IJCRR
Section: Healthcare
Sci. Journal Impact
Factor: 6.1 (2018)
ICV: 90.90 (2018)

Copyright@IJCRR

Incidence of Tongue Carcinoma in a University Hospital Setting

Sindhu Priya Kuppusamy Sundara Murthy¹, Mahathi N², Suresh³

¹Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical sciences (SIMATS), Saveetha University, Chennai - 77, India; ²Reader, Department of Oral and Maxillofacial Surgery, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai - 77, India; ³Reader, Department of Prosthodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai - 77, India.

ABSTRACT

Introduction: Oral cancer is the 6th most common cancer and more than 90% are squamous cell Carcinoma. Factors influencing head and neck cancer are tobacco, alcohol, diet and nutrition, viruses, radiation, and there is also genetic predisposition.

Objective: To evaluate the incidence of tongue Carcinoma in a university hospital setting. Data samples required for study were taken from hospital records.

Methods: All the collected data were cross verified and compiled together in an excel sheet. Compiled data were statistically analysed with help of SPSS software.

Results: In this study, with a total 51 patients, 17.65% of patients had tongue Carcinoma. Within the limitations of this study, it is significant the 17.65% of patients are diagnosed with tongue cancer.

Conclusion: Oral squamous cell carcinoma is a commonly occurring oral cancer and it is associated with significant mortality and morbidity. Tongue cancer being the most commonly occurring anatomic site for oral cancer. It is important to identify the various reasons for this incidence in our population. To conclude, it is statistically significant that 17.65% of the patients had tongue cancer.

Key Words: Alcohol, Squamous cell carcinoma, Tobacco, Smoking, Tongue carcinoma

INTRODUCTION

The oral cavity that has been frequently exposed to various carcinogenic agents, tobacco, alcohol, betelnut, human papilloma virus and through the oral cavity, the digestive and respiratory tract is exposed to these agents.¹ Head and neck squamous cell carcinoma are biologically heterogeneous groups of cancer. They are a major source of cancer morbidity and mortality worldwide.² Oral squamous cell Carcinoma comprises more than 90% of head and neck malignancies. When compared to other oral cancers, squamous cell carcinoma of the tongue has a high predisposition to produce metastasis in lymph nodes with an incidence rate of 15- 75% depending on the extension of the primary lesion.³

In clinical practice, the treatment plan and prognosis of oral squamous cell carcinoma is mainly based on the TNM classification.^{4,5} According to reports of WHO, Oral cancer ranks 6th among all malignancies. Cancers of tongue and buccal

mucosa have been noted as common of chewing pan, and betel leaf.⁶ Despite a large number of studies on OSCC, details on the demographic sites of these lesions in different populations are limited.⁷

The purpose of this study was to identify any trends in the number of cases or incidence rates with respect to specific anatomic sites or specific age and gender. Previously our team had conducted numerous clinical trials⁸⁻¹¹ and lab animal studies¹²⁻¹⁹ and in-vitro studies²⁰⁻²² over the past 5 years. Now we are focussing on epidemiological surveys. The aim of this study is evaluate the incidence of tongue carcinoma in a private hospital.

MATERIALS AND METHOD

All the data of patients who were diagnosed with oral cancer and diagnosed with tongue Carcinoma formed the study

Corresponding Author:

Dr. Mahathi N, Reader, Department of Oral and Maxillofacial surgery, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical sciences (SIMATS), Saveetha University, Chennai - 77, India; Email: mahathin.sdc@saveetha.com

ISSN: 2231-2196 (Print)

ISSN: 0975-5241 (Online)

Received: 16.09.2020

Revised: 17.10.2020

Accepted: 14.11.2020

Published: 26.12.2020

sample. The study setting was a university setting. Exclusion criteria was case sheets with incomplete data, patients with other types of oral cancers and those patients who did not come for follow up visits when called.

Data was collected from case sheets of patients who reported during the months of October 2019 and March 2020 from the hospital record management system where all the records of patients regarding their medical and dental history and treatment done are stored. Cross verification was done to avoid bias by another examiner. To avoid missing any data, photographic evaluation was done. Approval from the Institutional Ethical Committee was obtained before the start of the study. All the data will be covered by the following ethical approval number: SDC/SIHEC/2020/DIASDATA/0619-0320.

All the relevant data were retrieved and tabulated in Microsoft Excel. Later, it was statistically analysed by IBM SPSS statistics, using the Chi-Square test. Dependent variables are tongue cancer. Independent variables are the total number of cases.

