

CLINICAL PRESENTATION AND PATHOLOGICAL STUDY OF HEAD AND NECK CANCER IN MALWA REGION OF PUNJAB

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ABSTRACT

BACKGROUND

Head and neck cancer is one of the most common cancers worldwide, and more than 90% of these tumours are squamous cell carcinomas. Oral cancer is the most common form of cancer and of cancer-related deaths in men in India. Tobacco and alcohol are the two strongest aetiological factors responsible for the development of head and neck squamous cell carcinoma, but in contrast younger patients often do not present these traditional risk factors, which leads to suspect other potential risk factors. Its high risk in the Indian subcontinent is related to the popularity of pan-tobacco (a combination of betel leaf, lime, areca nut and sun-cured tobacco) chewing in the region.

The objective of this study was aimed at analysing the incidence, aetiology and clinical presentation of head and neck carcinoma in our population and to evaluate the pathological findings and also the TNM staging in patients with head and neck carcinoma.

MATERIALS AND METHODS

We conducted a study on 150 diagnosed cases of head and neck cancer in the ENT Department of Government Medical College/Rajindra Hospital, Patiala, Punjab, India. Detailed history of the selected patients was taken and tumour data including site, subsite, grade and TNM stage were collected.

RESULTS

The maximum prevalence of patients with head and neck cancer was seen in the fifth decade (34.66%) followed by sixth decade. The male-to-female ratio was 70:30. The highest incidence was in the persons belonging to labourer group followed by farmers and businessmen. Chronic smoking and drinking played a major role in causing cancer in these groups. Most frequent site involved was oral cavity (39.33%) followed by oropharynx (23.33%). In the oral cavity, tongue was the most common site followed by buccal mucosa, whereas in oropharynx base of tongue was the most common subsite followed by retromolar trigone. Maximum incidence of hypopharyngeal carcinoma, especially in the post-cricoid region was seen in female patients (84.6%). Oral cavity cancers were most commonly presented with mass/growth followed by non-healing ulcers, whereas oropharyngeal cancers were most commonly presented with dysphagia followed by odynophagia. Majority of the patients presented with either well-differentiated or moderately differentiated squamous cell carcinoma. Maximum number of patients presented with early tumour staging: T₁ and T₂.

CONCLUSION

This study was aimed at analysing the age, sex distribution, role of aetiological factors, extent and clinical presentation including site, subsite, TNM stage and histopathological grading. In non-smoking and non-drinking patients, sharp tooth, environmental smoke and occupational exposure may contribute to squamous cell carcinoma. High index of suspicion was required to diagnose these lesions early, even when history of smoking and drinking was absent.

KEYWORDS

Head and Neck, Squamous Cell Carcinoma, Oral Cavity.

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BACKGROUND

Head and neck cancer is one of the most common cancers found worldwide; more than 90% of these tumours are

Squamous Cell Carcinoma (SCC) accounting for 5% to 10% of all new cancers in Europe and the USA.¹ Head and Neck Squamous Cell Carcinoma (HNSCC) is an anatomically heterogeneous group of neoplasms arising from the mucosal surface of the oral cavity, oropharynx, hypopharynx, larynx, sinuses and other sites within the upper aerodigestive tract. The annual global incidence and mortality rates of HNSCC are 540,000 and 271,000, respectively.² The International incidence of HNSCC (particularly of the oral tongue and oropharynx) has increased in young adults.³ Surprisingly, this increase has occurred concurrently with a decreasing prevalence of cigarette smoking in the general population; importantly, this observation would not be expected if the

