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Original Research Article

EPIDEMIOLOGY, RISK FACTORS AND CLINICAL PROFILE IN PATIENTS WITH ORAL CAVITY AND OROPHAYNGEAL CARCINOMA

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ABSTRACT

Background: Globally Oral cancer is a leading cause of malignancy but in India, it accounts for approximately 500,000 new cases annually.[2] Over 90% of cases is predominantly contributed by oral squamous cell carcinoma (OSCC), with major risk factors including tobacco and alcohol use. The condition has a substantial influence on patients' quality of life, including communication and nutrition. Most patients present with advanced stages, which results in low survival rates. Our study intends to assess the demographic profile, lifestyle habits, and clinical manifestations of oral cancer among railway patients from northern region with the goal of highlighting the burden and informing preventive initiatives. **Aim and Objectives:** The study aims to assess the incidence of oral and oropharyngeal malignancies in patients at NRCH ENT OPD, evaluate exposure duration to individual and combined risk factors, and analyse the clinicopathological staging at presentation

Material and Methods: A Cross sectional study study done on 100 patients over the age of 18 years, who were biopsy proven to have carcinoma of oral cavity or oropharynx or referred to us from other centers following diagnosis of the disease from AUG 2017 to APRIL 2019.

Conclusion: Most participants were from age 51-60, with a higher prevalence among males. Common presenting symptoms included pain, non-healing ulcers, and difficulty swallowing. Main risk factors identified were tobacco chewing, smoking, and alcohol consumption, with longer durations of use. Most patients presented at T4 stage, and many had comorbidities like hypertension and diabetes.

Key Words: Oral cancer, Oropharyngeal cancer.

INTRODUCTION

Oral cancer ranks among the ten most common cancers globally and, when combined with pharyngeal cancer, is one of the top three cancer types in India. The estimates available shows that, about 3,78,500 new cases of intraoral cancer are diagnosed annually worldwide. The oral cancer is less common in the developed countries and but is eighth common cancer. The oral cancer comprises of 5.5% of all malignancies and 30% of all head and neck cancers. Globally, about 500,000 new oral and pharyngeal cancers are diagnosed annually.[2]

Almost 80,000 cases are diagnosed annually with mean age around 55 yrs. Two third of oral cancers are prevalent in males. Fifty percent of men and 11% of women between 15 – 49 yrs of age are presenting with oral cancers in India. According to WHO, 90% of oral cancers in Indian men can be attributed to tobacco consumption, together with other risk factors such as sharp teeth, ill-fitting dentures, and passive smoking. The are significant population-attributable risks associated with smoking and alcohol consumption, estimated to be 80% for males, 61% for females, and 74% overall.[3] Oral cancers are 2-3 times more predominant in men across most ethnic groups. The combined use of tobacco and alcohol considerably enhances the chance of getting these cancers, with smokers being three times more likely to acquire oral malignancy

than nonsmokers.[4] In India, males are more likely to develop oral cancer in western regions, whilst females are more afflicted in eastern parts. Oral cancer has a significant influence on quality of life, including functional deficits in communication, swallowing, and overall lifestyle.[5]

The tongue, oropharynx, lip, floor of mouth, gingiva, hard palate, and buccal mucosa are the most commonly affected areas. Early-stage lesions are typically asymptomatic or have nonspecific symptoms, but advanced stages are characterized by pain, halitosis, and considerable difficulty in speaking and swallowing. Tobacco and alcohol have long been established as key risk factors for oral and pharyngeal malignancies in epidemiological research. Tobacco usage can cause precancerous disorders such as leukoplakia and erythroplakia, whilst chewing areca nuts has been linked to oral submucous fibrosis in India and Southeast Asia. Tobacco-related cancers account for approximately 50% of all cancers in men and 25% in women.[7]

Studies show a causal relationship between increased alcohol use and oral cancer, with Human Papilloma Virus (HPV) as a potential contributory cause while higher consumption of fruits, vegetables, and vitamins is linked to a lower chance of developing oral cancer.[8] Due to diagnosis at late stages, socioeconomic considerations, and a lack of knowledge, oral cancer survival rates is on the lower side in developing nations. Only 20–50% of patients survive since the majority have locally advanced illness (stages 3 and 4).[9]

The etiology of oral carcinoma includes a range of environmental and lifestyle factors. Avoidable risk factors like alcohol use, tobacco chewing, and smoking and their combined impacts make the problem worse.[10]

In this context, our study aims to assess the demographic profile of oral cancer, correlations with personal habits, primary sites of involvement, and clinical presentations in patients with oral malignancy.

