

Profiling of Oral Squamous Cell Carcinoma of Lower Assam Region – A Hospital-Based Retrospective Study

Abstract

Background: Oral cancer is one of the ten most common cancers worldwide and the sixth most common type of all cancer in India. Among the oral malignancies, oral squamous cell carcinoma (OSCC) is the most common, accounting for more than 90% of oral cancer and hence a significant public health concern. **Aim:** The aim of this study was to evaluate clinicopathological and demographic profiling of OSCC in a district and adjacent area of lower Assam. **Settings and Design:** This was a retrospective observational study. **Materials and Methods:** A total of 140 histologically confirmed OSCC patients diagnosed at the Regional Cancer Centre in the district between the period 2022 April and 2023 October constitute our study sample size in this study. The duration of the study was 1½ years. **Statistical Analysis:** The clinical and histopathological features were analyzed using descriptive statistics. Statistical Package for the Social Science (SPSS) version 23.0 was used. **Results:** OSCC constitutes 23.97% of head-and-neck cancer. The incidence of OSCC was higher in males. The highest number of patients was in the age group of 50–59. The most common site of OSCC was the buccal mucosa followed by the tongue. Most of the cases were well differentiated, the number being 82 (58.57%). Most of the patients were in Stage III and Stage IV. **Conclusions:** The present study highlights that in the lower Assam region, the majority of the OSCC patients are middle-aged male patients with advanced stages of OSCC. The findings from the present study can be used to compare the scenario of OSCC in other parts of Assam and North East India and also can be used for a follow-up study.

Keywords: Oral cancer; oral squamous cell carcinoma; retrospective

Introduction

Oral and lip cancer are one of the most common types of cancer worldwide. According to GLOBOCAN 2020, number of new cases of lip and oral cancer was 377,717 and number of deaths in 2020 due to oral cancer was 135,929^[1] and new cancer deaths in 2020 worldwide, which represents 9.6% of new cancer cases and 4.72% of new cancer deaths in all populations.^[1] Overall 57.7% of HNCs occur in Asia, especially in India, where it accounts for 30% of all cancers. In India, the total number of new cases of carcinoma of the lip and oral cavity was 104,661 (16.2%) in males and 31,268 (4.6%) was 125,244 in females. The mortality rate of carcinoma of the lip and oral cavity was 8.8% and 5-year prevalence rate was 21.27%.^[2]

Smoking, alcohol consumption, tobacco, and betel quid chewing are three major risk factors for HNC.^[3,4] Other proven

carcinogenic factors include human papillomavirus infection, and poor oral hygiene, each of these risk factors results in different subtypes of HNCs at different levels; tobacco and betel quid chewing chiefly impact oral cancer and oropharyngeal cancer, cigarette smoking predominantly influence laryngeal cancer, and alcohol consumption has synergistic influence.^[5,6] India is the third largest consumer of tobacco. Tobacco-related cancer accounts for nearly 50% of all cancers among men and 25% of all cancers among women. The increased incidence of oral cancer can be attributed to exposure to carcinogenic risk factors such as tobacco.^[7]

Since the district and the adjacent areas have only one cancer center and also since literature search revealed that the number of studies on profiling of oral squamous cell carcinoma (OSCC) of the North Eastern Region of India is scarce, therefore, such type of regional database will help us to understand the present scenario of

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the OSCC in the region and also such type of data will be helpful for national health policy implementation. The aim of the present study was to evaluate clinicopathological and demographic profiling of OSCC in a district and adjacent area of lower Assam, India.

Materials and Methods

The present study was a retrospective observational study done at the Government Medical College and Hospital in collaboration with the Regional Cancer Centre. The Ethical Clearance (FAAMCandH/P.Est./I.E.C/26/Pt-1/2022/13253) for this study was obtained from the institutional ethical committee (dated December 29, 2023). The number of study samples was 140. The duration of the study was April 2022–November 2023. The study adhered to the principles of Helsinki with appropriate safeguards for patients' confidentiality. A total of 584 head-and-neck carcinomas were analyzed from laboratory records. From 584 head-and-neck carcinomas, 140 histologically confirmed OSCC cases were selected and analyzed further for relevant data. Parameters included in this study were age, gender, site of the lesion, clinical features, histopathological diagnosis, and staging of cancer, and tumor, node, and metastasis (TNM) categorization was recorded. Inclusion criteria for the sample selection was histologically confirmed squamous cell carcinoma (SCC) of the oral cavity only which includes lip, buccal mucosa, tongue, hard palate, and retromolar trigone. Exclusion criteria were patients having other variants of malignancy, malignancy of oropharyngeal and laryngeal region, recurrent malignancy, metastatic carcinoma from unknown primary site, and lesions diagnosed only by cytological methods.

