Original Research Article

Clinicopathological study of premalignant conditions of oral cavity in rural area

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Abstract

Background: The pre-malignant conditions of oral cavity are relatively common, occurring in about 2.5% of general population and are an important target for cancer prevention. Among these, most frequently mentioned are leukoplakia, erythroplakia, oral submucous fibrosis and lichen planus. These lesions have got a very close association with the local habits practiced by the people such as betel nut, pan, slaked lime with tobacco, smoking, alcohol. Poverty, illiteracy and poor health standards are the important reasons for advanced disease at first contact in our country. We conducted a study to investigate the prevalence of these four precancerous lesions in different socioeconomic classes, to study various risk factors and to make early diagnosis. So that we can bring awareness on these potentially dangerous lesions thereby preventing oral cancer. **Aim:** To study socioeconomic profile, various risk factors, sites and location and histopathological findings of oral premalignant conditions and to make suitable recommendations based on study. **Material and Method:** Patients with clinically diagnosed premalignant oral conditions i.e. leukoplakia, erythroplakia, oral submucous fibrosis and lichen planus were included. Detailed history and examination was done and histopathological examination was done. **Results and Conclusion:** Maximum patients with oral premalignant condition belong to lower middle socioeconomic status, having one or the other habit of areca nut, tobacco chewing, smoking and alcohol consumption. Most common site of involvement was buccal mucosa and histopathological correlation was found to be 83.3%.

Key Words: Leukoplakia, erythroplakia, oral submucous fibrosis and lichen planus, risk factor, histopathology.

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INTRODUCTION

The pre-malignant conditions of oral cavity are those which has got potentiality to turn malignant in its due course if left untreated. Oral carcinoma is global health problem with rising prevalence and mortality. It is eighth most common malignancy worldwide. Different lesions have been reported to have potential to transform into squamous cell carcinoma. Among these, most frequently mentioned are leukoplakia, erythroplakia, oral submucous fibrosis and lichen. Poverty, illiteracy and poor health standards are the important reasons for advanced disease at first contact in our country (Bhowate *et al.*, 1991)[1]. High incidence reported by various observers is thought to be due to practice of chewing betel nut, betel quid, slaked lime with tobacco, smoking, alcohol, poor dental and oral hygiene, diet poorer in vitamins, syphilis and oral sepsis by trauma (WHO, 1984). Many genetic and idiopathic factors also may predispose to development of premalignant conditions. The list of oral premalignant conditions is extensive. The focus here will be on most common conditions. The study is designed to investigate the prevalence of these four precancerous lesions in different socioeconomic classes, to study various risk factors and to make early diagnosis. Hence we can bring awareness on these potentially malignant lesions thereby preventing oral cancers.

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MATERIALS AND METHODS

60 patients were selected for study at department of ENT, SRTR Govt. Medical college, Ambajogai, which was conducted over a period of two years (dec 2013 –nov 2015) with regular follow up.

The patients for study were selected on following criteria.

Inclusion Criteria

1. All patients coming to ENT OPD with clinically diagnosed premalignant oral lesions i.e oral submucous fibrosis, leukoplakia, Erythroplakia or oral lichen planus.
2. Patients of all age group and of either sex

Exclusion Criteria

1. Patients with diagnosed case of oral malignancy or its recurrences.
2. Patients with allergic reaction to antibiotics.
3. Patients with dermatological diseases of face.

Detailed history of patient was be taken including chief complaints, duration of lesions, habits of tobacco chewing, betal-nut chewing, smoking and alcohol use, dietary habits and socio-economic status, denture wearing. Regarding habits or addiction duration, frequency were noted. In socioeconomic status we enquired about per capita income literacy, occupation, total family members, type of house and. Modified Prasad classification was applied to divide the cases in various socioeconomic status which is based on per capita monthly income. During clinical examination, detailed features of the lesion was noted i.e. anatomical location with extention of lesion. The lesions presented clinically as 1. Oral submucous fibrosis;2. Leukoplakia; 3. Oral lichen planus; 4. Erythroleukoplakia. All selected patients were subjected to hematological investigations. Biopsy was carried out under local anaesthesia after consent for the same. The lesions were histopathologically diagnosed as benign keratosis, oral submucous fibrosis, oral epithelial dysplasia, oral lichen planus and oral epidermoid carcinoma. Proper medical or surgical management was given. Follow up of patients was kept to determine progress of oral lesion. Findings were analysed using proper statistical tests.

