

Research Article


The study of clinical and histopathological characteristics of oral malignant and premalignant lesion

Akanksha Awasthi^{1*}, Ananya Bajpai²

¹Consultant Pathologist, Jai Prakash District Hospital, Bhopal, India

²Senior Resident, Datta Meghe Medical College, Nagpur, India

*Corresponding author email: awasthi.akanksha.94.aa@gmail.com

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Abstract

Introduction: Oral malignancy is one of the common malignancies in the world. The annual estimated incidence is around 275,000 with two-third of these cases occurring in developing countries. The most common type among these is squamous cell carcinoma constituting about 90%. The present study aimed to evaluate and compare the clinical and histology characteristics of malignant and premalignant lesions from oral cavity. In addition to that we also wanted to determine the clinical features of oral cavity lesions and to assess the correlation of oral cavity lesions among smokers, tobacco chewers, betel nut and alcohol user.

Material and methods: The present study was carried out in the Department of Pathology from January 2018 to April 2022 at R.D. Gardi Medical College, Ujjain. Total 118 cases of oral malignant and premalignant lesions were selected for the study who were subjected to histopathology examination, after institutional and research committee approval and with due consent of the patient. All the oral cavity lesions were included which are adequate, representative of the lesion, properly resected surgical specimens such as punch biopsies, incisional biopsy, wedge biopsies, surgical excision, and hemimandibulectomy received in the surgical histopathology laboratory.

Results: Among 118 cases, majority (n=84, 71.2%) of the cases presented with ulcer in oral cavity, 51 (43.2%) cases were presented with pain in oral cavity and 24 (20.3%) cases were presented with swelling in oral cavity. We found statistical significant association ($p=0.049$) between involved anatomical site and age groups in studied cases. No significant association ($p>0.05$) between patients' habit and squamous cell carcinoma differentiation was observed.

Conclusion: Our study concluded that there was no significant association ($p>0.05$) between habits and site of the lesion of oral cavity. Among tobacco chewer and smokers, most common site was buccal mucosa and among alcohol user, tongue was the most common site of the lesion. On histopathology, majority of lesions were malignant, among malignant lesions the most common lesion was squamous cell carcinoma, while the most common premalignant lesion was leukoplakia.

Key words

Oral malignancy, Squamous cell carcinoma, Tobacco chewer, Histopathology.

Introduction

Oral malignancy is one of the common malignancies in the world. The annual estimated incidence is around 275,000 with two-third of these cases occurring in developing countries. It accounts for about 3-4% of all malignancies [1]. Out of these 96% are carcinomas and 4% are sarcomas [2]. The most common type among these is squamous cell carcinoma constituting about 90% [3]. Malignancy being a genetic disorder involves multiple alterations of the genome. During its progression, visible physical changes take place at the cellular level (atypia) and tissue level (dysplasia). These physical and morphological alterations are of diagnostic and prognostic relevance and it is designated as “pre-malignant” changes. These changes are involved in neoplastic transformation [4].

Surveillance of oral epithelial dysplasia results in a number of newly diagnosed cases of oral squamous cell carcinoma. The clinical stage of oral squamous cell carcinoma at diagnosis influences the treatment required and the prognosis [5]. Oral malignancy poses significant mortality and morbidity in the patients, especially when discovered late in the course of the disease. Early detection should be done to increase the chance of patient being cured and greatly reduce the mortality and morbidity [6]. The present study aimed to evaluate and compare the clinical and histology characteristics of malignant and premalignant lesions from oral cavity. In addition to that we also wanted to determine the clinical features of oral cavity lesions and to assess the correlation of oral cavity lesions among smokers, tobacco chewers, betel nut and alcohol user.

Material and methods

The present study was carried out in the Department of Pathology from January 2018 to April 2022 at R.D. Gardi Medical College, Ujjain. Total 118 cases of oral malignant and premalignant lesions were selected for the study who were subjected to histopathology examination, after institutional and research committee approval and with due consent of the patient. The patients were finally confirmed for malignant and premalignant lesion of oral cavity, considering the histopathology finding as the gold standard. All the oral cavity lesions were included which are adequate, representative of the lesion, properly resected surgical specimens such as punch biopsies, incisional biopsy, wedge biopsies, surgical excision, and hemimandibulectomy received in the surgical histopathology laboratory. The evaluation was performed at R.D. Gardi Medical College, Ujjain during the study period. All inadequately fixed and autolyzed specimens and cases with improper clinical record (history and examination) were excluded from the study.

Patients history and clinical details were noted from the original request form and all the specimen which were received in 10% formalin were processed in automated tissue processor and stained with Hematoxyline and Eosin [7-13]. The stained slides were examined under microscope and classified according to WHO classification as malignant and premalignant lesions of oral cavity. For quantitative data, frequency distribution and graphical representation were applied. The frequency distribution, percentage and various diagrammatic representations were calculated.

