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Original Research Article

Demographic profile of head and neck cancer patients: a single tertiary institution-based study in Telangana

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ABSTRACT

Background: Head and neck cancer (HNC) is a broad category of cancerous entity that arise from different types of tissues and organ sites located in the topographical areas of the head and neck (Hand N). H and N squamous cell carcinomas (HNSCC) comprises 30% of all cancer cases in India. The risk factors for HNSCC include tobacco and alcohol consumption.
Methods: This study aimed to determine the demographics of HNC patients and classify the incidence of H&N cancers according to the primary histological type and organ of origin along with any recent change in pattern compared with previous study.
Results: Highest incidence seen in 41-50 years of age group with majority of cases belonging to urban area. Tobacco chewing was observed as most common habit. Buccal mucosa cancer was seen as most common cancer particularly at gingivo-buccal sulcus. Squamous cell carcinoma was the most common type identified on histopathology. Majority of the cancers presented in locally advanced stage.
Conclusions: Male plurality of carcinoma noted indicating male being more likely to be engaged in behaviours increasing risk of carcinoma head and neck. Buccal muscosa carcinoma particularly at gingivo-buccal sulcus noted to be most common site correlating to tobacco chewing habit and keeping tobacco quid at gingivo-buccal sulcus leading to prolonged exposure.

Keywords: Carcinoma head and neck, Buccal mucosa carcinoma, Gingivo-buccal sulcus, Locally advanced stage, Smoking, Tobacco chewing

INTRODUCTION

In India, head and neck cancers have become major common public health issues. They are caused by lifestyle choices, have a protracted latent phase, and require specialized infrastructure and personnel for treatment.[1]As infectious illness rates decline and the country's population ages, the incidence of cancer in India is rising.[2] Even though there have been multiple studies done recently on the biology and molecular elements of cancer, the overall survival rate has remained unchanged. In India, there is a specific demographic profile for head and neck cancer.[3] The head and neck area are made up of several small, finely structured components that are essential for both fundamental physiological demands and facial appearance, expression, and social interaction. Depending on the location, size, and patterns of dissemination, head and neck malignancies can result in different degrees of structural abnormalities and functional impairments, which can negatively impact quality of life and self- worth. Treatment for head and neck tumors may decrease the

patient's quality of life and result in further mutilation.[4] If esophageal cancers are excluded, in Asia, particularly India, accounts for 57.5% of all head and neck cancer cases worldwide. India leads the world with more than 200,000 new cases of head and neck cancer annually. Each year in our nation, about 80,000 cases of oral cancer are identified.[5] The bucco-gingival sulcus, where the betel quid is maintained in the mouth for extended periods of time, is the site of nearly two-thirds of oral cancer cases. Considering its location and genesis, the title "Indian oral cancer" may be appropriate for this bucco-gingival carcinoma.

The variation in head and neck cancer incidence and pattern is caused by regional variations in the prevalence of risk factors. Despite the mouth cavity being accessible for visual inspection, most oral lesions are discovered in their advanced stages. In reality, 40% of patients in affluent nations present with advanced disease, whereas 60 to 80 percent of patients in India do the same, which translates into a worse overall survival rate.[6] The established link between tobacco uses and malignancies of the pharynx and oral cavity is widely acknowledged. According to epidemiological research, smokers have a five to nine-fold increased risk of mouth cancer compared to nonsmokers. Those who smoke 80 or more cigarettes a day, or who are extremely heavy smokers, may increase their risk by up to seventeen times. Cigarette smoking is a contributing factor in around 25% of cases of mouth cancer. Cigarette smoke contains over 60 carcinogens, while at least 16 carcinogens have been found in smokeless tobacco. In addition to smoking, smokeless tobacco use is very common. In several regions of India, betel quid (pan) is incredibly common.[7] Chewing betel quid has been found to be an oral carcinogen in humans, with evidence of a dose-response connection. Betel quid is well recognized to produce precancerous diseases of the mouth, such as submucosal fibrosis.[8] Regular alcohol use is dose-dependently linked to an increased risk of mouth cancer. When four to five drinks are regularly consumed each day, the risk of oral cavity cancer is two to three times higher than when no alcohol is consumed. Overall, high alcohol consumption is linked to 7 to 19% of occurrences of cancer of the oral cavity. Alcohol both by itself and in combination with smoking: drinking alcohol along with tobacco use in any form raises the risk of mouth cancer by an exponential proportion i.e. about 11 times.[9] Certain oropharyngeal and oral malignancies may be associated with the human papilloma virus (HPV), according to recent research.[10]

