Original Article

FREQUENCY OF VARIOUS CLINICAL STAGES OF ORAL SQUAMOUS CELL CARCINOMA IN ISLAMABAD/ RAWALPINDI AND ITS ADJOINING AREAS

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ABSTRACT

Objective: *The Objective of this study was to determine the frequency of different clinical stages of squamous cell carcinoma in newly diagnosed patients at presentation.*

Material and Methods: *This cross sectional study was conducted at department of Oral and Maxillofacial Surgery, Islamic International Dental College and Hospital, Islamabad on 60 patients having oral squamous cell carcinoma with age range of 25 to 75 years. A thorough history was taken to confirm the duration of the lesion. Clinical examination of soft tissues, bone and lymph nodes were carried out to determine the site, size and clinical picture. Incisional biopsy was taken to confirm the diagnosis of oral squamous cell carcinoma. Staging of the tumor was done according to TNM staging system. SPSS version 20 was used to compute descriptive statistics of age, clinical stages of oral squamous cell carcinoma and gender.*

Results: *Thirty-two (53.3%) were males and 28 (46.7%) were females having mean age of 57±9.91years. Highest number of patients (53%) presented in stage IVA followed by stage III (26.67%) and stage I and II (8.33%). The age-wise stratification for different clinical stages (TNM) of oral squamous cell carcinoma was highly statistically significant (P=0.000) but not gender-wise (P=0.601). Comparison on basis of duration of lesion for various clinical stages (TNM) was highly statistically significant (P=0.000). The most common site for oral squamous cell carcinoma was left buccal mucosa (20%) followed by lateral border of tongue, right alveolus and body mandible and left alveolus mandible (10%).*

Conclusions: *Oral squamous cell carcinomas are presenting very late (Stage III and IV) in Pakistan leading to dismal prognosis.*

Key words: *Oral squamous cell carcinoma, TNM staging, Buccal mucosa, Lesion*

INTRODUCTION

The prevalence of Oral Cancer is high in Asian countries especially Southeast Asia[1] About 90% of malignant tumors in the oral cavity are Squamous Cell Carcinomas[2]. Oral squamous cell carcinoma remains one of the most debilitating and disfiguring of all malignancies and is the fourth leading cause of cancer death in men[3]. Tongue, floor of the mouth and alveolar ridge is the most common affected sites[4].

Etiology of squamous cell carcinoma is multi-factorial. Tobacco and alcohol abuse are the two most widely implicated etiological risk factors[5]. Tobacco is consumed in various forms with smokeless tobacco being one of them. Smokeless tobacco include paan/betel quid, snuff, Gutka, Supari, Qiwam and other less common products[6]. Smokeless tobacco has a wider prevalence in certain parts of the world particularly South and southeast Asia (Pakistan and India)[7]. About 30 brands of smokeless tobacco (naswar) available in Pakistan were tested for carcinogens such as cadmium, arsenic, lead, nitrite, nitrate and nicotine. The above-mentioned carcinogens were found in theses tobacco products in such amounts that making it a health hazard for the consumers[8].

Accurate clinical staging is important for patient counseling, treatment planning, prognostication and the rational design of clinical trials. At the time of

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diagnosis, treatment strategies are largely based upon clinical staging[9].

The most widely used classification-system for describing the anatomical extent of the disease is the Union for International Cancer Controls TNM-system, which includes primary tumor size and extant (T), the amount of spread to regional lymph node/nodes (N) and the presence of distant metastasis (M). Survival time of the OSCC patients is strongly associated with the TNM-stage and the TNM classification system is still the most important guide for treatment stratification in clinical practice[4].

The available clinical information used in clinical staging include history, physical examination, radiographic examination by Ortho pentomo gram (OPG),Computer tomography (CT) or Magnetic Resonance Imaging (MRI) scan of head and neck, chest x-ray and ultrasound abdomen. The T, N, and M categories of the tumor were then combined to find an overall clinical stage of the tumor. The various clinical stages from the results of study done by Shah I[10] on total 334 patient's shows that stage I and II have 25.6 % (61), stage III 24.55 % (82) and stage IV 56.85 % (191).

Oral cancers are diagnosed very late (Stage III and IV) in Pakistan leading to dismal prognosis[10]. In our study we want to see burden of different stages at diagnosis of oral squamous cell carcinoma in our population. By knowing its burden we can use screening tools to diagnose patients early and then manage accordingly.

The objective of this study was to determine the frequency of different clinical stages of squamous cell carcinoma in newly diagnosed patients at presentation.

