

Original Research Article

Association of Histopathological Grading of Oral and Oropharyngeal Cancers and Its Correlation with Tobacco Abuse both Smoked and Non-Smoked in Western Part of Uttar Pradesh: A Hospital Based Study

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ABSTRACT

Introduction: Overall 95% of oral and oropharyngeal cancers are caused by tobacco consumption. Squamous cell carcinoma is the most common histopathology in these sites. Histopathologically these cancers can be grade 1, grade 2 and grade 3. Here we have tried to correlate the association of these histopathology grades with tobacco chewing habits in western part of Uttar Pradesh, India.

Material and methods: This is a retrospective cross-sectional hospital based study, performed in Nayati Health Care and Research Centre, Mathura, Uttar Pradesh. Total 40 subjects who were tobacco users with histopathologically proven squamous cell carcinoma of oral and oropharyngeal malignancies, registered in our hospital between Jan 2017 and July 2018, included in our study. Fisher's Exact Test used for categorical variables to see the association between them.

Results: The most common age groups affected by oral and oropharyngeal malignancies were 51-60 (32.5%) followed by 61-70 years (25%). Male (87.5%) preponderance was observed. 70% cases were of oral cavity and 30% oropharyngeal cancers. It was observed that 82.5% cases presented in stage III and IV. Grade 2 was more common (65%) followed by grade 1 (25%). There was statistically significant association between grade and male gender [$p=0.04$] and no significant association observed between grade and tobacco habits.

Conclusion: Thus, we can conclude that though tobacco acts as a risk factor in oral and oropharyngeal malignancies, still it cannot be certainly concluded that tobacco habits could be associated with the grade of the disease, which is a major prognostic factor.

Key Words: Oral and oropharyngeal malignancies, histopathological grade, tobacco abuse.

INTRODUCTION

Head and neck malignancies are the one of the most common malignancies in

India in terms of incidence and prevalence with different risk factors, prevalence and outcomes. ^[1-3] This may be attributed to

tobacco abuse in any form like smoking (bidi, cigarettes, hukka etc.), tobacco chewing (areca nuts, beetle quid, gutkha, pan masala, chutta etc.) or both smoking and tobacco chewing. Tobacco abuse in any form leads to myriad of changes in mucosal part of different head and neck subsites like mucositis, submucous fibrosis, leukoplakia, erythroplakia etc. which further lead to malignant transformation. [3] Incidence of oral and oropharyngeal malignancies are 354864 (2%) and 92887 (0.5%) and the mortality are 177384 (1.9%) and 51005 (0.5%) worldwide as per GLOBOCAN data. [4,5] Age standardized incidence rate of lip and oral cavity malignancies in South East Asia in males and females are 3.2 and 1.8 per one lakh population respectively. [5] Squamous cell carcinoma is the most common histopathology variety in oral and oropharyngeal malignancies. [6] Histopathologically these oral and oropharyngeal squamous cell carcinomas are classified into well differentiated (grade 1), moderately differentiated (grade 2) and poorly differentiated (grade 3). [7] In this study, we have tried to find out the association between histopathological grade of oral and oropharyngeal squamous cell carcinoma and different types of tobacco habits in the study population.

MATERIALS AND METHODS

Study design: This study was a retrospective cross-sectional hospital-based pilot study, performed in a quaternary care centre in Nayati Health Care and Research Centre, Mathura, Uttar Pradesh. The study performed during the period of Jan 2017 to July 2018. Total 40 patients enrolled in this study, who were tobacco users with histopathologically proven squamous cell carcinoma of oral cavity and oropharynx, registered in our hospital. Patients with any other histopathology except squamous cell carcinoma were excluded.

Data collection: The data was collected after obtaining ethical approval from the Scientific Advisory Committee (SAC) of Nayati Health Care and Research Centre,

from medical records available in the hospital regarding patient profile, demography, histopathological grade and tobacco habits.

Statistical analysis: Data was primarily entered in to Microsoft Excel. Later these data were transferred and analysed using SPSS 21.0 software. The number and percentage of demographic characteristics were calculated. Further Fisher's Exact test for the categorical variables to see the association between them. The level of statistical significance was set as $p < 0.05$.

RESULTS

Table.1: Distribution of demographic and clinical Characteristics of patients.

Characteristics	Numbers	Percentage
Age Group (in years)		
21-30	1	2.5
31-40	4	10.0
41-50	9	22.5
51-60	13	32.5
61-70	10	25.0
>70	3	7.5
Gender		
Male	35	87.5
Female	5	12.5
Site		
Oral Cavity	28	70.0
Oropharynx	12	30.0
Subsite		
Alveolus	1	2.5
Anterior Tongue	11	27.5
Base of Tongue	9	22.5
Buccal Mucosa	13	32.5
GB Sulcus	1	2.5
RMT	2	5.0
Soft Palate	2	5.0
Tonsillar Fossa	1	2.5
Stages		
I	6	15.0
II	1	2.5
III	7	17.5
IV	26	65.0
Grade		
1	10	25.0
2	26	65.0
3	4	10.0

Major finding of this study were depicted in Table - 1 and Table - 2. The distributions of demographic and clinical characteristics of the patients are shown in Table - 1. Most common age groups affected by oral and oropharyngeal malignancies was 51-60 (32.5%) followed by 61-70 (25%) followed by 41-50 years (22.5%). Males were more affected (87.5%) than females, as per our observation. We

observed that 70.0 % cases were of Oral and 30.0% oropharyngeal malignancies. Subsite analysis further suggested that buccal mucosa was the commonest subsite involved (32.5%) followed by oral tongue (27.5%), base of tongue (22.5%), RMT (5%), Soft palate (5%), tonsillar fossa

(2.5%), alveolus (2.5%). Stage III and IV cancers constitute 82.5% of our study cohort, which suggests that most cases present for treatment in advanced stages, which further needs analysis to find out the cause. We found grade 2 was more common (65%) followed by grade 1 (25%).