Lichen planus of the mouth, especially the erosive variety, may raise the risk of cancer. When post-cricoid webs (plummer-vinson syndrome) and dysphagia coexist, iron deficiency anemia raises the chance of developing oral, oropharyngeal, and esophageal cancer.[8,11] Oral precancerous conditions: most oral cavity cancers in India are preceded by precancerous lesions, which virtually exclusively affect tobacco smokers and share a similar etiology with oral cavity malignancies. Lesions come in three main categories. Leukoplakia is the most prevalent kind, with an Indian frequency of 0.2–5.2 percent and a malignant transformation rate of 0.13–10%. Compared to leukoplakia, erythroplakia is the most severe type of precancerous lesion and has a significantly higher risk of developing into malignancy.[12] The other precancerous lesion is submucosal fibrosis, which has a malignant transformation rate of roughly 17% and is thought to be a significant contributing cause to the rising prevalence of oral cancer in Indians aged 35 and under 12. Cancers of the lip vermilion are linked to long-term exposure to actinic radiation. Certain people seem to be more susceptible to oral malignancies due to immunosuppression. Lip malignancies have been documented in several people undergoing kidney transplants and taking immunosuppressive drugs. Similarly, oral carcinomas have even been reported in a few young HIV individuals.[7]

There is a paucity of literature regarding the risk factor profile of oral cancer patients in southern India, despite the vast range of reports from independent researchers regarding the frequency of oral cancer and its risk factors in different parts of the country. We attempt to define the demographic, risk profile, presenting symptom, and stage at diagnosis among the group of head and neck patients reported in one hospital-based cancer registry in Telangana between August 2022 and October 2023, given the notable differences between the state and the other states regarding tobacco, alcohol, diet, and medical service availability years of age, the incidence of colon cancer in the general population increases exponentially after the fifth decade of life.[4] The male to female ratio is 5:3. In early years of the present century, these malignancies were neglected because disease was less common than now: with less tools for diagnosis, less life expectancy and general unawareness of the fact that malignancy may occur in younger age group. There has been a decline from previous year in deaths as well as in new cases.[5] Although roughly 7% of cases occur in patients younger than 50 years of age, the incidence of colon cancer in the general population increases exponentially after the fifth decade of life.[6] The male to female ratio is 5:3. Aim of the present study was to explore the disease on clinical presentation, histopathological typing and grading, to determine the nature of surgical procedure and other therapeutic options and to know the outcome of disease. The pace of discovery is accelerating, and new observations are finding more rapid and practical applications than ever before.[7] Colorectal cancer (CRC) is the third most common cancer in men (663000 cases, 10.0% of the total cancers) and the second in women (570,000 cases, 9.4% of the total cases) worldwide.

METHODS

The study aimed at studying the demographic profile, sites involved, histo-pathological pattern and stage of presentation of head and neck carcinoma. Also to check

for any change in risk factor profile, gender wise predominance and most involved site as compare to a study conducted from 2002-2006 in the same geographic area.[13] Data on the demographic profile and clinical information were obtained from hospital and clinical records. Staging was based on the American joint committee on cancer and included primary tumor size (T), regional neck status (N), and group stage. The site of cancer was classified based on the international classification of disease for oncology (ICD-02).

Type of study

This study was retrospective descriptive study.

Sample size

Time based study during time august 2022 October 2023.

Place of study

Place of study was at MNJIO & RCC, Hyderabad Telangana.

Time period

Data sampling period was 15 months.

Inclusion criteria

All histologically verified cases of head and neck from a single tertiary referral center were reviewed.

Exclusion criteria

Recurrent head and neck in the set timeframe was excluded from the statistical analysis. Recurrent head and neck however, diagnosed prior to the start of the collection of the data was included as head and neck case. All cases of metastatic disease in the head and neck region were excluded from the statistical analysis, due to the study being aimed only at primary head and neck.

