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Research Article

THE HISTOPATHOLOGICAL STUDY OF TUMOR AND TUMOR-LIKE LESIONS OF ORAL CAVITY AND OROPHARYNX

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ABSTRACT

Objective: The objective is the histopathological study of tumor and tumor-like lesions of the oral cavity and oropharynx.

Methods: This study was conducted in the Department of Pathology, SBKS Medical Institute and Research Centre, Piparia, for 1 year. One hundred oral biopsies received from the ENT department were studied. Clinical details were obtained from the requisition form. Biopsies received were processed and stained with Hematoxylin and Eosin. Histopathological diagnosis regarding type and differentiation was made.

Results: Among 100 cases of the oral cavity and oropharynx biopsies analyzed in the present study, malignant lesions were 90 (90%), premalignant lesions were 4 (4%), and benign lesions were 6 (6%). The study included 86 cases (86%) of squamous cell carcinoma, 2 cases (2%) of verrucous carcinoma, 1 case (1%) of adenosquamous carcinoma, 1 case (1%) of adenocarcinoma, 3 cases (3%) of leukoplakia, 1 case (1%) of severe dysplasia, 3 cases (3%) of pleomorphic adenoma, and 1 case (1%) each of pyogenic granuloma, squamous papilloma, ossifying fibroma. Maximum number of cases was of squamous cell carcinoma (86%). Maximum number of cases was seen inthe age group of 36–45 years, the youngest patient was 25 years old. There was a male preponderance for oral and oropharyngeal lesions (73%) as compared to females (27%). Male: Female ratio was 1:0.37. The most common site of the lesion was the tongue (41%) followed by buccal mucosa (30%). The majority of the tumors were well-differentiated.

Conclusion: Males are more likely to develop lesions of the oral cavity and oropharynx than females. Typically, older age groups are affected. Drinking alcohol, smoking, and chewing tobacco can contribute to oral and oropharyngeal lesions. The most frequent place implicated is the tongue. The most prevalent histological variation is squamous cell carcinoma, and the majority of these tumors are well-differentiated.

Keywords: Oral cavity, Oropharynx, Squamous cell carcinoma.

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INTRODUCTION

Oral cavity and oropharynx are a common site for many types of benign and malignant tumors. The benign tumors do not invade other tissues and do not spread to other parts of the body whereas the malignant tumors can penetrate into surrounding tissues and spread to other parts of the body. There are also some growths that start off harmless but can later develop into cancer. These are known as pre-cancerous conditions. Benign tumors and tumors-like conditions of the oral cavity include eosinophilic granuloma, fibroma, granular cell tumor, keratoacanthoma, lipoma, schwannoma, neurofibroma, papilloma, verruciform xanthoma, and pyogenic granuloma, as well as odontogenic tumors. The usual treatment for these conditions is to surgically remove them since they are unlikely to recur [1].

Oral cancer is the eighth most common cancer in men and ranks 14th among women worldwide. There were 274,300 new cases and 145,500 deaths worldwide in 2002. Two-thirds of this burden are borne by developing countries and over 30% by India all alone [2]. Oral cancer is the most common type of cancer in India in men and actually accounted for 40% of all forms of cancer. In males, oral cancers represent 4% of total body cancers whereas in females in India, 2% of all cancers are of the oral cavity [3].

The knowledge of etiological factors for the development of oral cancers can make the disease preventable by avoidance of risk factors such as tobacco consumption, betel-quid chewing, and alcohol abuse. Betel quid and areca nut chewing were major risk factors evaluated by the International Agency for Research on Cancer as carcinogenic to humans in 2003 monograph evaluation [2]. In Western countries, tobacco usually takes the form of cigarette, cigar, or pipe smoking. The etiologic role of oncogenic Human Papillomavirus infections in the development of oral cancers is also being defined.

