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ORIGINAL RESEARCH

Exploring The Association Of Risk Variables To The Clinicopathological Characteristics Of Oral Lesions – A Retrospective Study

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ABSTRACT

Introduction: The oral cavity is susceptible to trauma and injury leading to various diseases that range from simple inflammatory lesions to highly malignant tumors.Smoking is the most threateningrisk factor and the most prevalent lesions are well differentiated squamous cell carcinomas.

Aim: To identify the morphological spectrum of oral lesions in urban areas like Visakhapatnam in correlation with specific risk factors and categorize them according to age, gender and site.

Materials and Methods: This is a retrospective cohort study conducted at the Department of Pathology in association with the Department of ENT at GayatriVidya Parishad Institute of Health Sciences, Andhra Pradeshwhich included 220cases of oral lesions from January 2022 to February 2024.Frequency and percentage statistics were used to present the results.

Results: A total of 220 oral cavity lesions were included in the present study, out of which 26 were non-neoplastic. Among the 194 neoplastic lesions, 40 were benign, 26 were pre-malignant and the rest 128 were malignant lesions. The age group ranged from 10-85 years with majority of patients with malignant lesions found in the 4th and 5th decades of life. A male preponderance with a male-to-female ratio of 1.5:1 was observed. Gingivo-buccal mucosa was predominantly involved (39.9%) followed by tongue (18.8%) and palate (11.81%). Ulceroproliferative growth was the most common clinical finding in malignant cases.

Conclusion: Oral lesions and cancers are the most common health burdens in developing countries. The incidence of oral SCC remains high due to habits like tobacco chewing and alcohol consumption in the Visakhapatnam region.

Key words : A detailed clinical workup with the aid of histopathology study can help in diagnosing most of the oral cavity precursor lesions.

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INTRODUCTION

Oral cancer is one of the most common cancers in the world, with two-thirds of the cases occurring in developing countries [(1)].It is the most common cancer and cancer-related deaths in men in India[(2)] .Syphilis, nutritional deficiencies, sun exposure (in cases of lip cancer), trauma, sepsis and irritation from sharp tooth and dentures also play a role in the etiology of oral cancers [(3)].A better knowledge of aetiological factors for the development of oral cancers can make the disease preventable by avoiding risk factors like tobacco consumption, betel nut chewing and alcohol abuse[(4)]. The involvement of the oral cavity in mastication makes it vulnerable to different types of trauma and injury, also the presence of teeth and odontogenic tissue adds more liability for other groups of diseases which vary from simple inflammatory diseases to highly malignant tumors[(5)]. Though the oral cavity is more accessible to total examination, the disease gets detected in later stages either due to unawareness or inaccessibility to medical care[(6)].Early diagnosis of most of the cancers has a very good prognosis. However, a delay in diagnosis and intervention impairs the patient's quality of life.

MATERIALS AND METHODS

This is a two-year retrospective study on oral lesions reported between January 2022 to February 2024 in the Department of Pathology in association with the department of ENT, studied at Gayatri Vidya Parishad Institute of Healthcare and Medical Technology, Visakhapatnam. Relevant clinical details of all the cases and important results of investigations were recorded. The labeled post-surgical specimens received in formalin fixative after thorough gross examination were subjected to tissue processing reagents, a standard method of H and E stain was performed on sections and were examined under the microscope for histopathological diagnosis. The histopathological diagnosis was correlated with clinical findings and various risk factors involved. Frequency and percentage statistics were used to present the results.

INCLUSION CRITERIA

All oral cavity samples with ages ranging from 10 to 85 years received were included during the study period at the Department of Pathology, Visakhapatnam.

EXCLUSION CRITERIA

1. Patients with major salivary gland lesions
2. Inadequate tissue submitted for histopathology
3. Localized lesions of tonsils and throat
4. Autolyzed tissue not sent in formalin was excluded from the study.

STATISTICAL ANALYSIS

Frequency and percentage statistics were used to calculate the mean age, gender, site distribution, and histopathological type of the tumor in the study group.

RESULTS

A total of 220 oral cavity lesions were included in the present study, out of which 28 were non-neoplastic. Among the 192 neoplastic lesions,40 werebenign, 26werepre-malignant and the rest were 128 malignant lesions. The age group ranged from 10-85 years with a majority of patients with malignant lesions found in the 5^{th} and 6^{th} decades of life (Table 1). Among the cases studied, 132(60%) were males and 88(40%) were females which showed a male preponderance with a male-to-female ratio of 1.5:1(Table 2). Gingivo-buccal mucosa was predominantly involved region (39.9%) followed by tongue (18.8%) and palate (11.81%). Other sites arethe floor of the mouth (5.45%) and retromolar trigone (1.81%). Among the malignant lesions, the most common site involved was gingiva-buccal mucosa (39.68%), followed by the tongue (30.15%) (Table 3).Ulceroproliferative growth (Fig 1b) was the most common clinical finding in malignant cases. Erythematous or white patches, pain, difficulty in chewing, and swelling at the site of the lesion were the presenting complaints in the remaining cases.