OBSERVATION AND RESULTS

In our study out of 60 cases of oral premalignant conditions 25 (41.66%) were clinically diagnosed as oral submucous fibrosis, 16(26.66%) as leukoplakia, 16(26.66%) as oral lichen planus and 3 cases (5%) as erythroleukoplakia. Maximum number of cases are between 26 and 45 years i.e. 31 (51.67%) cases, followed by 46-60 years i.e. 16 (26.66%).The mean age of our patients is 41.75 years. The youngest patient is of 22 years old and oldest was 70. The present study shows male predominance and male (70%) to female (30%) ratio is 2.33 : 1. 24 cases of oral premalignant conditions i.e.40% belongs to lower middle socioeconomic class, 25% to lower class, 15% to middle class, 11.66 % to upper class and 8.33% cases to upper middle class. In present study intolerance to spicy food (75%) is most common symptom followed by discolouration of mucosa (71.66%). Among 60 cases in study, duration of symptoms varied from minimum 15 days to maximum of 3 years. (Chi square 12.23; df- 9; p-value-0.2004).Duration of symptoms was not found significant with oral premalignant conditions. Present study shows 39 (65%) cases had habit of tobacco chewing. Amongs 25 cases of Oral Submucous Fibrosis in our study 19 (76%) cases are tobacco chewer. Out of 16 cases of leukoplakia 11 cases (68.75%) are tobacco chewer. In oral lichen planus, 6 (37.5%) are tobacco chewer and among erythroleukoplakia all (100%) are tobacco chewer. Out of 60, 52 patients are having habit of areca nut chewing, out of which 38 (73.07%) patients consumes areca nut 1-5 times a day, 8 (15.38%) patients 6-10 times a day, and 5 (9.61%) patients are occasional smoker. 1 (1.92%) patient consumes areca nut more than 10 times a day. Among 25 cases of oral submucous fibrosis recruited, all (100%) are areca nut chewer. In leukoplakia 15 cases (93.75%) are areca nut chewer. In oral lichen planus 9 cases (56.25%) consumes areca nut and in erythroleukoplakia 100% cases were areca nut chewer. In our study of 21(35%) cases are alcoholic. Out of these 21, 8 (38.10%) consumes alcohol once a week, 3 (14.28%) consumes alcohol for 1-6 times per week, and 2 (9.52%) consumes alcohol daily. In Oral Submucous Fibrosis patients, 8 (32%) are occasional alcoholic, among leukoplakia 6 (37.5%), in oral lichen planus 4 (25%) and in erythroleukoplakia all 3 patients (100%) of are alcoholic out of which 2 are daily drinker.Present studyshows 51 (85%) cases are nonsmoker and 9 (15%) are smoker. Amongssmoker 2 (22.22%) patients practices smoking 1-5 times per day, 1 (11.11%) patient smokes for 6-20 times per day, and 1 (11.11%) patient smokes for more than 20 times a day. 5 (55.56%) cases are occasional smoker. Among patients with Oral Submucous Fibrosis, 2(8%) cases are smoker, in leukoplakia 2 (12.5%), in oral lichen planus 3 (18.75%) and in erythroleukoplakia 2 cases (66.6%) are smoker. In present study all cases of clinically diagnosed oral premalignant conditions underwent biopsy and histopathological diagnosis was observed. 21 (35%) cases showed oral submucous fibrosis, 10 (16.67) benign keratosis, 6 as mild epithelial dysplasia, 6 (10%) as moderate dysplasia, 3 (5%) cases as severe dysplasia and 2 (3.33%) as epidermoid carcinoma (squamous cell carcinoma). It is found that histopathological findings of lichen planus are significantly seen in Oral Lichen planus ($p<0.0001$). Mild epithelial dysplasia is significantly seen

in leukoplakia (p-0.003) and oral submucous fibrosis (p-0.03).Submucous fibrosis changes are significantly seen in clinically diagnosed oral submucous fibrosis (p-0.004). (Chisquare – 100.46; df- 18; p - 0.00).

