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Pattern of oral lesions – Cytohistopathological study in tertiary care centre.

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Abstract

The prevalence and incidence of oral lesions are uncommon. Many of these lesions can be identified as specific entities on the basis of their histopathological features and are divided into epithelial, fibrous, vascular and giant cell type. Smoking, drinking alcohol and chewing tobacco products are common habits in India, which have been positively associated with oral lesions. Oral cancers account for over 30% of all cancers in India. Despite this fact, in Indian scenario, the oral cancers are reported late, due to lack of awareness and poverty. The aim of the present study was to determine the cytological and histopathological patterns of oral cavity lesions and to know the prevalence of various premalignant and malignant lesions in 100 patients.

For cytological examination, FNAC and oral brush cytology was conducted and histopathological study of biopsy specimen was also done and compared. This comprehensive investigation has led to the conclusion that squamous cell carcinoma is the most malignant tumor seen dominantly affecting the rural male population.The benign lesions acknowledged were the cysts and vesiculo-bullous lesions, noticed predominantly in urban females. Leukoplakia emerged as the most common premalignant lesion. Clinically the various lesions presented as mass, ulcer, plaque and cysts. The sites involved primarily are tongue and buccal mucosa. Awareness regarding the hazards of indiscriminate use of tobacco and smoking can reduce its incidence in general population.

Keywords: Oral lesions, Cytohistopathological study, Leukoplakia

Introduction

Oral cavity is the site of both congenital and acquired diseases affecting variety of tissues. The lesions could be neoplastic consisting of both benign and malignant. The non neoplastic lesions are usually inflammatory in nature involving the superficial oral mucosa that include candidiasis, recurrent herpes libialis, recurrent aphthous stomatitis, erythema migrans, hairy tongue and lichen planus.

The malignant lesions account for 40% of all cancers in Indian subcontinent, in comparison to 2-4% in the west[1], and in addition have the stigma of high mortality rate. More than 95% cancers of the oral cavity are squamous cell carcinomas[2].

Oral leukoplakia is the most common pre-malignant oral lesion. Biopsy should be performed on a persistent whitish erythematous oral lesions to rule out dysplastic change or cancer.

Multifactoral etiologies operate in the development of oral lesions. As oral cavity is a portal of entry for both gastrointestinal and respiratory tracts , so it is exposed to a number of injurious substances and carcinogenic agents such as infections, physical and thermal influences, deranged immune system, trauma and systemic diseases. The persistent effect of these factors may bring dysplastic changes in oral mucosa. The predisposing risk factors are the consumption of alcohol, tobacco (both smoked and chewable) , betal nut chewing and viral carcinogens like HPV 16 and 18[3].

Study design

The present study was conducted on 100 patients, in the department of Pathology, Govt. Medical College, Amritsar. The data from Histopathology and Cytology sections of the department was retrieved to analyze the pattern of oral lesions. All cases of oral lesions in both males and females of all ages were included. Oral brush cytology and FNAC was done on cases received in cytology section. Biopsy tissues were processed and sections made were stained with H&E for histopathological examination(HPE) and the results were compared. The aim of this study was to study the various benign, premalignant and malignant lesion and its correlation with some etiological agents.

Observations

Results of 100 cases were compiled. Out of the total 100 cases, 42 cases were reported as malignant, that included 29 cases on HPE and 13 cases on cytology. 36 cases were diagnosed as benign i.e. 31 on HPE and 5 on cytology. 22 cases were reported as premalignant, 12 on HPE and 10 on cytology. Outcomes of the results are summarized in table 1.

Table 1 Distribution of Malignant, Premalignant and Benign lesions

Lesions	Histopathology		Cytology		Total
	No.	%	No.	%	
Malignant	29	40.27	13	46.42	42
Benign	31	43.05	5	17.85	36
Premalignant	12	16.62	10	35.71	22
Total	72	72.00	28	28.00	100

Most common malignant lesion seen in oral cavity was squamous cell carcinoma(S.C.C) (90.7%), followed by verrucous carcinoma (4.76%),and undifferentiated carcinoma of minor salivary glands.

