

Epidemiology of Non-Malignant Oral Lesions in a Rural Population Attending a Tertiary Care Centre in Lucknow, U.P., India

Ekta Agarwal¹, Sumit Sharma², Ahmed Aseem Naseem³

¹Senior Resident; ²Associate Professor, ³Assistant Professor;
Department of ENT, Mayo Institute of Medical Sciences, Barabanki

Corresponding Author: Sumit Sharma

ABSTRACT

Objective: To describe the epidemiology of non-malignant oral lesions in a rural population attending a tertiary care centre in Lucknow, India.

Method: A total of 340 patients presenting with oral lesions for more than 2 weeks were enrolled in the study. Patients with proven malignancy, white patch in the oral cavity which can be scrapped off, e.g. oral candidiasis and urban patients were excluded from the assessment. Demographic profile, adverse oral habits and dietary habits of patients were noted. Data was analyzed using SPSS 21.0 software. Data has been represented as number and percentages.

Results: Age of patients enrolled in the study ranged between 18 and 75 years, median age was 32 years and mean age was 33.86±10.65 years. Majority were aged 26-50 years (66.2%), were males (55.3%), were farmers/labourers (58.6%), were illiterate/educated upto primary grade (57.1%). Oral pain and burning sensation was the most common presenting complaint (45%). All the patients have two or more of the following habits – areca nut chewing, tobacco chewing and smoking. A total of 41.5% patients had all the three habits. Alcohol and spicy food consumption were reported by 12.6% and 84.4% patients. On histopathology, a total of 191 (56.18%) cases had premalignant lesions and 149 (43.82%) had benign lesions. Major premalignant types were leukoplakia (n=87; 45.5%), OSMF (n=62; 32.5%) and Erythroplakia (n=18; 9.4%). Aphthous ulcer major (n=74; 49.7%), geographical tongue (n=43; 28.9%) and traumatic ulcer (n=23; 15.4%) were the major benign lesions.

Conclusion: In a rural population presenting with non-premalignant oral lesions areca nut, chewing tobacco and smoking were the major etiologies affecting mainly young adults. The high prevalence of premalignant lesions showed a high potential of their transformation to malignant status. Preventive measures with modification of oral habits are recommended.

Key Words: Non-malignant oral lesions, Leukoplakia, oral submucous fibrosis, aphthous ulcer major, rural.

INTRODUCTION

Oral mucosa is soft and tender and prone to a number of conditions that end up in giving rise to lesions. The oral mucosal lesions can be simple, harmless conditions like ulcerative lesions that tend to heal within 10-14 days without the need of any intervention¹, however, there are a number of lesions that have potential to become malignant.² Consequently, not all oral lesions are oral cancers yet there are oral lesions that have potential to progress into cancerous lesions. Unfortunately, while plenty of literature is available regarding oral malignant and premalignant lesions, there are fewer reports discussing the spectrum of non-malignant and benign oral lesions. The present study tries to focus mainly on non-malignant oral lesions and tries to determine the frequency of benign and premalignant conditions in a rural population of North India.

MATERIAL AND METHOD

The present study was carried out as a cross-sectional study in the Department of Otorhinolaryngology, Era's Lucknow Medical College & Hospital, Lucknow over a period starting from January, 2016 to June, 2017 after approval from Institutional Ethics Committee and obtaining consent from all the participants. A total of 450 patients attending the Outpatient Department of Otolaryngology of Era's Lucknow Medical College and Hospital, having complaints suggestive of oral cavity lesions for more than 2 weeks were included in the assessment. Proven cases of oral malignancy and patients with white patch in the oral cavity which can be scrapped off, e.g. oral candidiasis were excluded from the assessment.

Personal and clinical history of the patients was obtained and was recorded on a Case Record form for each individual, patients were subjected to necessary laboratory and radiographic investigations and biopsy was taken from the lesion and was sent for histopathological examination.

The patient was made comfortable and a detailed history of his complaints was taken on a Case record form designed for the same.

