

Oral Squamous Cell Carcinoma Epidemiological, clinical and histological features

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Objectives: To determine the clinico-pathological features, histopathological grading, staging and their associations in patients presenting with oral squamous cell carcinoma (OSCC).

Methodology: A total of 81 patients presenting with various histological subtypes, grades and stages of OSCC were recruited from the Radiotherapy Department of INMOL Hospital, Lahore, Pakistan from March 2014 to December 2014. Clinical and gross examination findings including age, gender, laterality, site of tumor, etiological habits, oral hygiene, gross appearance, histological subtype, grade and clinical stage of the tumor were recorded.

Results: The mean age of patients was 52.74 ± 14.14 years with male to female ratio 1.8:1, of which 52 (64.2%) were male and 29 (35.8%) were female. The most common presenting complaint was non healing ulcer which was seen in 51 (63%) patients, followed by both non healing ulcer and fungating mass in 17 (21%) and fungating mass in 13 (16%). The most common site for OSCC in oral cavity was tongue in 45

(55.6%) patients, followed by buccal mucosa, floor of mouth, retromolar area and lip and palate, in descending order. The right side was affected more commonly and was noticed in 50 (61.7%) patients. Smoking accounted for 37 (45.7%) patients with predominantly poor oral hygiene in 45 (55.6%) patients. Moderately differentiated tumors were mostly observed in 42 (51.9%) with advanced clinical stage at the time of diagnosis in 46 (56.8%) patients. There was a strong association of site of tumor with appearance, grading, addictive habits, gender, age and clinical staging.

Conclusion: Fourth to sixth decade of life with male predominance, smoking and pan chewing habits with poor oral hygiene were common features of OSCC. The most common histological subtype was moderately differentiated squamous cell carcinoma while well differentiated tumors form the largest number. The patients usually present with advanced clinical stage. (Rawal Med J 201;41:81-85).

Keywords: OSCC, histological subtypes, TNM staging, oral hygiene.

INTRODUCTION

Cancer is one of the most important threats to public health in the developed world and progressively increasing in the developing world. Oral cancer is a neoplasm, which initiates at the lips and ends at the anterior pillar of fauces.¹ Oral cancers are the 6th most common cancer worldwide.² More than 90% of all oral cancers are squamous cell Carcinoma (SCC).³ The incidence of oral cancer is predominantly high among men and rates for oral cancer differ in men from 1 to 10 per 100,000 population in different countries.⁴ In Pakistan, this risk is increasing due to the very common habits of smoking, chewing tobacco, areca nut and betel quid.⁵ Major etiological and predisposing factors of OSCC include smoking, paan chewing, alcohol and ultraviolet radiation but several other factors are

also involved like candida infection, human papillomas virus, nutritional deficiencies and genetic predisposition.⁶

The most commonly affected sites in decreasing order are the tongue, oropharynx, lip, floor of mouth, gingiva, hard palate and buccal mucosa.⁷ Squamous cell carcinoma is a malignant neoplasm of epithelial cells demonstrating squamous differentiation as differentiated by the development of keratin and the existence of intercellular bridges.⁸ The cell of origin of OSCC is the oral keratinocyte.⁹ Histologically, OSCC is of different types which are conventional, verrucous, spindle, basaloid, adeno-squamous, papillary and muco-epidermoid and acantholytic type. Verrucous SCC is less aggressive type of SCC, in contrast to more aggressive basaloid form.¹⁰

The principal treatment method of oral cancer is in

general decided according to the stage of the tumor; with surgical treatment as the base of multimodal treatment.¹¹ Despite of the easy access of oral cavity for clinical examination, OSCC is usually diagnosed in advanced stages. Most frequent reasons are the early wrong diagnosis and the ignorance from the attending physician or dentist.¹² While establishing the prognosis of individual with OSCC all the factors like general physical, clinical, demographic, histological and molecular factors should be considered. The aim of this study was to determine the clinico-pathological features, histopathological grading, staging and presentation of OSCC.

METHODOLOGY

This was a descriptive retrospective cross sectional study and was carried out by following convenient sampling technique carried out at the radiotherapy department, INMOL hospital, Lahore, Pakistan from March, 2014 to December 2014. It comprised of 81 patients with histologically confirmed diagnosis of OSCC of oral cavity. The sample size was calculated by using the following formula: $n = \frac{Z^2 P (1-P)}{d^2}$ for 95% confidence level = 1.96, P = prevalence = 0.30 (Ahmed and Elemirri, 2009), d = Margin of error = 0.10. Patients of both genders without any age limit were included. The study was approved by Institutional Ethical Review Committee and Advanced Studies & Research Board.

Table1. Simplified Oral Hygiene Index (OHI-S).

