

INVOLVEMENT OF ORAL CAVITY SUBSITES AND ETIOLOGICAL FACTORS FOR ORAL CAVITY CARCINOMA IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Objectives: To determine the frequency of carcinoma of various oral cavity sub sites along with risk factors like smoking.

Material and Methods: Six months Descriptive retrospective study was conducted at Pakistan Institute of Medical Sciences, Islamabad, Pakistan, in department of ENT, Head & Neck Surgery, from June 2015 to Dec 2015. Five years data was analyzed from the record room of ENT department, 200 patients with proven malignancy of oral cavity excluding cases involving oropharynx. The past five years cancer record was analyzed. Tumor staging and nodal staging was based on size of primary lesion and neck node status on palpation and on CT scan of neck where present in record. Risk factors were identified accordingly.

Results: The highest frequency was for oral cancer in anterior 2/3rd of tongue, 33.5% followed by floor of mouth, 30.5%, lower alveolus 14%, buccal mucosa 10%, upper alveolus 5%, hard palate 3%, and retromolar trigone, 2% each. Tobacco smoking was identified as the major risk factor for increasing frequency of oral cancer. However, no such association could be found for age and gender.

Conclusion: Oral cancers are fairly common in our population with tongue and floor of mouth the most frequent sites. Tobacco smoking is the most common risk factor for oral cancer.

Keywords: carcinoma, epidemiology, oral cavity, smoking.

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INTRODUCTION

Oral cancer is becoming a significant worldwide health problem. A number of risk factors have been reported in literature. Oral cavity is the most common anatomical sub-site of malignancies involving upper aero-digestive tract. Squamous cell carcinoma is the most common histological type and totalizes more than 95% of oral cancer¹. An early spread to the neck and subsequent poor prognosis warrants special attention

to the prompt diagnosis and improved survival. Five years survival rate has not been significantly improved, despite remarkable advances in treatment options, over the past several decades and is still around 50-60%³.

Tobacco (cigarettes, pipes, cigar and smokeless tobacco) and alcohol usages are the major risk factor responsible for most cases of oral cancer. Although the most common use of tobacco is cigarette smoking, increase in the number of users of smokeless tobacco (snuff, paan, chalia) is alarming⁴. Smokeless tobacco is particularly associated with cancers of buccal mucosa, lower alveolar ridge, inner surface of the lips and tongue⁵. About 8 out of 10 people with oral cavity cancers use tobacco and quantity and time duration of use of tobacco is directly related to risk of cancer

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development⁶. Researchers have been looking for factors that can influence the prognosis of oral carcinoma, because its outcome is highly unpredictable. Poor socioeconomic status is also a predisposition to oral cancers and oropharynx⁷. Oral cavity carcinoma has shown geographical variations with respect to its distribution among its various sub sites. Oral tongue and floor of the mouth are the most common sites in west, whereas lower alveolar ridge and buccal mucosa along with oral tongue are the leading sites in our part of the world.⁸ Advance age is also a risk factor in cancer development. There is longer exposure to potential carcinogens due to advancing age and potential damage to the DNA aging cells. Similarly, male are more likely to develop a cancer than female⁹.

Conversely some studies have shown that oral carcinoma rate in female is reaching those found in male. Same study also found that the females presenting with oropharyngeal carcinoma were younger and had a positive history of heavy drinking and smoking. Improved public awareness will help in early diagnosis and prompt treatment. Our study will demonstrate valuable information in this regard, with focus on sub site involvement and risk factors associated to have a positive influence on the overall outcome.

MATERIAL AND METHODS

Six months descriptive retrospective study was conducted at Pakistan Institute of Medical Sciences, Islamabad in department of ENT, Head & Neck Surgery, from June 2015 to Dec 2015. Five years previous data was analyzed from the record room of the department, 200 patients with proven malignancy of oral cavity. Patients with tumors primarily involving sub sites of oropharynx and extending into the oral cavity were excluded. Patients with incomplete data in files, meta-chronous/ synchronous, previously treated patients and age below 12 years were excluded. Patients were included in study based on demographic data, relevant medical history and physical examination findings along with histopathology reports.

Tumor staging and nodal staging was performed based on size of primary lesion and neck nodes status on palpation and on CT scan of neck where present in record. The data was entered in the computer and analyzed in SPSS (10). Descriptive statistics were used to calculate mean and standard deviation for age. Frequency (%age) was calculated for values of gender, cigarette smoking, and duration of symptoms, sub sites of oral cavity involved, T staging and neck node status. Chi-square test was used as test of significance. P value of <0.05 was considered as significant.

