.[13] Clinically and biopsy-proven cases of OSCC were enrolled in group A, while cases of histopathologically confirmed OPMDs of all three grades of oral dysplasia were enrolled in group B. Patients aged <10 years, OPMD cases which on later biopsy showed suspicion of invasion, and clinically suspected patients of cancers who later were not confirmed on histopathology as OSCC were excluded.

After taking informed and written consent from each participant, data was collected, including demographic history, radiological findings and histopathology reports, using a predesigned questionnaire.

Data was analysed using SPSS 21. Data normality was checked using Shipro-Wilk test. Pearson's chi-square test was used for the analysis of association between categorical variables. P<0.05 was taken as significant.

Results

Of the 90 patients, 45(50%) were in group A; 34(75.6%) males and 11(24.4%) females with mean age 49.44±11.53 years. The remaining 45(50%) patients were in group B; 35(77.8%) males and 10(22.2%) females with mean age 50.82±13.34 years (p>0.05). The most common oral habit reported in both the groups was smokeless tobacco (SLT); 33(73.3%) in group A and 37(82.2%) in group B. The most reported site was the buccal mucosa of the cheek, followed by the tongue (Table).

Table: Comparison of clinico-demographic characteristics between OSCC and OPMD cases.

Category	**OSCC** n (%)	**OPMD** n (%)	***p*-value**
Age (years)			
30-40	13(54.2)	11(45.8)	0.91
41-50	11(45.8)	13(54.2)	
51-60	11(50.0)	11(50.0)	
61-70	10(55.6)	8(44.4)	
71-80	0(0.0)	1(100)	
81-90	0(0.0)	1(100)	
Gender			
Male	34(75.6)	35(77.8)	0.80
Female	11(24.4)	10(22.2)	
Oral Habits			
Tobacco (Smoking)	5(11)	1(2.2)	0.31
Tobacco (Smokeless)	33(73.3)	37(82.2)	
Both	7(15.6)	7(15.6)	
Anatomical site			
Buccal mucosa	29(53.7)	25(46.3)	<0.05
Lip	1(33.3)	5(66.7)	
Tongue	14(66.7)	7(33.3)	
Alveolus	0	1(100)	
Floor of mouth	1(100)	0	
Gum	0	5(100)	
Hard plate	0	4(100)	
Retromolar region	0	1(100)	
TNM stage of OSCC	n (%)		
Stage I	12 (26.7)		
Stage II	3 (6.7)		
Stage III	9 (20)		
Stage IV	21 (46.7)		
Histopathological grading of OPMD cases			
Mild dysplasia	29 (65)		
Moderate dysplasia	6 (13)		
Severe dysplasia	10 (22)		
Clinical Presentation of OPMD cases			
Leukoplakia	34(75. 6)		
Erythroplakia	7(15. 6)		
Oral submucous fibrosis	4(8.8)		

OSCC: Oral squamous cell carcinoma, OPMD: Oral potentially malignant disorders, TNM: Tumour-node-metastasis.

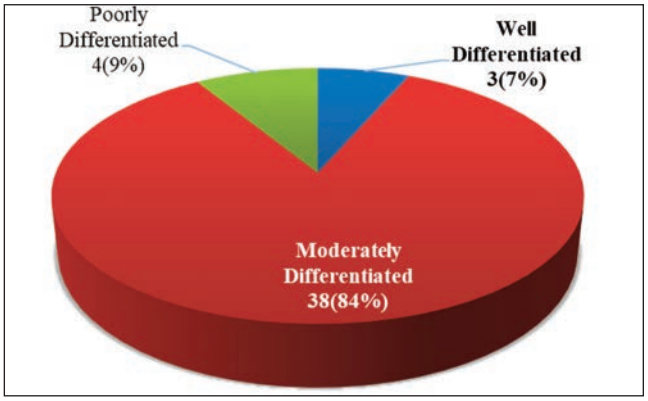

Figure-1: Distribution of oral squamous cell carcinoma (OSCC) cases according to histopathological grades.

