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Demographic & clinicopathological profile of head & neck squamous cell carcinomas: an Indian insight

¹Dr Prerna Chadha, ²Dr Rahul Bhushan*, ³Dr. Farhana Siddiqui

¹Resident, Dept of pathology, Command Hospital, Lucknow

²Resident, Dept of Surgery, Era's Lucknow Medical college, Lucknow

³Resident, Dept of Pathology, Era's Lucknow Medical college, Lucknow

Corresponding author *

Abstract

Aims & objectives: To study & evaluate the epidemiological & clinicopathological profile of patients with head and neck squamous cell carcinomas (HNSCCs).

Materials & methods: This study included all resected HNSCC cases which presented between Dec 2012 & May 2015. Clinicopathological parameters such as age, gender, place of residence (rural/urban), site, initial presentation, habits (tobacco/alcohol consumption), histological grade/degree of differentiation, TNM staging at the time of presentation, along with locoregional recurrence/relapse were analysed for these patients and conclusions drawn to chart trends in the Indian population.

Results: Mean age of the patients was 61.33 years and the male: female ratio was 4:1. Most of the patients hailed from a rural background. The most common site of presentation was alveolus & tongue while the most common clinical presentation was a non healing ulcer. Tobacco chewing was the major factor involved in the development of HNSCCs. Majority of the HNSCCs were well differentiated and stage T2N0M0 at presentation. Locoregional recurrence/relapse was seen in only 30% of the cases.

Conclusion: The purpose of this study was the demographic and clinicopathological description of HNSCC. Most of the cases present late as the symptoms are ignored which often leads to a delayed treatment. Early diagnosis & prevention by means of health programs and mass education are warranted.

Key words: epidemiology, demographic, head and neck squamous cell carcinoma

Introduction

Cancer is a major cause of morbidity & mortality & Head and neck squamous cell carcinoma (HNSCC) is one of the most common neoplasms worldwide. HNSCC is a phenotypically & biologically heterogeneous disease with India accounting for about 30% of all new cases annually ^[1]. These cancers are a major detriment in a patient's quality of life due to the functional loss produced by treatment modalities^[2] even in the best of centres. HNSCC is primarily a disease of older adults, occurring most frequently in patients between the

ages of 51-60 years ^[3]. Most of the studies found in literature show a male predilection^[4]. A variety of etiopathological factors have been implicated in the pathogenesis of HNSCCs, of which tobacco and alcohol consumption have emerged as the major preventable risk factors. In addition, both have a synergistic effect ^[2].

HNSCCs have a varied presentation and Oral cavity & pharynx are the commonly affected sites. Within the oral cavity, most tumors arise from the floor of mouth and ventrolateral tongue ^[5]. The prognosis of HNSCCs is largely based on tumor

size, location & the presence of lymph node metastasis.

There are certain well recognized etiological factors associated with HNSCCs which can be avoided as a means of controlling this disease. It has a varied presentation as the head and neck is an anatomically complex region & early detection and treatment can be made possible if the symptoms are recognized and reported .

Material and methods

This study evaluated 90 cases of HNSCCs, both prospectively and retrospectively which presented to the hospital between Dec 2012 and May 2015. The cases were retrieved from the archives of Department of Pathology, Command Hospital, Central Command, Lucknow. Hematoxylin and eosin (H & E) staining was performed. Relevant clinical data in the form of case sheets, laboratory & radiological investigations were collected & noted.

Small biopsy specimens, cases with recurrent HNSCC post chemo/radiotherapy, cases other than squamous cell carcinoma, and cancers of the thyroid and salivary glands were excluded from the study.

Results

Clinicopathological data

The study sample comprised of 90 cases of HNSCCs which included 72 males (80%) and 18 females (20%). The male to female ratio was 4:1. The most common age group for HNSCCs was found to be 37-79 years. Mean age of the patients was 61.33±10.38 years. Majority of patients (n=46/90; 51.1%) were aged above 60 years. Only 2 (2.2%) patients were aged <40 years. The profile of patients was primarily from a rural background (n=64; 71.1%). There were only 26 (28.9%) patients hailing from an urban background.