Simplified Oral Hygiene Index (OHI-S) *	
Examination of 6 specific teeth: 16, 11, 26, 31 (buccal), 36, 46 (lingual).	
OHI-S Evaluation	
0: no plaque, calculus	
1: plaque, calculus covering up to 1/3 tooth face	
2: plaque, calculus covering < 2/3 tooth face	
3: plaque, calculus covering ≥ 2/3 tooth face	
OHI-S: Oral Hygiene Classification	
0.0 - 1.2: good oral hygiene	
1.3 - 3.0: moderate oral hygiene	
3.1 – 6.0: poor oral hygiene	

* Introduced by Green và Vermillion in 1964

All retrievable case files were obtained and necessary data were extracted regarding gender,

age, site, staging and histological type of OSCC was recorded. The addictive habits, oral hygiene, clinical features of OSCC including its appearance and side of oral cavity involved were recorded. Oral hygiene status was evaluated using the 'Simplified Oral Hygiene Index' (OHI-S) by examining six index teeth.²² (Table 1). The associations of the clinical and histological factors with the gender, age and site category were analyzed using Fisher exact test. Data analyses were performed at $\alpha = 0.05$ significance value using SPSS version 20.

RESULTS

Patients with OSCC most commonly presented between the ages of 46-55, with mean age of 52.74 ± 14.14 years (Table 2). Proportion of male patients was almost double (64.2%) as compared to females (35.8%) with a ratio of 1.8:1.

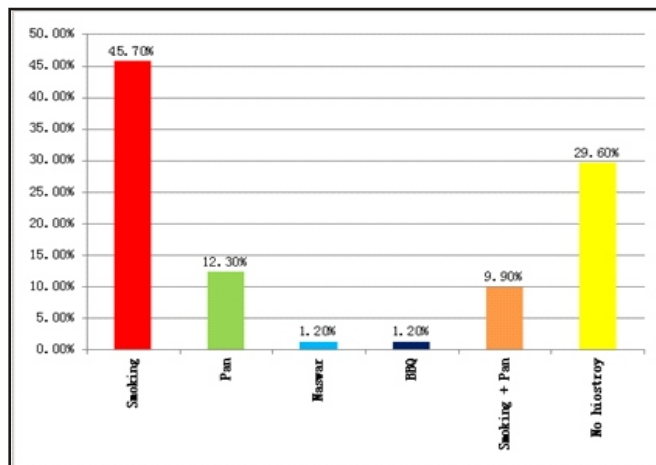
Table 2. Clinicomorphological features of OSCC.

Gender Distribution	
Male	64%
Female	36%
Age Distribution	
25-35 yrs	11.1%
36-45 yrs	23.5%
46-55 yrs	35.8%
56-65 yrs	19.8%
66-75 yrs	8.6%
76-85 yrs	1.2%
Addictive Habits	
Smoking	45.7%
Paan	12.3%
Smoking + Paan	9.9%
Naswar	1.23%
BBQ eating	1.23%
No addiction	29.6%
Site Distribution	
Tongue	55.6%
Buccal Mucosa	27.2%
Floor of Mouth	9.9%
Retromolar Area	4.9%
Palate	1.2%
Lip	1.2%
Histological Grading	
WDSCC	30.8%
MDSCC	54.3%
PDSCC	14.8%
Verrucous	3.7%
Staging of Tumour	
T4	56.8%
T3	28.4%
T2	12.3%
T1	2.5%

Smoking habit was most commonly observed in patients with OSCC in 37 (45.7%) of cases, followed by pan alone, smoking and pan together

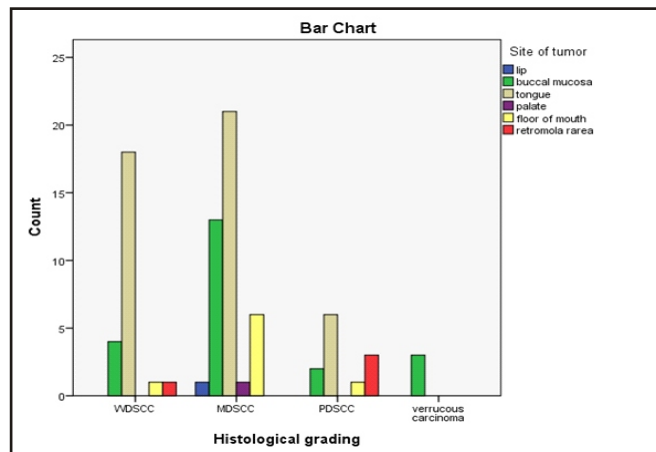
and naswar. However, 24 (29.6%) patients presented with no history of addictive habits (Fig. 1). The most common site of involvement of OSCC was tongue in 45 (55.6%), followed in descending order by buccal mucosa in 22 (27.2%), floor of mouth in 8 (9.9%), retromolar area in 4 (4.9%), lip and palate only in one (1.2%) patient.

Fig. 1. Different addictive habits among OSCC Patients.



The most common appearance of the OSCC at the time of diagnosis was ulcerated lesion in 51 (63%) patients followed by fungating mass in 13 (16%) cases. However, both ulcerated and fungating appearance was together observed in 17 (21%) cases. Poor oral hygiene was noticed in 45 (55.6%) patients. Moderately differentiated OSCC was predominantly patients mostly presented with locally advanced tumor (Table 2).