RESULTS

The study consists of 51 patients, among which 30 were males and 21 were females. All the 51 patients were diagnosed with oral cancer and 9 of them were diagnosed with tongue Carcinoma, with a percentage of 17.65% and cancers of the other oral cavity subsites were 82.35% (Figure 1). 9.80% of males had tongue cancer and the rest 62.75% had other oral cancers. 7.84% of females had tongue cancer and the rest 19.61% had no tongue cancer (Figure 2). 19.61% from 30-45, 23.53% from 46-60, 39.22% from >60 age groups had no tongue cancer (blue bars). 3.92% from 46-60, 13.73% from >60 age groups had tongue cancer (yellow bars) (Figure 3). The older the patients, the higher the percentage of tongue cancer.

Figure 1: Bar graph represents the percentage of patients with and without tongue cancer. X-axis represents the patients with and without tongue cancer and Y-axis represents the percentage of the patients. From the graph it is evident that the percentage of tongue cancer is 17.65% (yellow bar) and other oral cancers are 82.35% (blue bar).

Figure 2: Bar graphs represent the association between gender and tongue cancer. X-axis represents the gender with presence or absence of tongue cancer in patients. Y-axis represents the percentage of patients with and without tongue cancer. More males (9.8%) had tongue cancer (yellow) than females (7.84%). Chi-square test was done and the association was found to be statistically significant. Pearson's Chi-square value: 0.437, DF: 2, p-value: 0.025(<0.05), proving that there is significant association between gender and presence of tongue cancer.

Figure 3: Bar graph represents association between age and tongue cancer. X-axis represents the age groups of patients in this study. Y-axis represents the percentage of patients with and without tongue cancer. Majority of patients who had tongue cancer (13.73%) (yellow) were above 60 years of age. Chi-square test was done and the association was found to be statistically significant. Pearson's Chi-square value: 0.391, DF: 2, p-value: 0.025(<0.05), proving that the older the patients the higher the incidence of tongue cancer.

DISCUSSION

In the present study, 17.65% of patients reported with tongue Carcinoma. Considering 95% of the head and neck oral cancers are mainly squamous cell Carcinomas; the difference in the clinical behaviour changes according to their location and site of oral cancer. In another study, the Carcinoma of tongue represents 25% to 50% of all cases of OSCC with

lateral borders and anterior 2/3rd being the most affected locations in the oral cavity.²³

Patients with a history of drinking alcohol and smoking have an increased risk of developing carcinoma. Other factors such as HPV, diet, and genetic factors play an important role in development of carcinoma without a history of drinking and smoking. Various studies show that the sites of occurrence for oral cancer can differ, it can occur on the tongue, lip, and floor of mouth.²⁴ Shenoi et al. found 18.31% of oral cancer involving the tongue, while Sharma et al. found 3 cases (3.75%) in their respective studies. This variation could be due to different levels of tobacco, alcohol exposure, quality of life, etc.^{25,26} Albuguengue et al. found that the lateral borders of tongue were the most frequent site and most recurring site for Carcinoma in both groups (drinking and smoking and non-smoking and non-drinking).²⁷

Lateral borders of the tongue were affected by a percentage of 59.7% and 40.3% in users and non-users, respectively. Falaki et al. analyzed 158 cases of OSCC and the most common site of involvement was again the lateral border of tongue by 66%.²⁸ Agamal et al. considered histological grading of tongue OSCC, and found well-differentiated SQCC for 23 cases (44.2%) and moderately differentiated SQCC was seen in 29 cases (58.8%).²⁹ In the analysis of TNM classification, the results showed that there was a clear correlation between lesion size and lymph node involvement. There were 16 cases included in this study, which showed lesions of diameter greater than 4cm (lesions in stage-III and stage-IV) had poor prognosis compared to lesions with smaller diameters without lymph node involvement, according to the data from Snow et al.²⁹ and Tytor et al.³⁰ According to these authors, there is a direct correlation between these two factors, given that, the smaller the lesion, the use of the conventional treatment will be easier to achieve good prognosis, and a greater possibility of cure after the first treatment.

Based on results from another study, the evaluation of diagnosis, prognosis and planning the appropriate therapy are considered to be very important. It should be noted that “invasive pattern”, “tumor thickness” and “inflammatory infiltration” could also be used as important histological indicators for the degree of tumor aggressiveness.³¹ In addition to this, representative incisional biopsies should be used which will help to visualize the entire invasive front and border lines. This provides better assessment for diagnosing tongue cancer in order to provide better treatment.³² This study could be further improved by increasing the sample size and exploring the various factors affecting the cause of tongue cancer.

