

Oral and Oropharyngeal Squamous Cell Carcinoma in Our Population: The Clinic-Pathological and Morphological Description of 153 Cases

**Carcinoma de Células Escamosas Oral y Orofaringeo en Nuestra Población:
Descripción Clínico-Patológica y Morfológica de 153 Casos**

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SUMMARY: Oral cavity and oropharynx are one of the commonest sites for cancers in our population due to a high prevalence of tobacco use, especially chewing, in our country. The objective of this study was to prospectively assess the clinico-pathological and morphological aspects of the patients presenting to us with these malignancies. We studied 153 patients with oral and oropharyngeal squamous cell carcinoma who were managed in the department of otolaryngology and head and neck surgery between January 2006 and December 2007 at Maulana Azad Medical College and associated hospitals in New Delhi. There were 127 male patients (83%) and 26 females (17%) with ages ranging from 22 years to 70 years. One hundred and eleven patients (73%) presented with oral cavity and 42 patients (27%) with oropharyngeal carcinomas. Most common site of presentation in the oral cavity was the buccal mucosa, whereas, base of tongue was the commonest site in the oropharynx. Amongst the oral cavity cancers, 51 each (46% each) were well differentiated and moderately differentiated, whereas, 9 (8%) were poorly differentiated cancers. However, amongst the oropharyngeal cancers, 27 (64%) were moderately differentiated and 15 (36%) were poorly differentiated. Overall, 73 patients presented with lymphadenopathy on presentation, out of which, 44 patients were those with oral cavity and 29 with oropharyngeal cancers. There was a significant correlation between the site (i.e. oral cavity or oropharynx) and lymphadenopathy on presentation. Fifty nine patients (39%) presented to us with early stage disease (i.e. stage I and II), whereas, 94 patients (61%) presented with late stage disease (i.e. stage III and IV). There was a significant correlation between the site (i.e. oral cavity or oropharynx) and stage at presentation.

KEY WORDS: Squamous cell carcinoma; Oral cavity; Oropharynx; Head and neck.

INTRODUCTION

Although, there have been reports of an overall increasing incidence of head and neck squamous cell carcinoma (HNSCC) in western population over the past few years, its incidence is reported to be declining in our country (Gaitán-Cepeda *et al.*, 2010). Still, it remains one of the commonest sites for cancer in our country (Elango *et al.*, 2006; Mehrotra *et al.*, 2005). Amongst the HNSCCs, carcinoma of the oral cavity and oropharynx predominates in our population (Elango *et al.*; Yeole *et al.*, 2006). The prognosis of patients with these cancers depends upon a wide range of factors that may be grouped into patient-, tumour- and treatment-related (Massano *et al.*, 2006). The tumour related factors include the size of tumour, site of tumour, thickness of tumour, degree of differentiation and spread into regional lymph nodes (González-García *et al.*, 2009; Weijers *et al.*,

2009; Patel *et al.*, 2009; Rivera *et al.*, 2008; Shaw *et al.*, 2009). The present study is aimed at identifying the prevalence of tumour-related morphological and pathological factors such as the site, stage, degree of differentiation and lymph node involvement in oral and oropharyngeal squamous cell carcinomas in our population.

PATIENT AND METHOD

One hundred and fifty three patients with biopsy proven squamous cell carcinoma of the oral cavity and oropharynx who were treated in the Department of Otolaryngology and Head and Neck Surgery at Maulana

Azad Medical College and associated Lok Nayak Hospital between January 2006 and December 2007 were included in the study. Patients with other malignancies (i.e. lymphoma, sarcoma, minor salivary gland malignancies) and patients unwilling to comply were excluded.

All the patients underwent a clinical staging in accordance with the TNM system of the American Joint Commission of Cancer Staging (2002) at the time of presentation. On the basis of staging, the patients were divided into 2 groups: Group 1 with early stage disease at presentation (i.e. stage I and II) and group 2 with late stage disease at presentation (i.e. stage III and IV).

Age, sex, predisposing factors, previous treatment history, duration of symptoms, clinical evaluation and histopathological (biopsy) records were recorded. Required laboratory and radiological investigations were done and the patients were managed according to the standard protocols.