Aims and Objectives

1. To find the incidence of oral cavity and oropharyngealmalignancies in patients attending ENT OPD at NRCH.
2. To assess the incidence and duration of exposure to individual risk factors and combination of risk factors in oral and oropharyngeal malignancy.
3. To study the clinicopathological staging of oral and oropharyngeal carcinoma patients at the time of presentation to our hospital.

MATERIALS AND METHODS

Study Design: Cross sectional study
Study Period: AUG 2017 to APRIL 2019
Study Area: Department of Otorhinolaryngology, Northern Railway Central Hospital, New Delhi.

Sample Size Estimation

Sample size is calculated by assuming at the most 5% risk, with minimum 80% power and 5% significance level (significant at 95% confidence level, Z=1.96). Based on similar studies, assuming a 95% confidence level, a 0.60 probability of success, and a margin of error of ±10%, the calculation of sample size with the above assumptions was 92. So, a total 100 cases of oral and oropharyngeal cancer were considered for the study. The sample size was calculated using the formula.

Sample Size Formula = $\frac{(Z-score)2\ X\ P\ X(1-P)}{(margin\ of\ error)2}$

Study Population

The study population comprised of a total of 100 patients over the age of 18 years, who

who are biopsy proven to have carcinoma of oral cavity or oropharynx or referred to us from other centers following diagnosis of the disease from AUG 2017 to APRIL 2019 and fulfilling the inclusion and exclusion criteria formed the study population. The following inclusion and exclusion criteria will be used to select the study subjects

Inclusion Criteria

1. Age > 18 years
2. All patients who are biopsy proven to have carcinoma of oral cavity or oropharynx.
3. Patients who are able to give informed consent.
4. Carcinoma of oral cavity and oropharynx diagnosed at other centers and referred to us for further management

Exclusion Criteria

1. Patients with suspicion but not biopsy proven carcinoma of oral cavity or oropharynx.
2. Patients with recurrence of above malignancies.
3. Patients with psychiatric illness.
4. Major salivary gland tumors
5. Those who are not willing to participate.
6. The Study is approved by the institutional ethical and scientific committee

Methodology

Approximately 100 patients meeting the inclusion and exclusion criteria were informed about their disease, and a biopsy proven cases of carcinoma were included in the study. For these patients, a detailed history was taken which included age of onset for exposure to risk factors, duration of exposure, and age at diagnosis. Each patient underwent a thorough clinical examination, which included assessment of symptom duration, lesion characteristics, nodal involvement, metastasis, and associated comorbidities. Clinical and pathological staging of the disease was also performed alongside laboratory examinations.

Statistical Analysis

Statistical analysis was done using descriptive and inferential statistics, using the chi-square test or Fisher's exact test for categorical data, and t-tests for mean differences. A P-value of less than 0.05 was considered significant, with analyses conducted using SPSS version 20.

RESULTS

A total of 10,175 cases were screened for oral and oropharyngeal cancer in the outpatient department. The incidence of oral and oropharyngeal cancer in this study was 0.98%. Majority patients (34%) were between ages 51-60, with 90% male and 65% from rural areas. Symptoms reported were as follows: 28% presented with non-healing ulcers, 26% experienced growths, and 23% reported pain or difficulty in speaking. The duration of symptoms varied, with 31% presenting between 3-4 months, and 29% within 2 months. [Table 1]

The study focused on the length of time patients chewed tobacco, smoked, and drank alcohol. 33.3% of participants reported smoking for 21–30 years, and 31.5% of people chewed tobacco for that time. Of those who drank alcohol, 37.5% did so for 11–20 years. These results highlight the substantial exposure to these risk variables in patients with oropharyngeal and oral cancer.