CONCLUSION

Oral squamous cell carcinoma is a commonly occurring oral cancer and it is associated with significant mortality and

morbidity. Tongue cancer being the most commonly occurring anatomic site for oral cancer. It is important to identify the various reasons for this incidence in our population. To conclude, it is statistically significant that 17.65% of the patients had tongue cancer.

AUTHORS CONTRIBUTION

First author, Sindhupriya performed the data collection by reviewing patient details, filtering required data, analyzing, and interpreting statistics and contributed to manuscript writing.

Second author, Dr. Mahathi contributed to conception of study title, study design, analyzed the collected data, statistics, and interpretation and also critically revised the manuscript.

Third author, Dr. Suresh V. participated in the study and revised the manuscript. All the three authors have discussed the results and contributed to the final manuscript.

ACKNOWLEDGMENT

This research was supported by Saveetha Dental College and Hospital. We thank the department of Oral Medicine, Saveetha Dental College for providing insight and expertise that greatly assisted this research.

Conflict of Interest

The authors declare that there is no conflict of interests.

REFERENCES

1. Zaidi M, Mallick A. A study on assessment of mast cells in oral squamous cell carcinoma. *Ann Med Health Sci Res* 2014;4(3):457–60.
2. Dahlstrom KR, Little JA, Zafereo ME, Lung M, Wei Q, Sturgis EM. Squamous cell carcinoma of the head and neck is never smoker–never drinkers: A descriptive epidemiologic study. *Head Neck* 2008;30(1):75–84.
3. Schmidt BL, Dierks EJ, Homer L, Potter B. Tobacco smoking history and presentation of oral squamous cell carcinoma. *J Oral Maxillofac Surg* 2004;62(9):1055–8.
4. Wight R, Paleri V, Arullendran P. Current theories for the development of nonsmoking and non-drinking laryngeal carcinoma. *Curr Opin Otolaryngol Head Neck Surg* 2003;11(2):73–7.
5. Goldenberg D, Lee J, Koch WM, Kim MM, Trink B, Sidransky D, et al. Habitual risk factors for head and neck cancer. *Otolaryngol Head Neck Surg* 2004;131(6):986–93.
6. Barasch A, Morse DE, Krutchkoff DJ, Eisenberg E. Smoking, gender, and age as risk factors for site-specific intraoral squamous cell carcinoma. A case-series analysis. *Cancer* 1994;73(3):509–13.
7. Sturgis EM, Wei Q, Spitz MR. Descriptive epidemiology and risk factors for head and neck cancer. *Semin Oncol* 2004;31(6):726–33.
8. Jesudasan JS, Wahab PA, Sekhar MM. Effectiveness of 0.2% chlorhexidine gel and a eugenol-based paste on postoperative