Statistical analysis

The collected relevant data were analyzed using the International Business Machine (IBM) Statistical Package for Social Sciences (SPSS) version 23.0 (SPSS Inc., Chicago, IL, USA). Descriptive as well as analytical statistics were used for summarization and calculation of data. For continuous data, summarization was done as the mean, median, \pm standard deviation, and maximum value, and for categorical data, percentage and proportion were calculated.

Results

The data collection process of the present study was done in collaboration of the Regional Cancer Center. The complete data of 140 biopsy-confirmed OSCC cases were collected from the clinical case records unit of Regional Cancer Centre. Parameters such as age, gender, tumor site, histopathological features, stage of tumor, and TNM grouping were recorded.

OSCC constitutes 23.97% of HNC. Among the 140 OSCC cases, the number of male patients was 86 (61.42%) and the

number of female patients was 54 (38.57%) which is shown in Figure 1. Regarding parameter age, the minimum age of the study participants was 28 years and the maximum age was 95 years with a mean age of 55.12 ± 10.66 years. In our study, the highest number of patients was found in the age group of 50–59 which is 74 (52.85%) and the lowest was in the age group >90 which is 1 (0.71%) which is shown in Table 1.

In our study, the most common site of oral cancer was the buccal mucosa region followed by the tongue. Among 140 patients, 110 (78.57%) patients were having oral cancer in the buccal mucosa region followed by the

Table 1: The clinicodemographic data of the patients

Parameters	Mean \pm SD; median (IQR); minimum–maximum; frequency, n (%)
Age (years)	55.12 \pm 10.66; 55; 28–95
Age	
0–29	2 (1.42)
30–39	4 (2.85)
40–49	24 (17.14)
50–59	74 (52.85)
60–69	22 (15.71)
70–79	11 (7.85)
80–89	2 (1.42)
>90	1 (0.71)
Tumor site	
Lips	2 (1.42)
Buccal mucosa	110 (78.57)
Gingivo buccal sulcus	4 (2.85)
Tongue	6 (4.28)
Floor of the mouth	4 (2.85)
Hard palate	2 (1.42)
Retromolar trigone	6 (4.28)
Gingivobuccal sulcus + buccal mucosa	6 (4.28)
Histopathological features	
Well-differentiated	82 (58.57)
Moderately differentiated	42 (30.00)
Poorly differentiated	16 (11.42)

SD: Standard deviation; IQR: Interquartile range

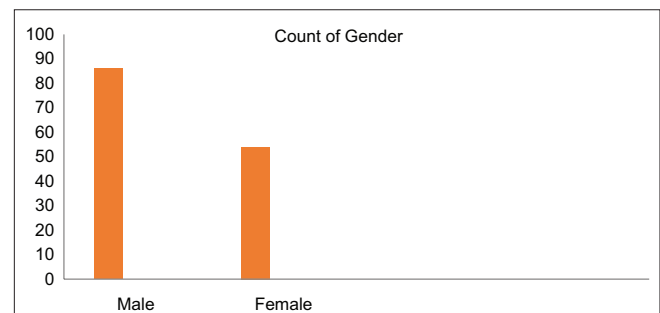


Figure 1: Gender-wise distribution of patients

tongue which is 6 (4.28%) and the least was in the region of lips 2 (1.42%) and hard palate 2 (1.42%) which is shown in Table 1.

Regarding histopathological features Table 1, most of the cases were well differentiated, the number being 82 (58.57%), the number of moderately differentiated was 42 (30.00%) whereas 16 (11.42%) cases were poorly differentiated.

In the present study, the TNM grouping and staging was done which is shown in Table 2. On analysis of the T category, it was found that most of the patients have T₄ lesions, the number of patients having T₄ lesions being 74 (54.28%) which is followed by T₂ lesions being 36 (25.71%) 24 (17.14%) patients have T₃ lesions while 4 patients (2.84%) have T₁. Regarding the analysis of the N category, it was found that maximum number of patients 64 (45.71%) have N₀ type of lesion followed by 44 (31.42%) patients having N₂ type of lesion, 30 (21.42%) patients having N₁ type of lesions and 2 (1.42%) patients having N₃ category of lesion. The number of N₄ patients was 0 (0). In our study, it was found that 128 (91.42%) have M₀ type of lesion and 14 (10.00%) patients have M₁ type of lesion. On analysis of staging of cancerous lesions [Table 2], it was found that most of the patients were in Stage IV and Stage III with 90 (64.28%) and 24 (17.14%) patients, respectively. Four (2.85%) and 22 (15.71%) patients were in Stage I and Stage II, respectively. The association of incidence within the group is shown in Figure 2.