Distribution of cases according to the age, sex and background of the patients has been shown in Table 1 below:

Table 1: Demographic and General Profile of Patients enrolled in the study

SN	Characteristic	No. of patients	Percentage
1.	Age (Years)		
	≤40	2	2.2
	41-50	14	15.6
	51-60	28	31.1
	61-70	29	32.2
	>70	17	18.9
	Mean Age±SD (Range)	61.33±10.38 (37-79 Yrs)	
2.	Gender		
	Male	72	80.0
	Female	18	20.0
3.	Place of residence		
	Rural	64	71.1
	Urban	26	28.9

Site

Alveolus and tongue/base of tongue were the most commonly involved sites (n=26; 28.9% each) in Table 2 shows distribution of cases based on the site.

our study followed by the buccal mucosa (n=16; 17.8%), lip (n=11; 12.2%), gingiva/gingivobuccal sulcus (n=8; 8.9%) and larynx (n=3; 3.3%).

Table 2: Distribution according to the site involved

SN	Site involved	No. of patients	Percentage
1.	Alveolus	26	28.9
2.	Tongue/Base of tongue	26	28.9
3.	Buccal mucosa	16	17.8
4.	Lip	11	12.2
5.	Gingiva/Gingivobuccal sulcus	8	8.9
6.	Larynx	3	3.3

Risk factors

Tobacco chewing was found to be the most common substance of abuse amongst the 90 patients studied and majority of them chewed tobacco in the form of ‘khaini’, betel quid or ‘supari’ (n=73;81.1%).

Approximately half of the patients were smokers (n=48; 53.3%). Alcohol use was reported by 14 (15.6%) patients. There were 6 patients having none of the aforementioned risk factors. A total of 40 (44.4%) patients indulged in more than one of these practices.

Table 3 below shows the distribution of patients based on the major risk factors:

Table 3: Distribution according to the major risk factors

SN	Characteristic	No. of patients	Percentage
1.	No habit	6	6.7
2.	Tobacco chewing	73	81.1
3.	Smoking	48	53.3
4.	Alcohol	14	15.6

Clinical presentation

A non healing ulcer was the most common initial clinical presentation (64.4%) followed by local swelling (14.4%). Dysphagia was seen in 7 (7.8%) patients while restriction of mouth opening in 6 (6.7%). A total of 5 patients (5.6%) reported of a growth and 4 (4.4%) patients had cervical lymphadenopathy as the presenting complaint.

Toothache and white patch(leukoplakia) were found to be the presenting complaints in 2 (2.2%) patients each. There was 1 (1.1%) patient who presented with a complaint of hoarseness of voice. A total of 8 patients had more than one presenting complaints.

Table 4 depicts the distribution of patients based on the initial clinical presentation:

Table4: Initial clinical presentation

SN	Characteristic	No. of patients	Percentage
1.	Ulcer	58	64.4
2.	Swelling	13	14.4
3.	Ulceroproliferative growth	5	5.6
4.	Dysphagia	7	7.8
5.	Restriction of mouth opening	6	6.7
6.	Lymphadenopathy	4	4.4
7.	Hoarseness of voice	1	1.1
8.	Toothache	2	2.2
9.	White patch(leukoplakia)	2	2.2

Histopathological grading/Degree of differentiation

Majority of the HNSCCs were well differentiated histopathologically (n=52; 57.8%). A total of 37

(41.1%) were moderately differentiated while only 1 (1.1%) was poorly differentiated.

Table 5 below shows the distribution of cases according to the histopathological grade:

Table 5: Distribution according to Histopathological Grading

SN	Grade	No. of patients	Percentage
1.	Poorly differentiated	1	1.1
2.	Moderately differentiated	37	41.1
3.	Well differentiated	52	57.8

Distribution according to the tumor size, lymph node status and distant metastasis at the time of presentation (TNM staging)

Maximum number of cases amongst the 90 cases in our study, presented with a clinical stage of T2 (n=45; 50.0%), while 21 patients (23.3%) had a tumor size corresponding to a clinical stage of T1. A total of 11 (12.2%) patients had a clinical stage of T3 while 13 of the patients (14.4%) had a stage of T4 at presentation.

Majority of the patients did not show nodal involvement initially (n=67; 74.4%). Nodal status was N1 in 15 (16.7%) and N2 in 8 (8.9%) of the patients included in this study.

Only 2 (2.2%) patients had distant metastasis at the time of presentation.

Table 6 depicts the distribution of cases according to the TNM staging:

Table 6: Distribution according to TNM Staging

SN	Staging	No. of patients	Percentage
I.	Tumor Stage		
	T ₁	21	23.3
	T ₂	45	50.0
	T ₃	11	12.2
	T ₄	13	14.4
II.	Nodal status		
	N ₀	67	74.4
	N ₁	15	16.7
	N ₂	8	8.9
III.	Metastasis		
	M0	89	98.9
	M1	1	1.1

Locoregional relapse/ recurrence

Follow up could be carried out in 55 cases, of which 17 (30.9%) cases showed recurrence.

