

Prevalence of Oral Malignant Tumours in a Known Population: An Epidemiological Study

Hemani Sukhija^{1*} Arti Mewara² Pratiksha Kumar³ Monica Mehta⁴ Richa Singh⁵ Ramya
Ramadoss⁶

¹Professor, Department of Oral Pathology and Oral Microbiology, Index Institute of Dental Sciences, Indore, Madhya Pradesh, India.

²Professor, Department of Oral Pathology and Oral Microbiology, R. R. Dental College and Hospital, Umarda, District Udaipur, Rajasthan, India.

³Associate Professor, Department of Oral Pathology and Oral Microbiology, Government College of Dentistry, Indore, Madhya Pradesh, India.

⁴MDS, Department of Oral Pathology and Oral Microbiology, Dr. Monica Mehta's Dental Clinic, Karnal, Haryana, India.

⁵Lecturer, Department of Orthodontics and Dentofacial Orthopedics, Chandra Dental College, Safedabad, Barabanki, Uttar Pradesh, India.

⁶Associate Professor, Department of Oral Pathology and Oral Microbiology, SRM Dental College, Chennai, Tamil Nadu, India.

ABSTRACT

Background: As per available literature, oral cancer is the sixth most common cancer in the world. Previous studies have shown that carcinogenesis is a multifactorial process. The present study was planned for assessing the prevalence of oral malignant tumors in a known population.

Materials & Methods: A total of 560 oral biopsies were analysed. Data records were analysed. Complete demographic and clinical details of all the patients were collected. Biopsy forms were analysed and a master chart was prepared for evaluating the site of the lesion and other relevant clinical details. Only biopsy proven cases were included. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

Results: Prevalence of oral malignant tumours in the present study was 7.68 percent. Among these patients, oral squamous cell carcinoma was found to be present in 5.18 percent of the patients, while muco-epidermoid carcinoma was found to be present in 1.25 percent of the patients. Adenoid cystic carcinoma and verrucous carcinoma were found to be present in 0.89 percent and 0.36 percent of the patients respectively.

Conclusion: Oral squamous cell carcinoma was the most commonly encountered oral malignancy observed in the present study.

Keywords: Oral, Malignant, Tumours.

INTRODUCTION

As per available literature, oral cancer is the sixth most common cancer in the world. Among the most important risk factors for oral cancer, especially for squamous cell carcinoma, are tobacco and alcohol consumption, which have synergistic effect.^{1,2}

The major causes of oral cancer worldwide are tobacco use in its many different forms, heavy consumption of alcohol, and increasingly, HPV infection. Although the relative contribution of risk

factors varies from population to population, oral cancer is predominantly a disease of the lower socioeconomic strata of population.^{3,4} Prevention of this devastating disease can come from fundamental changes in socioeconomic status, as well as from actions to reduce the demand, production, marketing and use of tobacco products and alcohol.^{5,6} Previous studies have shown that alcohol consumption is an independent risk factor for the development of cancer in the dose

Received: June. 12, 2019; Accepted: Aug. 17, 2019

*Correspondence Dr. Hemani Sukhija.

Department of Oral Pathology and Oral Microbiology, Index Institute of Dental Sciences, Indore, Madhya Pradesh, India.

Email: Not Disclosed

dependent manner. Alcohol is first oxidized to acetaldehyde by alcohol dehydrogenase (ADH). Acetaldehyde is considered to be a group I carcinogen according to the International Agency for Research on Cancer (IARC).⁷ Hence, the present study was undertaken for assessing prevalence of oral malignant tumors in a known population.

MATERIALS & METHODS

The present study was conducted with the aim of assessing the prevalence of oral malignant tumours in a known population. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 560 oral biopsies were analysed. Data records were evaluated. Complete demographic and clinical details of all the patients were collected. Biopsy forms were studied and a master chart was prepared for evaluating the site of the lesion and other relevant clinical details. Only biopsy proven cases were included. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi-square test was used for assessment of level of significance.

Table 1: Prevalence of oral malignant tumours

Oral malignant tumours	Number of patients	Percentage of patients
Oral squamous cell carcinoma	29	5.18
Mucoepidermoid carcinoma	7	1.25
Adenoid cystic carcinoma	5	0.89
Verrucous carcinoma	2	0.36
Total	43	7.68

Table 2: Mean age

Oral malignant tumours	Mean age
Oral squamous cell carcinoma	46.8
Mucoepidermoid carcinoma	39.4
Adenoid cystic carcinoma	46.8
Verrucous carcinoma	37.8

Table 3: Gender-wise distribution

Oral malignant tumours	Males	Females	p-value
Oral squamous cell carcinoma	16	13	0.45
Mucoepidermoid carcinoma	5	2	
Adenoid cystic carcinoma	3	2	
Verrucous carcinoma	2	0	
Total	26	17	

RESULTS

In the present study, a total of 560 oral biopsies were analysed. Prevalence of oral malignant tumours in the present study was 7.68 percent. Among these patients, oral squamous cell carcinoma was found to be present in 5.18 percent of the patients, while mucoepidermoid carcinoma was found to be present in 1.25 percent of the patients. Adenoid cystic carcinoma and verrucous carcinoma was found to be present in 0.89 percent and 0.36 percent of the patients respectively. Non-significant results were obtained while comparing the gender-wise distribution of patients with oral malignant disorders.

