

Frequency and Pattern of Oral and Maxillo-facial Carcinomas

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Objective: To determine the frequency and pattern of carcinomas in Oral and Maxillofacial region, in particular relation to the primary sub site and involvement of the level of lymph nodes in the neck.

Study Design: Descriptive study.

Place and Duration of the Study: Oral and Maxillofacial Surgery Department, King Edward Medical University/ Mayo Hospital Lahore and Institute of Nuclear Medicine and Oncology Lahore (INMOL), from 1st October 2007 to 30th September 2008.

Patients and Methods: Inclusion criteria: patients of all age groups and gender with biopsy (incisional or excisional) proven carcinomas of the oral and maxillofacial region. Exclusion criteria: Irradiated patients and patients with metastatic carcinomas in head and neck region.

Results: Squamous cell carcinoma was found in 84.28% (n = 118) patients out of 140 cases, Adenocarcinoma was 5.7% (n = 8), Basal cell carcinoma was 0.7% (n = 1), Acinic cell carcinoma was 1.4% (n = 2), Adenoid cystic carcinoma was 3.6% (n = 5), Mucoepidermoid carcinoma was 3.6% (n = 5) and Verrucous carcinoma was found in 0.7% (n = 1) patients. The levels of lymph nodes involved were as follows; level I 35.7% (n = 50), level II 24% (n = 34), level III 11.4% (n = 16), level IV 6.4% (n = 9) and level V 3.5% (n = 5) in all 140 cases. There were 10% (n = 14) cases of parotid gland tumors, 28.6% (n = 39) tongue carcinomas, 11.4% (n = 16) maxilla, 22.1% (n = 31) buccal mucosa, 15% (n = 21) mandible, 8.5% (n = 12) floor of the mouth and 4.3% (n = 6) cases of palate. Most of the patients with Squamous cell carcinoma presented with T3 and T4 which were 33.9% (n=40) and 43% (n=51) respectively. Histopathologically, SCC with well-differentiated, moderately differentiated and poorly differentiated varieties were 27.12% (n = 32), 33.9% (n = 40) and 38.98% (n = 46) respectively. Most of the SCC patients were of stage stage-III or stage IV 41.5% (n = 49) and 35.5% (n = 42) respectively.

Conclusion: Squamous cell carcinoma is the most common cancer of oral and maxillofacial region and most frequent site for squamous cell carcinoma is oral tongue.

Key words: Oral carcinoma, squamous cell carcinoma, precancerous lesions, TNM staging.

Introduction

Oral cancer is one of the top ten cancers worldwide, it has wide geographical distribution¹. Incidence is different in different countries and it also varies in different regions of the same country. The peak rates of occurrence of oral cancers are found in countries of South and South-East Asia.²⁻⁴

Oral cancer represents 5% of all cancers in men and 2% in women. More than 90% of oral cancers are Squamous cell carcinoma or one of its variants¹. It is the most common cancer of oral and maxillofacial region in Pakistan as well⁵.

Clinically SCC can presents in various forms like: ulcer with indurated margins, fungating mass or nodule etc. The two most common intra oral sites of involvement are oral tongue and floor of the mouth⁶. They can also develop from some precancerous lesions, such as oral submucous fibrosis⁷, leukoplakia, erythroplakia or arise in de-novo.

Head and neck carcinomas mostly exhibit lymphogenic metastatic spread. Oral cavity has abundant blood supply and lymphatic drainage hence chances of cervical metastases are very high. Neck levels I and II are at great risk for

the development of neck metastases especially in oral tongue and floor of mouth⁸.

Both the extrinsic and intrinsic factors (genetic predisposition) may be at work to cause such cancers. Among the extrinsic factors, tobacco use, alcohol consumption, syphilis, malnutrition, immune deficiency disorders, chronic trauma, radiations and viruses are the most important.⁹⁻¹⁵ Chewing of various forms of smokeless tobacco have been shown to have the strongest association of carcinoma of the oral cavity, which also includes various forms of snuff, betel quid with tobacco.^{2-4,14,15} In Pakistan the use of tobacco is the most important risk factor for carcinoma of the oral cavity.⁶

The aim of the present study was to evaluate the frequency and pattern of different varieties of oral and maxillofacial carcinomas; in particular relation to involvement of tumor subsites and nodal metastasis.