The most common habit among patients with involvement of the buccal mucosa was chewing tobacco alone (25.9%), followed by smoking alone (7.4%) and drinking alcohol alone (3.7%). It is noteworthy that 3.7% and 14.8% of patients, respectively, reported combination tobacco chewing and alcohol and tobacco chewing and smoking and alcohol.

22.2% of patients with buccal mucosal cancer had chewed tobacco for less than ten years, while 11.1% had smoked for mostly 21–30 years. Only 11.1% of people aged 21 to 30 drank alcohol. Of patients with tongue cancer, 25.7% chewed tobacco for 21–30 years while consuming little alcohol. Of the patients with oropharyngeal cancer, 37.5% had been exposed to tobacco for 11–20 years, and smoking was seen for a variety of lengths of time. The most important risk factor for all cancer types was, in general, tobacco smoking.

Among the patients, 16% had ischemic heart disease (IHD), 19% had diabetes mellitus, and 20% had hypertension. Interestingly, 9% of patients had chronic obstructive lung disease, whereas 42% of patients reported having no comorbidities.

The two most prevalent tumor types in this study were T4a (40%) and T3 (28%), which indicated the predominance of advanced stages of oral cancer in this study population. 49% of patients had no nodal involvement (N0), whereas 27% of patients belonged to N1 based on their nodal status. Metastasis was absent (M0) in 92% of cases, and there was distant metastasis (M1) in 4% of cases. [Table 2]

In our study, alcohol consumption was reported in 4.4% of patients at stage IV. Smoking alone was observed in 9.1% of patients with stage II carcinoma and in 13.3% at stage IV. Among patients who chewed tobacco, 33.3% presented at stage I, 63.6% at stage II, 50% at stage III, and 53.3% at stage IV.

For patients who were both alcoholic s well as smokers, 9.1% were in stage II, 14.3% in stage III, and 15.6% in stage IV, with no patients at stage I. In the alcohol and tobacco chewing group, 14.3% were at stage III and 6.7% at stage IV, with none at stages I or II. Among patients who chewed tobacco and smoked, 33% presented at stage I, 9.1% at stage II, none at stage III, and 2.2% at stage IV. Finally, in the group consuming alcohol, smoking, and chewing tobacco, 33.3% were at stage I, 9.1% at stage II, 21.4% at stage III, and 4.4% at stage IV.

The histology of these patients revealed that 63% were well-differentiated, 17% moderately differentiated, 15% poorly differentiated, and 5% classified as verrucous carcinoma. Regarding staging, the majority of patients were at stage IV (56%), followed by stage III (25%), stage II (15%), and stage I (4%). This highlights a predominance of advanced disease in the study population. [Table 3]

Table 1: Distribution of the oral and oropharyngeal cancer patients according to the various subsites involved

Site of cancer	Frequency	Percent
Buccal mucosa	27	27.0
Lateral border of tongue	8	8.0
Dorsum of Tongue	19	19.0
Lower gingivobuccal sculcus	17	17.0
Upper gingivobuccal sulcus	12	12.0
Alveolus	6	6.0
Floor of mouth	4	4.0

Table 2: Distribution of personal habits in the oral and oropharyngeal cancer patients in our study

Habits	Frequency	Percent
Tobacco chewing alone	39	39.0
Smoking alone	7	7.0
Alcohol alone	2	2.0
Tobacco chewing + alcohol	5	5.0
Tobacco chewing + Smoking	3	3.0
Smoking + alcohol	10	10.0
Tobacco chewing + Smoking + alcohol	7	7.0

Table 3: Distribution of personal habits in staging of oral and oropharyngeal carcinoma

Carcinogens	Staging			
	I n (%)	II n (%)	III n (%)	IV n (%)
Alcohol alone	0	0	0	2 (4.4)
Smoking alone	0	1 (9.1)	0	6 (13.3)
Tobacco chewing alone	1 (33.3)	7 (63.6)	7 (50.0)	24 (53.3)
Smoking + Alcohol	0	1 (9.1)	2 (14.3)	7 (15.6)
Tobacco + Alcohol	0	0	2 (14.3)	3 (6.7)
Tobacco chewing + Smoking	1 (33.3)	1 (9.1)	0	1 (2.2)
Tobacco chewing + Smoking + Alcohol	1 (33.3)	1 (9.1)	3 (21.4)	2 (4.4)
Total	3 (100)	11 (100)	14 (100)	45 (100)