Table 1: Shows Distribution of case according to socioeconomic status

SE class	Cases	%
Upper	7	11.66
Upper middle	5	8.33
Middle	9	15
Lower middle	24	40
Lower	15	25
Total	**60**	**100**

Table 2: Shows Association of patients habit with clinical diagnosis.

Habit	Oral submucous fibrosis	Leuco plakia	Oral lichen planus	Erythro Leukoplakia	p value	Odds ratio (conf. int)
Tobacco chewing	19	11	6	3	0.03	5 (1.47 to 16.95)
Areca nut Chewing	25	15	9	3	0.0005	33 (3.65 to 306.4)
Alcohol consumption	8	6	4	3	0.09	
Smoking	2	2	3	2	0.05	14.29 (1.41 to 178.8)

Table 3: Shows Distribution of cases according to site of lesion

Sr. No.		Oral submucous fibrosis	Leuko plakia	Oral lichen planus	Erytho leukoplakia	No.	%
1	Buccal mucosa	25	05	16	02	48	80
2	Floor of mouth	00	00	00	00	00	0
3	Tongue	00	11	00	01	12	20
4	Soft palate	20	00	00	00	20	33.33
5	Retromolartriagone	19	00	00	00	19	31.66
6	Lip	08	01	00	00	09	15

Table 4: Shows Distribution of cases according to histopathological diagnosis

Histopathology finding	Oral submucous fibrosis	Leukoplakia	Oral lichen planus	Erythroleukoplakia	Total
Benign Keratosis	02	06	02	0	10
Submucous fibrosis	21	0	0	0	21
Lichen planus	0	0	12	0	12
Mild dysplasia	02	02	02	0	06
Moderate dysplasia	0	05	0	01	06
Severe dysplasia	0	02	0	01	03
Epidermoid carcinoma	0	01	0	01	02
Total	**25**	**16**	**16**	**03**	**60**

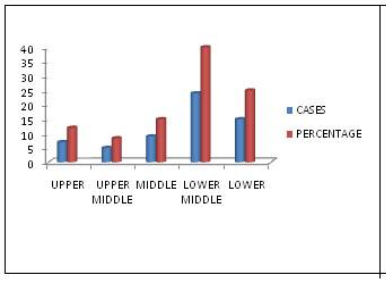

Figure 1

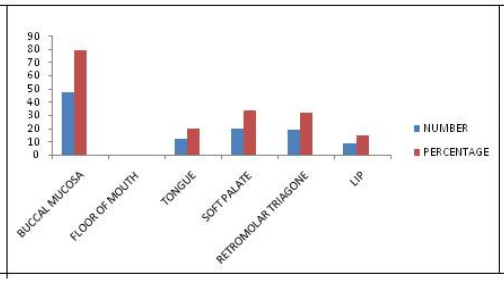

Figure 2

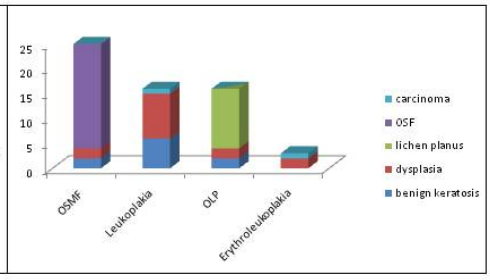

Figure 3

Legend

Figure 1: Shows distribution of case according to socioeconomic status; **Figure 2:** Shows dstribution of case according to site of lesion; **Figure 3:** Shows distribution of case according to histopathological finding

DISCUSSION

In present study maximum number of cases are between 26 to 45 years of age, the ageing process itself is the greatest risk for premalignancy. Sex incidence of oral premalignant lesions had stronger predilection for male as compared to female with male (70%) to female (30%)