Patients and Methods

140 Patients were included and the study was conducted at

two places; Oral and Maxillofacial Surgery Department, King Edward Medical University / Mayo hospital Lahore and Institute of Nuclear Medicine and Oncology Lahore Pakistan (INMOL) from 1st October 2007 to 30th September 2008. The diagnoses were confirmed by histopathology report of the specimen after the incisional or excisional biopsy, at Mayo Hospital in oral and maxillofacial surgery ward. In this analytical study of 140 patients of oral and maxillofacial carcinomas, 51 patients were presented in the Oral and Maxillofacial Surgery Department, King Edward Medical University / Mayo Hospital Lahore and 67 patients in INMOL in One year duration. All the patients presented in the maxillofacial surgery ward were biopsied in the same place where as INMOL received almost all referred patients from different hospitals. The method of sampling was simple random sampling. Tumor sub sites included were as follows, oral tongue, floor of the mouth, maxilla, palate, mandible and cheek mucosa and parotid gland. TNM staging for SCC patients was done according to classification of malignant tumors.¹⁶ The results were analyzed using SPSS statistical version 15.

Results

One Hundred and forty patients were included in the study and their age range was 12 to 89 years. 15% (n=21) patients were in the age group of 40 or less, 24.3% (n=34) patients were in age group of 41-50, 25.7% (n=36) patients were in the age group of 51-60, 35.0% (n=49) patients were in the age group of 60 or above. 60.7% (n=85) patients were male and 39.3% (n=55) female (Table 1).

Various types of carcinomas with respect to their sub-sites showing maximum number of cases of squamous cell carcinomas n = 118 (84.3%) and maximum number of cases of tongue 28.5% (n = 39). In relation to the primary site there were 11.4% (n = 16) cases of maxilla, 15% (n = 21) cases of mandible, 28.5% (n = 39) cases of tongue, 8.5% (n

= 12) cases of floor of mouth, 22.1% (n = 31) cases of buccal mucosa, 5% (n = 7) were of palate and 10% (n = 14) cases of parotid gland (Table 2).

Table 1: Age GRP * gender Cross tabulation

Count		Gender		Total
		Male	Female	
Age GRP	40 or less	1	8	2
	41 –50	1	1	3
	51 – 60	2	1	3
	60 or above	3	1	4
Total		8	5	14

The cervical lymph nodes were palpable among 81.4% (n = 114) patients and in 18.6% (n = 26) patients lymph nodes were not palpable. Out of 114 palpable cases, level I was involved in 44% (n = 50) cases, level II was involved in 30% (n = 34) cases and level III was involved in 14% (n = 16) cases level IV was involved in 7.9% (n = 9) cases and level V was involved in 4.4% (n = 5) cases (Table 3).

TNM staging of Squamous cell carcinoma showed, T₁ 6.7%, T₂ 16.1%, T₃ 33.9% and T₄ 43.2%, N₀ 9.3%, N₁ 19.5%, N₂ 43.2% and N₃ 28%, M₀ 89% and M₁ was found in 11% cases (Table 4).

Regarding SCC TNM staging, stage 1 was 6.7%, stage II 16%, stage III 41.5% and stage IV 35.6% reported (Table 5).

Histopathological grading of Squamous cell carcinoma, 27.1% (n = 32) patients had well differentiated carcinoma, 34% (n = 40) had moderately differentiated and 39% (n = 46) had poorly differentiated squamous cell carcinoma carcinomas (Table 6).

Table 2: Type of tumor and tumor site cross tabulation.

Type of tumor	Tumor site							Total (%)
	Maxilla	Mandible	Tongue	Floor of mouth	Buccal mucosa	Palate	Parotid gland	
Squamous cell carcinoma	12	19	37	11	29	6	4	118 (84.3)
Adenocarcinoma	2	0	1	0	1	1	3	8 (5.7)
Basal cell carcinoma	0	0	0	0	1	0	0	1 (0.7)
Acinic cell carcinoma	0	0	0	1	0	0	1	2 (1.4)
Adenoid cystic carcinoma	2	0	1	0	0	0	2	5 (3.6)
Mucoepidermoid carcinoma	0	1	0	0	0	0	4	5 (3.6)
Verrucous carcinoma	0	1	0	0	0	0	0	1 (0.7)
Total	16 (11.4%)	21 (15%)	39 (28.5%)	12 (8.5%)	31 (22.1%)	7 (5%)	14 (10%)	140 (100)

Table 3: Type of tumor and cervical lymph node level.

Type of tumor	Cervical lymph node status						Total
	None	Level-1	Level-II	Level-III	Level-IV	Level-V	
Squamous cell carcinoma	11	45	32	16	9	5	118
Adenocarcinoma	6	1	1	0	0	0	8
Basal cell carcinoma	1	0	0	0	0	0	1
Acinic cell carcinoma	1	1	0	0	0	0	2
Adenoid cystic carcinoma	5	0	0	0	0	0	5
Mucoepidermoid carcinoma	2	3	0	0	0	0	5
Verrucous carcinoma	0	0	1	0	0	0	1
Total	26	50	34	16	9	5	140

Table 4: SCC: Tumor size, nodal metastases and distant metastases (TNM).