Categorical variable were analyzed by Chi-Square test and p value <0.05 was considered significant.

Results

We studied total 118 cases of oral malignant and premalignant lesions who were subjected to histopathology evaluation from January 2018 to April 2022 at the Department of Pathology at R.D. Gardi medical college, Ujjain.

The patients' age ranged from 20-77 years with a mean age of 49.92 years. Out of the total cases, majority (n=43, 36.4%) of the cases were in the age group of 51-60 years, followed by (n=27, 22.9%) cases in 41-50 years of age, young and elderly population comprised of 8 (6.8%) and 19 (16.1%) cases respectively. Amongst the total cases, majority (n=97, 82.2 %) of the cases were male and 21 (17.8%) cases were female making the male to female ratio of 4.6:1. Among 118 cases, majority (n=84, 71.2%) of the cases presented with ulcer in oral cavity, 51 (43.2%) cases were presented with pain in oral cavity and 24 (20.3%) cases were presented with swelling in oral cavity (**Table - 1**). According to histology findings, malignant lesions were found in 73 (61.9%) cases, while pre-malignant lesions were seen in 45 (38.1%) cases (**Table - 2**). Among the malignant lesions, the most common (n=71, 60.2%) lesion was squamous cell carcinoma followed by verrucous carcinoma (n=2, 1.7%). Well differentiated squamous cell carcinoma were detected in 14 (19.2%) cases, moderately differentiated squamous cell carcinoma were detected in 52 (71.2%) cases which comprised of the majority of squamous cell carcinoma and poorly differentiated squamous cell carcinoma were seen in 5 (6.9) cases. Pre-malignant lesions, leukoplakia, was detected in 34 (75.5%) cases. When we compared the anatomical location of lesion in various age group, the buccal mucosa was commonly (31.3%) involved site in the age group 41-50 while, tongue was most commonly (44.4%) involved site in age group 51-60 years while in the young population (<= 30 years), cheek was commonly (27.8%) involved

anatomical site. We found statistical significant association ($p=0.049$) between involved anatomical site and age groups in studied cases. No significant association ($p>0.05$) between patient's habit and squamous cell carcinoma differentiation was observed as shown in **Table - 3**. Among tobacco chewer, 6 (42.9%) lesion were well differentiated squamous cell carcinoma, 18 (34.6%) lesion were moderately differentiated squamous cell carcinoma and 2 (40.00%) lesions were poorly differentiated squamous cell carcinoma. While in smokers, 5 (35.7%) lesion were well differentiated squamous cell carcinoma, 12 (23.1%) lesion were moderately differentiated squamous cell carcinoma and 2 (40.00%) lesion were poorly differentiated squamous cell carcinoma. Among alcohol user, 2 (14.3%) lesion were well differentiated squamous cell carcinoma, 7 (13.5%) lesion were moderately differentiated squamous cell carcinoma. Among betel nut user, 3 (5.8%) lesion were moderately differentiated squamous cell carcinoma. Among cases who had history of two or more combination of either tobacco chewing, smoking or alcohol, 8 (15.40) lesions were moderately differentiated squamous cell carcinoma and 1 (20.00) lesion were poorly differentiated squamous cell carcinoma.

Table – 1: Clinical presentation of the cases studied (N=118).

Clinical presentation	Number of cases (%)
Ulcer	84 (71.2)
Pain	51 (43.2)
Swelling	24 (20.3)

Discussion

Oral cavity lesions are often asymptomatic and confused with other clinical representations and therefore missed in clinical examinations. Most of lesions are detected at the pre-malignant or malignant stages hence the timely and correct identification of various oral lesions is vital for the prevention of morbidity and mortality. Awareness about oral health and hygiene is necessary to prevent the oral health complications. Along with clinical examination

histopathology examination should be done for lesions of oral cavity.

The aim of present study is to evaluate clinical and histopathology characteristic of oral malignant and pre-malignant lesions from oral cavity. We studied total of 118 cases of oral cavity lesions which were categorized as malignant and pre-malignant on histopathology. The mean age of the patient was 49.92 years. The maximum number of the cases was between 51-

60 years of age group followed by 41-50 years of age. Shah PY et al showed majority of the cases were in the age group of 31 to 40 years (27.94%) followed by 41-50 years (23.53%) [14]. The most common presentation was ulcer followed by pain and swelling similar to study performed by J Bagan, et al. [15] and GS Kumar, et al. [16], where oral cavity lesion presented as ulcer, pain or swelling with tenderness. Hence, high suspicion of malignancy should be made if patient presents with ulcer, swelling or both [17].

