



A STUDY OF PREVALENCE OF ORAL PRECANCEROUS LESIONS IN RELATION TO TOBACCO HABITUATION

AMBEKAR D.M.^{1*}, CHAUDHARY B.J.¹ AND KULKARNI V.V.²

¹Terna Medical College, Nerul, Navi Mumbai- 400 706, MS, India.

²Rajiv Gandhi Medical College, Thane- 400 605, MS, India.

*Corresponding Author: Email- entdrdeepa@gmail.com

Received: March 21, 2014; Accepted: April 15, 2014

Abstract- Background: Oral cancer is a becoming leading global cause of morbidity and mortality. It is one of the ten most common cancers in the world. Oral cancer is almost all the time preceded by some type of precancerous lesion. Early detection and elimination of the causative risk factor like tobacco can help in the reduction of the incidence of oral cancer.

Aims and Objectives: To study the prevalence of oral precancerous lesions and its correlation with the use of tobacco in tobacco habituated population.

Material and Methods: This one year duration study was undertaken on 106 employees of a charitable trust. After taking detailed history about tobacco habituation they were screened for the presence of oral precancerous lesions. Only clinical criteria were used for diagnosis of oral precancerous lesions. Efforts were also made to motivate them to quit the tobacco habit.

Results and Observations: Out of total 106 subjects studied, 57 (53.77%) were tobacco users. Prevalence of oral precancerous lesions was (47.16%) in our study population, and all the lesions were exclusively seen in tobacco habitual. In tobacco habitual, oral leukoplakia as a single lesion was found in 18 cases, Erythroplakia in 9 cases and oral sub mucous fibrosis in 16 cases. A total of 9 (14%) subjects were showing multiple oral precancerous lesions.

Conclusion: Tobacco acts as a major risk factor in the development of single or multiple oral precancerous lesions and they could be identified by simple oral cavity examination before they undergo malignant transformation.

Keywords- oral precancerous lesions, tobacco habitual, oral leukoplakia, erythroplakia, oral sub mucous fibrosis, multiple oral precancerous lesions, oral cancer, oral cavity examination

Citation: Ambekar D.M., Chaudhary B.J. and Kulkarni V.V. (2014) A Study of Prevalence of Oral Precancerous Lesions in Relation to Tobacco Habituation. International Journal of Medical and Clinical Research, ISSN: 0976-5530 & E-ISSN: 0976-5549, Volume 5, Issue 1, pp.-282-285.

Copyright: Copyright©2014 Ambekar D.M., et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

Introduction

Oral cancer has become one of the leading causes of death not only in India but all over the world. Globally about 3, 00,000 new oral cancer cases are getting diagnosed per year. Even though oral cancer represents only 2 to 4% of the malignancies in the Western countries, it accounts for about 40% of all cancers in India. A prognosis of oral cancer is directly related to the stage at which it gets diagnosed. Almost always oral cancers are preceded by some or other type of precancerous lesion. These lesions can be diagnosed as early as 15 years before they turn into invasive carcinoma. Early detection and treatment of these potentially malignant lesions can help in the primary prevention of oral cancer. Several oral lesions like leukoplakia, erythroplakia, oral sub mucous fibrosis are regarded to be precancerous lesions for oral cancer, because of their tendency to malignant transformation. According to a workshop coordinated by WHO in May 2005 at London the use of the term 'Potentially malignant conditions' was suggested [1].

The association of tobacco and oral cancer was noticed in India as early as 1902 by Niblock [2]. In India tobacco is used in different forms. Smoking is through cigarettes, biddies, hukka, and chillum (ganja). Smokeless tobacco products include tobacco that is used in betel quid, gutkha, pan masala, zarda, khaini, mawa, mishri, snuff and datun. In Maharashtra smokeless form of tobacco is used more commonly than the smoke form. After the ban on gutkha in recent years other forms like zarda and khaini are becoming popular because of its easy availability and cheaper rates. The present study was done to determine prevalence of oral precancerous lesions in high risk population like tobacco habitual.

Oral Screening for precancerous lesions and tobacco cessation activities, if conducted together can have high impact on reducing incidence of oral cancer. This study was conducted in Terna Sahyadri hospital and Research Centre for one year duration. The objectives were to screen all 106 employees of a charitable trust in Mumbai, Maharashtra for oral precancerous lesions irrespective of to-

bacco use. In addition, the objective was to inform them about the adverse health effects of tobacco and motivate them to quit the habit. This article describes the prevalence of oral precancerous lesions in relation to tobacco habituation.

Materials and Methods

This was an observational study of 106 study subjects carried out in Terna Sahyadri Hospital and Research Centre, Navi Mumbai, Maharashtra. All were included irrespective of their tobacco habituation. An ethical clearance was obtained from the institutional ethical committee and the study was carried out for the period of one year.