RESULTS

Of the 153 patients, 127 (83%) were male and 26 (17%) were female. The youngest patient was 22 years and the eldest 70 years (Fig. 1). One hundred and eleven patients (73%) presented with oral cavity and 42 patients (27%) with oropharyngeal carcinomas.

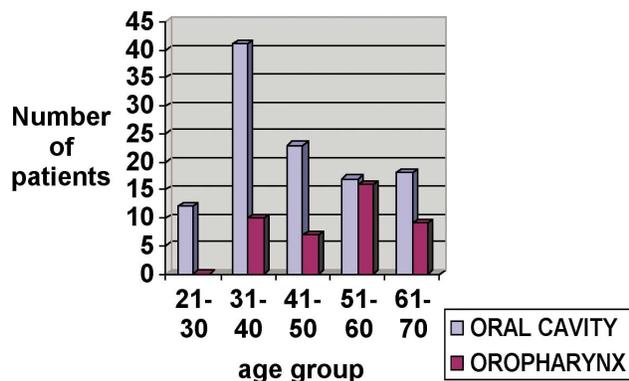


Fig. 1. Showing age distribution of patients with oral and oropharyngeal cancer.

Of the 111 patients presenting with oral cavity cancer, 90 (81%) were male and 21 (19%) were female. The commonest site was found to be buccal mucosa (41%) (Table I). The most common presenting symptom was a mass/ulcer in the oral cavity, followed by pain, dysphagia and trismus. The most commonly identifiable risk factor was tobacco chewing (Table II). Fifty-one patients each had a well differentiated and a moderately differentiated carcinoma on histopathological evaluation, whereas, 9 patients had a poorly differentiated squamous cell carcinoma (Table III). On examination, the tumour mass was exophytic/proliferative in appearance in 99 patients and ulcerative/infiltrative in 12 patients (Table IV) (Figs. 2 to 8). Forty-four patients had cervical lymphadenopathy on presentation.

Table I. Sites of presentation in the oral cavity.

Sub-site	Number of patients
Upper lip	Nil
Lower lip	09
Buccal mucosa	45
Oral tongue	18
Floor of mouth	09
Lower alveolus	12
Upper alveolus/Hard palate	18
Total	111



Fig. 2. Showing proliferative growth involving oral tongue.

Table II. Number of patients with various risk factors for different sub-sites in the oral cavity.

Sub-site	Upper lip	Lower lip	Buccal mucosa	Oral tongue	Floor of mouth	Lower alveolus	Upper alveolus
Risk Factor (n of patients)							
Smoking	Nil	Nil	18	07	06	04	15
Tobacco chewing	Nil	11	32	13	02	14	03
Alcohol	Nil	Nil	04	04	05	05	Nil



Fig. 3. Showing proliferative growth involving lower alveolus.



Fig. 6. Showing proliferative growth involving buccal mucosa.



Fig. 4. Showing proliferative growth involving upper alveolus.



Fig. 7. Showing infiltrative growth involving oral tongue.



Fig. 5. Showing proliferative growth involving lower lip.



Fig. 8. Showing infiltrative growth involving lower lip.

Of the 42 patients presenting with oropharyngeal cancer, 37 (88%) were male and 5 (12%) were female. The commonest site was found to be the base of tongue (Table V). The commonest presenting symptom was dysphagia. The most common identifiable risk factor was smoking (Table VI). Twenty-seven patients had a moderately differentiated squamous cell carcinoma on histopathological evaluation, whereas, 15 patients had a poorly differentiated squamous cell carcinoma (Table VII). On examination, the tumour mass was exophytic/proliferative in appearance in 27 patients and ulcerative/infiltrative in 15 patients (Table VIII), (Figs. 9 and 10). Twenty-nine patients had cervical lymphadenopathy on presentation.

Of the 153 patients, 59 patients (39%) presented with early stage disease (i.e. stage I and II) and 94 patients (61%)

presented with late stage disease (i.e. stage III and IV).

Of the 59 patients presenting with early stage disease, 50 were male and 9 were female with 51 patients presenting with oral cavity cancer and 8 patients with oropharyngeal cancer. Most of the patients with early stage disease presented in the age group of 31 to 40 years (Fig. 11).

