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Original Research Article

HISTOPATHOLOGICAL SPECTRUM AND TREND OF ORAL CAVITY MUCOSAL LESIONS; AN EXPERIENCE FROM TERTIARY CARE HOSPITAL OF CENTRAL INDIA

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ABSTRACT

Background: Background Oral cavity is an important and first organ system of alimentary canal which is exposed to environmental agents constantly. It is very common site for both non-neoplastic and neoplastic lesions. In the developing countries like India, squamous cell carcinoma of oral cavity is serious health issues due to habitual chewing of tobacco in various forms including eating of betel nut. It is mostly asymptomatic to start with and diagnosed at advanced stage due to ignorance by the patients. Biopsy is considered gold standard for the diagnosis and proper management. **Objective:** To study histopathological spectrum of neoplastic and non-neoplastic lesions with reference to age, sex and site.

Materials and Methods: This was retrospective study carried out in the department of Pathology, NSCB medical college, Jabalpur for a period of five years. A total of 486 cases were studied. **Data Analysis:** Statistical analysis was conducted using SPSS 26.0 software. Descriptive statistics were utilized to summarize the distribution of cases by age, sex, lesion type, and site of presentation. Percentages and ratios were calculated to analyze trends and demographic patterns.

Results: A total 486 lesions of oral cavity were registered in the data record file. The age of presentation varied from 5 years to 90 years with maximum number of cases in the age group 30 to 40 years. Male preponderance was seen in the lesions involving buccal mucosa. Most frequent presenting lesions were neoplastic lesions 373 (6.7%) and remaining were non-neoplastic 113 (23.3%). In the non-neoplastic lesions, most common lesions were chronic tonsillitis 47 followed by pseudoepitheliomatous hyperplasia lesions 41 and other less common were inflammatory lesions, pyogenic granuloma and mucus retention cyst. In the neoplastic malignant lesions commonest presenting lesion were squamous cell carcinoma 326. Among dysplastic lesions, patients presenting with carcinoma in situ were 6, moderate dysplasia 11 and mild dysplasia were 13. In the benign category commonest presenting tumor were hemangioma 05, followed by papilloma. Buccal mucosa was the most common site 236 (48.6%) for malignant lesion including premalignant lesions.

Conclusion: Oral cavity lesions are common in our country but squamous cell carcinoma are increasing in our country with alarming rate and thus it is now serious health issue for the country like India. Malignant lesions are increasing irrespective of age group in central India due to habitual practice of chewing tabacco in different forms. It is diagnosed mostly in advanced stage. Early detection through biopsy is key in breaking chain and management.
Keywords: Squamous cell carcinoma, dysplasia, buccal mucosa, malignant, neoplastic.

INTRODUCTION

Oral cavity is the first part of gastro-intestinal system but most complex in its organization. It is divided into two compartments vestibule and oral cavity proper. It structures are derived from both ectodermal and endodermal tissue embryologically. Oral cavity has mucosa but no submucosa, former is histologically divided into keratinized and non-keratinized epithelium. Muscular tissue is present in tongue, buccal mucosa and labial mucosa only. Minor salivary glands mostly mucous glands are distributed throughout oral cavity except on the attached gingiva and tongue dorsum.[1] Knowledge of oral anatomy is important for understanding etiopathogenesis of oral cavity diseases. Oral mucosal tissue is affected by varieties of neoplastic and non-neoplastic lesions as it is open gateway to the myriad of environmental irritants with constant exposure. Malignant oral cavity lesions progressed from premalignant lesions. Clinical presentation of potentially malignant lesions are described with various nomenclature in literature like precursor lesions, premalignant, intra-epithelial neoplasia and potentially malignant.[2]