Most common benign lesions seen in oral cavity were cystic lesions, such as retention cysts, submucous cysts, keratocyst and dermoid cyst and were constituting 19.44% while benign fibrous lesions were seen in 6 cases (16.6%). Lesions associated with dermatological disorders, such as phemphigus vulgaris, erythema multiforme, constituted 13.9%. Squamous cell papilloma was found in 3 cases (8.3%) and pleomorphic adenoma was seen in 2 cases (5.5%).

Most common premalignant lesions seen in oral cavity was leukoplakia, constituting 50% (11 cases) followed by lichen planus 27.3% (6 cases); submucosal fibrosis and DLE each constituting 4.5% (1 case) each.

As regards the age groups, 26 cases were seen in <30 yrs age group, 39 cases in 31-50 yrs age group and 35 cases were seen in patients of >51 yrs age group.

Among patients of <30 yrs age group, mostly benign lesions (69.2%) were seen, while in late age group 31-50 yrs and >50 yrs, most of the cases were reported as malignant constituting 40.5% and 60% respectively.

Out of total 100 cases, 64 were males and 36 were females with male to female ratio of 1.7:1. Among males most of the lesions were reported as malignant (52%), while in females, most of the lesions were benign (52%).

In the documented study, most of the patients were from rural area (59 cases) and 41 cases were from urban areas. Among rural area patients, malignant lesions were most common (49.25%), while among the urban area patients, mostly benign lesions (53.7%) were reported.

Most common clinical presentation in patients sent to our department was a mass lesion (44%) and out of which 52.27% cases were malignant and 31.8% cases were benign, while 11.4% cases turned out to be premalignant.

Majority of the mass lesions were present on the tongue (36.4%).Ulcer was found in 38% cases and most of the ulcerated lesions were reported as malignant (44.7%) and majority of these ulcers were present on buccal mucosa (31.8%).

Plaques were seen in 11% cases and most of them were premalignant (72.7%), seen most commonly on buccal mucosa.

Cystic lesions constituted 7% of all of them were reported as benign and majority of the cysts were seen on lips (42.9%).

Table 2 Distribution based on clinical presentation

	Malignant		Benign		Pre-malignant		Total	
	No.	%	No.	%	No.	%	No.	%
Mass	23	52.27	14	31.81	5	11.36	44	44.0
Ulcer	17	44.73	12	31.57	9	23.68	38	38.0
Plaque	1	9.0	2	18.2	8	72.7	11	11.0
Cyst	-	-	7	100.0	0	0	7	7.0

Table 3 Distribution of oral lesions

Site	Malignant		Benign		Pre-malignant		Total	
	No.	%	No.	%	No.	%	No.	%
Buccal mucosa	13	31.7	14	34.15	14	34.15	41	41.0
Tongue	16	51.61	10	32.25	5	16.12	31	31.0
Lip	5	41.60	5	41.6	2	16.6	12	12.0
Palate	5	62.5	2	25.0	1	12.5	8	8.0
Gingiva	1	20.0	4	80.0	0	0	5	5.0
Floor of mouth	2	66.7	0	0	1	33.3	3	3.0

In this documented study, 68% of the patients were found to have risk factors like tobacco chewing, alcohol drinking and smoking, while rest of the patients (32%) had no habits.

So the main risk factors for the oral lesions were tobacco and alcohol seen in 72.52% and 63.23% respectively, 52.94% of patients were found to be smokers.

Table 4 Distribution based on personal habits

	Tobacco		Alcohol		Smoking	
	No.	%	No.	%	No.	%
Malignant	37	74.0	27	62.00	25	69.00
Benign	6	12.0	7	16.27	3	8.33
Pre-malignant	7	14.0	9	21.00	8	22.22
Total	50	100.0	43	100.0	36	100.0

It was observed that out of 28 cases reported in cytology section of our department, specimen was adequate in 26 cases on brush cytology and in 2 cases, it was found inadequate, while on FNAC, 15 cases showed adequate material for making the diagnosis and in 12 cases, it was found inadequate.

Out of these 26 cases with adequate specimen on brush cytology, 12 cases (46.14%) were reported as malignant, 4 cases as benign (15.38%) and 10 cases as pre-malignant (138.46%).