METHODS AND MATERIALS

This cross sectional study was conducted at Department of Oral & maxillofacial surgery, Islamic International Dental College and Hospital, Islamabad on 60 patients having oral squamous cell carcinoma(OSCC) with age range of 25 to 75 years. Those patients having received treatment for OSCC were excluded. Sample size was 60 calculated by WHO calculator from the study done by Shah I et al11 anticipated population 25.0 % and used confidence level of 95 % and absolute precision of 10 %.

A thorough history was taken to confirm the use and duration of any one of the etiological factors. Clinical examination of soft tissues, bone and lymph nodes were carried out to determine the site, size and clinical picture. Incisional biopsy was taken to confirm the diagnosis of squamous cell carcinoma. Staging of the tumor was done according to cTNM staging system. To maintain uniformity of procedures and techniques used for Staging of squamous cell carcinoma one clinician and one histopathologist (with minimum 5 years experience) were used. All information was gathered by myself and will be checked by a senior consultant who was a supervisor of College of Physicians and Surgeons Pakistan and will be recorded on a proforma.

Data so collected were analyzed by SPSS version 20. Descriptive statistics was done to compute the mean ± standard deviation for numerical variables like age. Frequencies and percentages were calculated for categorical variable like clinical stages and gender. For gender male to female ratio was calculated. Clinical stages were stratified among age, gender, site and duration to see the effect modifiers. Post stratification chi square test was applied. P value < 0.05 was considered significant.

RESULTS

Thirty-two (53.3%) were males and 28 (46.7%) were females with a ratio of 1.4:1. The mean age of this sample was 57±9.91years with age range from 25 to 75 years.

Most of patients affected by oral squamous cell carcinoma was presented with advanced stage of OSCC. Highest number of patients (53%) presented in stage IVA followed by stage III (26.67%) and stage I and II(8.33%). Least number of patients presented in stage IVB and IVC (1.677). Detail is given in Fig -1.

Table 1 shows frequency of clinical stages (TNM) of oral squamous cell carcinoma stratified by age groups. Most of the patients were presented in late age in each stage. Most of the patients who presented in stage I and IVA, IVB, and IVC (80%, 43.8% ,100% and 33.3% respectively) were in age range 61-75 years. While most of patients having stage II and III (80% and 68.8% respectively) of OSCC were presented in age range 51-60 years. This age-wise stratification for different clinical stages (TNM) of OSCC was highly statistically significant (P=0.000).

Table 2 shows the Clinical stages (TNM) of oral squamous cell carcinoma stratified by gender. Both males and female patients having OSCC were commonly presented in stage IVA (43.8% and 64.3% respectively) followed stage III (31.2% and 21.4% respectively). The difference for various clinical stages (TNM) presentation among gender was also not statistically significant (P=0.601).

The most common site for OSCC was left buccal mucosa (20%) followed by lateral border of tongue, right alveolus and body mandible and left alveolus mandible (10%). Least frequencies of OSCC were found for anterior maxilla, right alveolus mandible, floor of mouth, ventral surface of tongue, and Right maxilla. The details are given in Table-3.

All patients having lesions of OSCC in site of anterior maxilla, right alveolus mandible, tip of tongue, lower lip, anterior mandible, floor of mouth, ventral surface of tongue, and right body of mandible presented in 1-5 months. Some of patients having lesions in left buccal mucosa, right buccal mucosa, left alveolus mandible, left alveolus maxilla, lateral border of tongue, and right alveolus and body mandible reported for treatment in 6-9 months duration of lesions. Patients with lesions of left buccal mucosa, lateral border of tongue, right maxilla, right alveolus and body mandible presented in 10-12 months. Twenty percent lesion of left alveolus and body mandible and 33.3% lesions in right alveolus and body maxilla presented in 13-25 months. Only 50% of lesions in right ramus and third molar area presented for treatment in 19-24 months. The details are given in Table-4.