Fig. 2. Association among histological grading and site of OSCC



Significant association was observed by applying Fisher Exact test among gender and site of tumor ($p=0.036$), appearance of tumor and site of tumor ($p=0.001$), site of tumor and histological grading of tumor ($p=0.024$) (Fig. 2). Site of tumor and addictive habits of patients ($p=0.018$) (Table 2) and age and clinical staging of tumor ($p=0.035$) were significant. However, insignificant associations were observed between site of tumor and age of patient ($p=0.497$), histological grading and habits of patients ($p=0.623$), gender and histological grading ($p=0.507$), clinical staging and addictive habits of patients ($p=0.084$) by applying Fisher Exact test.

DISCUSSION

In this study, a significant number (35.8%) of patients presented with OSCC were in age group of 46-55 years, which is similar to a study from Shaukat Khannum Memorial Cancer Hospital, Lahore from the period of 2003-2008, in which the mean age of patients with OSCC was 53 years.¹³ OSCC occurs less frequently in young individuals (< 40 years) and these cases represent 3-6% of all oral squamous cell carcinoma.¹⁴

We found that OSCC mostly affected males as compared to females, with a ratio 1.8:1; most likely because more men than women indulge in the addictive habits (smoking, chewing habits and snuff consumption). Similar trends were observed in another local study.¹⁵ A significant association was observed among gender and site of tumor (Table 2), which is in accordance with an earlier study.¹⁶

Oral squamous cell carcinoma can involve any site of the oral cavity and large lesions can invade several continuous areas. Another study reported that the tongue is the predominant site of involvement for OSCC in oral cavity.¹⁷ A study from Hungary reported that the most common site of OSCC were the floor of the mouth.¹⁸

Present and past the smoking and alcohol consumption are believed to be the major risk factors for the development of OSCC.⁶ The present study is in contrast to multiple international and local studies. A study by Khan et al stated that chewing gutka was the most common cause of OSCC patients, accompanied by raw tobacco¹⁹ and Shenoj et al showed that 31.8% patients had

personal habit of tobacco chewing, followed by 18.64% who had both habit of tobacco chewing and smoking.²⁰ An interesting feature which was observed in present study was that 29.6% patients had no history of any addictive habits and these were most commonly females. Similar results were reported by Falaki et al, which found no key risk factors in the OSCC affected patients and they were all healthy.²¹ A significant association was observed among site of tumor and addictive habits of patients (Table 2).

There are multiple histological variants of OSCC and these are conventional OSCC, verrucous carcinoma and basaloid SCC. This was positively related with the other local studies, which reported that 85-90% was conventional SCC.¹⁵ Pires et al reported that verrucous carcinoma was diagnosed in only 2.6% of patients, which is similar with our study.¹⁶

According to WHO grading system, OSCC is divided in three categories: well-differentiated, moderately-differentiated and poorly differentiated. The present study, is in accordance with the other studies which also reported that moderately differentiated SCC is the most common histological type of OSCC.¹⁷ There are multiple local studies which are in contrast with the present study i.e. the study conducted at Karachi and Lahore stated that well differentiated SCC was predominantly observed in OSCC affected patients.¹³ The present study observed significant association between site of tumor and histological grading.

In our study, patients mostly presented with the advance stage T4 with only two patients in T1 stage. However, studies by Jerjes et al¹⁷ and Pires et al¹⁶ stated that most of the affected patients with OSCC were diagnosed with T1/T2 stage, which is in dissimilarity from our study. Al-Rawi et al stated that ulcero-proliferative lesions were more common in OSCC patients.¹ A significant association was observed between clinical appearance and site of tumor.

In present study, poor oral hygiene was predominantly observed in OSCC affected patients. Priebe reported that oral hygiene was mostly 'poor' in 50.8% and 'moderate' in 36.9% in OSCC affected

patients.²² Poor oral hygiene has been suggested as a risk factor for oral cancer in numerous studies.²³

Present study data would appropriately reveal the epidemiological profile of OSCC in a public Hospital, Lahore, Pakistan. Study focal point on specific regions are welcome as they show the clinical and demographic profile of OSCC in limited geographic locations, offering an improved understanding of these tumors and the opportunity of development of particular approach of prevention, diagnosis and treatment.

CONCLUSION

Oral squamous cell carcinoma is common in the older age group and males reported both tobacco and pan consumption more commonly than females. Serious thought should be given to prevention and early detection. Whenever a physician or a dentist finds an ulcer, a white patch or a growth in the oral cavity that lesion should be instantly biopsied to confirm the diagnosis. More upcoming studies in large populations should be done to complete a definite and reliable conclusion about the nature of OSCC in patients, its risk factors and etiology.

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 Analysis and interpretation of the data: SM, MK, WA
 Drafting of the article: SM, MK
 Critical revision of the article for important intellectual content: WA, AHN
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