Oral mucosal cancer is more prevalent in developing countries than in developed countries with changing trends due to lifestyle modification by people and communities. It is major health challenge in developing countries like India, Srilanka, Bangladesh and Pakistan and forming almost one-fourth burden of new cancer cases.[3,4] GLOBOCAN 2020 recorded near about 19.3 million incidence of oral cancer worldwide in the year 2020,[5] India is the third country with maximum cases and if current trend continues, there is prediction by GLOBOCAN about increased number of cases to 2.08 million in India with approx. rise of 57.5 percent in twenty years from 2020.[6] India is facing diverse health challenges and oral squamous cells carcinoma is now ranking third among all cancers.[7] In India, global incidence is approximately one-fourth with reported new cases around 77,000 and 52,000 deaths,[8] In sharp contrast to western countries, 70% of cancer in India are detected mostly in advanced stage (American Joint Committee on Cancer, Stage III-IV) . Cure rate in this cancer is quite low as a result of late presentation and five year survival rate is close to 20% which is indeed quite gloomy.[9] Oral cancer developed due to variety of carcinogenic agents and related habitual practice. In western countries alcohol consumption and smoking is mostly responsible for oral carcinogenesis and In Asian countries like India tabacco consumption in various forms like chewing with betel quids, gutka ,pan masala and smoking are the main causative agent.[10] There are certain other uncommon predisposing factors like ill fitted denturs and sharp teeth which can be responsible for neoplasia if traumatic insults goes for extended duration.[11-12] The gold standard for diagnosis of oral lesions including malignant lesions are microscopic examination of haematoxylin and eosin stained sections. Ours is the retrospective study to find trends of various type of neoplastic and non-neoplastic lesions in oral cavity in reference to demographic data in a tertiary care hospital.

MATERIALS AND METHODS

Current study is a retrospective study carried out in the department of pathology of a tertiary health care centre for a period of five years. Patients with oral cavity lesions were included in the study. Clinical data and histopathological data were collected yearly for consecutive five years. Clinical details like age, sex, habit and site were retrieved manually from patient record register maintained in the Department of Pathology. Histopathological diagnosis both non-neoplastic and neoplastic entity were recorded. Neoplastic lesions were divided into benign, pre malignant and malignant and recorded accordingly. Only upfront surgical excisional and incisional biopsies of oral cavity taken for diagnostic purpose were included in this study Among all biopsies that were received in the histopathology department only 486 biopsies were taken as study population. The lesions without clinical data, located outside oral cavity, non-diagnostic, re-biopsy and biopsy for second opinion samples were excluded. The biopsy samples were taken in 10% formalin, followed by grossing, conventional processing, paraffin embedding and stained by routine hematoxylin & eosin stain (H&E). All H&E slides were retrieved and analysed. Statistical analysis was done by utilizing SPPS version.

RESULTS

A total of 486 lesions of oral cavity mucosal biopsy were taken from record register which constituted our study population. Among them 314(64.6%) were male &172(35.4%) were female. Male to

female ratio were 2:1. Out of 373 (76.7%) cases who were diagnosed with neoplastic lesions, 252 (80.3%) were males and 121 (70.3%) were females. Similarly in the non-neoplastic category out of 113 observed cases, 62 (19.7%) were males and 51 (29.7%) were females. Males were affected more in comparision to female in both neoplastic and non-neoplastic category. The distribution according to sex is shown in table 1.

Age of presentation varied from 5 years to 90 years. In the non- neoplastic category maximum number of cases were seen in the age group 30-40 followed by age group 20-30 whereas in the neoplastic category maximum number of cases were seen in the age group 30-40 followed by 40-50. The distribution according to age is shown in Table 2. The most common site for neoplastic lesions was buccal mucosa 195 (82.2%) followed by tongue 104 (90.4%). Other less common sites were hard palate, soft palate, tonsils, gingiva, uvula, lips, alveolus, floor of mouth and gingivo-buccal sulcus. Among the non-neoplastic category, the most commonly affected site were tonsils 46 (75.4%) followed by buccal mucosa 42 (17.8%). The distribution of lesions according to sites are shown in figure 3.