All the study subjects were informed regarding the study and informed consent was obtained. A detailed case history proforma was duly filled. In this study, any subject who was using tobacco at the time of recruitment or had consumed any form of tobacco at least once in a day continuously during the past 6 months was considered as tobacco habitual. The history of tobacco habit is asked in detail i.e. form of tobacco, amount, frequency & duration of usage, time of contact with tobacco and site of keeping it. Dietary history is taken with regards to fruit, vegetable & spicy food intake. Subjects using areca nut were included in the group of smokeless tobacco users because of its carcinogenic potential with respect to the oral cavity. All subjects irrespective of their tobacco use were screened for oral precancerous lesions by the same researcher. Only clinical criteria were used for the diagnosis of leukoplakia, erythroplakia and oral sub mucous fibrosis. Tobacco habitual were educated about health hazards of tobacco and were advised to quit the tobacco habit. The data was statistically analyzed and documented.

The association of oral precancerous lesions with respect to age, sex, form of tobacco, frequency and duration of tobacco use was studied by chi-square test. Statistical analysis was performed with the statistical software for cross sectional study MS-Excel-10 and "p" values <0.05 were considered as the level of significance.

Results

Out of 106 subjects aged between 21-60 years,77 were males and 29 were females [Fig-1]. Majority of male individuals i.e.28 were seen in the age group of 31-40 years and maximum number of females were seen in 21-30 years of age-group.

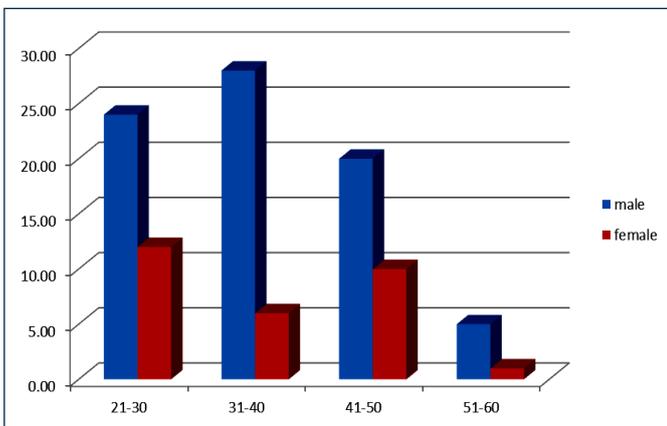


Fig. 1- Distribution of study population by age and gender

Total 57 (53.77%) were tobacco user's. Out of which 51 were males and 6 were females. According to the form of tobacco used 57 tobacco users were divided into three groups smoke form users, smokeless form users and mixed users i. e. using both forms.

Out of 57 tobacco users, Forty seven (82%) were using smokeless forms of tobacco, 2 (4%) were using tobacco in smoking forms, and 8 (14%) were mixed users.

All 106 subjects, irrespective of the history of tobacco use were screened for oral precancerous lesions with naked eye examination by the researcher. Oral precancerous lesions were detected exclusively among tobacco users. Eighty seven percent of the tobacco users, that is, 50 subjects, had oral precancerous lesions. Prevalence of oral precancerous lesions was found to be 47.16%. No frank oral cancers were detected. The details of the oral precancers detected are as mentioned in the [Table-1].

Table 1- Prevalence of Precancerous Lesions in Relation to various Tobacco habits

Type of Lesion	Smoke form		Smokeless form		Mixed	
	n	%	N	%	n	%
Leukoplakia	0	0	17	35.41	1	14.28
OSMF	0	0	15	31.25	1	14.28
Erythroplakia	0	0	8	16.66	1	14.28
OSMF + Leukoplakia	0	0	3	6.25	1	14.28
Leukoplakia + Erythroplakia	0	0	2	4.16	1	14.28
No Lesion	2	100	3	6.25	2	28.57
Total	2	100	48	100	7	100

In tobacco habitual Leukoplakia as a single lesion was found in 18 cases. Whereas it was seen along with OSMF in 4 cases and with Erythroplakia in 3 cases. Erythroplakia was seen in 9 subjects and OSMF in 16 cases. Thus we had a total of 9 (14%) cases of multiple oral precancerous lesions. Total 45 tobacco chewers and 5 mixed users were showing some form of oral precancerous lesions. No lesions were found in tobacco smokers, 3 cases of tobacco chewers and 2 cases of mixed users.

Age and sex wise distribution of oral precancerous lesions is shown in [Table-2] and [Table-3].

