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Original Research Article

Correlation of Oral Mucosal Lesions with Various Habits and Histopathological Findings

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Abstract:

Background: The oral mucosa is subjected to numerous local irritants throughout the life. This makes the oral cavity one of the most common sites for various benign, premalignant and malignant lesions. These lesions can cause variety of symptoms, leading to severe discomfort in daily life. Oral lesions generally present in the form of ulcer, swelling, discolouration or restricted mouth opening. Hence, the knowledge of all these pathological lesions of oral cavity becomes important in their early diagnosis and effective management.

Method: In this present analytical and descriptive study, we studied clinical profile and histopathologic findings of various oral mucosal lesions, in 80 subjects. These lesions were found to be more common in middle aged males of low socioeconomic status. There was strong association between tobacco chewing and smoking with occurrence of premalignant and malignant lesions. Alcohol addiction often coexisted with tobacco consumption; and was found to be weakly associated with only malignant lesions. Aphthous stomatitis and Oral submucous fibrosis were found to be the most common benign and premalignant lesions, respectively.

Results: Most common malignant lesion was squamous cell carcinoma of buccal mucosa. History and clinical examination were needed to study the type, site, gross appearance and extent of the lesion. However intraoral biopsy was gold standard in making accurate diagnosis of these lesions.

Conclusion: Knowledge obtained through this clinico-histopathological study was useful to make early diagnosis of oral mucosal lesions for their effective management.

Keywords: Oral mucosal lesions, leukoplakia, Erythroplakia, Oral cancers, Aphthous ulcers, Oral submucous fibrosis.

Introduction

The oral mucosa is subjected to numerous local irritants throughout the life. This makes the oral cavity one of the most common sites for various benign, premalignant and malignant lesions. These lesions can cause variety of symptoms such as pain, bleeding, halitosis, difficulty in chewing, swallowing and speech, leading to severe discomfort in daily life. Oral lesions generally present in the form of ulcer, swelling, discolouration or restricted mouth opening. Hence the knowledge of all these pathological lesions of oral cavity becomes important in their early diagnosis and effective management.

Materials and Methods

In this present analytical and descriptive study, we studied clinical profile and histopathologic findings of various oral mucosal lesions, in 80 subjects whose age above 20 years and giving consent to take part in the study and for biopsy. Cases with biopsy proven, post op Head and Neck malignancy, post chemotherapy and/or radiotherapy, recurrence and associated with systemic disorders and infections were excluded in this study.

All subjects who met above criteria underwent a detailed study. A written and valid informed consent was obtained from each subject. A given pro-forma was filled toelicit detailed history. Patients underwent general physical examination and intra-oral examination.

Under all aseptic precautions biopsy was collected from the lesion in the outpatient-setting and was sent for histopathology. Patients were followed up with histopathology reports. After going through the history, clinical profile and histopathology reports a definitive diagnosis was made and various diagnosed lesions were studied in relation to age,

sex and habits. Patients were also counselled regarding their prognosis and outcomes of various treatment modalities available and were encouraged to quit addictions.

Results

In this study, the age group of 46-60 years had 34 (43%) patients which accounted to be the maximum number. Minimum number of patients belonged to the age group of 18-30 years. On plotting the age against type of lesion i.e. premalignant, benign and malignant; we found a moderate positive correlation between age and chances of malignant transformation, with coefficient of correlation 0.5004 and p value 0.01276 which was statistically significant. Benign lesions were more often found in age less than 45 years while malignant lesions were found more frequently in age more than 45 years. Premalignant lesions were found in all age groups with a trend towards increasing age. This study consisted of 51 (64%) males and 29 (36%) females. Out of 80 subjects, 19 (24%) consumed vegetarian diet while 61 (76%) consumed mixed type of diet. Occurrence of Aphthous stomatitis (recurrent aphthous ulcers) showed positive correlation with consumption of pure vegetation diet. In India, people are seen to clean oral cavity with products like toothpaste, bamboo stick and mishri etc. In this study, maximum number of individuals used toothpaste to clean oral cavity.