Table – 2: Types of lesions detected on histopathology of the cases study (N=118).

Histopathology findings		Number of cases (%)
Premalignant (N=45)	Dysplasia	2 (4.4)
	Keratosi	1 (2.2)
	Leukoplakia	34 (75.5)
	Squamous cell papilloma	1 (2.2)
	Wart	7 (15.5)
Malignant (N=73)	Well differentiated squamous cell carcinoma	14 (19.2)
	Moderately differentiated squamous cell carcinoma	52 (71.2)
	Poorly differentiated squamous cell carcinoma	5 (6.9)
	Verrucous carcinoma	2 (2.7)

Table – 3: Comparison between grading of Squamous cell carcinoma on histopathology and habits of the cases studied (N = 118).

Habits	Grading of Squamous cell carcinoma (N=71)			p
	Well differentiated (N=14) n (%)	Moderately differentiated (N=52) n (%)	Poorly differentiated (N=5) n (%)	
Tobacco chewing	6 (42.90)	18 (34.60)	2 (40.00)	0.921
Smoking	5 (35.70)	12 (23.10)	2 (40.00)	
Alcohol	2 (14.30)	7 (13.50)	0	
Betel nut	0	3 (5.80)	0	
Tobacco chewing + smoking + alcohol	0	8 (15.40)	1 (20.00)	

The most common (33.1%) habit associated; of the patient was tobacco chewing followed by smoking (12.7%) similar to study performed by Muwonge, et al. [18]. Dias et al showed, majority (57.8%) of the patients were tobacco chewer followed by alcohol use (50%) and the combination of alcohol and smoking (43.8%) [19]. Tobacco chewing has emerged as a stronger risk factor than smoking, since there is a direct

exposure of tobacco chewing on mucosa for longer duration, while smoking has more contact with pharynx, larynx and lungs [20]. On histopathology examination, mostly (61.9%) malignant lesions were detected. However, the data from other studies revealed, wide variability regarding the prevalence of malignant and premalignant lesions. The most common malignant lesions was squamous cell carcinoma

followed by verrucous carcinoma on histology finding similar to study performed by Modi D, et al. [21], Patro P, et al. [22] and Shyam N D [23]. The present study showed moderately differentiated squamous cell carcinoma as most common squamous cell carcinoma followed by well differentiated squamous cell carcinoma similar to study done by Shah PY, et al. [14]. There was no statistically significant association ($p>0.05$) between risk factors and squamous cell carcinoma differentiation on histopathology examination.

Incidence of oral malignancy varies from one region to another, because of different factors and the potential predisposing etiologies. The mortality rate has remained unchanged for decades despite advances in surgery and radiotherapy, which remain the standard treatment options, with a 5-year survival rate of around 50% [24]. The diagnosis of oral malignant lesions in an early stage is of utmost importance for treatment with curative intent [25].

Conclusion

Our study concluded that there was no significant association ($p>0.05$) between habits and site of the lesion of oral cavity. Among tobacco chewer and smokers, most common site was buccal mucosa and among alcohol user, tongue was the most common site of the lesion. On histopathology, majority of lesions were malignant, among malignant lesions the most common lesion was squamous cell carcinoma, while the most common premalignant lesion was leukoplakia. Moderately differentiated squamous cell carcinoma was the most common squamous cell carcinoma. The diagnosis of malignancy in the early stage is a key factor to check further physical, psychological, and financial losses to the patient and proper treatment can be initiated that may improve the survival rate up to 90%.

References

1. Awan K.H., Morgan P.R., Warnakulasuriya S. Assessing the

accuracy of autofluorescence, chemiluminescence and toluidine blue as diagnostic tools for oral potentially malignant disorders—a clinicopathological evaluation. *Clinical oral investigations*, 2015; 19(9): 2267-2272.