Table 2- Showing prevalence of oral precancerous lesions in relation to Age-group

Type of Lesion	21-30 years	31-40 years	41-50 years	51-60 years
Leukoplakia	5(38.46%)	6(31.57%)	5(25%)	2(40%)
OSMF	4(30.76%)	4(21.05%)	8(40%)	0(0%)
Erythroplakia	4(30.76%)	2(10.52%)	1(5%)	2(40%)
OSMF + Leukoplakia	0(0%)	3(15.78%)	1(5%)	0(0%)
Leukoplakia + Erythroplakia	0(0%)	2(10.52%)	1(5%)	0(0%)
No Lesion	0(0%)	2(10.52%)	4(20%)	1(20%)
Total	13	19	20	5

$X^2 = 17.1$ $p = 0.310$

Table 3- Showing prevalence of oral precancerous lesions in relation to Gender

Type of Lesion	Male	Female
Leukoplakia	18 (35.29%)	0 (0%)
OSMF	13 (25.49%)	3 (50%)
Erythroplakia	8 (15.68%)	1 (16.66%)
OSMF + Leukoplakia	4 (7.84%)	0 (0%)
Leukoplakia + Erythroplakia	3 (5.88%)	0 (0%)
No Lesion	5 (9.80%)	2 (33.33%)
Total	51	6

$X^2 = 6.51$ $p = 0.259$

Both as an independent lesion and as a combined lesion leukoplakia was mainly seen in the age group of 31-40 years. In our study the observed age of preponderance for OSMF was 41- 50 years. Maximum cases of Erythroplakia were seen in the age group of 21-30 years. All oral precancerous lesions were predominantly seen in male patients. Total 46 (92%) male subjects and 4 (8%) female subjects were showing the lesions.

About 48% of the detected oral precancerous lesions were asymptomatic and those who were having symptoms never consulted a doctor for the same at any point of time.

In tobacco habitual 25 subjects were drinking alcohol. Out of them 24 were showing precancerous lesion. All 7 cases of multiple oral precancerous lesions were addicted to tobacco and alcohol both.

According to frequency of tobacco consumption per day the maximum number of patients were recorded in 6-10 times per day as shown in [Table-4].

Table 4- Depicting relation of oral precancerous lesions with frequency of habit per day

Type of oral precancerous lesion	Frequency of habit per day			
	1-5 times	6-10 times	11-15 times	> 15 times
Leukoplakia	1 (6.66%)	11 (40%)	6(46.15%)	0 (0%)
OSMF	6 (40%)	7 (28%)	2(15.38%)	1 (25%)
Erythroplakia	0 (0%)	5 (20%)	3(23.07%)	1 (25%)
OSMF + Leukoplakia	1 (6.66%)	1 (4%)	1(7.69%)	1 (25%)
Leukoplakia + Erythroplakia	0 (0%)	1 (4%)	1 (7.69%)	1 (25%)
No Lesion	7 (46.66%)	0 (0%)	0 (0%)	0 (0%)
Total	15	25	13	4

$\chi^2 = 36.9 p = 0.001$

Correlation of duration of habit with prevalence of oral precancerous lesions is shown in [Table-5]. Majority of the precancerous lesions were found in subjects habituated for 6-10 years followed by >15 years group. Most of the cases of leukoplakia (n=10) and OSMF (n=8) were seen in subjects habituated for 6-10 years. Only 7 lesions were seen in the group habituated for 6 months-2 years.

Table 5- depicting relation of oral precancerous lesions with duration of habit

Type of oral precancerous lesion	Duration of habit			
	6 months-5yrs	6-10 yrs	11-15 yrs	> 15yrs
Leukoplakia	3 (42.85%)	10(47.61%)	0 (0%)	5 (25%)
OSMF	3 (42.85%)	8 (38.09%)	1 (11.11%)	4 (20%)
Erythroplakia	1 (14.28%)	1 (4.76%)	4 (44.44%)	3 (15%)
OSMF + Leukoplakia	0 (0%)	0 (0%)	3 (33.33%)	1 (5%)
Leukoplakia + Erythroplakia	0 (0%)	1 (4.76%)	1 (11.11%)	1 (5%)
No Lesion	0 (0%)	1 (4.76%)	0 (0%)	6 (30%)
Total	7	21	9	20

$\chi^2 = 34.1 p = 0.003$

Discussion

India is the third biggest manufacturer and user of tobacco in the world. Tobacco is used in different forms in India like smoke form and smokeless form.

In our study population of 106 subjects, 57 subjects were addicted to tobacco. Out of which 51 were males and 6 were females. This shows that predominantly males were habituated to tobacco than females. This male preponderance coincides with the other studies by Keluskar [3], S.P. Rao [4] and Sujatha [5].