Table 1: Diet and oral hygiene practices among subjects

Various practices amongst subjects	No. of subjects	Percentage of subjects
Diet		
• Veg.	19	24%
• Mixed	61	76%
Oral hygiene habits		
• Toothpaste	53	66%
• Bamboo stick	9	11%
• Mishri	18	23%

Most of the patients (43%) presented within 1-6 months of symptom onset. The most common chief complaint was pain (78%), followed by burning at the site of lesion (64%). Forty three subjects (54%) had oral ulcer as their primary complaint. Six (8%) individuals had prior history of Aphthous stomatitis. Fourteen (18%) and twenty five (31%) subjects presented with swelling and bleeding, respectively. Hyperpigmentation and hypopigmentation accounted for 26% and 16% of subjects respectively. Fifteen (19%) individuals had restricted mouth opening and six (8%) individuals had loose teeth. One patient had difficulty in swallowing and speaking because of large oral lesion. The most common site of oral lesion in this study was buccal mucosa (52%).

Table 2: Distribution of chief complaints of patients

Distribution of chief complaints	No. of subjects	Percentage of subjects
Ulcer	43	54%
Swelling	14	18%
Pain and burning	62	78%
Bleeding	25	31%
Hyperpigmentation	21	26%
Hypopigmentation	13	16%
Restricted mouth opening	15	19%
Loose teeth	6	8%
Recurrent ulcers	6	8%
Difficulty in swallowing and speaking	1	1%

Table 3: Distribution of site of lesion

Distribution of site	No. of subjects	Percentage of subjects
Tongue	26	33%
Buccal mucosa	42	52%
Lip	5	6%
Hard palate	5	6%
Tonsil	2	3%

The study had 60 tobacco chewers, and majority of them (68%) had habit of daily tobacco chewing with frequency of more than 10 times a day and total duration of more than 15 years (93%). We encountered 35

smokers in our study and 24 subjects (69% of total smokers) had smoked more than 20 pack-year (py). The study also had 29 alcohol users and majority of them (65%) consumed 20-40 grams of alcohol per day.

Table4:Dailyfrequencyoftobaccochewing

Dailyfrequencyof tobaccochewing	No.ofsubjects	Percentageofsubjects
1-3times	0	0%
4-10times	19	32%
>10times	41	68%
Total tobaccochewers	60	100%

Table5:Durationoftobaccochewing

Durationof tobaccochewing	No.ofsubjects	Percentageofsubjects
<5 years	0	0%
5-15 years	4	7%
>15 years	56	93%
Total tobaccochewers	60	100%

Table6:Amount of smoking pack per year

Amount of smoking in per year	No.ofsubjects	Percentageofsubjects
<10 per years	3	8%
10-20 per years	8	23%
>20 years	24	69%
Total smoker	35	100%

Table 7: Amount of alcohol consumption in average gram/day

Alcohol consumed (gram/day)	No. of subjects	Percentage of subjects
<20	6	21%
20- 40	19	65%
>40	4	14%
Total drinkers	29	100%

Table 8: Distribution of past history and co-morbidities

Past history	No. of subjects	Percentage of subjects
Similar lesion in oral cavity in past	9	11%
Diabetes	7	9%
Hypertension	7	9%
Tuberculosis	3	4%
Dental prosthesis	1	1.25%

After obtaining the histopathology reports, we came across 13 benign, 32 benign and 35 malignant cases. The sites showing malignancy were tongue, buccal mucosa, lip, hard palate and tonsil. Aphthous stomatitis of buccal mucosa was the most common benign lesion noted in our study. The most common premalignant and malignant lesions noted were Oral submucous fibrosis and Squamous cell carcinoma of tongue.

We found statistically significant and a very strong positive correlation between duration of tobacco chewing & premalignant and malignant lesions, with coefficient of correlation of 0.9995 (p value 0.000013) and 0.9997 (p value 0.00001), respectively.

Hence the incidence of malignant transformation was seen to increase with increase in duration of tobacco chewing.There was no correlation between smoking and benign oral lesions (coefficient of correlation -0.3278). However a strong positive correlation was found between smoking and premalignant lesions with coefficient of correlation 0.9548 and p value 0.01146.

Similarly, the correlation between smoking and malignant lesions was found to be very strong with coefficient of correlation 0.9585 and p value 0.010085.There was no positive correlation found between alcohol consumption and benign as well as premalignant lesions.

A weak positive correlation was found between alcohol consumption and malignant lesions with coefficient of correlation 0.3352 and p value 0.5813 with no statistical significance.

Subjects consuming more than 40 gram of alcohol per day only showed malignant lesions.