Table 1: Gender wise distribution of neoplastic and non-neoplastic lesions of oral cavity

Sex	Diagnosis				
	Non-neoplastic	Benign	Pre-malignant	Malignant	Total
Male	62(19.7)	7(2.2)	19(6.1)	226(72.0)	314
Female	51(29.7)	5(2.9)	11(6.4)	105(61.0)	172
Total	113(23.3)	12(2.5)	30(6.2)	331(68.1)	486

Table 2: Age wise distribution of lesions into neoplastic and non-neoplastic category

Age group (in years)	Non-neoplastic	Neoplastic			
		Benign	Pre-malignant	Malignant	Total
0-10	6(100.0)	0	0	0	6
11-20	16(72.7))	2(9.1)	0	4(18.2)	22
21-30	23(38.3)	3(5.0)	6(10.0)	28(46.7)	60
31-40	26(21.5)	1(0.8)	7(5.8)	87(71.9)	121
41-50	22(21.4)	2(1.9)	5(4.9)	74(71.8)	103
51-60	14(15.6)	2(2.2)	5(5.6)	69(76.7)	90
61-70	4(7.0)	2(3.5)	5(8.8)	46(80.7)	57
71-80	2(10.5)	0	2(10.5)	15(78.9)	19
81-90	0	0	0	6(100.0)	6
Total	113(23.3)	12(2.5)	30(6.2)	331(68.1)	486

Table 3: Site wise distribution of neoplastic and non-neoplastic lesions of oral cavity

Site	frquency	Percentage
Buccal mucosa	236	48.6%
Tonsils	61	12.6%
Tongue	115	23.7%
Gingiva	5	1%
Hard palate	14	2.9%
Alveolus	10	2.1%
Gingivo-buccal sulcus	6	1.2%
Soft palate	9	1.9%
Floor of mouth	10	2.1%
Uvula	6	1.2%
Lips	14	2.9%

Table 4: Distribution and percentage of non-neoplastic and neoplastic lesions according to histopathological diagnosis

Categories	Histopathological diagnosis	No of cases
Non-neoplastic lesions	Chronic tonsilitis	47
	Pseudoepitheliomatous hyperplasia	41
	Inflammatory lesion	12
	Pyogenic granuloma	04
	Mucus retention cyst	10
Benign lesions	Papilloma	04
	Adenomatoid odontogenic tumor	01
	Hemangioma	05
	Pleomorphic adenoma	02
Pre-malignant lesions	Mild dysplasia	12
	Moderate dysplasia	11
	Carcinoma in situ	06
Malignant lesions	Well differentiated squamous cell carcinoma	190
	Moderately differentiated squamous cell carcinoma	130
	Poorly differentiated squamous cell carcinoma	06
	Verrucuous carcinoma	03
	Adenoid cystic carcinoma	01

	Lymphoma	01
	Round cell tumor	01

In the non neoplastic lesions chronic tonsillitis were most common 47 followed by pseudoepitheliomatous hyperplasia 41 and inflammatory lesions 12. Out of 373 neoplastic lesions, 331(68.1%) were malignant, 30 (6.2%) were premalignant and a small subset of cases 12 (2.5%) were benign. Among the malignant cases, most frequently observed malignancy was squamous cell carcinoma 328, others uncommon lesions were adenoid cystic carcinoma, lymphoma and round cell tumor. Well differentiated squamous cell carcinoma were 190, moderately differentiate squamous cell carcinoma were 130 and poorly differentiated squamous cell carcinoma were 06 and verrucuous carcinoma was 03. Among dysplastic lesions, patients presenting with carcinoma in situ were 06, moderate dysplasia 11 and mild dysplasia were 13. In the benign oral mucosal lesions category hemangioma 05 was most common followed by papilloma 04, pleomorphic adenoma 02 and adenomatoid odontogenic tumor 01.

Buccal mucosa was the most common site 236 (49.4%) for neoplastic lesion as well as for malignant lesion 177 whereas tonsils were commonest for non-neoplastic lesions.