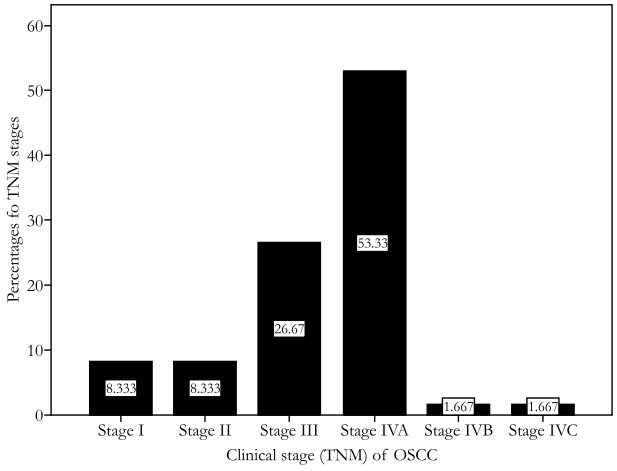

Figure-1: Percentages OF Different Stages of OSCC

DISCUSSION

In this study, a total of 60 patients having oral squamous cell carcinoma were included. Thirty-two (53.3%) were males and 28 (46.7%) were females with a ratio of 1.4:1. So males were the dominant gender. Pinholt[11] observed almost equivalent numbers between men and women (1.2:1). There is significant bias in the incidence of oral cancer amongst males, which can be attributed to the easy acceptance of habits by them. The consumption of tobacco and betel nut as a means of stimulants renders males more susceptible to

Table-2: Clinical stages of oral squamous cell carcinoma stratified by gender

Clinical stage(TNM)	Gender				Total		p-value
	Male		Female				
	n	%	n	%	n	%	
Stage I	3	9.4	2	7.1	5	8.3	.601
Stage II	3	9.4	2	7.1	5	8.3	
Stage III	10	31.2	6	21.4	16	26.7	
Stage IVA	14	43.8	25	64.35	32	53.3	
Stage IVB	1	3.1	0	0	1	1.7	
Stage IVC	1	3.1	0	0	1	1.7	
Total	32	100	28	100	60	100	

Chi-Square value: 3.650

Table-3: Descriptive statistics for site of lesion in patients with oral squamous cell carcinoma

Site of lesion	**n**	**%**
Anterior maxilla	1	1.7
Left alveolus and body mandible	5	8.3
Left buccal mucosa	12	20.0
Right buccal mucosa	3	5.0
Right alveolus mandible	1	1.7
Left alveolus mandible	6	10.0
Left alveolus maxilla	2	3.3
Tip of tongue	3	5.0
lateral border of tongue	6	10.0
Lower lip	1	1.7
Anterior mandible	3	5.0
Right Ramus and third molar	2	3.3
Floor of mouth	1	1.7
Ventral surface of tongue	1	1.7
Right maxilla	1	1.7
Right body of mandible	3	5.0
Left body of mandible	3	5.0
Right alveolus and body Mandible	6	10.0
Total	**60**	**100.0**

oral cancers. Contrarily, in Pakistan, consumption of alcohol and tobacco is considered a taboo amongst the female population. However, this custom is nowadays gradually fading away, as females cutting across age and socio-economic lines are turning to these habits.

The mean age of this sample was 57±9.91years. Similar results were reported by Shenoi[12] in the Indian population. They reported a mean age of 52 years. A study conducted in Armed Forces Institute of Dentistry, Pakistan by Shah[11] showed similar results. This old mean age is due to the fact that with advanced age more exposure to the carcinogen occurs and enough time to develop dysplastic change in oral mucosa.

Highest number of patients (53%) presented in

Table-1: Frequency of clinical stages of oral squamous cell carcinoma stratified by age groups

Clinical stage(TNM)	Age groups (years)										Total	
	25-30		31-40		41-50		51-60		61-75			
	n	%	n	%	n	%	n	%	n	%	n	%
Stage I	0	0	0	0	1	20	0	0	4	80	5	100
Stage II	0	0	0	0	1	20	4	80	0	0	5	100
Stage III	1	6.2	0	0	3	25.8	11	68.8	1	6.2	16	100
Stage IV A	0	0	1	3.1	6	25.8	11	34.4	14	43.8	32	100
Stage IV B	0	0	1	100	0	0	0	0	0	0	1	100
Stage IV C	0	0	0	0	0	0	0	0	1	100	1	100
Total	1	1.7	2	3.3	11	25.3	26	43.3	20	33.3	60	100

Pearson Chi-Square value: 50.799a Df: 20 p-value: .000

Table-4: Site of in patients with oral squamous cell carcinoma stratified by duration of lesion