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only primary risk factors for all HNSCC were alcohol and tobacco abuse.⁴ Incidence of oral cavity SCC and oropharyngeal SCC in patients under the age of 45 years increases for accounts for approximately 1% - 6%.^{5,6} Tobacco and alcohol are the two strongest aetiological factors for the development of HNSCC, both independently and synergistically.^{7,8} They have long been implicated as the traditional risk factors for HNSCC in adults, regardless of age. A study evaluated betel-quid chewing as a risk factor for oral cancer and studies in India have examined the role of betel quid with and without tobacco in oral cancer cases, which concluded that adding tobacco to the betel quid significantly increased the risk of developing malignancies.⁹ In contrast to the 'typical' patient with HNSCC, younger patients do not often present the traditional risk factors of alcohol and/or tobacco exposure. This leads to suspect that other potential agents such as inherent genetic factors, viral infections and behavioural risk factors may be involved.⁴ Oral cancer is commonly seen in men of the developing countries.¹⁰ Oral cancer is the most common form of cancer and of cancer-related deaths seen in men from India.^{10,11} Its high risk in the Indian subcontinent is related to the popularity of pan-tobacco chewing in the region.¹² Oropharyngeal cancer forms the predominant group of cancer in the people from Punjab. Oropharyngeal cancers include cancer of the base of tongue, tonsil, soft palate cancer and NPC (Nasopharyngeal Carcinoma). NPC has been the second most common malignancy found in men for the past decade contributing to approximately 11% of all malignancies of the same sex. The significant difference in the geographical, ethnic and dietary habits within our country could predispose people from the north-eastern region of India for high incidence of NPC. Cancer of larynx (voice box) is one of the common cancers seen among men from the Indian subcontinent. Hypopharyngeal cancers are more common in men than in women. The most common site of origin of hypopharyngeal cancer is the pyriform sinus followed by the posterior pharyngeal wall and post-cricoid area (20% - 25%).¹³ According to the data from cancer registries in India, oesophageal cancer is the second most common cancer among men and the fourth most common cancer among women.¹⁴ Nasal and paranasal cavities are among the most common sites for malignancies in nickel workers and in those with industrial exposure to fumes and organic chemicals. Lymph node in the neck may be enlarged because of primary malignant tumours or because of the metastatic spread from the cancer of head and neck region, lung, breast, stomach and testes.

MATERIALS AND METHODS

This study was conducted on 150 diagnosed cases of head and neck cancer from the ENT Department of Government Medical College and Rajindra Hospital, Patiala, Punjab, India. Detailed history of the selected patients with head and neck cancer was taken as per proforma after taking informed consent which also included history of tobacco smoke exposure, personal history and family history of head and neck cancer. Tumour data including site, subsite, grade and TNM stage were collected. Each patient was subjected to detailed clinical examination and investigation. On the basis of the above clinical examination and investigation, incidence and aetiology of head and neck cancer was calculated and

TNM staging was evaluated. All the information was entered in the predesigned proforma and analysed statistically and $P < 0.05$ was considered significant and $P < 0.001$ was considered highly significant at the end of the study period.

Acceptance Criteria-

Age: All age group

Gender: Both

Healthy Volunteers: No

Inclusion Criteria

- All subjects with newly diagnosed, biopsy proven carcinoma of head and neck.
- The patient is able to understand and give informed consent (in case of minor- guardian of the patient)

Exclusion Criteria

- Patients with suspicion of head and neck cancer in which final diagnosis had not been made.
- Patients who do not have cancer of head and neck.
- Patients who have a recurrence of their cancer of head and neck.
- Patient has a psychiatric illness or developmental delay, which would interfere with understanding of the study and provision of informed consent.

RESULTS

Histopathological examination confirmed 150 patients with malignancy in the region of head and neck admitted in the ENT Department of Rajindra Hospital, Patiala. The maximum prevalence of patients with head and neck cancer was seen in the fifth decade (34.66%) followed by sixth decade (23.33%). Of the 150 patients with head and neck cancer included in our study 105 were men (70%) and 45 were women (30%), which indicate that incidence of head and neck cancer was 2.5 times higher in men as compared with women. The highest incidence of head and neck cancer reported in this study was in the persons belonging to labourer group (54 cases, 49%) followed by farmers (25 cases, 22.72%) and businessmen (17 cases, 15.45%). Most of the women in this study were housewives. Poor orodental hygiene and Plummer-Vinson syndrome were found to be the most frequent predisposing factors affecting the housewives, whereas chronic habits of smoking and drinking alcohol played a major role in causing cancer in labourers, farmers and businessmen. The incidence of head and neck cancer was maximum in poor people; therefore, poor people have more risk to cancer because of their unhygienic living standards, poor orodental hygiene and poor nutrition leading to anaemia, thus Plummer-Vinson syndrome. Incidence of cancer in head and neck region was 3.6 times more in the rural area of Malwa region of Punjab as compared with the 32 cases (21.33%) seen in the urban area. Lack of awareness to seek an early medical advice because of illiteracy and unhygienic conditions of living may be responsible for higher incidence. Cancer of oral cavity was the most common cancer seen in head and neck region (39.33%). It was followed by the cancer of oropharynx and laryngopharynx. Approximately, 84.7% of the patients with oral cavity cancer present with growth or mass, whereas 65.7% and 85.29% of the patients with oropharyngeal and hypopharyngeal carcinoma present with dysphagia, respectively. A total of 61.5% of the patients with laryngeal carcinoma present with