DISCUSSION

Although affordable, acceptable, easy to use, accurate and effective screening tests for oral cancer is available in high-risk countries, a decision to introduce population based screening should take into account the level of health service development and available resources to meet the increased treatment demand that screening generates. It has been observed in studies that the target population for oral cancer screening consists of those individuals of age 30 years and above who use tobacco and/or alcohol.^{8,9}

In the present study, a total of 560 patients were analysed. Prevalence of oral malignant tumours in the present study was 7.68 percent. Among these patients, oral squamous cell carcinoma was found to be present in 5.18 percent of the patients, while mucoepidermoid carcinoma was found to be present in 1.25 percent of the patients. Dhanuthai K *et al* determined the prevalence and

clinicopathologic data of the oral malignant tumors. Of the 22639 accessioned cases, 1411 cases (6.23%) were diagnosed as oral malignant tumors. The mean age of the patients in this study was 59.13 ± 17.32 years. A total of 651 cases (46.14%) were diagnosed in males whereas 759 cases (53.79%) were diagnosed in females. The male-to-female ratio was 0.86:1. The sites of predilection for oral malignant tumors were the gingiva, followed by tongue and alveolar mucosa. The three most common oral malignant tumors in the descending order of frequency were squamous cell carcinoma, non-Hodgkin lymphoma and mucoepidermoid carcinoma. This study provides extensive data on the oral malignant tumors from several University biopsy services.¹⁰

In the present study, adenoid cystic carcinoma and verrucous carcinoma was found to be present in 0.89 percent and 0.36 percent of the patients respectively. Non-significant results were obtained while comparing the gender-wise distribution of patients with oral malignant disorders.

Tandon P *et al* documented the incidence of OSCC depending upon the involvement of different sites of oral cavity and its variation with age and gender. Histopathologically proven oral squamous cell carcinoma cases were collected. The cases were systematically grouped under three headings: anatomical site of oral cavity, age group, and gender, which were analysed to calculate the prevalence of oral cancer. In their study, among the different sites of oral cavity, the highest incidence (31.47%) of oral squamous cell carcinoma was seen in buccal mucosa. The most affected age group (39.50%) were patients above the age of 50 years predominantly involving males. The population in their study were mostly from remote areas, among which a high rate of occurrence of oral cancer was encountered because the people were of low socio-economic status, had a casual attitude towards their health, high rate of tobacco consumption and limited health care facilities.¹¹

CONCLUSION

Oral squamous cell carcinoma is the most commonly encountered oral malignancy observed in the present study. It may noted that in India, oral squamous cell carcinoma is an oral health issue of major concern. Strategies need to be continually

designed to improve the health care services in India to distribute the burden on health care centers. To achieve effective results, sharing of knowledge, prevention, early diagnosis, management and follow up of oral cancer cases need to be implemented and documented. However, further studies are recommended.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

REFERENCES

1. Marttila E, Uttamo J, Rusanen P, Lindqvist C, Salaspuro M, Rautemaa R. Acetaldehyde production and microbial colonization in oral squamous cell carcinoma and oral lichenoid disease. *Oral Surg Oral Med Oral Pathol Oral Radiol*. 2013;116:61-8.
2. Harty L C, Caporaso N E, Hayes R B, Winn D M, Bravo-Otero E. and others. 1997. "Alcohol Dehydrogenase 3 Genotype and Risk of Oral Cavity and Pharyngeal Cancers." *Journal of the National Cancer Institute* 89 (22): 1698-705.
3. Feller L, Chandran R, Khammissa RA, Meyerov R, Lemmer J. Alcohol and oral squamous cell carcinoma. *SADJ*. 2013;68:176-80.
4. Goldstein BY, Chang SC, Hashibe M, La Vecchia C, Zhang ZF. Alcohol consumption and cancers of the oral cavity and pharynx from 1988 to 2009: An update. *Eur J Cancer Prev*. 2010;19:431-65.
5. D'souza G, Kreimer AR, Viscidi R, Pawlita M, Fakhry C, Koch WM, et al. Case-control study of human papillomavirus and oropharyngeal cancer. *N Engl J Med*. 2007;356:1944-56.
6. Chaturvedi AK, Engels EA, Anderson WF, Gillison ML. Incidence trends for human papillomavirus-related and -unrelated oral squamous cell carcinomas in the United States. *J Clin Oncol*. 2008;26:612-9.
7. Gupta P C, Ray C S, Sinha D N, Singh P K. 2011. "Smokeless Tobacco: A Major Public Health Problem in the SEA Region: A Review." *Indian Journal of Public Health* 55 (3): 199-209.

8. Pfeifer GP, Denissenko MF, Olivier M, Tretyakova N, Hecht SS, Hainaut P. Tobacco smoke carcinogens, DNA damage and p53 mutations in smoking-associated cancers. *Oncogene*. 2002;21:7435–51.
9. Xue J, Yang S, Seng S. Mechanisms of Cancer Induction by Tobacco-Specific NNK and NNN. *Cancers (Basel)* 2014;6:1138–56.
10. Dhanuthai K, Rojanawatsirivej S, Subarnbhesaj A, Thosaporn W, Kintarak S. A multicenter study of oral malignant tumors from Thailand. *J Oral Maxillofac Pathol*. 2016;20(3):462–466. doi:10.4103/0973-029X.190949
11. Tandon P, Dadhich A, Saluja H, Bawane S, Sachdeva S. The prevalence of squamous cell carcinoma in different sites of oral cavity at our Rural Health Care Centre in Loni, Maharashtra - a retrospective 10-year study. *Contemp Oncol (Pozn)*. 2017;21(2):178–183. doi:10.5114/wo.2017.68628.