Clinical profile and epidemiological factors of oral cancer patients from North India

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ABSTRACT

Introduction: Tobacco chewing, smoking, and alcohol consumption are major contributing factors in the development of oral carcinoma. India has world’s highest number of oral cancers (almost 20%) and approximately 1% of the Indian population has oral premalignant lesions. Aim: The purpose of the study was to evaluate the epidemiological factors and clinical profile of oral cancer cases in our hospital. Settings: Department of Surgical Oncology, King George’s Medical University, Lucknow, India. Materials and Methods: A retrospective study was conducted from January 2010 to December 2012 on 479 cases with histopathologically confirmed oral carcinoma. Subjects’ details of age, sex, occupation, tobacco consumption, site of carcinoma, and stage at presentation were recorded. Results: Mean age in this study was 47.84 years with male to female ratio of 3.1:1.0. Buccal mucosa and alveolus were the most affected sites. The majority of cases were from socially and economically weaker section, with 93.72% cases being tobacco users. The majority of cases were advance stage (Stage III and IV) with Stage IV being the predominant stage at presentation followed by Stage III. Conclusion: The findings of the study reveal that tobacco consumption is one of the major contributors in the development of cancer of oral cavity with the majority of cases presenting in advance stages posing a big therapeutic challenge.

Key words: Buccal mucosa, oral cancer, oral cancer epidemiology

INTRODUCTION

Tobacco consumption is socially and culturally well-accepted in almost every level of society in India. Traditional smokeless forms like betel quid, tobacco with lime are commonly used and areca nut blended products such as gutkha and pan masala are ever-increasing not only among men but also among women, as well in teenagers and children especially in lower socioeconomic strata. Tobacco chewing, smoking, and alcohol consumption are major contributing factors for oral carcinoma. A small percentage of oral cancer cases are seen in the persons who do not use tobacco. Several studies from all over the world demonstrate smoking and smokeless tobacco products as etiological factors for oral cancer.[1] Alcohol consumption further increases this risk. [2] India has the dubious distinction of harboring world’s highest number (nearly 20%) of oral cancers. It aptly labeled the oral cancer capital of the world with an estimated 1% of the population having oral premalignant lesions.[3] Human papilloma virus,[4,5] dietary deficiencies,[6] and poor oral hygiene[7,8] have also been associated with increased risk of oral carcinoma.

The purpose of this retrospective study was to analyze the epidemiological factors and clinical profile of oral cancer cases in a North Indian hospital setting.
**MATERIALS AND METHODS**

Clinical details of 479 histopathologically proven oral cancer patients presenting to Department of Surgical Oncology between January 2010 and December 2012 were analyzed. Details of age, sex, occupation, tobacco habit, and clinical stage at presentation were recorded. Cases were classified according to the tumor-node-metastasis classification of the Union for International Cancer Control (7th edition) staging of carcinoma of oral cavity.[9]

**RESULTS**

Mean age of presentation of oral carcinoma was 47.84 years in the present study. Of a total of 479 patients, 364 were males (76.0%) and 115 were females (24.0%) [Table 1]. The age distribution of oral cancer cases is shown in Table 2. The largest number of cases in the study (n = 124; [25.8%]) were recorded in age group 51–60 years followed by age group 41–50 (n = 119; [24.8%]). The youngest patient was 20 years old, and the oldest was 80 years of age. Male to female ratio was 3.1:1.0.

The occupational data revealed that majority of the cases (n = 351; [73.2%]) were manual workers, and industrial laborers, followed by the unemployed (n = 67; [14.0%]). The least number of cases were professionals who comprised of only five patients (1.1%). The occupation distribution is shown in Table 3.

The majority of patients were tobacco users who comprised of 93.7% (449/479) of our patients in this study. The majority of cases (n = 254 [53.0%]) were tobacco chewers only, followed by the group of those who were both smokers and tobacco chewers who represented 156 (32.6%) cases. Thirty-nine (8.2%) cases were only smokers. Thirty (6.2%) patients never consumed tobacco in any form [Table 4].

The duration of tobacco habit is listed in Table 5. One hundred and nine patients (22.7%) had the habit of tobacco consumption for 5–14 years while 122 patients (25.5%) had a history of tobacco consumption for 15–24 years. Ten patients (2.1%) had a habit of tobacco consumption for more than 45 years.

Buccal mucosa and gingivo buccal sulcus were the most common subsites in our study, with 210 (43.8%) patients affected at these sites followed by alveolus, which was the site involved in 154 (32.1%) patients. Tongue cancer was the third major site of carcinoma with 88 patients (18.4%) affected. Few cases of the floor of the mouth and retromolar trigone were also reported [Table 6].