the symptom of change in voice, whereas 38.46% of them present with the symptom of lump in the neck. In oral cavity SCC maximum incidence was seen in oral tongue (16.66%) followed by buccal mucosa (14%), whereas in oropharyngeal SCC maximum incidence was seen in base of tongue (11.33%) followed by retromolar trigone (6%). In hypopharynx, maximum incidence was seen in post-cricoid region (9.33%) followed by pyriform fossa (5.33%). In larynx carcinoma, maximum incidence was seen in glottis region (2%) followed by supraglottic region (1.33%). In lymph node carcinoma, maximum incidence was occult primary (4.66%) followed by known primary (1.33%). In salivary glands tumour, major

gland especially parotid gland showed incidence of 2% followed by minor glands (1.33%). In nasopharynx and thyroid gland, maximum incidence was 1.33%. In nose and paranasal sinuses incidence of carcinoma recorded was 2%, and in ears, cervical oesophagus and mandible incidence of carcinoma was 0.66%. Moderately differentiated SCC predominated in our study. In case of moderately differentiated SCC, 83.7% had oral cavity cancers and 85.7% had oropharyngeal cancers. Maximum patients presented with early tumour staging, that is T1 and T2 (87.28%). Cases of carcinoma of nasopharynx, thyroid and oesophagus presented to us were in T2 stage (100%).

Sl. No.	Site	No. of Cases		No. of Cases		Percentage	
		Males		Females		Total	
		No.	% Age	No.	% Age	No.	% Age
1.	Oral Cavity	39	37.1	20	44.44	59	39.33
	a. Buccal mucosa	12	11.4	9	20	21	14
	b. Floor of mouth	7	6.66	5	11.11	12	8
	c. Tongue	19	18	6	13.33	25	16.66
	d. Lip	1	0.95	-	-	1	0.66
2.	Oropharynx	24	22.85	11	24.44	35	23.33
	a. Tonsillar region	6	5.71	-	-	6	4
	b. Soft palate	-	-	3	6.66	3	2
	c. Case of tongue	11	10.47	6	13.33	17	11.33
	d. Retromolar trigone	7	6.66	2	4.44	9	6
3.	Laryngopharynx	11	10.47	11	24.44	22	14.66
	a. Pyriform fossa	5	4.76	3	6.66	8	5.33
	b. Post-cricoid region	6	5.71	8	17.77	14	9.33
4.	Larynx	7	6.66	1	2.22	8	5.33
	a. Supraglottic	2	1.90	-	-	2	1.33
	b. Glottic	2	1.90	1	2.22	3	2
5.	Lymph Nodes	8	7.61	3	6.66	11	7.33
	a. Occult primary	5	4.76	2	4.44	7	4.66
	b. Known primary	1	0.95	1	2.222	2	1.33
6.	Salivary Glands	3	2.85	2	4.44	5	3.33
7.	Nasopharynx	2	1.90	-	-	2	1.33
8.	Thyroid Gland	-	-	2	4.44	2	1.33
9.	Nose and Paranasal Sinuses	3	2.85	-	-	3	2
	a. Lateral wall of the nose	2	1.90	-	-	2	1.33
	b. Maxillary antrum	1	0.95	-	-	1	0.66
10.	Ears	1	0.95	-	-	1	0.66
11.	Cervical Oesophagus	1	0.95	-	-	1	0.66
12.	Mandible	1	0.95	-	-	1	0.66

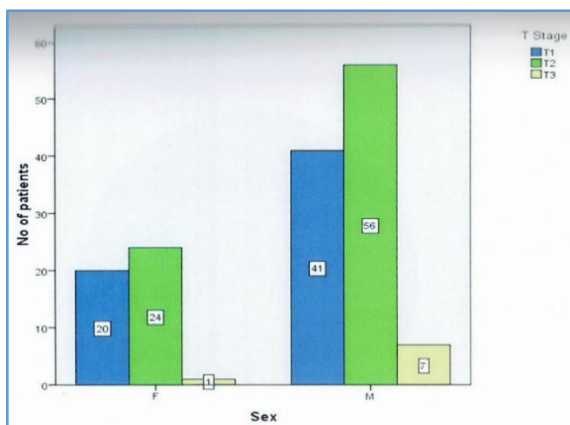
Table 1. Incidence of various Head and Neck Cancer