Syphilis, nutritional deficiencies, sunlight (in cases of lip cancer), miscellaneous factors including heat (particularly heat from a pipe stem in cases of lip cancer), trauma, sepsis, and irritation from sharp tooth and dentures also play a role in the etiology of oral cancers [2]. The possibility of lymph node metastasis from oral squamous cell carcinomas can be predicted with the help of certain factors such as site, size, and histological differentiation of the tumor. [4] The accuracy of the intraoral biopsy in the diagnosis of oral carcinoma can approach 100%.

These facts arouse a pathologist's interest in the study of oral cancers. The disease is widely prevalent in this part of the globe and ample material is available for the detailed study. The present work is undertaken to study the tumor and tumor-like lesions of the oral cavity and oropharynx.

METHODS

The present study was a prospective and observational (non-interventional) type of study. A total 100 number of patients from January 2012 to December 2012 were recruited.

All specimens of the oral cavity and oropharynx received in the Department of Pathology SBKS MI and RC, Piparia constituted the study material. The specimens were subjected to detailed histopathological examination. In each case, the pathological reaction pattern was studied carefully and documented.

All the specimens studied were categorized into one of the three categories.

a. Benign lesions
b. Pre-malignant lesions
c. Malignant lesions.

Inclusion criteria

All types of oral lesion specimens are considered in this study.

Exclusion criteria

Inadequate biopsies and poorly preserved oral cavity and oropharynx specimens are excluded from the study.

The study was conducted on oral cavity and oropharynx specimens removed at the ENT department, in the hospital, in the best interest of the patient. Hence, the present study did not require any intervention to be conducted on patients. However, Ethical Committee clearance was obtained.

The specimens were fixed in 10% of formalin for 24 h after recording the gross morphological features: The size, shape, color, consistency, presence of growth and necrosis, appearance on cut section, and appearance of other adjacent structures.

5 mm thick bits or small tissue fragments aggregated and submitted for processing, 4–5 micron thick sections were cut with a microtome and stained with Hematoxylin and Eosin (H and E) stain. The diagnosis of oral lesions was made on the basis of clinical presentation, gross morphology, and light microscopic features of H and E. Immunohistochemistry (Cytokeratin) were done whenever required. Immunophenotyping and cytogenetic studies were not performed.

RESULTS

The present study was an observational, prospective, and non-interventional kind of investigation, and it was done after taking permission of Institutional Ethical Committee. From January 2012 to December 2012, a total of 100 patients were recruited. The study material consisted of all oral cavity and oropharynx specimens obtained at the Department of Pathology SBKS MI and RC, Piparia.

Among 100 cases of the oral cavity and oropharynx, 94% of cases were of the oral cavity and 6% of the oropharynx (Table 1).

The present study includes 90% of malignant lesions, 6% of benign lesions, and 4% of premalignant lesions (Table 2).

In the present study, the patients observed were of a wide range in ages from 25 years to 85 years. The mean age was 49.60 years. Maximum numbers (33%) of cases were seen in the age group of 36–45 years. Minimum numbers (3%) of cases were seen in the age group of more than 76 years. There is a male preponderance for oral lesion biopsy (73%) as compared to females (27%). M: F ratio was 1:0.37. In malignant lesions, the M: F ratio was 1:0.32, in premalignant lesions, the M: F ratio was 1:1, and in benign lesions, the M: F ratio was 1:1.

Among 100 patients with oral cavity lesions, 47% gave the history of tobacco chewing. About 9% were smokers, 15% were both smoking and chewing tobacco, 9% were using alcohol as well as tobacco chewing and smoking, and 20% did not have any habits (Table 4).

Among 100 cases, 84 cases were punch biopsy specimen and 16 cases were resection specimen. Out of four cases of premalignant lesions three cases were of leukoplakia and one case was of severe dysplasia. Out of six cases of benign lesions, three cases were of pleomorphic adenoma, one case was of pyogenic granuloma, one case was of squamous papilloma, and one case was of ossifying fibroma (Table 5).

Out of 90 cases of malignant lesions, squamous cell carcinoma was the most common histological type in the presented study in 86 cases. Two cases were of verrucous carcinoma, one case of Adenosquamous carcinoma, and one case of adenocarcinoma (Table 6).