Discussion

HNSCC is the sixth most common neoplasm in the world with 5,50,000 new cases being detected per year^[6]. Early detection of this malignancy is imperative in the institution of prompt and correct therapy. The cornerstone of early detection is a better understanding of the epidemiology, risk factors and the broad spectrum of presentations in this neoplasm.

As opined by various authors, head and neck cancer is known to occur primarily in older adults, with most patients being more than 45 years of age^[7]. Although recent studies have demonstrated a steady rise in the incidence of HNSCCs in younger adults (18-45years) due to HPV related etiology^[8]; such a trend was not seen in our study. This possibly indicates that HNSCC in India has predominantly a non HPV related, tobacco and alcohol associated etiology

The disease shows a male preponderance in almost all countries, with rates two to four times higher among males than females^[9]. This was in

concordance with our findings and may be suggestive of a lower incidence of tobacco and alcohol consumption in females by and large. However, there may exist a significant bias in this study as it was conducted in an Armed forces hospital where there is a male preponderance.

As opposed to our results most of the studies available in literature, show a higher prevalence of HNSCCs in urban as compared to rural areas^[10]. The possible reason for this variation might be because, in an Indian scenario, the practices of betel quid chewing, consumption of “khaini” or supari, smoking or alcohol consumption, which are well recognized risk factors for HNSCCs, are more common in the rural population.

In our study, the most common site of HNSCC was alveolus and tongue/base of tongue (n=26; 28.9% each) followed by the buccal mucosa and lip. This is in concordance with other studies, which too, showed that the most common site of involvement in HNSCCs was the base of tongue and alveolus^[5,11]. The probable reason for such a

predilection might be due to the fairly common practice of chewing betel quid which is kept in the buccal sulcus, in close proximity to the alveolus

In our study, we stressed on the three common etiological agents; namely, tobacco chewing, smoking and excessive alcohol consumption. We found that, tobacco chewing was the most common practice amongst the 90 patients studied. Majority of them (81.1 %; n=73) chewed tobacco in the form of “khaini”, betel quid or “supari”. 53.3% (n=48) of the patients smoked tobacco while only 15.6 % (n=14) of the patients consumed alcohol exclusively. 44.4% of the patients indulged in more than one practices, whereas, only 6.7% (n=6) of the patients did not consume tobacco or alcohol in any form.

Similar results have been obtained by other studies, which have also demonstrated tobacco chewing and smoking as common etiological agents^[12,13]

10 of the 90 cases studied were noted to be partially edentulous although, 4 of these also indulged in tobacco and/or alcohol consumption. Out of the 6 cases who did not consume tobacco/alcohol in any form, 5 of them (83.3%) were partially edentulous. Hence, this could represent another possible risk factor in the etiopathogenesis of HNSCCs. Only a few studies are currently available in literature debating the role of inadequate dental status as an independent risk factor for HNSCC^[14], and these postulate a similar view. However, due to the limited number of patients in this group, these results need to be viewed with caution.

The most common presenting complaint found in our study was a non healing ulcer (64.4%; n=58), followed by local swelling (14.4%; n=13). This is in concordance with the fact that the tongue was the most common site of HNSCC in our study. As has been demonstrated in various studies, most

head and neck squamous cell cancers present with symptoms pertaining to their origin or the primary site of involvement^[15]

Most of the patients presented in Stage II (T2N0M0), while most of the HNSCCs; i.e. 57.8% were well differentiated histopathologically (n=52) This is in keeping with other studies mentioned in literature, wherein the most commonly found histological grade was well differentiated although no comment on the prevalence of carcinoma based on differentiation has been found.

Locoregional recurrence/ relapse was found in 30.9 % of the cases .However, these results must be interpreted with caution as follow up could be carried out in only 55 cases.

Conclusion

The epidemiological data of patients with HNSCCs in India has been outlined in this study. The most common age group at presentation is 61-70 years (32.2%),with a strong male predilection (4:1 ratio). The majority of the patients (71.1 %) hailed from a rural background. Alveolus and tongue/base of tongue were the most commonly involved sites (n=26; 28.9% each). Most of the patients practiced the habit of tobacco consumption in the form of smokeless tobacco chewing (81.1%). Majority of the cases were reported at an advanced stage, which shows the poor control of this disease amongst the population.

Mass education campaigns about the risk factors in HNSCCs, awareness about the importance of early diagnosis and treatment along with the varied presentation of this disease are warranted in order to control its spread. Hence, a multidisciplinary approach involving various health professionals along with regular dental checkups and oral hygiene programs targeting the population are required.

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