

## CLINICO-EPIDEMIOLOGICAL STUDY OF ORAL SQUAMOUS CELL CARCINOMA- A RETROSPECTIVE STUDY IN A TERTIARY CARE CENTRE IN CHENNAI

K. Bakyalakshmi<sup>1</sup>, D. Karthikeyan<sup>2</sup>

<sup>1</sup>Professor and HOD, Department of Dental Surgery, Government Stanley Medical College, Chennai.

<sup>2</sup>Senior Assistant Professor, Department of Dental Surgery, Government Stanley Medical College, Chennai.

### ABSTRACT

#### BACKGROUND

Oral Squamous cell carcinoma accounts for most head and neck cancers. In India it is the 3<sup>rd</sup> most common cancer and it is one of the major public health problems. The purpose of this study was to retrospectively evaluate the epidemiologic profile of Oral Squamous cell carcinoma (OScc) patients.

#### MATERIALS AND METHODS

This is a retrospective descriptive study analysis of OScc cases analysed from December 2015 to July 2017 for age, gender, duration of the symptoms, duration of the habits (smoker, tobacco chewer and alcohol consumption), site of primary tumour, TNM staging, histological grading and the findings were formulated to chart the trends in North Chennai population.

#### RESULTS

A total number of 67 patients were diagnosed as OScc with the male-to-female ratio of 2.52: 1. The mean age of occurrence was 52 years with the youngest being 28 years. Buccal mucosa (44.8%) was the common site of occurrence. Areca nut chewing (37.31%) in various commercially available forms and tobacco chewing (37.31%) were the major risk habits associated with the development of OScc. Majority of them were in Stage III (44.8%) with well-differentiated squamous cell carcinoma (46.26%).

#### CONCLUSION

Oral cancer is one of the major public health problems associated with risk habits. Therefore, oral health care professionals should create awareness among the public regarding the risk habits and its cessation. Prevention, early intervention and follow-up of the patients with OScc can increase the life span of the individual.

#### KEYWORDS

Oral Cancer Epidemiology, Oral Cancer, Tobacco Chewing.

**HOW TO CITE THIS ARTICLE:** Bakyalakshmi K, Karthikeyan D. Clinico-epidemiological study of oral squamous cell carcinoma- a retrospective study in a tertiary care centre in Chennai. J. Evolution Med. Dent. Sci. 2018;7(07):816-819, DOI: 10.14260/jemds/2018/186

#### BACKGROUND

Cancers are a large family of disease that involves abnormal cell growth with the potential to invade or spread to other parts of body. It is one of the major causes of morbidity and mortality worldwide. OScc accounts for most head and neck cancers. Oral cancer is the 6<sup>th</sup> most common cancer worldwide and accounts for world's 8<sup>th</sup> most common cancer in men.<sup>1,2</sup> In the developing countries, mainly in the Southern Central Asian region, the incidence of OScc is high. In India, OScc is the 3<sup>rd</sup> most common cancer, the incidence rate is 52,000 annually. Most of the cases are diagnosed at an advanced stage with overall survival rate of 5 years.<sup>3</sup> In Indian subcontinent, there is an increased risk of developing OScc due to deleterious habits of chewing tobacco, betel quid and areca nut. There is an alarming increase in incidence and prevalence of OScc in younger persons.<sup>4</sup> The risk factors most frequently associated with OScc are smoking, tobacco

chewing and alcohol consumption.<sup>5</sup> 4% - 10% of patients are not exposed to these risk factors.<sup>6</sup> Infection with human papilloma virus (HPV) genotype,<sup>1</sup> dietary deficiencies<sup>7</sup> and poor oral hygiene<sup>8</sup> have also been implicated in the aetiopathogenesis of OScc. Early oral cancer is asymptomatic, which contributes to delayed diagnosis. The prognostic evaluation and therapeutic planning of OScc is mainly based on clinical staging using TNM (T- Tumour size, N- Regional Lymph Node Involvement, M- Metastases) classification.<sup>9</sup> The prognosis is best when the primary tumour is small and there is no evidence of regional lymph node involvement or distant metastasis. The 5-year survival rate of person with early stage of OScc according to TNM staging may reach 80% - 90%<sup>10</sup> and that of advanced stage is about 90%.<sup>11</sup> Treatment modalities of OScc include excision/ resection, radiotherapy, systemic cytotoxic chemotherapy and blocking of epithelial growth factor receptor (EGF-R) or a combination of these.<sup>12</sup> Oral cancer is preventable and detectable at an early stage. The purpose of this retrospective study was to evaluate the epidemiological factors and clinical profile of patients with OScc in a tertiary care hospital in Chennai.