Table 1: No of cases from oral cavity and oropharynx were studied

Site	No. of cases	Percentage
Oral cavity	94	94
Oropharynx	6	6
Total	100	100

Table 2: Frequency of malignant, premalignant, and benign lesions

Lesions	No. of cases	Percentage
Malignant	90	90
Premalignant	4	4
Benign	6	6
Total	100	100

Table 3: Site of the lesion

Site of biopsy	No. of cases
Buccal mucosa	30
Tongue	41
GB sulcus	4
Angle of mandible	1
Hard and soft palate	6
Lower lip	1
Lower teeth	1
Oropharynx	3
Parotid gland	2
Retromolar trigone	3
Tonsil	5
Vellecula	3
Total	100

Table 4: Classification of cases according to habits

Habits	No. of cases	Percentage
Tobacco	47	47
Smoking	9	9
Smoking+Tobacco	15	15
Smoking+Tobacco+Alcohol	9	9
No habit	20	20
Total	100	100

Table 5: Histopathology of benign lesions

Benign lesions	No. of cases	Percentage
Pleomorphic adenoma	3	50
Pyogenic granuloma	1	16.67
Squamous papilloma	1	16.67
Ossifying fibroma	1	16.67
Total	6	100

Table 6: Histopathology of malignant lesions

Malignant lesions	No. of cases	Percentage
Squamous cell carcinoma	86	95.56
Verrucous carcinoma	2	2.22
Adenosquamous carcinoma	1	1.11
Adenocarcinoma	1	1.11
Total	90	100.00

Out of 86 cases of squamous cell carcinoma, 60 cases were of well-differentiated carcinoma followed by 25 cases were of moderately differentiated carcinoma and one case was poorly differentiated carcinoma (Table 7).

DISCUSSION

One hundred patients who visited our facility with a white or red plaque, growth, or ulcer in the oral cavity or oropharynx and who were later assessed on biopsy for histological diagnosis are included in the study.

About 90 (90%) of the 100 biopsies underwent for the study revealed malignant lesions, 6 (6%), benign lesions, and 4 (4%) premalignant lesions.

The mean age in our study was 49.60 years. The majority of patients (33%) were between the ages of 36 and 45, followed by 46–55 (25%), 56–65 (23%), 25–35 (12%), 66–75 (4%), and those over 76 (3%). Our study's youngest participant was a 25-year-old patient. In a study by Mehrotra *et al*. [5], the maximum incidence was in 50–59 years age range. Iype *et al*. [6] found 2.8% of oral lesions in young patients below 35 years of age. Dhar *et al*. [7] reported a maximum incidence (35.7%) in the age range of 51–60 years.

Table 7: Classification of cases according to differentiation

Differentiation	Squamous cell carcinoma	Percentage
Well-differentiated	60	69.77
Moderately differentiated	25	29.07
Poorly differentiated	1	1.16
Total	86	100.00

Fig. 1: Wide excision of carcinoma tongue

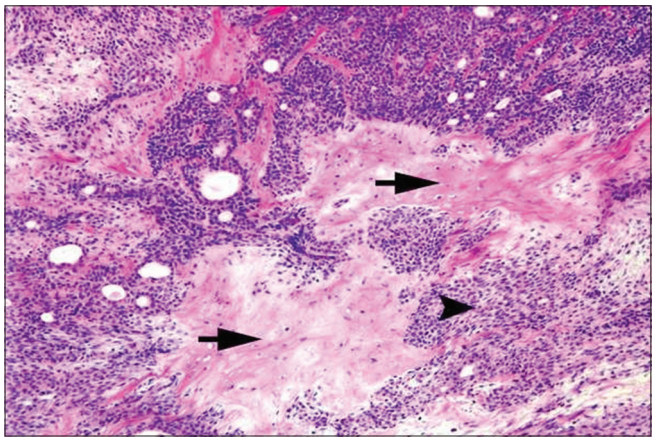

Fig. 2: Pleomorphic adenoma: Epithelial/Myoepithelial areas with myxochondroid areas. (Hematoxylin and Eosin, ×4)

In a study by Durazzo *et al*. [8], the mean age was 57.4 years. Only 8.6% of patients were 40 years or less. According to Dias and de Almeida [9], the average age of diagnosis of oral lesions was 62 years. Brandizzi *et al*. [10] reported the mean age of oral lesions to be 62 years, with a range of 19–95 years. According to Wahid *et al*. [10] in Pakistan, the most common age group affected in oral cavity squamous cell carcinoma was 41–50 years (38%), followed by 51–60 years (34%).