In the present study, non-neoplastic lesions accounted for 26 cases(11.81%) which included14 cases of mucocele (6.36%) and 6 cases each of inflammatory lesions andretention cysts (2.72%) respectively. Benign lesions were mostly vascular lesions which included 26 cases of Pyogenic granuloma (11.81%) followed by 8 cases of capillary hemangioma (3.63%)and 6 cases of Pseudoepitheliomatous hyperplasia (2.72%)%(Fig2(c)). Pre-malignant lesions included 6 cases(2.72%) of leukoplakia(Fig 1a), 10 cases(4.54%)of submucous fibrosis, and 10(4.54%) cases of severe dysplasia. Among all the oral cavity lesions58.18% were malignant lesions(128),out of which 94 were Well differentiated Squamous cell carcinoma(73.43%)(Fig2a)followed by18 cases of Moderately differentiated Squamous cell carcinoma(14.06%), 10 cases of Poorly differentiated Squamous cell carcinoma (7.8%) and 2 cases of Basal cell carcinoma0.7%(Fig2b)(Table 4).Smoking was found to be the most important risk factor(48.18%) causing oral malignancies followed by alcohol consumption (29.09%) and tobacco chewing (14.54%) and in 18 patients no identifiable risk factors were seen (Table 5).

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Table 1:Age-wise distribution of both non-neoplastic and neoplastic lesions of the oral cavity

		Neoplasticlesions			Total(%)
Age(years)	Non-neoplastic lesions	Benign	Premalignant	Malignant	
0-10	02	06	-	-	08(3.63%)
11-20	10	10	-	-	20(9.09%)
21-30	-	10	02	08	20(9.09%)
31-40	06	04	-	18	28(12.72%)
41-50	-	08	04	30	42(19.09%)
51-60	04	06	04	32	46(20.90%)
61-70	04	04	02	26	36(16.36%)
71-90	-	-	02	18	20(9.09%)
Total	28	46	20	126	220

Table 2 : Gender-wise distribution of both non-neoplastic and neoplastic lesions of the oral cavity

		Neoplastic lesions			Total (%)
Sex	Non neoplastic lesions	Benign	Premalignant	Malignant	
Male	16	26	10	80	132
Female	12	20	10	46	88
Total	28	46	20	126	220

Table 3: Site-wise distribution of non-neoplastic and neoplastic lesions of the oral cavity

		Neoplastic lesions			
Site of oral lesions	Non-neoplastic lesions	Benign lesions	Premalignant lesions	Malignant lesions	Total cases(%)
Gingivo-buccal	06 (21.48%)	10	20	50	80(41.66%)
Tongue	-	02	-	38	40(20.83%)
Palate	04 (14.28%)	-	-	22	22(11.45%)
Floor of mouth	04 (14.28%)	-	-	08	08(04.16%)
Lip	14 (50%)	34	-	04	38(19.79%)
Retromolar trigone	-	-	-	04	04(02.08%)
Total	28 (12.72%)	46	20	126	192 (87.27%)

Table 4: Histopathological diagnosis of oral cavity lesions

	Oral lesions	No. of patients
Non-neoplastic lesions	Inflammatory lesions	06 (2.72%)
	Mucocele	14 (6.36%)
	Retention cyst	06 (2.72%)
Benign lesions	Pyogenic granuloma	26(11.81%)
	Capillary hemangioma	08 (3.63%)
	Pseudoepitheliomatous hyperplasia	06 (2.72%)
Premalignant lesions	Leukoplakia	06 (2.72%)
	Oral submucous fibrosis	10 (4.45%)
	Severe dysplasia	10 (4.45%)
Malignant lesions	Verrucous carcinoma	04 (1.81%)
	WD SCC	94 (42.72%)
	MD SCC	18 (8.18%)
	PD SCC	10 (4.45%)
	BCC	02 (0.90%)

Table 5: Habits in oral and oropharyngeal cancer patients

Risk factors	No of patients %
Smoking	52(23.63%)
Reverse smoking	54(24.54%)
Alcohol	24(10.90%)
Alcohol and smoking	40 (18.18%)
Tobacco chewing (pan/gutka)	32 (14.54%)
No risk factors	18(08.18%)

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Fig 1: a.Leukoplakia. b.Palatal growth with ulceration