Symptoms	Oral Cavity	Oropharynx	Hypopharynx	Larynx	Salivary Gland	Nasopharynx	Thyroid
Mass/growth	50	2	-	3	5	3	5
Non-healing ulcer	16	-	-	-	-	-	-
Bleeding	7	-	2	-	-	2	-
Odynophagia	5	20	13	5	-	-	1
Dysphagia	-	23	29	4	-	-	1
Lump in the neck	-	17	25	5	-	3	3
Change in voice	-	-	8	8	-	-	1
Mass in preauricular region	-	-	-	-	5	-	-
Conductive hearing loss	-	-	-	-	3	-	-

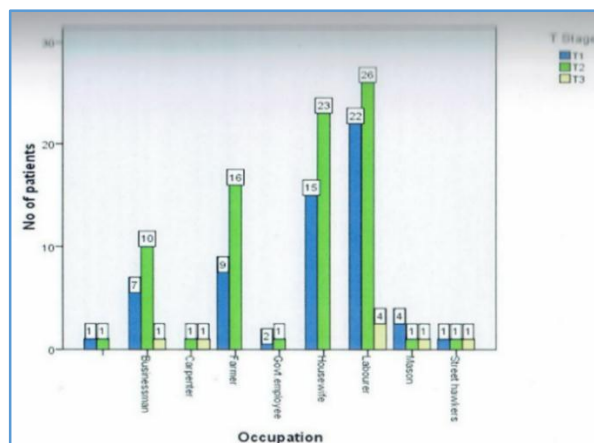
Table 2. Symptoms

Sl. No.	Tumour Types	No. of Cases		No. of Cases		Percentage Total	
		Males		Females		No.	% Age
		No.	% Age	No.	% Age		
1.	Squamous Cell Carcinoma	57	38	33	22	90	60
	a. Well differentiated	19	12.66	13	8.66	32	21.33
	b. Moderately differentiated	29	19.33	15	10	44	29.33
	c. Poorly differentiated	8	5.33	5	3.33	13	8.66
	d. Verrucous type	1	0.66	-	-	1	0.66
2.	Basal cell carcinoma	5	4.76	3	6.66	8	5.33
3.	Basisquamous carcinoma	3	2.00	3	6.66	6	4.00
4.	Metastatic carcinomatous deposits	12	8.00	8	5.33	20	13.33
5.	Salivary glands	5	3.33	2	1.33	7	4.66
	a. Adenoid cystic carcinoma	3	2.0	-	-	3	2.00
	b. Mucoepidermoid carcinoma	1	0.66	1	0.66	2	1.33
	c. Pleomorphic adenoma	1	0.66	-	-	1	0.66
	d. Undifferentiated carcinoma	-	-	1	0.66	1	0.66
6.	Thyroid gland	-	-	4	2.66	4	2.66
	a. Follicular carcinoma	-	-	3	2.00	3	2.00
	b. Undifferentiated giant cell carcinoma	-	-	1	0.66	1	0.66
7.	Nose						
	Papillary adenocarcinoma	1	0.66	-	-	1	0.66
8.	Lymphoma	2	1.90	-	-	2	1.33
	a. Non-Hodgkin's lymphoma	1	0.66	-	-	1	0.66
	b. Hodgkin's lymphoma (lymphocytic predominant)	1	0.66	-	-	1	0.66
9.	Fibrosarcoma	2	1.33	-	-	2	1.33
10.	Malignant mesenchymal tumour	2	1.33	-	-	2	1.33
11.	Chondrosarcoma	1	0.66	-	-	1	0.66
12.	Sarcoma botryoides	1	0.66	-	-	1	0.66
13.	Meibomian	4	3.8	3	6.6	7	4.66

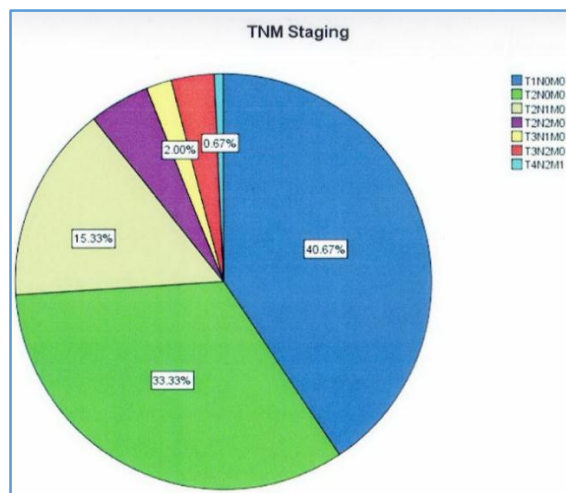
Table 3. Distribution of various Types of Tumour in Head and Neck Cancer