![Table 1: Gender information of cases](image1)

| Sex     | Number of cases | Percentage |
|---------|-----------------|------------|
| Male    | 364             | 76.0       |
| Female  | 115             | 24.0       |
| Total   | 479             | 100        |

![Table 2: Age group of cases](image2)

| Groups (years) | Number of cases | Percentage |
|----------------|-----------------|------------|
| 20-30          | 49              | 10.2       |
| 31-40          | 109             | 22.7       |
| 41-50          | 119             | 24.8       |
| 51-60          | 124             | 25.8       |
| 61-70          | 67              | 14.0       |
| 71-80          | 11              | 2.5        |
| Total          | 479             | 100        |

![Table 3: Occupation of patients](image3)

| Occupation                  | Number of cases | Percentage |
|-----------------------------|-----------------|------------|
| Unemployed                  | 67              | 14.0       |
| Self-employed\(^a\)         | 15              | 3.1        |
| Agriculture\(^b\)           | 22              | 4.6        |
| Manual workers\(^c\)        | 351             | 73.2       |
| People working in office\(^d\)| 19             | 4.0        |
| Professional\(^e\)          | 5               | 1.1        |
| Total                       | 479             | 100        |

\(^a\)Businessmen, \(^b\)Farm workers, \(^c\)Manual workers; manual and industrial labors; building/construction/mechanical worker, \(^d\)Executives; doctors; teachers etc

![Table 4: Tobacco habit](image4)

| Habit                          | Male | Female | Number of cases | Percentage |
|-------------------------------|------|--------|-----------------|------------|
| No tobacco consumption        | 14   | 16     | 30              | 6.2        |
| Tobacco chewing               | 170  | 84     | 254             | 53.0       |
| Tobacco smoking               | 31   | 8      | 39              | 8.2        |
| Tobacco chewing and smoking   | 150  | 6      | 156             | 32.6       |
| Total                         | 365  | 114    | 479             | 100        |

![Table 5: Duration of tobacco consumption](image5)

| Groups (years) | Number of cases | Percentage |
|----------------|-----------------|------------|
| No habit       | 30              | 6.3        |
| < 5            | 57              | 11.9       |
| 5-14           | 109             | 22.7       |
| 15-24          | 122             | 25.5       |
| 25-34          | 92              | 19.2       |
| 35-44          | 59              | 12.3       |
| 45+            | 10              | 2.1        |
| Total          | 479             | 100        |

The stage distribution of patients is shown in Table 7. Of 479 patients, 307 (64.1%) patients presented with Stage IV disease, followed by 135 patients (28.2%) with Stage III disease. Two hundred and sixty-five cases (55.3%) had Stage IV-A disease and 39 (8.1%) patients presented with Stage IV-B disease. Three patients presented with Stage IV-C (0.7%) disease. Twenty-four (5.0%) patients presented with Stage II and 13 (2.7%) patients with Stage I disease [Table 7].
We observed the same and tobacco.

Clinical stages

| Stage | Number of patients | Percentage |
|-------|--------------------|------------|
| T1N0M0 | 13 | 2.7 |
| T2N0M0 | 24 | 5.0 |
| T1N1M0-T3N1M0 | 135 | 28.2 |
| T1N2M0-T4aN2cM0 | 265 | 55.3 |
| T3N3M0-T4bN3M0 | 39 | 8.1 |
| T2N2cM1-T4aN1M1 | 3 | 0.7 |
| Total | 479 | 100 |

According to UICC 7th ed. UICC: Union for international cancer control, TNM: Tumor-node-metastasis

Discussion

The present study showed that the majority of oral cancer cases (93.7%) were tobacco consumers before being diagnosed with oral carcinoma. Such association of tobacco and development of oral cancer are reported in several studies. Male to female ratio was 3.1:1.0 in this study while some other studies conducted in other parts of India also found a higher male to female ratio. Males have easy access to tobacco products than females because of social and cultural factors; however, this is slowly losing ground. In this study, the youngest patient was 20-year-old, and the oldest was 80-year-old. The most affected age group was 51–60 years followed by Stage III disease (27%).

Late diagnosis of carcinoma is a major problem of developing countries especially in India, which adversely affects the treatment outcome. We observed the same in the present study as most of the cases were Stage IV (64.1%) followed by Stage III disease (27%).

Conclusion

Tobacco consumption is the main etiological factor for the development of carcinoma of the oral cavity in the present study. The majority of cases reported at an advanced stage of the disease which increases the burden of disease and worsens the prognosis. This is the most worrisome observation made in this study. Smokeless tobacco consumed in India is one of the most common forms of tobacco abuse and is the leading cause of cancer in India especially of the buccal mucosa and alveolus. There is need to spread awareness about this tobacco-related cancer and immediate consultation on suspicion of cancer.

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