- alveolar osteitis in patients having third molars extracted: a randomised controlled clinical trial. *Br J Oral Maxillofac Surg* 2015;53(9):826-30.
9. Santhosh Kumar, M.P., RAHMAN R. Knowledge, awareness, and practices regarding biomedical waste management among undergraduate dental students. *Asian J Pharm Clin Res* 2017;10(8):341-5.
 10. Christabel A, Anantanarayanan P, Subash P, Soh CL, Ram-anathan M, Muthusekhar MR, Narayanan V. Comparison of pterygomaxillary dysjunction with tuberosity separation in isolated Le Fort I osteotomies: A prospective, multi-centre, triple-blind, randomized controlled trial. *Int J Oral Maxillofac Surg* 2016;45(2):180-5.
 11. Marimuthu M, Andiappan M, Wahab A, Muthusekhar MR, Balakrishnan A, Shanmugam S. Canonical Wnt pathway gene expression and their clinical correlation in oral squamous cell carcinoma. *Indian J Dent Res* 2018;29(3):291.
 12. Packiri S, Gurunathan D, Selvarasu K. Management of paediatric oral ranula: a systematic review. *J Clin Diag Res* 2017;11(9):ZE06
 13. Santhosh Kumar, M.P. Relationship between dental anxiety and pain experience during dental extractions. *Asian J Pharm Clin Res* 2017;10(3):458-61.
 14. Patil SB, Durairaj D, Kumar GS, Karthikeyan D, Pradeep D. Comparison of extended nasolabial flap versus buccal fat pad graft in the surgical management of oral submucous fibrosis: a prospective pilot study. *J Maxillofac Oral Surg* 2017;16(3):312-21.
 15. Rao TD, Santhosh Kumar, M.P. Analgesic Efficacy of Paracetamol Vs Ketorolac after Dental Extractions. *Res J Pharm Tech* 2018;11(8):3375-9.
 16. Abhinav RP, Selvarasu K, Maheswari GU, Taltia AA. The patterns and etiology of maxillofacial trauma in South India. *Anna Maxillofac Surg* 2019;9(1):114.
 17. Santhosh Kumar, M.P., Snea S. Knowledge and awareness regarding antibiotic prophylaxis for infective endocarditis among undergraduate dental students. *Asian J Pharm Clin Res* 2016;9:154-9.
 18. Santhosh Kumar, M.P. The emerging role of botulinum toxin in the treatment of orofacial disorders: Literature update. *Asian J Pharm Clin Res* 2017;10(9):21-9.
 19. Rahman R, Santhosh Kumar, M.P. Knowledge, attitude, and awareness of dental undergraduate students regarding human immunodeficiency virus/acquired immunodeficiency syndrome patients. *Asian J Pharm Clin Res* 2017;10(5):175-80.
 20. Santhosh Kumar, M.P., Sneha S. Knowledge and awareness regarding antibiotic prophylaxis for infective endocarditis among undergraduate dental students. *Asian J Pharm Clin Res* 2016;9:154-9.
 21. Patturaja K, Pradeep D. Awareness of Basic Dental Procedure among General Population. *Res J Pharm Tech* 2016;9(9):1349-51.
 22. Jain SV, Muthusekhar MR, Baig MF, Senthilnathan P, Loganathan S, Wahab PA, Madhulakshmi M, Vohra Y. Evaluation of three-dimensional changes in pharyngeal airway following isolated lefort one osteotomy for the correction of vertical maxillary excess: a prospective study. *J Maxillofac Oral Surg* 2019;18(1):139-46.
 23. Sharma P, Saxena S, Aggarwal P. Trends in the epidemiology of oral squamous cell carcinoma in Western UP: an institutional study. *Indian J Dent Res* 2010;21(3):316-9.
 24. Mehrotra R, Singh M, Kumar D, Pandey AN, Gupta RK, Sinha US. Age specific incidence rate and pathological spectrum of oral cancer in Allahabad. *Indian J Med Sci* 2003;57(9):400-4.
 25. Iype EM, Pandey M, Mathew A, Thomas G, Sebastian P, Nair MK. Oral cancer among patients under the age of 35 years. *J Postgrad Med* 2001;47(3):171-6.
 26. Sheno R, Devrukhkar V, Chaudhuri, Sharma BK, Sapre SB, Chikhale A. Demographic and clinical profile of oral squamous cell carcinoma patients: a retrospective study. *Indian J Cancer* 2012;49(1):21-6.
 27. Albuquerque R, López-López J, Marí-Roig A, Jané-Salas E, Roselló-Llabrés X, Santos JR. Oral tongue squamous cell carcinoma (OTSCC): alcohol and tobacco consumption versus non-consumption. A study in a Portuguese population. *Braz Dent J* 2011;22(6):517-21.
 28. Falaki F, Dalirsani Z, Pakfetrat A, Falaki A, Saghravanian N, Nosratzahi T, et al. Clinical and histopathological analysis of oral squamous cell carcinoma of young patients in Mashhad, Iran: a retrospective study and review of literature. *Med Oral Pathol Circ Bucal* 2011;16(4):e473-7.
 29. Snow GB, Annyas AA, van Slooten EA, Bartelink H, Hart AA. Prognostic factors of neck node metastasis. *Clin Otolaryngol Allied Sci* 1982;7(3):185-92.
 30. Tytor M, Olofsson J. Prognostic factors in oral cavity carcinomas. *Acta Otolaryngol Suppl* 1992;492:75-8.
 31. Bryne M. Is the invasive front of an oral carcinoma the most important area for prognostication? *Oral Dis* 1998;4(2):70-7.
 32. Piffkö J, Bánkfalvi A, Ofner D, Rasch D, Joos U, Schmid KW. Standardized demonstration of silver-stained nucleolar organizer regions-associated proteins in archival oral squamous cell carcinomas and adjacent non-neoplastic mucosa. *Mod Pathol* 1997;10(2):98-104.