In our study, majority (73%) of the patients were males. Only (27%) were females. In a study by Patel and Pandya [11] 75% of patients were

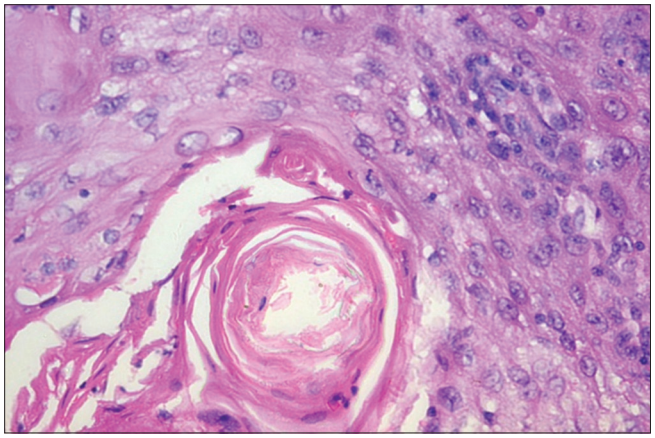

Fig. 3: Well-differentiated squamous cell carcinoma: Showing keratin pearls with pleomorphism, hyperchromatism, and high N:C ratio. (Hematoxylin and Eosin, ×20)

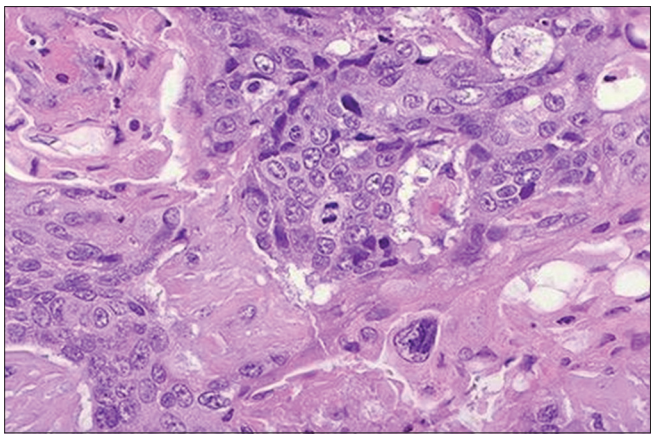

Fig. 4: Poorly differentiated squamous cell carcinoma: Showing atypical malignant cells. (Hematoxylin and Eosin, ×40)