The standard procedure of examination of ear, nose, throat, oral cavity, face and neck was carried out on each patient according to the protocol followed in the Outpatient Department of Otolaryngology, Era's Lucknow Medical College, Lucknow.

Patients were explained about the study and written and informed consent was taken for participation in the study.

Xylocaine sensitivity with 2% was done Intradermal and tetanus injection was injected intra muscularly before taking the biopsy.

Local was infiltrated around the site of lesion.

Punch biopsy was taken from the site of lesion and was sent for histopathological examination.

Data was analyzed using Statistical Package for Social Sciences (SPSS) version 21.0. Data was represented as frequency (number) and proportions (percentage) and mean±SD

RESULTS

Age of patients enrolled in the study ranged between 18 and 75 years, median age was 32 years and mean age was 33.86±10.65 years. Majority were aged 26-50 years (66.2%), were males (55.3%), were farmers / labourers (%), were illiterate / educated upto primary grade (51%) (Table 1).

Table 1: Demographic Profile and Characteristics of Study Population

SN	Characteristic	Statistic
1.	Mean Age±SD (Range) in years	33.86±10.65 (18-75)
2.	Male: Female	249 (55.3%): 201 (44.7%)
3.	Occupation	
	Housewife	128 (28.4%)
	Shopkeeper/Business	33 (7.3%)
	Farmer	91 (20.2%)
	Skilled Labourer	38 (8.4%)
	Unskilled Labourer	101 (22.4%)
	Service	41 (9.1%)
	Student	62 (13.8%)
4.	Education	
	Illiterate	114 (25.3%)
	Primary	143 (31.8%)
	Middle-High School	107 (23.8%)
	Intermediate	49 (10.9%)
	Graduate or above	41 (9.1%)

Table 2: Presenting Complaints and Oral Habits

SN	Characteristic	No.	%
1.	Presenting Complaints		
	Change of taste	21	4.67
	Dryness of mouth	37	8.22
	Growth in oral cavity	12	2.67
	History of denture use	20	4.44
	Oral pain and burning sensation	203	45.11
	Progressive inability to open mouth	57	12.67
	Whitish patch in oral cavity	101	22.44
2.	Personal Habits/Risks		
	Smoking	256	56.89
	Areca Nut	253	56.22
	Tobacco chewing	257	57.11
	Smoking + Areca nut/Tobacco chewing	187	41.56
	Areca nut + Tobacco chewing	144	32.00
	Areca nut + Smoking	131	29.11
	Alcohol	57	12.67
	Spicy Food	380	84.44

Oral pain and burning sensation was the most common presenting complaint (45.11%). All the patients have two or more of the following habits – areca nut chewing,

tobacco chewing and smoking. A total of 41.56% patients had all the three habits. Alcohol and spicy food consumption were reported by 12.67% and 84.44% patients (Table 2).

On histopathology, a total of 253 (56.22%) cases had premalignant lesions and 197 (43.78%) had benign lesions. Major premalignant types were leukoplakia (n=115; 45.45%), OSMF (n=82; 32.41%) and Erythroplakia (n=24; 9.49%). Aphthous ulcer major (n=98; 49.75%), geographical tongue (n=47; 28.93%) and traumatic ulcer (n=30; 15.23%) were the major benign lesions (Table 3).

Table 3: Spectrum of non-malignant (pre-malignant and benign) oral lesions

Group	HPE Diagnosis	No.	%
Premalignant – (n=253; 56.22%)	Actinic keratosis	1	0.40
	Erythroplakia	24	9.49
	Leukoplakia	115	45.45
	Lichen Planus	20	7.91
	Melanoplakia/Melanosis	11	4.35
	OSMF	82	32.41
Non-premalignant/ Benign (n=197; 43.78%)	Aphthous ulcers major	98	49.75
	Geographical tongue	57	28.93
	Mucocele	4	2.03
	Papilloma	5	2.54
	Pyogenic granuloma	3	1.52
	Traumatic ulcer	30	15.23