Tumor size	No. of patients	% age
T1	8	6.7
T2	19	16.1
T3	40	33.9
T4	51	43.2
Total	118	100
Nodal metastasis	No. of patients	% age
N0	11	9.3
N1	23	19.5
N2	51	43.2
N3	33	28.0
Total	118	100
Distant Metastasis	No. of patients	% age
M0	105	89
M1	13	11
Total	118	100

Modified from: TNM classification of malignant tumours. 6th edition. Sobin L.H., Wittekind Ch, editors. Wiley Liss, New York, 2002.¹⁶

Discussion

Cancers of the oral cavity and pharynx comprises the third most common malignancy site in the developing countries¹⁷. In this study SCC was found most common in the 60 year or above age group 35% (n = 49) with 2nd peak in the 51–60 year age group 25.7% (n = 36). Over all male: female ratio of 1.5 : 1. This is same as compared to most of the other studies, as reported by Hider, Idris Sugarman et al.¹⁸⁻²⁰ According to Llewellyn CD et al SCC is not so frequent in young patients. Only 1% to 6% of SCC cases occur in

patients under the age of forty, being the occurrence in children and adolescent extremely rare.²¹⁻²³ However in our study, patients under 40 years of age were reported as 15% (n = 21). This shows that the incidence of oral cancer among younger patients has markedly increased in our country.

Table 5: SCC; Tumor Staging.

Tumor Staging		No. of patients	% age
Stage I	T ₁ N ₀ M ₀	8	6.7
Stage II	T ₂ N ₀ M ₀	19	16.0
Stage III	T ₃ N ₀ M ₀ , T ₁₋₃ N ₁ M ₀	49	41.5
Stage IV	T ₄ any N M ₀ , any T N ₂₋₃ M ₀ Any T, any N, M ₁	42	35.6
Total		118	100

Table 6: Histopathological grading of oral Squamous cell carcinoma.

Tumor Grading	Frequency	Percent
Well differentiated	32	27.12
Moderately differentiated	40	33.9
Poorly differentiated	46	38.98
Total	118	100.00

Regarding TNM staging of Squamous cell carcinoma, most of the cases were T₃ or T₄, 33.9%, 43.2% respectively and N₁ 19.5%, N₂ 43.2% and N₃ 28%, this was in contrast to the previous other studies by S Manuel et al and Y Okada et al^{8,24} which shows presentation of the cases at their early stages. This might be due to the fact of high illiteracy rate, ignorance about the disease and poor referral system in our country.

The cervical lymph nodes were palpable among 81.4% (n = 114) patients and in 18.6% (n = 26) patients lymph

nodes were not palpable. Out of 114 palpable cases, level I was involved in 44% (n = 50) cases, level II 30% (n = 34) cases and level III 14% (n = 16) cases level IV 7.9% (n = 9) cases and level V was involved in 4.4% (n = 5) cases. In our series, level I & II were found to be the most commonly involved clinically positive lymph nodes in all oral maxillofacial carcinomas; this was the same as described by M Usman, Woolgar and Ferlito et al.²⁵⁻²⁷

There are various studies regarding the frequency of the oral carcinoma here in this study we have seen both the frequency and patterns of the oral and maxillofacial carcinoma with respect to the site of the tumor.

In our study the most common type of carcinoma was the Squamous cell carcinoma which was 84.3% and the least frequent type of carcinomas in our study were, basal cell carcinoma and Verrucous carcinoma. The most frequent site was oral tongue, which was 28.5% of the total sites. The other most frequent site in our study was buccal mucosa 22.1%, and the least frequent site was palate, which was just 5%. This is almost the same as described by Midion et al.¹⁵

Regarding TNM staging of SCC, patients presented in stage I were 6.7%, stage II 16%, stage III 41.5% and stage IV 35.6% reported. This indicates that we mostly encounter tumors in advanced stages. Which was in contrast to S Manuel et al and Y Okada et al^{23, 24} which shows presentation of the cases at their early stages.

Regarding Histopathological grading of Squamous cell carcinoma, 39% cases were found as poorly differentiated Squamous cell carcinomas. It was concluded from various studies that higher the grading of tumor and poorer its differentiation, more are its chances of metastasis.

Conclusion

Squamous cell carcinoma is the most common cancer of oral and maxillofacial region and tongue is the most common site of oral SCC and it is notorious for metastases to cervical lymph nodes. Level I & II cervical lymph nodes are the most frequently found metastatic nodes in cases of oral and maxillofacial cancers. Poorly differentiated is the most common histopathological grading of oral and maxillofacial SCC at the time of presentation in our ward.

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