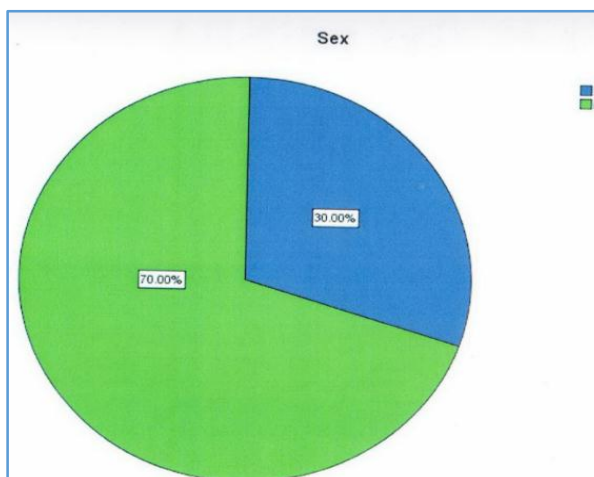
Graph 1



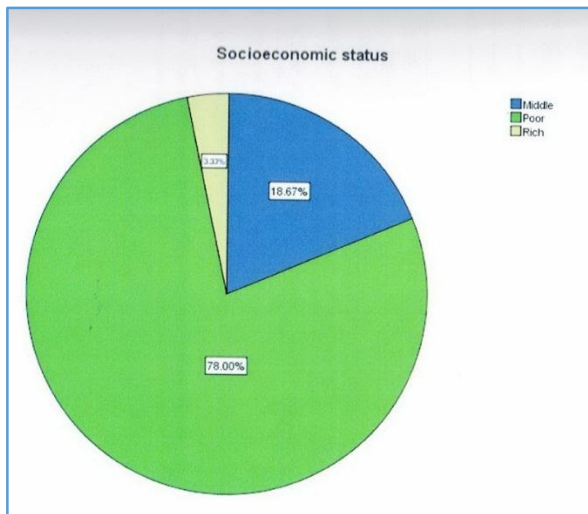
Graph 3



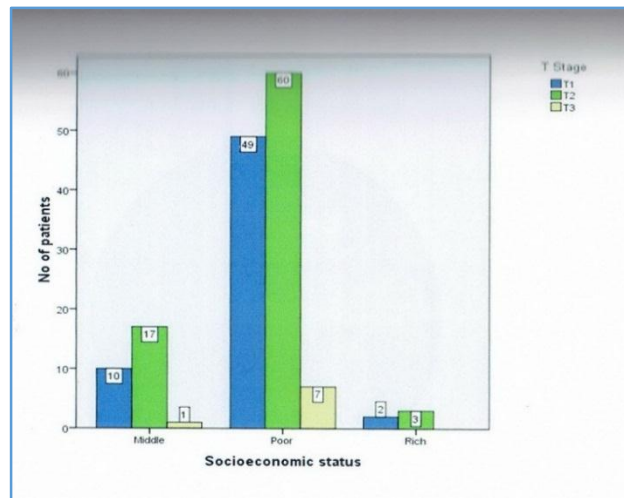
Graph 2



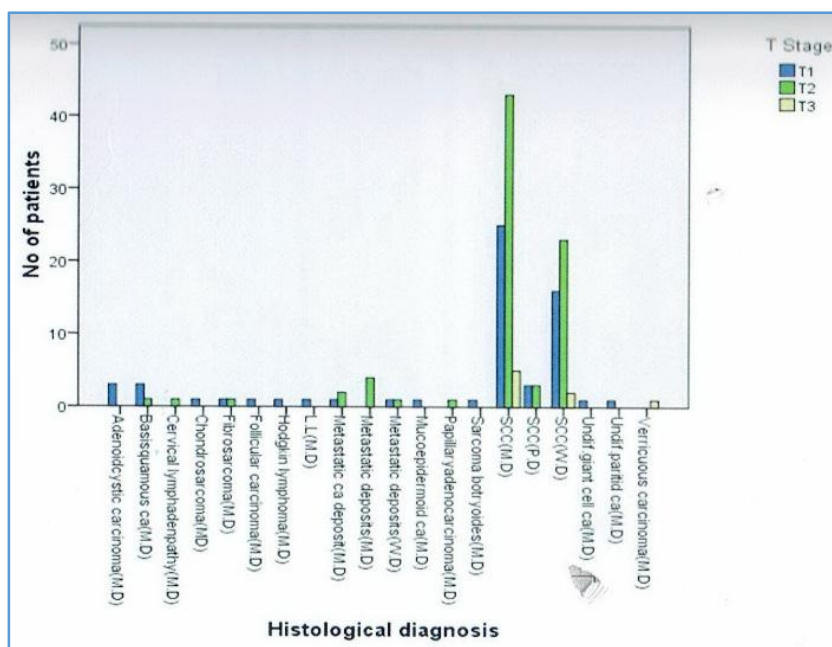
Graph 4



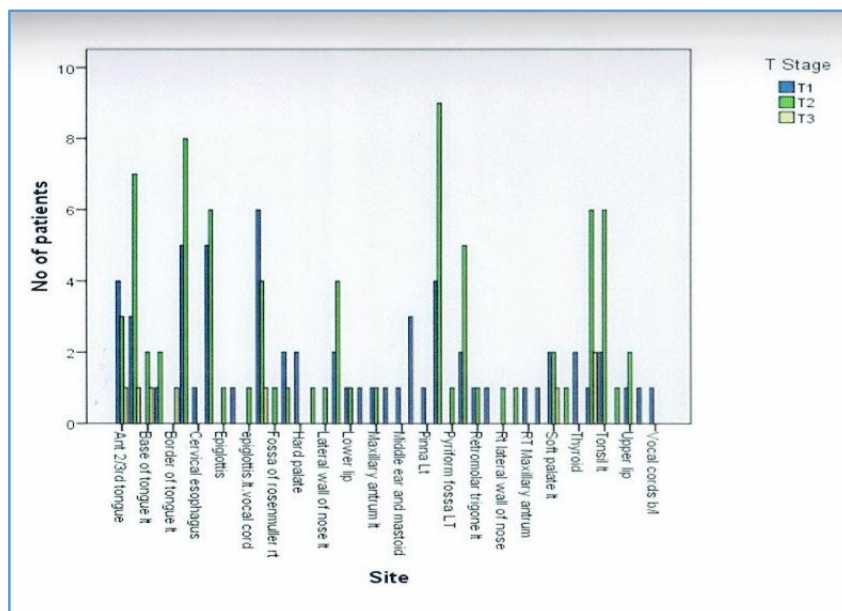
Graph 5



Graph 6



Graph 7



Graph 8

DISCUSSION

In this study, maximum prevalence of patients with incidence of head and neck cancer was seen in the fifth decade (34.66%) followed by sixth decade. The incidence of head and neck cancer decreased below the age of 30 years and above the age of 60 years. Our study was compatible with the study by Sharma et al.¹⁵ Our study comprised of 150 patients, of which 105 patients were men and 45 patients were women. These findings were in concordance with the results of various previous studies conducted in India. In our study, the most frequent site involved was oral cavity, subsite was the oral tongue 16.66% followed by buccal mucosa 14%, floor of mouth and lip. Our study was congruent with the studies conducted by Dahlstrom et al,¹⁶ Wiseman et al¹⁷ and Harris et al.¹⁸ In addition, we found that among the oral tongue growths, lateral border of tongue was most commonly involved. The dental professionals as well as ENT surgeons should be cognizant of the increasing incidence of oral tongue SCC and should consider oral tongue SCC, while evaluating patients with tongue lesions even when history of smoking and alcohol abuse was not present. The most common oropharyngeal subsite in our patients was the base of the tongue 11.33% followed by retromolar trigone 6%. Dahlstrom et al¹⁶ and Wiseman et al¹⁷ also found the most common oropharyngeal subsite to be the base of the tongue followed by tonsillar fossa. First symptom in cancer oropharynx was difficulty in swallowing. Other presenting symptoms were trismus and cervical lymphadenopathy. SCC was most commonly seen in oropharynx, dominated by moderately differentiated carcinoma. Hypopharyngeal carcinoma constituted 14.66% of head and neck cancer. Cancer in most of the cases was seen arising from pyriform fossa (9.33%) and post-cricoid (5.33%) region. Stefani and Eells¹⁹ recorded pyriform fossa to be the most common site of origin. The development of hypopharyngeal cancers in the post-cricoid area in women in the age group of 30 to 50 years without a history of tobacco or alcohol use was associated with Plummer-Vinson syndrome, also termed as Paterson-Brown-Kelly syndrome.