Majority (82%) were using smokeless form as compared to smoke form (8%). In recent years smokeless tobacco is becoming more popular because of its cheaper rate and easy availability. Similar findings were observed by Keluskar [3], S.P. Rao [4] and P.A. Uplap [6]. Zarda was found to be the most popular tobacco form in our study. In urban area one packet of zarda costs just three rupees fifty paise and in rural area people get it in even cheaper rates. This is the reason of its increased popularity. Assam has become the first state to ban all types of smokeless tobacco by law. Such initiative should be taken by all states in India in order to reduce the burden of oral cancer.

Prevalence of oral precancerous lesions was 47.16% in our study. This is closer to the prevalence observed by study conducted in Indore by Priyanka [10]. The most prevalent lesion seen was oral leukoplakia. This finding coincides with earlier studies [11].

All the oral precancerous lesions were seen in tobacco habitual only. Majority of precancerous lesions were found in smokeless form users. Both of these findings coincide with the study by Uplap [6] and Thomas [8]. This confirms the role of tobacco as a risk factor for oral precancerous lesions. Only 5 lesions were seen in mixed users.

There was no association seen between age and prevalence of oral precancerous lesions. Those were almost equally distributed in the 21-50 years of age. This could be because of the fact that in India more and more younger generations are getting attracted towards tobacco, which is a cause of concern.

Strong association was seen between frequency of tobacco use and occurrence of oral precancerous lesions ($\chi^2 = 36.9, p = 0.001$). Most of the precancerous lesions were seen in 6-10 times per day users. Similar finding was observed by Sujatha [5].

Also significant association of oral precancerous lesions was observed in relation to duration of habit ($\chi^2 = 34.1 p = 0.003$). Most of the cases were seen in subjects habituated for 6-10 years. Only seven cases were seen in subjects habituated for 6 months-5 years. This proves that as the duration of tobacco habit increases there are more chances of development of precancerous lesions. The association of frequency and duration of tobacco habits with the oral precancerous lesions is noticed in this study and also in previous studies by Sujatha [5], Aruna [7] and Priyanka [10]. In our study, out of 25 alcohol consumers 24 were showing precancerous lesions. All 7 cases of multiple precancerous lesions were seen in tobacco and alcohol addicts. This indicates that alcohol increases the risk of occurrence of oral precancerous lesions in tobacco habitual.

Our study does not reflect the prevalence of oral precancerous lesions in the general population. Further studies should be carried out with the larger sample size and in general population.

Conclusion

In developing countries like India treatment of oral cancer is becoming a leading cause of burden on the economy. So more cost effective prevalence studies should be carried out in high risk population like tobacco habitual for early detection of oral precancerous lesions. Relatively cheaper method like simple oral screening combined with tobacco cessation activities will have better impact. These studies can help in planning and implementing tobacco control programme in larger population so as to get a tobacco free healthy society.

Acknowledgements

We wish to thank the participants of this study for their cooperation towards successful completion of the study.

Conflicts of Interest: None Declared.

References

- [1] Gupta P.C. (1984) *British Journal of Cancer*, 50(4), 527-531.
- [2] Niblock W.J. (1902) *Indian Medical Gazette*, 37, 1-163.
- [3] Keluskar V. and Kale A. (2010) *Biosci. Biotech. Res. Comm.*, 3 (1), 50-54.
- [4] Rao S.P. and Bhowate R.R. (1998) *Indian Journal of Otolaryngology and Head and Neck Surgery*, 50(3), 261-265.
- [5] Sujatha D., Hebbar P.B. and Pai A. (2012) *Asian Pac. J. Cancer Prev.*, 13(4), 1633-1637.
- [6] Uplap P., Mishra G., Majumdar P., Gupta S., Rane P., Sadalge P., Avasare A., Goswami S., Dhar V. and Shastri S. (2011) *Indian Journal of Community Medicine*, 36(2), 133-138.
- [7] Aruna D.S., Prasad K.V., Shavi G.R., Ariga J., Rajesh G. and Krishna M. (2011) *Asian Pac. J. Cancer Prev.*, 12(6), 1561-1566.
- [8] Thomas G., Hashibe M., Jacob B.J., Ramadas K., Mathew B., Sankaranarayanan R. and Zhang Z.F. (2003) *International Journal of Cancer*, 107(2), 285-291.
- [9] Neville B.W. and Day T.A. (2002) *CA: A Cancer Journal for Clinicians*, 52(4), 195-215.
- [10] Mahawar P., Anand S., Sinha U., Bansal M. and Dixit S. (2011) *National Journal of Community Medicine*, 2(1), 82-85.
- [11] Nair D.R., Pruthy R., Pawar U. and Chaturvedi P. (2012) *Journal of Cancer Research and Therapeutics*, 8, 57-66.