DISCUSSION

The purpose of present study was to provide a comprehensive overview of the spectrum of non-malignant lesions of oral mucosa in a rural population and to discuss the demographic profile, risk factors and clinical characteristics of the susceptible population. There are limited studies conducted on the non-malignant and benign lesions of oral mucosa, however, the limited studies available have shown diverse differences thus indicating that the spectrum of oral lesions and patient characteristics is affected by region, per se, on the oral habits, food preferences and exposure to different risk factors. In present study, the age profile of patients ranged from 18 to 75 years with a mean age of 33.86 years. Compared to this, Tortorici et al. ³ while reporting prevalence and distribution of oral mucosal non-malignant lesions in a Sicilian population reported the age of patients between 13 and 86 years with a mean of

47.16±17.71 years. Similarly, Allon et al. ⁴ in their study describing the clinical characteristics of benign oral mucosal lesions reported the age of patients to be 0.25 to 86 years and mean age as 49.6 years. However, in another study from India, Mehrotra et al ² while reporting prevalence of oral pre-malignant and malignant lesions in a population from eastern UP (India) reported mean age of patients with oral premalignant and benign lesions to be 25 years. These findings in general suggest that oral mucosa is at a higher risk of lesions in Indian population even at a younger age. This could be probably owing to difference in oral habits that will be discussed in latter part of this discussion.

The present study showed a predominance of males (55.3%) as compared to females (44.7%), i.e. a gender ratio of 1.24. Similar gender ratio was also shown by Tortorici et al. ³ in their study (1.27). Allon et al. ⁴ and Mehrotra et al ² in their study also reported a male dominance. As far as potentially malignant lesions are concerned, they too are reportedly higher in males as compared to that in females in various studies ^{5,6,7,8}.

In present study, farmers and unskilled/skilled laborers comprised 51.2% of total study population and majority were either illiterate or educated upto primary level (57.1%). The lower education and occupational profile of the patients is reflective of their rural origin. Previous studies have also shown that lower socioeconomic strata, especially illiterates and less educated and labourers are more susceptible to oral lesions ^{8, 9, 10}. The findings of present study thus endorsed the susceptibility of lower socio-economic class towards oral benign and premalignant lesions too.

As far as presenting complaints were concerned, the present study showed Oral pain and burning sensation as the commonest presenting complaint (45.11%) followed by whitish patch in oral cavity (22.44%) and progressive inability to open mouth (12.67%) respectively. The findings

suggest that the physical manifestations were the major reasons for patients' visit to our facility. Oral pain and burning sensation, whitish patch in oral cavity and restricted mouth opening are some of the conditions associated with a number of common oral lesions such as erythroplakia, leukoplakia, oral submucous fibrosis, etc.^{11, 12, 13}. Apart from these ulcerative lesions also tend to present with pain and burning sensation¹. However, pain and burning sensation is a common but non-specific indication.

In present study, most of the patients were exposed to one or more risk factors. The most common independent personal habit was spicy food (84.4%) while tobacco chewing, areca nut chewing, smoking and alcohol were reported by 57.11%, 56.22%, 56.89% and 12.67% patients respectively. Tobacco use, particularly smokeless tobacco use is one of the most common risk factors for oral cancer as well as premalignant lesions^{12,14}. In fact considering the importance of tobacco use as a dominant risk factor for oral lesions some studies have been conducted solely in this high risk group of tobacco users only^{10, 15, 16, 17}. Other workers have also found prevalence of these habits in majority of their patients with premalignant lesions^{7, 18}. In their study Gupta et al.¹⁹ also identified 49.5% of their patients as tobacco chewers, 28% as pan masala chewers and 22.5% to be having mixed habits. Thus showing that majority of patients in their study population were tobacco/pan masala chewers. Incidentally, in their study, they did not report of prevalence of smoking habit. Kumar et al.⁹ in their study also reported use of tobacco/gutkha/smoking in 88% of their patients. Almost none of these studies have enquired about spicy food intake. This dimension was added in present study as we not only assessed the premalignant lesions but also took inflammatory and non-neoplastic/benign pathologies too. A number of studies have found that low pH-high acidic foods such as Indian spicy food have an increased risk of oral ulcers and

other non-neoplastic oral lesions^{20,21}. Some other studies have also indicated that although spicy foods do not seem to have a causative role but they are certainly instrumental in aggravating the symptoms of the disease and thus influence patients' healthcare seeking behavior.²²