²⁰⁻²² This syndrome was characterised by hypopharyngeal webs, dysphagia, weight loss and iron-deficiency anaemia. A substantial proportion of hypopharyngeal cancers could be attributable to occupational exposures.²³ The most common form of clinical presentation in our present cases was dysphagia, which was seen in 19 of the 22 cases. Larynx was involved in 5.33% of the patients with head and neck cancer in our study. Jussawalla et al²⁴ have correlated the development of laryngeal carcinoma with smoking habits. In a study by Sharma et al,¹⁵ the prevalence of laryngeal SCC constituted 16.7% of the total HNSCC. SCC was predominant. Malignancy involving cervical lymph nodes was observed in eight cases (7.33%), of which five patients had occult primary and two had lymphoma. Primary site in case of metastatic carcinoma of cervical lymph nodes was nasopharynx in 37.5% of the patients. In this study, the incidence of cancer in the salivary glands was 3.33% [three cases] of the patients with head and neck cancer. In our study, parotid was commonly affected. In a study conducted in Manipur, Bhatia and Jha²⁵ reported incidence of carcinoma of the salivary gland to be 2.9% of the patients with head and neck cancer. Nasopharynx constituted 1.33% of the patients with head and neck cancer. Sharma et al¹⁵ found nasopharyngeal carcinoma in 1.05% of the patients. In our

study, women above 60 years of age presented with complaint of nasal obstruction and nasal bleeding. In our study, nasopharyngeal carcinoma involved roof of nasopharynx followed by fossa of Rosenmuller. All the cases belonged to SCC and both were moderately differentiated. Thyroid was involved in 1.33% of the patients with head and neck cancer. In our study, women dominated the incidence of thyroid carcinoma. In this study, incidence of nose and paranasal sinuses was 2%. Nasal obstruction was the most common complaint because of the presence of mass in nasal cavity. In our study, only 0.66% of the patients with head and neck cancer showed symptoms involving ear and the patients presented with growth on pinna, whereas Bhatia and Jha²⁵ found it to be 0.8% in a study conducted by them in Manipur. In this study, incidence of oesophagus carcinoma was 0.66%. Wynder et al²⁶ concluded that excessive tobacco, alcohol consumption and dietary deficiencies can cause oesophagus cancer. In this study, patients had SCC of moderately differentiated type.