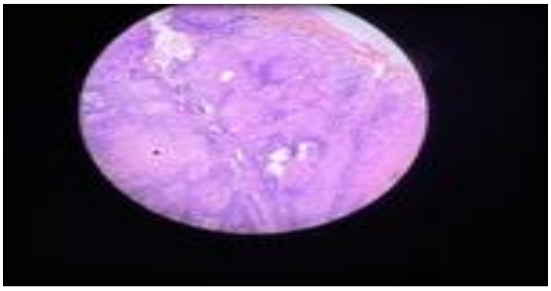

Figure 1: Photomicrograph showing moderately differentiated squamous cell carcinoma H&E 100X

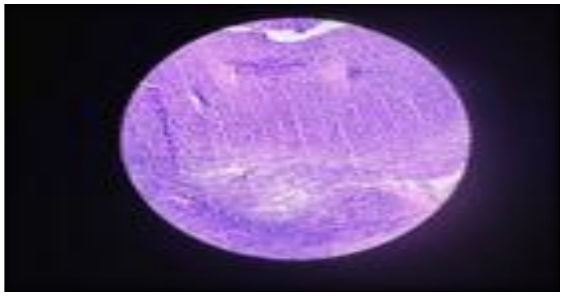

Figure 2: Photomicrograph showing Lymphoma H&E 100x

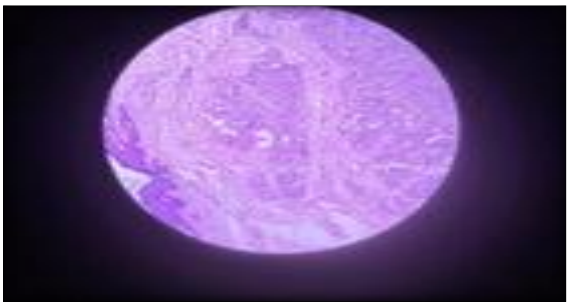

Figure 3: Photomicrograph showing hemangioma 100x H&E view

DISCUSSIONS

Oral cavity is affected by numerous neoplastic and non -neoplastic lesions however malignant lesions are increasing with alarming rate particularly in developing countries like India and has become significant health burden for community.

In the present study out of total 486 cases, 314(64.6%) were male & 172(35.4%) were female with the male female ratio 2:1 Out of 373 (76.7%) cases who were diagnosed with neoplastic lesions, 252 (80.3%) were males, similarly in the non-neoplastic category out of 113 observed cases, 62 (19.7%) were males. There is male preponderance in both neoplastic and non-neoplastic category. This study is consistent with previous studies done by Khan Y et al, M Gupta et al, R Mehrotra et al,[13-15] who also found male preponderance in their respective study.

In non-neoplastic category maximum number of cases were seen in the age group 30-40 followed by 20-30. This finding is similar to study done by Modi et al,[11] Khan Y et al,[13] and V Kadashetti et al,[16] having maximum number of cases in 3rd to 4th decade.

In the present study malignant cases were seen more in the age range 30-50 years whereas in study done by S H Bhalekar et al,[17] and R Agarwal et al,[18] malignant cases were more in slightly later age group 40-50 years. This study showed young age of presentation because of common practice of habitual tabacco chewing in various forms by our patient.

Most frequently observed malignancy in this study, was squamous cell carcinoma followed by salivary gland tumors and lymphoma. Our findings were in concordance with previous study done by S Masamatti et al and S Selvi et al where squamous cell carcinoma was most common malignancy.

In this study palatine tonsils were most common site for non-neoplastic lesion, which is in concordance with study done by Patro et al, however study done by Modi et al,[11] and Bhalekar et al found buccal mucosa as the commonest site.

Buccal mucosa was the most common site 236 (49.4%) for neoplastic lesion as well as for malignant lesion 177. Study done by Modi et al also

confirmed buccal mucosa to be most common site for neoplastic particulary malignant lesions.[11]

CONCLUSION

The present study highlighted the whole spectrum of oral cavity lesions that are usually asymptomatic at presentation and tends to get diagnosed late either due to lack of medical facility or ignorance. There is also rising trend of increased incidence and prevalence of oral cavity lesions particularly squamous cell carcinoma in developing countries like India due to rampant use of tabacco. Our study also showed that squamous cell carcinoma is increasing and now affecting young age too. There is need of hour to break this chain by health awareness programmes, early biopsy and timed histopathological diagnosis.

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