Statistics

We did not calculate a sample size priorly as it was a time-based study. All Histologically verified patient who underwent surgical resection during the time were included in the study. Statistical analysis was done by percentage method where one percent indicates one hundredth of the total.

Ethical approval

Obtained from Institutional Ethics Committee, MNJ Institute of Oncology and Research Cancer Centre, Hyderabad.

RESULTS

A total of 245 cases of head and neck cancer were reported during the study period. In all the age groups, there was a significant male preponderance. Among both males and females, the highest incidence of oral cancer was seen within the age group of 41-50 years.

Table 1: Distribution of age and gender in the study population.

Age group	Number
<30	12
31-40	50
41-50	58
51-60	67
>60	33

Table 2: Prevalence of habits.

Addiction	Number
Tobacco chewing	80
Tobacco smoking	7
Both chewing and smoking	16
Tobacco chewing and alcohol	38
Tobacco smoking and alcohol	15
Tobacco chewing smoking and alcohol	77
Only alcohol	4
None	8

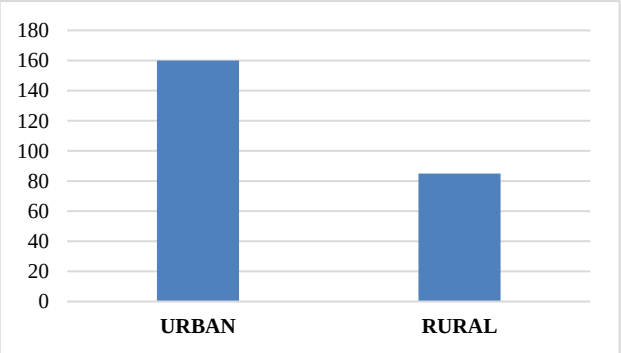

Figure 1: Majority of cases belonged to urban population.

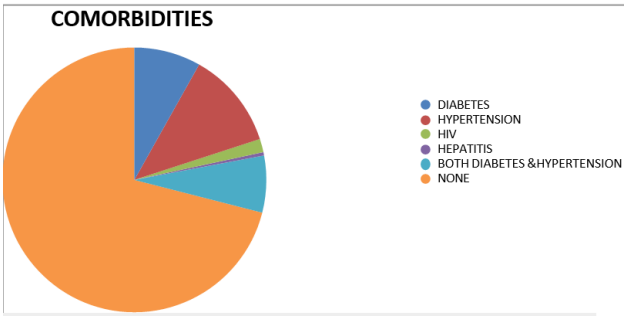

Figure 2: Majority of the patients were without any comorbidities.

The most common habit was tobacco chewing followed by the combination of tobacco (smoking and chewing) and alcohol, both in males and females. 8 out of 245 patients were free from any addiction.

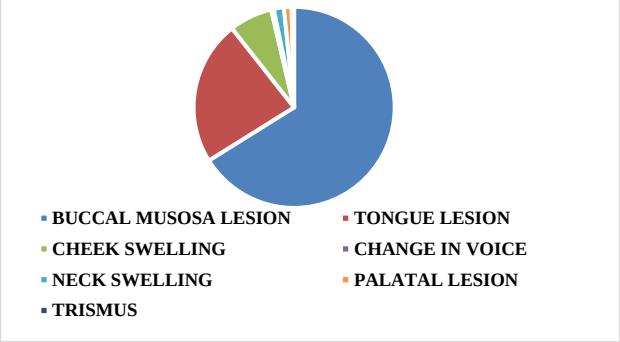

Figure 3: Majority of patients presented with buccal mucosa lesion.

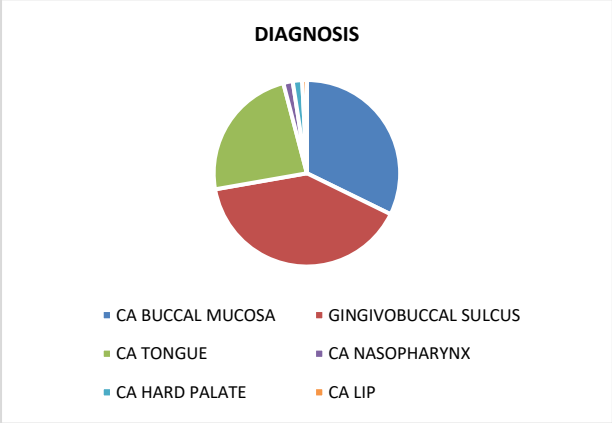

Figure 4: Diagnosis.