While, out of 15 cases with adequate specimen on FNAC, 12 (80%) cases were reported as malignant, 1 (6%) case as benign lesion and 2 (13.3%) cases as premalignant.

Thus it was observed that brush cytology is more reliable in premalignant and benign cases, especially in lesions presenting as ulcers and plaques, while FNAC is reliable in malignant lesions, presenting as mass and ulceroproliferative growth.

Discussion

Oral mucosal lesions present a significant health problem with a considerable morbidity and mortality. While comparing the occurrence of oral lesions with various studies, it has been found, that variation regarding age, distribution and prevalence has been observed. The evaluated material comprised a wide spectrum of lesions which ranged from benign inflammatory lesions to malignant lesions.

Of the various studies conducted by Ravi et al (2003)[4], Akram et al[5], Ravi et al (2008)[6]; Mishra et al[7] , it has been seen that the present study was in concordance with most of the above mentioned studies.

	Ravi et al (2003)	Akram et al	Ravi et al (2008)	Mishra et al	Present study
Malignant	39.12%	55.8%	38.4%	45.11%	42%
Benign	35.17%	40.5%	31.7%	18.6%	36%
Pre-malignant	16.7%	3.7%	29.8%	37.2%	22%

Regarding distribution of malignant lesions:

The present study was in concordance with the studies of Akram et al, Mishra et al, Ravi et al and Singh et al. In the documented study, the most common malignant lesion seen in the oral cavity was S.C.C (90.7%) but with regards to the distribution of benign lesions, it was observed that, spectrum of benign lesions vary among the different regions.

In the pre-malignant lesions, the spectrum and frequencies of different lesions veried, depending upon the prevalence of personal habits, health awareness and availability of medical resources.

The age distribution pattern seen in various studies showed that most of the studies were in concordance with the present study, showing that malignant lesions were more common in late age group (>50 yrs) and benign lesions were seen more frequently in younger age.

Similarly in the gender distribution, the present study showed higher prevalence of oral lesions in males as compared to females with M:F ratio of 1.7:1 and in the age group ranging from 31-50 yrs and in >50 yrs age group. This can be attributed to the easy acceptance of habits by males.

The clinical presentation in the present study was a mass lesion (44%), out of which 52.27% were reported as malignant, 31.8% as benign and 11.4% as premalignant. Plaque was seen in 11% cases and most of them were reported as pre-malignant (72.7%). Cystic lesions constituted 7% and all of them were reported as benign.

Most of the studies have concluded that tongue was more commonly affected in malignant lesions and involvement of buccal mucosa was seen more frequently in benign and premalignant lesions due to the common use of gutka and tobacco commonly kept within the buccal area.

It was observed that in most of the studies, including the present study, showed association of oral lesion with tobacco chewing/alcohol addiction and smoking.

As regards the cytology as a diagnostic tool in oral lesions, it has been observed that brush cytology is more reliable in pre-malignant and benign cases, especially in lesions presenting as ulcers and plaques, while FNAC is reliable in malignant lesions, presenting as mass and ulcer proliferation growths.

In a study done in 2009, the sensitivity and specificity of conventional exfoliative cytology in carcinomas suspected lesions ranged between 76.8-100% and 88.9%-100% respectively[8].

A study of 67 patients found the sensitivity, specificity, positive predictive value and negative predictive value on brush cytology were 77%, 100%, 100% and 38% respectively. Statistical analysis showed $p>0.05$ suggesting that there is no significant difference between histopathology and brush cytology in assessing both pre-malignant and malignant lesions. Inter and intra examiner reliability were 99.22% and 99.77% respectively.[9]

Summary and Conclusion

It was observed that brush cytology was more reliable method in pre-malignant and benign cases, presenting as ulcers and plaques, while FNAC played important role in diagnosis of malignant lesions presenting as mass lesions. FNAC could be used as a reliable diagnostic test for oral squamous cell carcinoma, but not for leukoplakia[10]

Thus it was concluded that cytological procedures could be used to differentiate between benign and malignant disorders. However histopathological examination is mandatory for confirmation of the diagnosis as specific diagnosis is difficult to make in the absence of characteristics architectural patterns.

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