Table 2: Association between grade with gender and tobacco habits

Characteristics	Grade			p value
	1	2	3	
Gender				
Male	7 (20.0)	25 (71.4)	3 (8.6)	0.04
Female	3 (60.0)	1 (20.0)	1 (20.0)	
Tobacco abuse				
Yes	8 (80.0)	24 (92.3)	4 (100.0)	0.55
No	2 (20.0)	2 (7.7)	0 (0.0)	
Smoking				
Yes	3 (30.0)	11 (42.3)	1 (25.0)	0.69
No	7 (70.0)	15 (57.7)	3 (75.0)	
Tobacco chewing				
Yes	6 (60.0)	20 (76.9)	3 (75.0)	0.74
No	4 (40.0)	6 (23.1)	1 (25.0)	
Smoking and tobacco chewing				
Yes	1 (10.0)	7 (26.9)	0 (0.0)	0.39
No	9 (90.0)	19 (73.1)	4 (100.0)	

We further observed that, there was statistically significant association between grade and gender [$p=0.04$; i.e. grade 2 is highly associated with males (71.4%)] (Table - 2). No significant association is observed between grade with respect to tobacco abuse ($p=0.55$), grade with smoking ($p=0.69$), grade with tobacco chewing ($p=0.74$), grade with both smoking and tobacco chewing ($p=0.39$).

DISCUSSION

In current study the most common age group affected by oral and oropharyngeal malignancies is 51-60 (32.5%) followed by 61-70 (25%) followed by 41-50 (22.5%). Brandizzi *et al.* mentioned that 28% of oral cancer patients were between 60-69 years, followed by 27% between 70-79 years and 18% between 50-59 years of age, as per their study. [8] According to Abhinandan *et al.*, the most common age group affected was 6th decade (31.13% cases) followed by 22.8% cases were in the 4th and 18% in 5th decade. [9] So, it can be concluded that oral and oropharyngeal malignancies are more common in sixth and seventh decade of life. In present study 87.5% patients are male.

Other studies in India, like Muwonge *et al.*, [10] Patel *et al.*, [11] also suggested that males are more affected than females. This may be due to the fact that, male members of the society go for early medical consultation as compared to the females and females are less habituated to tobacco abuse than males. [12]

Most common site of involvement is buccal mucosa in oral cavity, as suggested by Muwonge *et al.*, [10] Ahluwalia *et al.*, [13] but western literatures suggest oral tongue to be the most common site of involvement. [8,11,14,15,16] Buccal mucosa was the commonest subsite involved (32.5%) followed by oral tongue (27.5%), base of tongue (22.5%), RMT (5%), Soft palate (5%), tonsillar fossa (2.5%), alveolus (2.5%), as per our study. Current study suggested moderately differentiated (grade 2) is more common followed by well differentiated (grade 1) followed by poorly differentiated. There are studies which also support this finding like Bhat SP *et al.*, [17] but according to Mehrotra *et al.* [18] moderately differentiated squamous cell carcinoma as the most prevalent type in males, and well differentiated in females. Another study by Channana C *et al.*

suggested that in male patients, most common type of histopathological grade was moderately differentiated (50%), followed by well differentiated (26.9%) and poorly differentiated (23.1%) and in female patients, most common type of histopathological grade was well differentiated (54.1%), followed by moderately differentiated (29.1%) and poorly differentiated (16.8%).^[19] Most of the cases in the present study presented to the hospital in advanced stage, which is a common phenomenon in India as supported by Singh MP *et al.*^[20]

According to Schmidt *et al.*^[21] and Padma R *et al.*^[22] oral squamous cell carcinoma was more aggressive (poorly differentiated) in tobacco users than non-tobacco users. In contrary, Wang X *et al.* did not find significant association of histological grade and smoking habits in oral squamous cell carcinoma.^[23] In our study, we also found no evidence of association between tobacco abuse and histopathology grade of the oral and oropharyngeal squamous cell carcinoma. The only significant association obtained between grade and gender, that is higher grade, is associated with male gender, which may be due to the fact that females are outnumbered by the males in this study cohort.

CONCLUSION

In summary, we can conclude that though tobacco acts as a risk factor in oral and oropharyngeal malignancies, still it cannot be certainly concluded that tobacco habits could be associated with the grade of the disease, which is a major prognostic factor. We need to do further analysis with larger sample size to draw any conclusion with certainty in this regard. As in this study male gender is having positive association with grade, so the cancer biology may need to be further explored to see any other associations. Secondly as most of the cases present to the hospital in advanced stage of the disease, though this is not a domain of this study, but this is a new angle to be

explored further, for better treatment outcomes.

Conflicting interests:

The author(s) declared no conflicts of interests with respect to the research and publication of this article.

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Ethical approval:

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