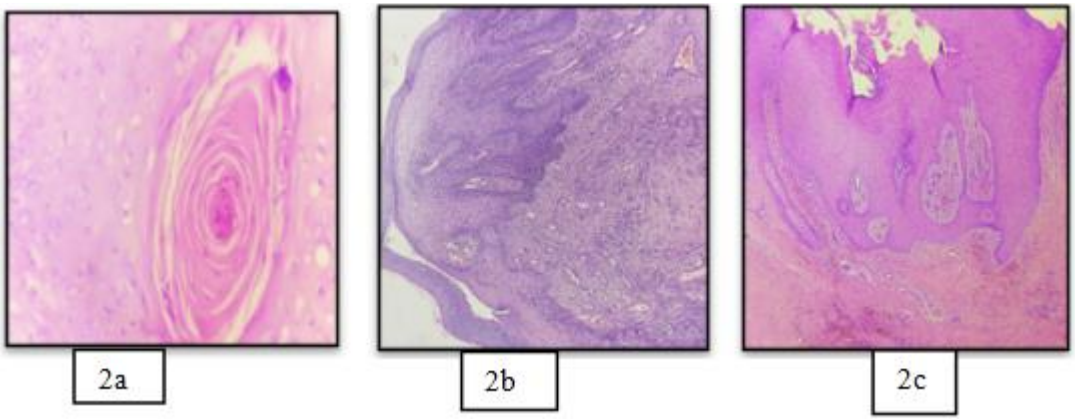

Fig 2: H&E sections showing a) Keratin pearl in WDSCCb) BCC c)Pseudoepitheliomatous hyperplasia

DISCUSSION

Oral lesions owing to its susceptibility to various local and habitual irritants are becoming more prevalent. Oral cancer is one of the major health burdens in many developing countries and in the past decade, the role of various potential risk factors like tobacco consumption in the pathogenesis of oral cancer has been well acknowledged. The increasing trend of malignancy in developing India is due to excessive usage of tobacco in the form of smoking, chewing, and reverse smoking. Since the oral cavity is more amenable to examination, any small lesion can be easily identified and examined. A variety of oral lesions adding up to 220 cases which includes both non-neoplastic and neoplastic were analyzed. In the present study, the age of patients ranged from 10 to 85 years with a majority oforal cavity lesions including non-neoplastic and neoplastic occurred in the 5th and 6th decadeswhich is comparable with the study done by Zaib N et al[7]where they found most common age group as 51- 60 years with 35.96% cases and also by Rahul Y Sakpal[8] with 30.67% cases. The majority of malignant cases were seen among the same age group between 51-60 years which correlated with the study done by Bhalekar S et al[9] and R Agarwal et al[10]. In contrast the present study of D Prasan[11] and R Laishram et al[12]showed a maximum incidence of malignant oral lesions lie in the age group of 61-70 years. Screening programs targeting men over 50 years and with risk factors, would help in early diagnosis of oral cancer and therefore improve the treatment outcome.

In the present studymale preponderance with male to female ratio of 1.5:1 was noted which correlated with the studies of Ali M and Sundaram D[13] and Rahul Y Satpal et al[8],this distribution highlights the fact that usage of substance misuse is more common inmen.The majority of cases in the present study occurred in the buccal mucosa (30.09%) followed by the tongue which is in accordance with thestudies by Rahul Y Satpalet al[8](35.33%), Ali M Sundaram[13](26.8%), Mehta NV et al[14](32%) and Mishra V et al[15] (54.5%).Among theneoplastic lesions,41.66%ofcases were seen involving thegingivo-buccal mucosawhich was comparable with studiesdone by Parikh et al[16] and Gupta et al[17].However in the study by Atram et al[18] the most common site was the tongue followed bylip. This could be explained by the greater surface area of the buccal mucosa making it more vulnerable and sensitive to irritants. Thenon-neoplastic lesions accounted for 11.81%, mucocele being the most common, comparable with the study done by Rahul Y Sakpalet al[8]. Pyogenic granuloma was the most commonneoplastic lesion in the present study which

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is comparable with the findingsby Kashyap B et al[19]The premalignant lesions in the present study accounted to 11.62%. These findings were comparable with the study done by Parikh S et al[16](12.21%) Tobacco consumption is a very significant risk factor for oral cancers. Other risk factors are age and male sex. The risk rises even more when combined with alcohol. Many of the patients in the present study reported tobacco usage in the form of smoking or tobacco chewing which is comparable with the study by Parikh S et al[17].

CONCLUSION

Oral lesions and cancers are the most common health burdens in developing countries. The incidence of oral SCC remains high due to habits like tobacco chewing and alcohol consumption in the Visakhapatnam region. Any suspicious lesion especially in the oral cavity should be sent for histopathology examination to rule out malignancy. A detailed clinical workup with the aid ofhistopathology study can help in diagnosing most of the oral cavity precursor lesions. This early detection helps in reducing the morbidity and mortality arising out of subsequent malignant transformation.