DISCUSSION

Oral cancer ranks among the ten most prevalent cancers worldwide and, when combined with pharyngeal cancer, is one of the top three cancer types in India.[1] In developed nations, its incidence is lower, with oral cancer being the eighth most common type. The prevalence of oral cancer varies greatly throughout the world; in India, tobacco use is responsible for almost 90% of cases, while other contributing factors include sharp teeth, poorly fitting dentures, and passive smoking.[3] Males are more prone than females to get oral and oropharyngeal cancers, and the risk rises when alcohol and tobacco use are combined; smokers are three times more likely than non-smokers to develop mouth cancers.

The tongue, oropharynx, lip, floor of the mouth, gingiva, hard palate, and buccal mucosa are among the common locations for oral and oropharyngeal malignancies. Advanced cases frequently exhibit symptoms like discomfort, halitosis, and trouble speaking and swallowing, although early-stage lesions may be asymptomatic or exhibit nebulous symptoms.[6] Tobacco smoking can also cause precancerous lesions like leukoplakia and erythroplakia, and chewing areca nuts can exacerbate conditions like oral submucous fibrosis (OSMF), particularly in Southeast Asia and India. Approximately 25% of cancers in women and 50% of cancers in men are brought on by tobacco use.[7]

Among the various environmental and lifestyle factors that contribute to the multifactorial etiology of oral cancer, smoking, chewing tobacco, and drinking alcohol have been found to be significant preventive risks. Alcohol and tobacco use together greatly increase the risk of developing cancer.[12]

Our study's objective was to assess the demographic profile of oral cancer by establishing a correlation between it and the patients' clinical presentations, primary locations of involvement, and daily behaviors. We performed a cross-sectional study on 100 patients who visited the ENT OPD at NRCH between August 2017 and April 2019 and had been diagnosed with oral and oropharyngeal cancer.

Patients meeting the inclusion and exclusion criteria were informed about their condition, and biopsies were taken from suspicious lesions. Those diagnosed with carcinoma were included in the study, and a detailed history was collected regarding the age of exposure to risk factors, duration of exposure, and age at diagnosis.

The study revealed an incidence rate of 0.98% among patients at NRCH. Age-standardized incidence rates were estimated at 2.6 per 100,000 for males and 1.8 for females. The majority of patients (34%) were aged 51-60. This was consistent with previous studies showing similar mean ages. Males were more prevalent than females, which is consistent with results from other studies such as Alves et al. (2017).

Habitat-wise, 65% of patients were from rural areas, where drinking alcohol and chewing tobacco were more common. 39% of patients had only completed primary school, which is in line with research showing lower educational attainment in patients with oral cancer.

The most common symptoms were mass growth (26%) and non-healing ulcers (28%). Lesions mostly affected the dorsum of the tongue (19%) and buccal mucosa (27%). 54% of patients reported chewing tobacco, and 27% reported smoking. Alcohol use was observed in 24% of cases. Diet-wise, 64% of patients consumed a mixed diet.

Regarding TNM staging, most patients presented at advanced stages, with a significant proportion in T4a (39.1% for oral cancer) and N0 stages. Histopathological analysis showed that 63% of cancers were well-differentiated.

CONCLUSION

The majority of patients, according to the findings, were between the ages of 51 and 60, and the prevalence was higher in men. Most people had symptoms for less than six months, and the most prevalent ones were non-healing ulcers, oral growths, discomfort, and trouble speaking and swallowing. Smoking, drinking alcohol, and chewing tobacco (54%) were found to be important risk factors, frequently associated with more than 20 years of exposure. The majority of patients had palpable lymph nodes when they first appeared in the T4 stage, and the study's histology revealed well-differentiated squamous cell carcinoma. The study offered important insights into oral and oropharyngeal malignancies, despite its limitations in proving causation among risk variables.

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