Majority of patients presented with buccal mucosa lesion (more than 50 % of which was GBS) followed by tongue. A few presented with cheek swelling, neck swelling, palatal lesion, neck swelling and trismus.

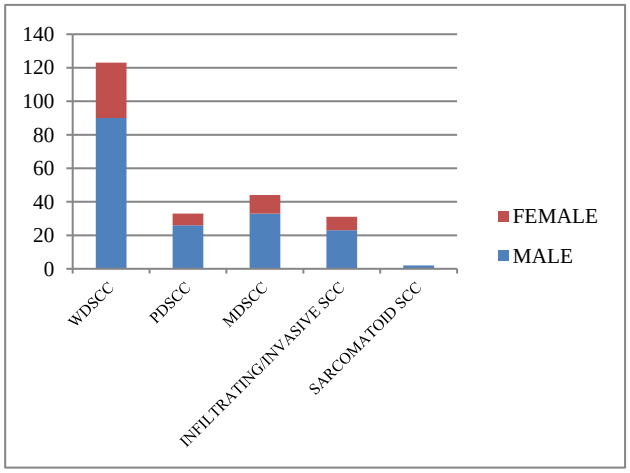

Figure 5: Histopathological subtype of squamous cell carcinoma.

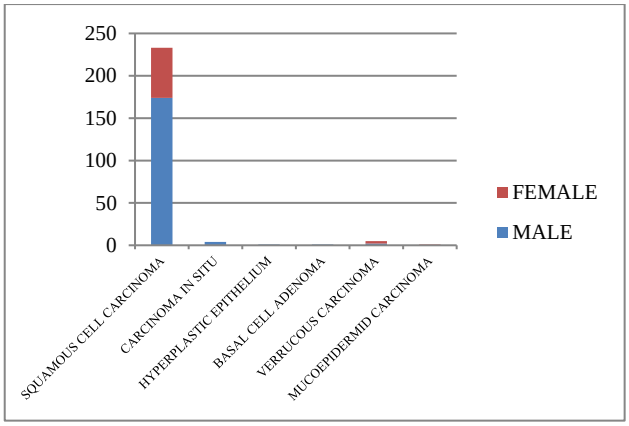

Figure 6: Histopathological type of carcinoma.

The most common sites of cancer were buccal mucosa in which gingivobuccal sulcus followed by tongue. This was followed by rest of the oral cavity. The least common sites were nasopharynx, hard palate, lip, and base of the tongue in both the genders. Out of 98 cases of CA GBS 82 were tobacco chewer. Whereas out of 58 case of CA tongue 47 were tobacco chewer.

Prevalence of type of cancer determined by histopathology

Majority of histopathology reports showed squamous cell carcinoma in which well differentiated variant was most prevalent followed by moderately differentiated and poorly differentiated. Other variants were invasive/ infiltrating squamous cell carcinoma, sarcomatoid squamous cell carcinoma, verrucous carcinoma (1 case), mucoepidermoid CA (1 case), basal cell adenoma (1 case), hyperplastic epithelium (1 case). Only 4 out of 245 showed carcinoma in situ.

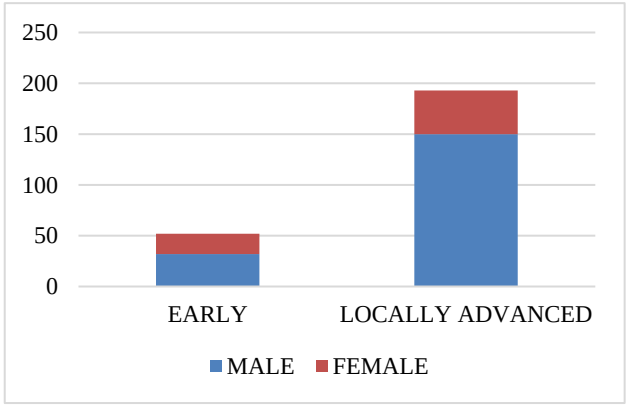

Figure 7: Stage presentation.

Patients were staged by AJCC TNM staging for head and neck cancer. Stage i and ii included in early disease whereas stage iii, iv and v included in locally advanced disease. Majority of the patients were diagnosed in locally advanced stage of cancer in which also male patients were the majority.