REFERENCES

1. Warnakulasuriya S. Global epidemiology of oral and oropharyngeal cancer. Oral oncology. 2009;45:309-316.
2. Sankaranarayanan R, Ramadas K, Thomas G, Muwonge R, Thara S, Mathew B, et al. Effect
3. of screening on oral cancer mortality in Kerala, India: a cluster-randomised controlled trial. The Lancet. 2005 Jun;365(9475):1927–33.
4. Patel MM, Pandya AN. Relationship of oral cancer with age, sex, site distribution and habits.Indian J PatholMicrobiol. 2004 Apr;47(2):195-7.
5. Pires fr, ramos ab, de oliveirajbc, tavares as, da luz psr, dos santostcrb. Oral squamous cell
6. carcinoma: clinicopathological features from 346 cases from a single Oral Pathology service during an 8-year period. Journal of Applied Oral Science. 2013;21(5):460–7.
7. Abdul Rauf SP, R Sonwane B. Tumors and tumor-like lesion of the oral cavity: A study of 100 cases at tertiary care hospital. Trop J PatholMicrobiol 2020Apr.30 2024May15;6(4):265-74.
8. Gillison ML. Current topics in the epidemiology of oral cavity and oropharyngeal cancers. Head & Neck. 2007;29(8):779–92.
9. Zaib N, Sajjad M, Iltaf S. Oral biopsies: Study of 114 cases. Pakistan Oral & Dental Journal. 2012;32(3):416-20
10. Sakpal, Rahul &Warpe, Bhushan & Joshi-Warpe, Shweta. (2021). Spectrum of Histopathological Diagnosis of Oral Lesions in a Tertiary Care Hospital at Miraj in Maharashtra State, India. NATIONAL JOURNAL OF LABORATORY MEDICINE. 10.7860/NJLM/2021/47581.2488
11. Surekha Hemant Bhalekar Sonia Kundu. Clinico-pathological study of oral cavity lesions-a retrospective analysis of 70 cases. GJRA. 2018;(5):46–8
12. Agrawal R, Chauhan A, Kumar P. Spectrum of oral lesions in a tertiary care, hospital. J Clin Diagn Res. 2015;9(6):EC11-13
13. Prasan D. Clinico-Pathological Study of Oral Cancers. 2015;14(6):35–8
14. Laishram R, Modi D, Sharma LC, Debnath K. Pattern of oral cavity lesions in a tertiary care hospital in Manipur, India. J Med Soc. 2013;27(3):199
15. Ali M, Sundaram D. Biopsied oral soft tissue lesions in kuwait: A six-year retrospective analysis. Med PrincPract. 2012;21:569-75
16. Mehta NV, Dave KK, Gonsai RN. Histopathological study of oral cavity lesions: A study on 100 cases. Int J Cur Res Rev. 2013;5(10):110-16.
17. Mishra V, Singh PA, Lal NA, Agarwal P, Singh P. Changing patterns of oral cavity lesions and personal habits over a decade: Hospital based record analysis from Allahabad. Indian Journal of Community Medicine. 2009;34(4):321-25.
18. Parikh S, Prajapati H, Parikh B, Shah CK, Shah NR. Histopathological study of oral cavity lesions. International Journal of Scientific Research. 2013;2(11):430-32
19. Gupta M, Choudhary H, Gupta N, Gupta A. Histopathological study of neoplastic lesions of oral cavity and oropharynx. Int J Res Med Sci. 2016;4(5)1506–1510.
20. Atram MA, Bhalavi VD, Dantkale SS. Oral cancer: A clinicopathological study in relation to tobacco chewing, smoking and other risk factor. J Pharm Biomed Sci. 2015;05(03):215-22.
21. Kashyap B, Reddy PS, Nalini P. Reactive lesions of oral cavity: A survey of 100 cases in Eluru, West Godavari district. ContempClin Dent. 2013;3(3):294-97.
22. .Abdul Rauf, S. P., & R Sonwane, B. (2020). Tumors and tumor-like lesion of the oral cavity: A study of 100 cases at tertiary care hospital. Tropical Journal of Pathology and Microbiology, 6(4), 265-274.
23. Prithal G. A histopathological study of premalignant and malignant lesions of the oral cavity. [Dissertation]. [Bangalore, Karnataka]. Rajiv Gandhi University Of Health Sciences, 2013.
24. Bushra A, Khawer S, Waqar A, Shaikh A. A clinico-pathological study of oral cancers. Biomedica. 2011;27:29-32.