Of the 94 patients presenting with late stage disease, 77 were male and 17 were female with 60 patients presenting with oral cavity cancer and 34 patients with oropharyngeal cancer. Most of the patients presented in the age group of 31 to 40 years (Fig. 2). On using Fisher Exact test, there was found to be a significant correlation ($p < 0.05$) between the site (i.e. oral cavity or oropharynx) and stage at presentation and lymphadenopathy at presentation.

Table III. Showing histological differentiation of tumours at various sub-sites in the oral cavity.

Sub-site	Histological grade of differentiation (n of patients)		
	Well differentiated	Moderately differentiated	Poorly differentiated
Upper lip	Nil	Nil	Nil
Lower lip	05	04	Nil
Buccal mucosa	14	22	09
Oral tongue	10	08	Nil
Floor of mouth	Nil	09	Nil
Lower alveolus	08	04	Nil
Upper alveolus/Hard palate	14	04	Nil
Total	51	51	09

Table IV. Showing gross appearance of tumours of oral cavity.

Site	Number of patients		
	Exophytic/Proliferative	Ulcerative/Infiltrative	Total
Lower lip	08	01	09
Buccal mucosa	40	05	45
Oral tongue	14	04	18
Floor of mouth	09	00	09
Lower alveolus	12	00	12
Upper alveolus	16	02	18

Table V. Sites of presentation in the oropharynx.

Sub-site	Tonsil	Base of tongue	Soft palate	Posterior pharyngeal wall	Total
n of patients	15	21	06	Nil	42

Table VI. Number of patients with various risk factors for different sub-sites in the oropharynx.

Sub-site	Tonsil	Base of tongue	Soft palate	Posterior pharyngeal wall
Risk Factor (n of patients)				
Smoking	10	18	05	Nil
Tobacco chewing	05	Nil	03	Nil
Alcohol	06	08	07	Nil

Table VII. Showing histological differentiation of tumours at various sub-sites in the oropharynx.

Sub-site	Histological grade of differentiation (n of patients)		
	Well differentiated	Moderately differentiated	Poorly differentiated
Tonsil	Nil	07	08
Base of tongue	Nil	17	04
Soft palate	Nil	03	03
Posterior pharyngeal wall	Nil	Nil	Nil
Total	Nil	27	15

Table VIII. Showing gross appearance of tumours of oropharynx.

Site	Number of patients		
	Exophytic/Proliferative	Ulcerative/Infiltrative	Total
Tonsil	12	03	15
Base of tongue	09	12	21
Soft palate	06	00	06

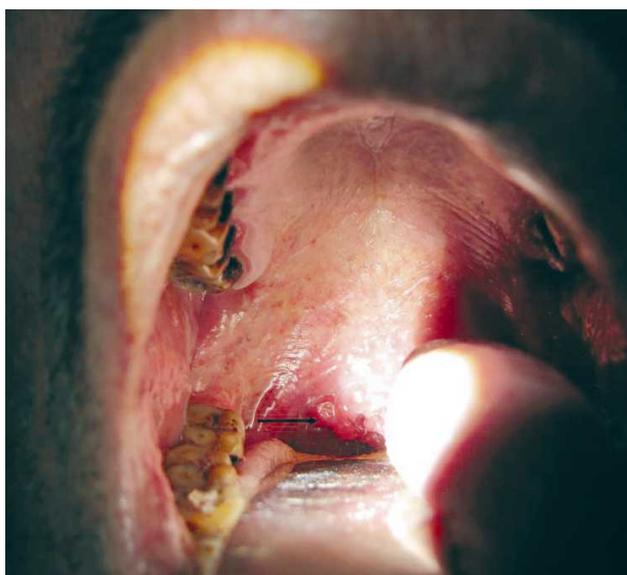


Fig. 9. Showing proliferative growth involving soft palate (black arrow).



Fig. 10. Showing proliferative growth involving tonsil and adjoining soft palate.