ratio 2.33:1.Considering the fact that there is availability of processed betel nut and tobacco as gutka in affordable packets and widespread acceptance of its use may be the reason of male predominance now. In study by Syed *et al*[2] lichen planus has a relatively strong female prediction with a M: F ratio of 1:2. In our study out of 16 cases of lichen planus, 7 cases are females with a ratio of 1.2:2.In our study 24 (40%) cases belong to lower middle socioeconomic class. HashibeM *et al*[3] found that cases with low income in Kerala had higher prevalence of tobacco, betel nut chewing habits, alcohol consumption habits and low intake of vegetables and fruits. One study by Greenberg *et al*[4] **r**eported no association of oral premalignant or malignant conditions and education or occupation. In study by Burungale*et al*[5], 2014 inverse relationship was found between socioeconomic status and premalignant and malignant conditions of oral cavity. It could be due to poor oral hygiene and increase prevalence of tobacco chewing in lower socioeconomic group. In our study 39 (65%) are tobacco chewer in one or other form i.e. with lime, gutkha, pan masala etc. Tobacco has been identified as the major etiological factor in the initiation and progression of oral premalignant and malignant lesions. (Linda *et al*, 2001)[6]**.** tobacco preponderance was among males which prevails the Indian scenario where male being the wage earner are privileged to spend their earnings for their pleasure. It is also noted that the use of tobacco is often social, prompted by friends and other role models. These may later lead to addiction and long term use[7]. Present study shows 52 (86.67%) were having habit of areca nut chewing. It is observed that there is significant (p-0.0005) increased risk of oral lichen planus and oral submucous fibrosis on consumption of areca nut with odds of 33. Sinor *et al*[8] confirmed betel nut as the most important etiologic factor in Oral submucous fibrosis. The areca nut chewer outnumbered the tobacco chewers, there may possibility of easy availability, at low price, with good fragnance that younger generation is fond of areca nut relayed compounds like gutkha. Areca nut has a long history of use and is deeply ingrained in many socio-cultural and religious activities. In present study 9 (15%) patients are smoker in the form of bidi or cigarrette. Smoking significantly increases risk of erythroleukoplakia with the odds of 14.29 as compared to other habits. According to Banoczy *et al*[9] and Bouquot *et al*[10], leukoplakia is most common in tobacco smokers followed by tobacco chewers in whom malignant transformation is rate is comparatively less. Apart from fact of smoking, the number of smoked cigarette is important. Our study shows 35% patients are practicing habit of alcohol consumption. In a prospective study of alcohol consumption and risk of oral premalignant lesions concluded that alcohol consumption was consistently associated with greater risk of oral premalignant lesions (Maserejian *et al* 2002)[11]. Alcohol abuse, especially high percentage alcohol, is a predisposing factor for lekoplakia and other premalignant conditions (Starzynska *et al*)[12]**.** It is believed that in the carcinogenesis process tobacco acts both at initiation and promotion stage,however alcohol only acts at the promotion stage. In present study the most common site of premalignant condition is buccal mucosa (80%). Syed *et al*, Phookan *et al*, Misra *et al*, Wahi *et al*, Gupta *et al*, Burungale *et al* reported the comparable results. It may be due to buccal vestibule being commonest site for retaining the betel quid or tobacco or areca nut for several hours which can affect the mucosa in several ways. Being irritant, tannin can precipitate proteins and hence damage the mucosa, phenol can cause burning sensation and arecolin (alkaloid) can stimulate fibroblast proliferation and collagen synthesis. So 83.33% of clinically diagnosed premalignant lesions were confirmed histopathologically. There is significant (p-0.0005) increased risk of oral lichen planus and oral submucousfibrosis on consumption of areca nut with odds of 33 as compared to other habits. Smoking significantly increases risk of erythroleukoplakia with the odds of 14.29 as compared to other habits. There is significant (p-0.03) increased risk of oral lichen planus with tobacco chewing. In our study alcohol is not found significant risk factor for any of the oral premalignant lesion.83.33% of clinically diagnosed premalignant lesions were confirmed histopathologically.

CONCLUSION

The study reveales majority of cases of oral premalignant conditions belong to lower middle socioeconomic status. There is strong association between tobacco chewing and areca nut chewing, smoking habit and premalignant conditions of oral cavity. Mass screening of oral premalignant and malignant lesions should be carried out so that early detection and prompt treatment can be assured. Most common site of premalignant lesion is buccal mucosa. Clinicopathological correlation was found in 50(83.33%) cases. There is a need of intensive public education regarding hazards of tobacco and motivation for changing life style by the use of mass communication

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