In present study, majority of cases (56.22%) had premalignant conditions while remaining 149 (43.78%) had non-neoplastic/benign inflammatory conditions. Thus prevalence of premalignant conditions was 56.18% in our study. Compared to this, Kumar et al.¹³ in their study noticed benign/non-neoplastic oral conditions in 32% of their patients. However, in their study, Joshi and Tailor¹⁷ found non-neoplastic/ benign oral conditions in 75.1% of their patients screened for tobacco-associated oral lesions. Gupta et al.²³ too in their study, reported of benign lesions to be 3.3 times higher than the premalignant lesions among patients having neoplastic lesions of oral cavity and oropharynx. The high prevalence of premalignant conditions in present study could be attributable to lesser awareness, low education and lower socioeconomic profile of patients. In fact, most of the patients turned to our facility only when primary facilities/home remedies failed to provide any symptomatic relief. The higher prevalence of premalignant conditions in present study thus indicates the need for use of strategic planning to create awareness regarding progressive nature of non-malignant oral lesions towards malignancy and benefit of early identification and treatment.

In present study major premalignant types were Leukoplakia (n=115; 45.45%), OSMF (n=82; 32.41%) and Erythroplakia (n=24; 9.49%) while major benign/non-malignant types were Aphthous ulcer major (n=98; 49.75%), geographical tongue (n=57; 28.93%) and traumatic ulcer (n=30; 15.23%). Similar to our study, Ambedkar et al.¹⁵ and Mishra et al.¹⁶, also found Leukoplakia to comprise 37.8% and 41.6% of premalignant lesions in their series. Jagtap et al.¹⁸ in their study found

Leukoplakia to comprise 68.41% of their study population. As far as OSMF is concerned, a number of studies have reported it to be dominant premalignant type reporting in 30.4% to 88.1% of premalignant lesions^{17, 10, 24, 25}. Similar to our study, Tortorici et al.³ in their study found also found aphthous ulcer and traumatic ulcers to be quite common non-malignant benign oral lesions; however, they did not find geographic tongue to be a dominant type. In their study, ulcerative lesions comprised 22% of total sample. In present study too, ulcerative conditions accounted for nearly 28.5% of total lesions. However, Allon et al.⁴ who described the clinical characteristics of benign oral mucosal tumors reported the non-ulcerated masses (98.6%) to be most common types. However, in their study only biopsy proven cases of benign tumors were taken into consideration. However, ulcerative lesions owing to their presentation with pain and burning sensation are more commonly reported as observed in our study.

In present study, papilloma (2.54%), mucocele (2.03%) and pyogenic granuloma (1.52%) were the some of the least common non-malignant benign lesions. These conditions are rare and are generally reported as case reports only^{26, 27, 28}.

The findings of present study conducted amongst rural patients a tertiary care facility thus showed that rural patients generally tend to report late with a high dominance of premalignant conditions or conditions accompanied with pain and burning sensation. A high dominance of premalignant conditions in this study could be attributable to presence of multiple adverse oral habits. It would be pertinent to mention here that malignant conditions were excluded from the study domain. The gravity of situation would have been worse had had malignant lesions also included. These findings in turn indicate a need for strategic interventions to create awareness, strong statutory provisions and upgradation of primary care facilities. The present study was probably the first work on non-

malignant lesions in rural setting, further studies on a similar population and a comparative assessment with urban population is recommended to get a clearer picture.

Ethical Considerations of the Study:

1. **Ethics Committee Approval:** Ethics committee approval was received for this study from the Institutional Ethics Committee.
2. Written Informed Consent was obtained from concerned subjects and authority of institutions.
3. Privacy, confidentiality and anonymity were granted.
4. Scientific objectivity was maintained with honesty and impartiality.

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