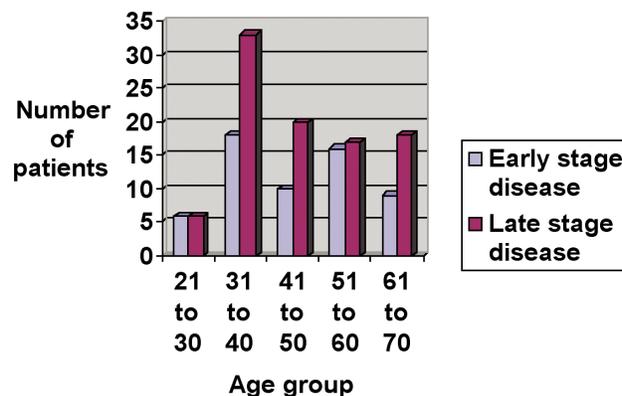


Fig. 11. Showing age distribution of patients presenting with early and late stage disease.

DISCUSSION

Head and neck is one of the commonest sites for squamous cell carcinomas in our country. Amongst HNSCCs, oral cavity and oropharyngeal carcinomas predominate (Elango *et al.*; Mehrotra *et al.*; Yeole *et al.*, 2006). Squamous cell carcinoma of the oral cavity is the most frequently observed form of head and neck cancer in Southeast Asia and is the sixth most common cancer worldwide (Al-Swiahb *et al.*, 2010).

India is a high-risk region for oral and oropharyngeal cancer due to a high prevalence of tobacco use, particularly chewing (in both sexes), bidi smoking and alcohol drinking in male population (Yeole *et al.*, 2003). Our country accounts for a quarter of the world burden of oral cancer (Parkin *et al.*, 1999). Apart from alcohol and tobacco, low level of

education, gender, dietary habits and poor oro-dental hygiene have also been found to be associated with a high risk of oral and oropharyngeal cancer (Güneri *et al.*, 2005).

Despite improvements in diagnosis and loco-regional treatment, the long-term survival in oral and oropharyngeal cancer has not increased significantly over the past four to five decades and is amongst the lowest of the major cancers world wide (Swango, 1996; Shiboski *et al.*, 2000). The observed 5-year survival rate in an Indian population has been reported to be as low as 30.5% in a recent study (Yeole *et al.*, 2003). Such low survival rates have been accredited to advanced age and advanced clinical stage at presentation. Other factors influencing the outcome of such cancers include tumour-related morphological and pathological factors like the degree of differentiation, site and size of tumour, etc. The present study is aimed at identifying such morphological and pathological characteristics of oral and oropharyngeal carcinomas in patients in our population.

Our study comprised 153 patients, out of which, 83% were male and 17% were female. This gender distribution was similar to a few of the studies in the past (Mehrotra *et al.*), whereas, some studies report a much higher incidence of females suffering from these cancers (Kumar *et al.*, 2001; Güneri *et al.*). A few of the studies have reported an increasing incidence of these cancers in the females (Gaitán-Cepeda *et al.*, 2010; Girod *et al.*, 2009).

Of these, 73% of the patients had cancer of the oral cavity with buccal mucosa as the most common site (41%). Although, oral tongue is considered the most common site for carcinoma in the oral cavity according to western literature (Watkinson *et al.*, 2000; Rivera *et al.*), the rampant use of chewable tobacco can be attributed to the relatively higher incidence of involvement of buccal mucosa in our country (Mehrotra *et al.*; Kumar *et al.*). Seventeen percent of the patients in our study had oropharyngeal cancer with the base of tongue as the commonest site (50%). The most commonly reported oropharyngeal site for cancer in western literature is the tonsil, whereas, some studies report base of tongue as the commonest site (Rivera *et al.*). Some of the studies have shown a significant association between the site of the tumour and overall prognosis, with the buccal mucosa tumours reportedly having a worse prognosis (Shaw *et al.*; Jerjes *et al.*, 2010). The most commonly identifiable risk factors for both oral as well as oropharyngeal cancer in our study were tobacco chewing, smoking and alcohol intake. The other reported risk factors in the past include low socio-economic status, gender, dietary habits and poor oro-dental hygiene (Güneri *et al.*).

Thirty-nine percent of the patients presented to us with early stage disease (stage I and II). These results were comparable to a study on Indian population in the past where 32% of the patients presented with a localized cancer (Yeole *et al.*, 2003). However, another Indian study in the past reported 50% of the patients presenting in early stages (Sankaranarayan, 1990). The clinical stage at the time of presentation has been shown to be significantly related to the overall prognosis, with the advanced stage disease having a worse prognosis (Watkinson *et al.*; González-García *et al.*).