RESULTS

The total number of subjects (n) was 200. The Mean age of the participants was $37.87 \pm S.D 11.602$, with an age range of 18-62 years. Amongst the participants, 115(57.5%) were males and 85(42.5%) were females. The highest frequency was for oral cancer in anterior 2/3rd of tongue, 71/200 cases (35.5%) followed by floor of mouth, 61/200 cases (30.5%), Lower alveolus 28/200 cases (14%), buccal mucosa 20(10%), upper alveolus 10 (5%), hard palate 6(3%), retromolar trigone, 4(2%) (Table I). Ninety-one (45.5%) participants had no nodal metastasis, 40(20%) had N1, 10(5%) N2a, 18(9%) N2b, 15 (7.5%) N2c and 26(13%) N3. Fifty-six (28%) of participants had T1 oral cancer, 46(23%) of participants had T2 oral cancer, 45(22.5%) of participants had T3 oral cancer, 26 (13%) had T4 oral cancer and 27 (13.5%) had carcinoma in situ, Tis. 165(82.5%) of the participants did not have distant metastasis, M0, while 35 (17.5%) had distant metastasis (M1). One hundred and twenty three (61.5%) of the participants reported Tobacco smoking. 45(22.5%) of the participants reported using naswar. 19 (9.5%) of the participants reported using betel nuts. 13 (6.5%) of the participants reported using alcohol and smoking (Table II). For association of age with frequency of oral cancer in different oral sub-sites, Chi square test reveals chi-square value of 28.377 and p-value Of 0.778 (>0.05), therefore no significant association between age and frequency of oral cancer in different oral sub-sites found. (p<0.05 considered statistically significant). For association of gender with frequency of oral cancer in different oral sub-sites, Chi square test reveals chi-square value of 3.343 and p-value Of 0.852 (>0.05), therefore no significant association between gender and frequency of oral cancer in different oral sub sites found (p<0.05 considered statistically significant). For association of tobacco smoking with frequency of oral cancer in different oral sub sites, Chi square test reveals chi-square value of 153.227 and p-value Of 0.000 (<0.05), therefore there is a significant association of tobacco smoking with frequency of oral cancer in different oral sub-sites (p<0.05 considered statistically significant).

Table 1: Frequency of sub site involvement.

Oral Cavity Sub site	No of Pts & %ages.
Anterior 2/3rd of tongue	71(35.5%)
Floor of mouth	61(30.5%)
Lower Alveolus	28(14%)
Buccal Mucosa	20(10%)
Upper Alveolus	10(5%)
Hard palate	6(3%)
Retromolar Triagone	4(2%)

Table 2: Frequency of tobacco use (risk factors).

Risk factor	No of Pts & %ages
Tobacco smoking	123(61.5%)
Naswar habitual	45(22.5%)
Betel nuts	19 (9.5%)
Alcohol consumption	13(6.5%)

DISCUSSION

Our study found that the frequency of oral cancers according to various sub sites of oral cavity was as follows: The highest frequency was for oral cancer in anterior 2/3rd of tongue, 67/200 cases (33.5%) followed by floor of mouth, 61/200 cases (30.5%), Lower alveolus 28/200 cases (14%) buccal mucosa 20(10%), upper alveolus 10 (5%), hard palate 6(3%), posterior 1/3rd of tongue and retromolar trigone, 4(2%) each^{9,10}. A similar study from found that there were 28.6% (n = 39) tongue carcinomas, 22.1% (n = 31) buccal mucosa, 15% (n = 21) mandible, 11.4% (n = 16) maxilla, 8.5% (n = 12) floor of mouth and 4.3% (n = 6) cases of palate^{11,12}.

A study by Radoi L and colleagues was conducted to analyze 689 oral cavity cancer cases and demonstrated the role of combination of tobacco and alcohol consumption in the oral cavity cancer burden in France and gives an indication of the proportion of cases attributable to other risk factors. Most of oral cavity cancers are potentially preventable through smoking or drinking cessation as they attributable to concurrent smoking and drinking².

For a fair comparison, we can present here and relate the findings of another study. This study was conducted in Zimbabwe^{13,14} with the purpose to document the age, gender, sub site and histologic differentiation of the oral cavity, lip and maxillary antrum in a Zimbabwean population and compare these findings with other studies in the literature. It was found that 66 (18.4%) of oral squamous cell carcinoma was in mandibular gingiva, 33 (9.2%) in maxillary gingival, 28 (7.8%) hard palate, 58 (16.2%) floor of mouth and buccal mucosa, 33 (9.2%)¹⁵. These findings are comparable with our study findings. Another major objective of our study was identified and determines the risk factors for the development of oral cancers in our setting. The current study found that tobacco smoking was significantly associated with increased frequency of cancers of various oral-sub sites ($p=0.000 < 0.05$)¹⁶. Now we shall review a few studies, focusing on the aforementioned findings and highlight the essential similarities and differences.

Both intrinsic and extrinsic factors may be at work to cause such carcinomas. Amongst the extrinsic factors, alcohol consumption, tobacco use, malnutri-

tion, syphilis, immune deficiency disorders, chronic trauma, radiations and viruses are most important^{17,18}. Strongest association of carcinoma of the oral cavity is chewing of various forms of smokeless tobacco, which also includes various forms of snuff, betel guid with tobacco^{19,20}. In Pakistan most important risk factor for oral cavity cancer is tobacco use²¹.

Other international studies showed significant risk factor for developing upper aero digestive track disease, oral squamous cell carcinoma, esophageal cancer, lung cancer and stomach cancer is smoking^{22,23}. Bidis, flavored or unflavored, which consist of tobacco wrapped in temburni or tendu leaf. Bidis are imported to the US (United States) from Asian countries and have become popular among teenagers in the United States²⁴.

Presence of tobacco smoking, in the current study, was found to be significantly associated with increased frequency of oral cancers in various oral sub sites ($p=0.000$). This finding is in line with number of studies^{25,26} that suggest that the presence of substance abuse, be it in the form of tobacco, betel, alcohol, cannabis etc, is a significant risk factor for the development of oral cancers. Therefore, in conclusion, the presence of tobacco smoking, have generally been found to be significantly associated with oral cancers in various studies.

CONCLUSION

Oral cancers are fairly common in our population with tongue and floor of mouth the most frequent sites. Tobacco smoking is the most common risk factor for oral cancer. By controlling this preventable factor, we can decrease the burden of oral cavity carcinoma.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Junaid M: write up of manuscript, data analysis,
Khan MA: Data collection, writing manuscript, data analysis.
Umair M: Helping in writing manuscript, Proof Reading.
Nabi A: Proof Reading.
Khawar A: Proof Reading.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.