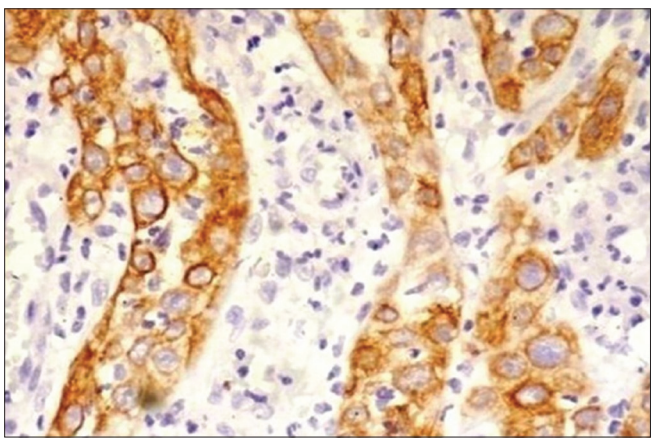

Fig. 5: Cytokeratin

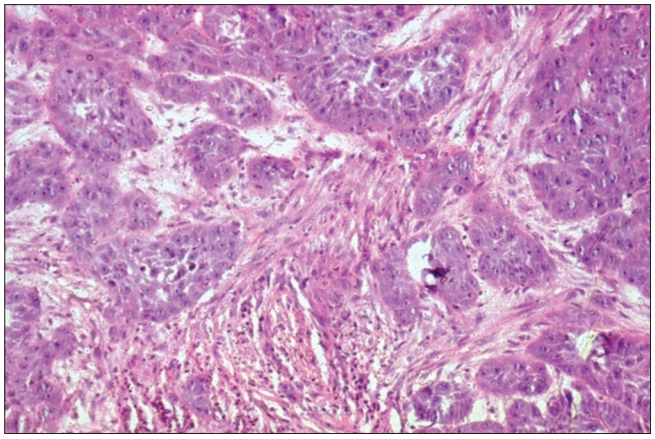

Fig. 6: Adenocarcinoma: Showing tumor cells arranged in a glandular pattern with pleomorphism, hyperchromatism, high N:C ratio, and prominent nucleoli. (Hematoxylin and Eosin, ×10)

males. Mehrotra *et al.* [5] from Allahabad, India reported a Male: Female ratio of 3.27:1. In a study by Shruthi *et al.* [12] from Karnataka, male preponderance was seen in malignant lesions with a male-to-female ratio of 1.7:1. All the studies are comparable with my studies. This shows a male preponderance of oral and oropharyngeal malignancies. The fact that oral cancer affects many more men than women may be observed in all of the studies conducted in India as well as other countries.

In our study, out of 100 patients with oral cavity lesions, 47% gave the history of tobacco chewing. About 9% were smokers, 15% were both smoking and chewing tobacco, 9% were using alcohol as well as tobacco chewing and smoking, and 20% did not have any habits.

In a study by Iype et al [6], 56.4% of patients were habituated to either tobacco chewing, smoking, or alcohol. In the study of Khandekar et al. [13], 71.3% of patients were chewing tobacco. About 63.3% were smoking tobacco in the form of cigarettes or bidis. In the study of Durazzo et al. [8] tobacco smoking was identified in 80.8% of patients. Alcohol consumption history was retrieved in 56.6% ofpatients. Dias and de Almeida [9] reported a history of tobacco use in 57.8% of patients with oral cancer. Alcohol consumers were 50% of the total number of cases. About 43.8% of the patients were both alcoholics and smokers. In the study of Balaram et al., 53% of patients were smokers. Drinkers of alcoholic beverages were 32%. Pan chewing habit was found in 59% of men and 90% of women. In a study by Shruthi et al. [12] from Karnataka among malignant lesions in our study, 60.3% had a history of tobacco consumption, 17.5% consumed both alcohol and tobacco, 9.5% were alcoholics, and 12.7% patients did not have any habits. All the studies are comparable with my studies as they show a maximum number of patients addicted to tobacco.

In our study tongue was the most common site involved (41%) followed by buccal mucosa (30%) and palate (6%). Tonsil (5%), GB sulcus (4%), oropharynx (3%), retromolar trigone (3%), and vallecula (3%) were the next common sites involved. Parotid gland (2%), lower lip (1%), lower teeth (1%), and angle of the mandible (1%) were other sites involved in the study. In the study by Patel and Pandya [11], conducted at Surat, Gujarat, Anterior 2/3 of the tongue was the most common site (23.02%). Next common was posterior 1/3 (19.64%), followed by alveolus, lips, and cheeks. Iype et al. [6] found the tongue the most common site (52%) followed by the cheek (26%), alveolus (10%), palate (4.5%), lip (2.3%), and floor of mouth (1.9%). In a study done by Bhattacharjee et al. [8] oropharyngeal cancer was the most common site comprising 15.56% of total body malignancy and oral cavity comprising 8.87%. The tongue was the most common site of malignancy in the oral cavity accounting for 32.6% of oral cavity malignancy.