²⁶ Carcinoma of mandible constituted 0.6% of the patients with head and neck cancer. In our study, oral cavity cancers most commonly presented with mass/growth (84%) followed by non-healing ulcer (27.3%) and oropharyngeal cancers most commonly presented with dysphagia (65.7%) followed by odynophagia (57.1%). Strong suspicion was required for early diagnosis and management, even when patient was not having any history of tobacco or alcohol abuse. Dahlstrom et al¹⁶ observed that majority of patients presented with either moderately differentiated or well-differentiated SCC. In our study, it was observed that majority of patients presented with either well-differentiated or moderately differentiated SCC. The degree of differentiation was considered as one of the important prognostic factors in head and neck cancers. Well-differentiated SCC showed good prognosis and poorly differentiated cancers showed worst prognosis. In this study, we found that maximum patients with oral cavity SCC (87.28%) presented with early tumour staging, that is T₁ and T₂. In oropharyngeal SCC, maximum patients (88.5%) presented with tumour staging—T₁ and T₂. Harris et al¹⁸ also reported maximum number of patients (72%) who presented with T₁ and T₂ stage (%). We also acknowledge some limitations to our study. One limitation of our study was the relatively small patient cohort. Second limitation was that we did not include HPV status in our patients. High index of suspicion was required to diagnose these lesions early, even when history of smoking and drinking was absent.

CONCLUSION

This study was aimed at analysing the age, sex distribution, role of aetiological factors, extent and clinical presentation including site, subsite, TNM stage and histopathological grading. In non-smoking and non-drinking patients, sharp tooth, environmental smoke and occupational exposure may contribute to squamous cell carcinoma. High index of suspicion was required to diagnose these lesions early, even when history of smoking and drinking was absent.

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