Forty four out of 111 patients (40%) with oral cavity cancers had cervical lymphadenopathy on presentation. Twenty nine out of 42 patients (69%) with oropharyngeal cancers had cervical lymphadenopathy on presentation. The results were similar to most of the studies in the past (Rivera *et al.*; Batista *et al.*, 2010). The presence or absence of metastatic lymphadenopathy has been reported to be the single most important prognostic factor for these cancers (Jerjes *et al.*; Rapoport *et al.*, 2009).

Fifty one patients each out of 111 patients (46% each) with oral cavity cancers had well and moderately differentiated squamous cell carcinoma, whereas, 9 patients (8%) had a poorly differentiated squamous cell carcinoma. Twenty seven patients out of 42 (64%) with oropharyngeal cancer had a moderately differentiated squamous cell carcinoma, whereas, 15 patients (36%) had a poorly differentiated squamous cell carcinoma. None of the patients had a well differentiated squamous cell carcinoma. These results were similar to a few of the studies in the past (Rivera *et al.*; Jerjes *et al.*; Andisheh-Tadmir *et al.*, 2008). The degree of differentiation is considered as one of the important prognostic factor in head and neck cancers with poorly differentiated cancers having the worst prognosis (Weijers *et al.*; Al-Swiahb *et al.*, 2010). Some studies have also reported a significant correlation between the degree of differentiation of the cancer and metastasis to regional lymph nodes, with less differentiated cancers having a greater propensity for metastasis (Rivera *et al.*).

Thus, the present study was aimed at analyzing the tumour-related morphological and pathological factors in patients suffering from oral and oropharyngeal squamous cell carcinomas in our population. The identification of these preoperative morphological and pathological features that prelude a higher risk for the appearance of local recurrences and, thus, affect the overall prognosis may be of potential interest in determining the overall prognosis of these cancers in our population and which patients should benefit of a closer regular follow-up.

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RESUMEN: En nuestro país, la cavidad oral y orofaringe son los sitios más comúnmente afectados por cáncer, debido a la alta prevalencia del consumo de tabaco, especialmente, el tabaco de mascar. El objetivo de este estudio fue evaluar prospectivamente los aspectos clínico-patológicos y morfológicos de los pacientes que acuden con estas malignidades. Se estudiaron 153 pacientes con carcinoma de células escamosas de la cavidad oral y orofaringe que fueron tratados en el Servicio de Otorrinolaringología y Cirugía de Cabeza y Cuello entre enero del 2006 y diciembre del 2007 en Maulana Azad Medical College y hospitales asociados en Nueva Delhi. Se evaluaron pacientes de ambos sexos, 127 hombres (83%) y 26 mujeres (17%) con edades entre 22 a 70 años. Ciento once pacientes (73%) presentaron carcinoma de la cavidad oral y 42 (27%) carcinomas de la orofaringe. El sitio más común de presentación en la cavidad oral fue la mucosa bucal, mientras que la base de la lengua fue el sitio más común de la orofaringe. Entre los cánceres de la cavidad oral, 51 (46% cada uno) estaban bien diferenciados y moderadamente diferenciados, mientras que 9 (8%) fueron escasamente diferenciado. Sin embargo, entre los cánceres de la orofaringe, 27 (64%) fueron moderadamente diferenciados y 15 (36%) fueron pobremente diferenciados. En total, 73 pacientes se presentaron con adenopatías, de los cuales, 44 pacientes fueron en la cavidad oral y 29 en la orofaringe. Se observó una correlación significativa entre el sitio (es decir, la cavidad oral u orofaringe) y la presentación de adenopatías. Cincuenta y nueve pacientes (39%) se presentaron con enfermedad en estadio temprano (estadios I y II), mientras que 94 pacientes (61%) se presentaron con enfermedad en estadio tardío (etapas III y IV). Se observó una correlación significativa entre el sitio (cavidad oral u orofaringe) y la etapa en la presentación.

PALABRAS CLAVE: Carcinoma de células escamosas; Cavidad oral; Orofaringe; Cabeza y cuello.

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