Histopathologic examination classified squamous cell carcinoma into three categories:

1. Well differentiated squamous cell carcinoma
2. Moderately differentiated squamous cell carcinoma
3. Poorly differentiated squamous cell carcinoma

We studied the correlation between various addictions with histopathologic differentiation of squamous cell carcinoma. A very strong correlation was found between duration of tobacco chewing and histopathologic differentiation.

With more number of years of tobacco consumption there were increased chances of lesion becoming poorly differentiated. The coefficient of correlation for moderately differentiated squamous cell carcinoma was 0.9918 (p value 0.00089), and that for poorly differentiated one was 0.9944 (p value 0.000503). These results were statistically significant. There was strong statistically significant association between smoking and histopathologic differentiation. The coefficient of correlation for well, moderately and poorly differentiated squamous cell carcinoma were 0.8839, 0.9667 and 0.9848, respectively. There was no association found between alcohol and histopathologic differentiation of squamous cell carcinoma. Various addictive habits and type of lesion habits and type of lesion:

Table 9: Distribution of type of oral lesion at various sites

Site of lesion	Benign	Premalignant	Malignant
Tongue	1	6	19
Buccal mucosa	7	26	9
Lip	3	0	2
Hard palate	2	0	3
Tonsil	0	0	2
Total	13	32	35

Table 10: List of benign, premalignant and malignant lesions found at various site

Site	Benign	Premalignant	Malignant
Tongue	Fibroma	Oral leukoplakia	Squamous cell carcinoma
	-	Oral lichen planus	Sarcomatoid carcinoma
	-	Erythroplakia	Adenoid cystic carcinoma
Buccal mucosa	Aphthous stomatitis	Oral leukoplakia	Squamous cell carcinoma
	Fibroma	OSMF	-
	-	Erythroplakia	-
Hard palate	Hemangioma	Stomatitis nicotina	Squamous cell carcinoma
	Angiolipoma	-	-
Lip	Benign hyperplasia of minor salivary glands (mucocele)	-	Squamous cell carcinoma
Tonsil	-	-	Squamous cell carcinoma
	-	-	Mucoepidermoid carcinoma

Discussion

In our study, oral lesions were found in all age groups with maximum number of cases distributed between the age of 46 and 60 years (43%). In Gupta et al. study, maximum incidence of oral lesions was found from 51 to 60 years of age. [1] In Mathew AL et al. and Pai KM et al. studies, maximum incidence of oral lesions was found in the age group of 21-40 years. [2] TR Saraswathi in his cross sectional study, conducted in Chennai, in 2006, had maximum subjects belonging to the age group of 21-30 years. [3]

In our study, male to female ratio was found to be 1.78, while in Gupta et al. study it was 2.28. [1] It was found 1.68 and 1.76 in Mathew AL et al. [2] and TR Saraswathi et al. [4] studies respectively. We found 16.25% benign, 40% premalignant and 43.75% malignant lesions, in our study. In Gupta and Choudhary study, there were 11% of benign, 7% of premalignant and 82% of malignant conditions observed. [1]Goyal and Jadia study had 57% of benign, 28% of premalignant and 15% of malignant lesions. [3]

In studies carried out by Gupta et al., Mathew et al., Goyal et al. and TR Saraswathi et al., it was concluded that tobacco chewing and smoking had a very strong association with oral mucosal lesions, especially with premalignant and malignant lesions. Alcohol consumption failed to show direct correlation with oral lesion, in these studies. [1] These results were comparable with those of our study. In Gupta et al. study, alcohol consumption was seen to be associated with premalignant lesions.

In this study, most common lesions associated with tobacco chewing were Oral Submucous Fibrosis (OSMF), Leukoplakia and Carcinoma. Lesions found to be highly associated with smoking were

Stomatitis nicotina, Ulcerative leukoplakia, Erythroplakia and Carcinoma. Apart from duration of smoking, number of cigarettes smoked per day was found to be significant, in all these studies. Alcohol consumption showed weak positive correlation with occurrence of malignant lesions. We had two rare cases in our study, i.e. Mucoepidermoid carcinoma of right palatine tonsil in a 47 year old female with no any history of addictions, and Sarcomatoid carcinoma of tongue in a 48 year old male in a chronic tobacco chewer.

Conclusion

It is important to study oral mucosal lesions in more detail with respect to demographic details of the patient. History and clinical examination are always needed to know the type and extent of the lesion, including clinical TNM stage in case of malignant lesions. However final diagnosis is made only after histopathology report, which also has prognostic significance.

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