Treatment provided

In around 68% of total cases composite resection with reconstruction was done. Out of 98 cases of carcinoma gingivo-buccal sulcus more than 95% went for composite resection whereas in remaining 4-5 % wide local excision and reconstruction was done due to surgical limitation. One patient of CA GBS went for definitive CTRT.

DISCUSSION

This study was retrospective, single-hospital based, and limited to histologically verified cases of patients with Head and neck cancer. The current research population's male plurality of cancer cases similar to previous study conducted in the same geographical area indicates that men are more likely than women to have engaged in behaviors that increases the risk of head and neck.[13,14] The combination of all three habits (alcohol, tobacco, and smoking) were the most prevalent behavior among both genders in previous study whereas in this study tobacco chewing was the most common addiction among females and males indulged in consumption of both tobacco chewing and smoking. However, according to previous study also the combination of chewing and smoking together with alcohol drinking to show very high relative risk.[9]

More than half of the participants in the study have used tobacco comparable to studies conducted previously in both south India and north India, either in the form of chewing or smoking, underscoring the necessity of prevention through a shared risk factor approach. Numerous multi-system illnesses have been linked to tobacco use, with or without other risk factors. In order to reverse the current situation of such preventable diseases, it is imperative that proper preventive techniques should be implemented through a common risk factor approach in conjunction with a comprehensive educational campaign.[13,14] In this study majority of the population presenting to hospital belonged to urban location correlating both to geographical location of the hospital and unwareness of disease presentation and severity in rural population. The tongue was the second most prevalent location of malignancy after the buccal mucosa as compared to the previous study 13 where tongue was the most common site of malignancy. Though in an analysis done in 2023 based on published data from other cancer registries buccal mucosa is the most common site of cancer in both male and female.[15] One of the possible causes of the increased incidence of cancer in the tongue and buccal mucosa when chewing could be repeated contact with the quid. Around 40% of cases were of CA gingivo-buccal sulcus probably because of the habit of keeping tobacco for long time in gingivobuccal sulcus. Comparative limited visibility and inaccessibility of gingivo-buccal sulcus during regular oral hygiene maintenance may cause early cancerous changes like leuoplakia/erythroplakia goes unnoticed. However, in northeastern states when compared to other regions, the incidence of hypopharynx cancer was the highest for both males and females in the northeastern region. The high prevalence of smoking and smokeless forms of tobacco use in the northeast region could be one of the reasons.[15] In this study majority of the patients had histopathological type squamous cell carcinoma (WDSCC) which is the most common type in head and neck cancers.[7] Since most patients were diagnosed at a locally advanced stage same as previous study 13, need for composite resection was higher along with complex plastic surgery for reconstruction which had higher morbidity.

Complex reconstruction leads to long term facial deformity and malocclusion. Hence following any treatment for HNC, physical therapy may play an essential role in preventing various complications and helping patients to mitigate impairments, and restoring function of the shoulder joint, neck, and face.[5] It is important to monitor for early symptoms such as leukoplakia, voice changes, and swelling.[7] Early detection can lead to a better prognosis. The lack of proper standardized recording format to quantify the risk factors was also one of the drawbacks of our study. Cancer registries should design and use standardized format for recording of habits like tobacco and alcohol intake, their duration and frequency of consumption, along with other risk factors such as oral hygiene, nutrition, viral infections, educational and socioeconomic status.

CONCLUSION

Male plurality of carcinoma indicates male being more likely to be engaged in behaviours increasing risk of carcinoma head and neck. Buccal muscosa carcinoma particularly at gingivo-buccal sulcus noted to be most common site correlating to tobacco chewing habit and keeping tobacco quid at gingivo-buccal sulcus leading to prolonged exposure. Prevention and early diagnosis are the two main pillars that will determine the control of oral and oropharyngeal cancer. On a local, state, and federal level, ongoing education initiatives are required to inform the public about the disease's risk factors and early warning signs and symptoms. People should also be urged to have frequent professional oral examinations from a dentist or medical expert. Finally, it is important to educate healthcare professionals about the early warning symptoms of oral carcinoma and to encourage them to do examinations for oral cancer as part of their patient care routine.

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