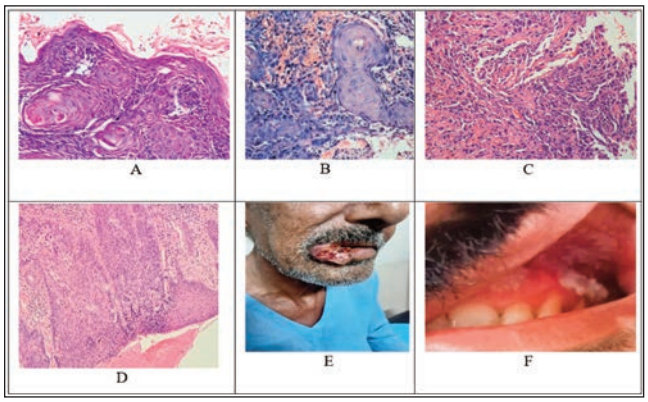

Figure-2: Haematoxylin-and-eosin (H&E) stained photomicrographs and clinical presentations of cases in the study: A) Photomicrograph of well-differentiated oral squamous cell carcinoma (OSCC) (H&E x 100 magnification), B) moderately-differentiated OSCC (H&E x 200 magnification), C) poorly-differentiated OSCC (H&E x 200 magnification), D) grade III severe dysplasia (H&E x 200 magnification), E) Clinical presentation of OSCC of lip, and F) Leukoplakia of gum.

In group A, 38(84%) case were biopsy proven as moderately differentiated OSCC, 4(9%) poorly differentiated, and 3(7%) were well-differentiated (Figure 1,2A, B & C). Majority of these patients showed advanced stage on presentation; 21(46.7%) in stage IV (Figure 2E), 12(26.7%) in stage I, 9(20%) in stage III, and 3(6.7%) in stage II. In group B, mild dysplasia grade I was the most common 29(65%), followed by severe dysplasia grade III 10(22%) (Figure 2D), and as moderate dysplasia grade II 6(13%). In group B, the most common clinical diagnosis was OL 34(75.6%) (Figure 2F), followed by OE 7 (15.6%) and OSF 4(8.8%).

Discussion

Squamous cell carcinoma of the lip and oral cavity is amongst the most common cancers, especially in Asian countries, including Pakistan, where the prevalence is quite high regardless of gender.[3] Worldwide, there is an increased mortality rate for oral cancer. There is a tendency for malignant transformation in OPMDs into invasive oral cancer.[14,15] Cancer has traditionally been labelled as a disease of people age >40 years, with an average age at diagnosis 65 years. However, studies have reported a change in the age trend for oral cancer. These cancers are equally reported in younger and older age groups. Most of the reported cases fall in the 30-40 years age bracket.[16] The current study found oral cancer patient being aged 30-70 years, which was consistent with earlier findings.[3,17,18] However, the study found no statistically significant difference in the mean ages of OSCC and OPMD patients (p>0.05).

The existing evidence indicates that there is a significant prevalence of oral cancer amongst the male population, but studies have reported a variation of ratio of oral cancer in male and female that ranges between 1.2:1 and 4:1.(3,18) In the current series, the male-to-female ratio of 4:1, which was similar to an earlier study.[3] In OPMDs, the reported ratio was 3.5:1, which was similar to Naushin T. et al.[19] Majority of OSCC and OPMD patients in the current study consumed SLT. According to the WHO, SLT has been classified as a carcinogen and studies from different countries have established the role of SLT in oral carcinogenesis.[20] The current findings were similar to earlier studies.[3,16]

Different studies from southern part of Asia reported an increase association of oral cancer with low socioeconomic status (SES).[3,21] The current findings supported such reports as the majority of oral cancer cases belonged to the lower strata of society. As regards the ethnicity of the studied subjects, the majority of oral cancer and OPMD subjects were Urdu-speaking in the current study, concurring with earlier findings.[22]

Considering the site of lesion, in the current series, majority cases of OSCC and OPMD had oral lesions in the buccal mucosa and tongue. Earlier studies also reported similar findings.[15,23,24] This can potentially be attributed to the customary practice of locally depositing tobacco, naswar and other associated quid substances in specific oral locations.

According to histological grading system of oral cancer, majority of current patients were grade II moderately-differentiated OSCC, concurring with an earlier report.[15]

Finally, the present study reported oral cancer patient in advanced stage IV, which was consistent with earlier findings.[25,26]

Conclusion

There was no significant differences in the age of OSCC and OPMD cases. The most common site of oral lesions in both cases was the buccal mucosa of cheek. Majority of oral cancer patients presented in advanced stage of tumour, and as grade II moderately-differentiated OSCC.

Disclaimer: The text is based on an M.Phil thesis.

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Author Contribution:

SK: Concept, drafting, data collection and statistical analysis.
MMA: Supervision, histopathological reporting cases, revision, editing and final approval.
UB: Supervision and histopathological reporting cases.
MSF: Helps in clinical reporting cases.
QUA: Helps in filling questionnaire performa.
AS: Editing.