2. Canto MT, Devesa SS. Oral cavity and pharynx cancer incidence rates in the United States, 1975–1998. *Oral oncology*, 2002 Sep 1; 38(6): 610-7.
3. Adeyemi BF, Adekunle LV, Kolude BM, Akang EE, Lawoyin JO. Head and neck cancer—a clinicopathological study in a tertiary care center. *Journal of the National Medical Association*, 2008 Jun 1; 100(6): 690-7.
4. Rajendran R. Oral leukoplakia (leukokeratosis): Compilation of facts and figures. *Journal of Oral and Maxillofacial Pathology*, 2004 Jul 1; 8(2): 58.
5. Ho MW, Field EA, Field JK, Risk JM, Rajlawat BP, Rogers SN, Steele JC, Triantafyllou A, Woolgar JA, Lowe D, Shaw RJ. Outcomes of oral squamous cell carcinoma arising from oral epithelial dysplasia: rationale for monitoring premalignant oral lesions in a multidisciplinary clinic. *British Journal of Oral and Maxillofacial Surgery*, 2013 Oct 1; 51(7): 594-9.
6. Dhanuthai K, Rojanawatsirivej S, Thosaporn W, Kintarak S, Subarnbhesaj A, Darling M, Kryshtalskyj E, Chiang CP, Shin HI, Choi SY, Lee SS. Oral cancer: A multicenter study. *Medicina oral, patologia oral y cirugia bucal.*, 2018 Jan; 23(1): e23.
7. Annie Jain, Gunvanti Rathod. Oncocytoma of parotid gland: A rare case report. *IAIM*, 2015; 2(4): 166-169.
8. Nupur Singla, Gunvanti Rathod, Disha Singla. Adenoid cystic carcinoma of the parotid gland - A case report and review of literature. *IAIM*, 2015; 2(4): 182-186.
9. Anchal Bhola, Gunvanti Rathod, RK Tandan. Cystic metastatic squamous cell

- carcinoma - A case report. *IAIM*, 2015; 2(5): 195-199.
10. Rathod GB, Jain A. Role of FNAC in diagnosis of gouty tophi - A case report. *IAIM*, 2015; 2(7): 137-140.
 11. TH Kalidas Singh, Gunvanti B. Rathod. Diagnosis of fat necrosis on FNAC - A case report. *IAIM*, 2015; 2(6): 236-239.
 12. Rathod GB, Rai P. Audit of repeat fine needle aspiration in cytopathology laboratory. *IAIM*, 2015; 2(9): 20-25.
 13. Rathod GB, Rai P, Rai S. A prospective study of ultrasonographic and FNAC correlation of thyroid pathology. *IAIM*, 2015; 2(11): 46-51.
 14. Shah PY, Patel RG, Prajapati SG. Histopathological study of malignant lesions of oral cavity. *International Journal of Medical Science and Public Health*, 2017 Mar 1; 6(3): 472-9.
 15. Bagan J, Sarrion G, Jimenez Y. Oral cancer: clinical features. *Oral oncology*, 2010 Jun 1; 46(6): 414-7.
 16. Bastakoti S, Shrestha G, Kumar Gautam D, et al. Clinico-pathological Spectrum of Oral Cavity Lesions at a Tertiary Care Center in Central Nepal: A Descriptive Cross-sectional Study. *JNMA J Nepal Med Assoc.*, 2021; 59(234): 124-127. Published 2021 Feb 28. doi:10.31729/jnma.5539
 17. Scully C, Felix DH. Oral medicine—update for the dental practitioner oral cancer. *British dental journal*, 2006 Jan; 200(1): 13-7.
 18. Muwonge R, Ramadas K, Sankila R, Thara S, Thomas G, Vinoda J, Sankaranarayanan R. Role of tobacco smoking, chewing and alcohol drinking in the risk of oral cancer in Trivandrum, India: a nested case-control design using incident cancer cases. *Oral Oncol.*, 2008 May; 44(5): 446-54. doi: 10.1016/j.oraloncology.2007.06.002. Epub 2007 Oct 22. PMID: 17933578
 19. Dias GS, Almeida AP. A histological and clinical study on oral cancer: Descriptive analysis of 365 cases. *Med Oral Patol Oral Cir Bucal.*, 2007; 12(7): 474-478.
 20. Sturgis EM, Wei Q, Spitz MR. Descriptive epidemiology and risk factors for head and neck cancer. *In Seminars in oncology*, 2004 Dec 1; 31(6): 726-733.
 21. Modi D, Laishram RS, Sharma LD, Debnath K. Pattern of oral cavity lesions in a tertiary care hospital in Manipur, India. *J Med Soc.*, 2013; 27(3): 199. doi: 10.4103/0972-4958.127393.
 22. Patro P, Lad P, Mithila KB. A Histopathological study of oral cavity lesions. *Int J Health Sci Res.*, 2020; 10(3): 17-21.
 23. Naga SN, Gundamaraju KK, Bujunuru SR, Navakoti P, Kantheti LP, Poosarla C. Prevalence of oral potentially malignant and malignant lesions at a tertiary level hospital in Hyderabad, India. *J NTR Univ Health Sci.*, 2014; 3(Supplement-1): S13-6. doi: 10.4103/2277-8632.128484.
 24. Anis R, Gaballah K. Oral cancer in the UAE: a multicenter, retrospective study. *Libyan Journal of Medicine*, 2013; 8(1).
 25. Gowhar O, Ain TS, Singh NN, Sultan S. Prevalence of oral premalignant and malignant lesions in Moradabad, India-A retrospective study. *Int J Contemp Med Res.*, 2016; 3(7): 2079-81.