Table 2: The tumor, node, and metastasis staging and grouping of the patients

Parameters	Mean±SD; median (IQR); minimum–maximum; frequency (%)
pT	
T ₀	0
T ₁	4 (2.85)
T ₂	36 (25.71)
T ₃	24 (17.14)
T ₄	76 (54.28)
pN	
N ₀	64 (45.71)
N ₁	30 (21.42)
N ₂	44 (31.42)
N ₃	2 (1.42)
N ₄	0
cM	
M ₀	128 (91.42)
M ₁	14 (10.00)
Stage	
Grade I	4 (2.85)
Grade II	22 (15.71)
Grade III	24 (17.14)
Grade IV	90 (64.28)

SD: Standard deviation; IQR: Interquartile range; TNM: Tumor, node, and metastasis

Discussion

According to the National Oral Cancer Registry India, oral cancer is the most common cancer in India among men (11.28% of all cancers) and the fifth most frequently occurring cancer among women (4.3% of all cancers) and about 80% of oral cancers are directly attributed to tobacco use.^[8,9]

In this present study, it was found that the incidence of oral cancer was higher in males compared to females with a male–female ratio of 1.59:1 which is similar to other studies done on oral cancer^[10-12] which is due to the habit of tobacco chewing being more common among men than women. However the ratio is higher than the ratio reported by Tandon *et al.* in their study.^[13]

In our study, it was found that the majority of the patients were in the age group of 50–59 years (52.85%) followed by the 40–49 years group (17.14%). Our study findings are similar to the findings reported by Al-Rawi *et al.*, Grimm, where the maximum number of patients were diagnosed at a mean age of 50–70 years.^[14,15] Senapati *et al.* reported in their study that the maximum number of patients diagnosed with OSCC were within the age group of 40-49 years.^[12]

On analysis of the site of lesion, it was found that buccal mucosa was the most common site, 78.57% followed by tongue 4.28%. The study done by Senapati *et al.* and Tandon *et al.*^[12,13] also shows buccal mucosa as common site of lesion, 41.7% and 45.92%, respectively.

Regarding histopathological features, it was found that most of the lesions, 82 (58.57%) were well differentiated (grade I) followed by 42 (30.00%) moderately differentiated (grade II) lesions. In comparison, our study is similar to the study done by Tandon *et al.*^[13] and Senapati *et al.*^[12] which also reported the highest number of well-differentiated lesions (66.36%) and (87.2%), respectively. However, other studies from India show the highest number of moderately differentiated lesions.^[16,17]

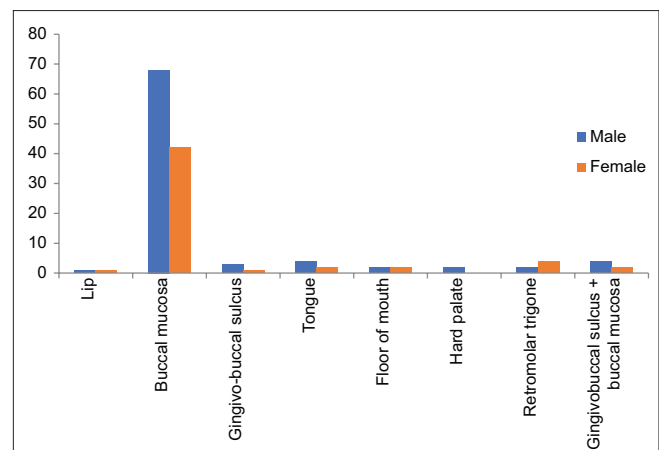


Figure 2: Association of incidence within the group

The incidence of pT and pN category varies from country to country depending upon economic status, education, and also health systems such as screening, early detection, and early referral. Authors from developed countries reported the disease in early pT which ranges from 60 to 67%.^[18,19] In the present study, the highest number of patients who have pT4 lesions is 76 (54.28%) while 4 (2.85%), 36 (25.71%), and 24 (17.14%) patients have pT1, pT2, and pT3, respectively. Similarly, 64 (45.71%) have pN0 lesions, 44 (31.41%) have pN2 lesions, 30 (21.41%) have pN1, and 2 (1.42%) have pN3 lesions. On analysis of staging of lesions, 90 (64.28%) presented Stage IV disease, 24 (17.14%) in Stage III, 22 (15.71%) in Stage II, and 4 (2.85%) patients presented Stage I lesions. In comparison to developed countries, the majority of the patients in this study presented in the advanced stage of the disease which may be probably due to a lack of awareness and poor socioeconomic conditions.

Limitations

This study may not reflect the whole population.

Conclusions

The present study depicts the present scenario of oral cancer of the population of the lower Assam Region of North East India. The study showed that the majority of the oral cancer patients in this region are middle-aged male patients with advanced stages of the disease. The findings of this study emphasize the need of awareness among people of this region, the need for early detection and improved referral system. The findings from the present study can be used to compare the scenario of oral cancer in other parts of Assam and North East India and also can be used for a follow-up study.

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Conflicts of interest

There are no conflicts of interest.

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