Sankaranarayanan *et al.* [14] found buccal mucosa to be the most common site of malignancy of oral cavity. Durazzo *et al.* [8] in their study found that 55.6% of patients having cancer of the tongue and floor of the mouth.

Abdul *et al.* [15] in their study at Abbottabad, Pakistan, reported the maximum number of oral cancer in the buccal mucosa (34%). Other sites were lip (26%), tongue (21%), and gums (19%). Ahmed and Islam [16] from the Department of Pathology, Dhaka Medical College, Bangladesh, found the cheek to be the most common site, the next being the anterior 2/3 of the tongue.

It is observed in various studies that anatomically more anterior parts (buccal mucosa, anterior 2/3 of the tongue, alveolus, lips, and base of tongue) are the frequently involved sites in oral and oropharyngeal malignancies. This could be due to the long duration of contact with the carcinogens in tobacco and alcohol.

In our study, 86% of cases had squamous cell carcinoma, 2% verrucous carcinoma, 1% adenosquamous carcinoma, 1% adenocarcinoma, 3% leukoplakia, 1% severe dysplasia, 3% pleomorphic adenoma, 1% pyogenic granuloma, 1% squamous papilloma, and 1% ossifying fibroma. In the study of Patel and Pandya [11], all 504 patients in the study had squamous cell carcinoma. Mehrotra et al. [5] also found squamous cell carcinoma as the most common histological variety, comprising 85.12% of oral, and 97.5% of oropharyngeal malignancies. In a study by Iype et al. [7], squamous cell carcinoma was the most common type (72%). About 3.8% had minor salivary gland tumors, and 1.9% had soft-tissue sarcomas. About 6% had non-specific malignancies. Bhattacharjee et al. [17] found the most common histological type in the oral cavity and oropharynx was squamous cell carcinoma accounting to 85.12% and 97.5%, respectively. Durazzo et al. [8] from Brazil also found squamous cell carcinoma was the most frequent histological type and was present in 90.3% of patients included in their study. Glandular carcinoma was found in 4% of them. Shruthi et al. [12] from Karnataka out of 63 cases of malignant lesions in our study, squamous cell carcinoma was the most common histological type accounting for 60 cases (95.2%). All the studies are comparable with my studies.

In our study, 69.77% of squamous cell carcinoma were well-differentiated, 29.07% were moderately differentiated, and 1.16% were poorly differentiated. In the study by Patel and Pandya [11], 60.12% of the tumors were well-differentiated, 38.7% were moderately differentiated, and 1.18% were poorly differentiated. Mehrotra *et al.* [5] also observed a maximum number of well-differentiated squamous cell carcinoma. Iype *et al.* [6] found well-differentiated squamous cell carcinoma in 52.6% of cases, moderately differentiated in 34.2%, and poorly differentiated in 8.9% of cases. Shruthi *et al.* [12] from Karnataka out of 60 cases of squamous cell carcinoma, the majority were well-differentiated type seen in 31 cases (51.67%) followed by moderately differentiated in 23 cases (38.33%) and 6 cases (10%) were poorly differentiated. Ahmed and Islam [16] from Dhaka, Bangladesh also reported well-differentiated squamous cell carcinoma were the most common oral cavity malignancy. All the studies show well-differentiated tumors as the most common differentiation.

CONCLUSION

Males are more likely to develop lesions of the oral cavity and oropharynx than females. Typically, older age groups are affected. Drinking alcohol, smoking, and chewing tobacco can contribute to oral and oropharyngeal lesions. The most frequent place implicated is the tongue. The most prevalent histological variation is squamous cell carcinoma, and the majority of these tumors are well-differentiated.

CONFLICTS OF INTEREST

There were no conflicts of interest.

FINANCIAL SUPPORT AND SPONSORSHIP

Nil.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was conducted on oral cavity and oropharynx specimens removed at the ENT department, in the hospital, in the best interest of the patient. Hence, the present study did not require any direct intervention to be conducted on patients. However, Ethical Committee clearance was obtained.

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