Site of lesion noticed	Duration of lesion									
	1-5 month		6-9 month		10-12 month		13-25 month		19-24 month	
	N	%	N	%	n	%	n	%	n	%
Anterior maxilla	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Left alveolus and body mandible	4	80.0	0	0.0	0	0.0	1	20.0	0	0.0
Left buccal mucosa	6	50.0	2	16.7	4	33.3	0	0.0	0	0.0
Right buccal mucosa	2	66.7	1	33.3	0	0.0	0	0.0	0	0.0
Right alveolus mandible	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Left alveolus mandible	3	50.0	3	50.0	0	0.0	0	0.0	0	0.0
Right alveolus maxilla	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Left alveolus maxilla	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0
Tip of tongue	3	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Lateral border of tongue	3	50.0	2	33.3	1	16.7	0	0.0	0	0.0
Lower lip	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Anterior mandible	3	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Right Ramus and third molar	1	50.0	0	0.0	0	0.0	0	0.0	1	50.0
Floor of mouth	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Ventral surface of tongue	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Right maxilla	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0
Left maxilla	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Right body of mandible	3	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Left body of mandible	2	66.7	0	0.0	0	0.0	1	33.3	0	0.0
Right alveolus and body maxilla	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Left alveolus and body maxilla	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Right alveolus and body Mandible	3	50.0	2	33.3	1	16.7	0	0.0	0	0.0

stage IVA followed by stage III (26.67%) and stage I and II (8.33%). Least number of patients presented in stage IVB and IVC (1.677). de LL Costa[13] in a retrospective study based on histological review of 38 cases of oral squamous cell carcinoma selected from the medical files of Hospital Dr. Luis Antonio, Natal - Rio Grande do Norte, Brazil. TNM clinical classification data were obtained from the analysis of the medical records. Two pathologists performed histological malignancy staging on routine 3µm-thick sections of invasive tumor areas stained with hematoxylin and eosin. Concerning TNM clinical staging, 14(36%) patients were classified as stage IV, 11(28%) as stage III, 5(16%) as stage II and 8(21.5%) as stage I. The de LL Costa[13] results are in consistent with our study. Shah[10] reported clinical stages of OSCC to be 15 (4.49%) as stage I, 46(13.77%) as stage II, 82(24.55%) as stage III, 191(57.25%) as stage IV. These results are also consistent with current study.

In the current study, most of the patients were presented in late age in each stage. Most of the patients who presented in stage I and IVA, IVB, and IVC (80%, 43.8% ,100% and 33.3% respectively) were in age range 61-75 years. While most of patients having stage II and III (80% and 68.8% respectively) of OSCC were presented in age range 51-60 years. This age-wise stratification for different clinical stages (TNM) of OSCC was highly statistically significant (P=0.000). No previous studies reported such age wise distribution. Most of the stage IV cases belong to age 61-75 years. The reason may be that in aged patients more advanced spread of oral squamous cell carcinoma. While late diagnosis has been reported repeatedly by other studies, our study reports a much higher stage-IV disease. Lack of public and professional awareness, poverty, illiteracy and unavailability specialist services are of some of the factors that contributing to late presentation and diagnosis. This warrants the immediate launch of campaigns to create both public and professional awareness regarding this deadly disease that is unfortunately so common in South East Asia including Pakistan[10].

In the present study, both males and female patients having OSCC were commonly presented in stage IVA (43.8% and 64.3% respectively) followed stage III (31.2% and 21.4% respectively). The difference for various clinical stages (TNM) presentation among gender was also not statistically significant (P=0.601). Similar results were reported by others[13].

The present research showed that the most common site for OSCC was left buccal mucosa (20%) followed by lateral border of tongue, right alveolus and body mandible and left alveolus mandible (10%). Least frequencies of OSCC were found for anterior maxilla, right alveolus mandible, floor of mouth, ventral surface of tongue, and right maxilla. Tongue is the most common sub site involved by oral cancer in Western world[14]. In our study buccal mucosa (32%) were more commonly involved than tongue (21.8%). Wahid[15] have similarly reported buccal mucosa to be more commonly involved than tongue. Differences in etiologic factors for example chewed vs smoked tobacco, betel nut and pan chewing etc may explain these differences and warrant another independent study. In our society, snuff dipping and smoking is the common abnormal habits, which affect the buccal mucosa and tongue.

In the current study, the soft tissue and superficial lesion(alveolus mandible, tip of tongue, lower lip, anterior mandible, floor of mouth, ventral surface of tongue) were presented early as compare to bony lesion(body mandible). This may be due their ease for the patients to notice these lesions readily. However, some sites having lesions do not follow this pattern. Which may be their aggressiveness of some lesions which noticed early by patients in deep bony sites.

CONCLUSION

Oral squamous cell carcinomas are presenting very late (Stage III and IV) in Pakistan leading to dismal prognosis. There is immediate need for creating public and professional awareness regarding the early signs and symptoms of oral cancer so that patient present early and medical professionals diagnose the oral cancers early.

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