#### MATERIALS AND METHODS

This is a retrospective descriptive study of 67 patients with a histologically confirmed diagnosis of OScc was carried out in the Department of Dental Surgery, Government Stanley Medical College and Hospital from December 2015 to July 2017. Details of patients, gender, age, habits of tobacco

*Financial or Other Competing Interest:* None.

*Submission* 04-01-2018, *Peer Review* 29-01-2018,

*Acceptance* 03-02-2018, *Published* 12-02-2018.

*Corresponding Author:*

Dr. D. Karthikeyan,

No. 49 Old No. 22/1,

GR Ananda Complex,

Manikam Street,

Choolai-600112.

E-mail: karthikeyanmds@gmail.com

DOI: 10.14260/jemds/2018/186



ingestion, alcohol consumption, site of the primary tumour, TNM staging and histopathological grading were collected, statistical analysis was done, and the results were formulated.

## RESULTS

Total numbers of 67 cases were included in the study. Biopsy was done and the diagnosis of OSCC was confirmed. Among 67 cases, 48 cases (71.6%) were males and 19 cases (28.3%) were females (Table 1). Male: Female ratio was 2.52: 1.

The youngest patient with OSCC was 28 and the eldest was 76 years old with the mean of 52 years. Table 2 shows the age distribution of the patients. Maximum number of patients in the study 20 (29.9%) were in the age group of 31 to 40. The minimum number of patients 3 (4.5%) were in the age groups of 21 - 30 and above 70 years old. 13 patients (19.40%) were in the age group of 21 - 30 and 41 - 50; 15 patients (22.4%) were in the age group of 51 - 60 years.

Table 3 shows the habits associated with the OSCC patients. 15 patients (22.4%) had the habit of tobacco chewing alone. 25 patients (37.31%) consumed areca nut in various forms like pan masala, mawa and gutkha. 1 patient (1.49%) had the habit of tobacco chewing and alcohol consumption. 2 (2.98%) were tobacco chewers and smokers. 9 (13.43%) had the habit of chewing pan masala, mawa, gutkha and alcohol consumption. 7 (10.44%) of the patients had all the three habits of chewing, smoking and consuming alcohol. 4 (5.97%) did not have any of the habits.

63 patients had the risk habits of smoking, tobacco chewing and alcohol consumption. Table 4 shows the duration of habits of the patients. 23 patients (36.5%) had the habit for less than 10 years followed by 13 (20.6%) for 11 to 20 years. Among the group of 31 - 40, 9 patients (14.3%) had the habit. 5 patients (7.9%) had the habit for 31 to 40 years. 2 (3.2%) had the habit for 41 to 50 years.

30 patients (44.8%) had the primary lesion in buccal mucosa. Tongue was involved in 22 patients (33.8%). Mandibular alveolus had the lesion in 6 patients (8.9%). Retromolar trigone was involved in 4 patients (5.9%). 2 patients (2.9%) had the lesion in maxillary alveolus and in floor of the mouth. Labial mucosa was involved in 1 patient (1.5%). The distribution of primary tumour is shown in Table 5.

Among the total of 67 patients, 5 patients (7.5%) had oral submucous fibrosis and one person had leukoplakia (1.5%). The associated premalignant disorders were shown in Table 6.

The stage distribution of patients is shown in Table 7. Of 67 patients, 30 patients (44.8%) presented with Stage III followed by 21 patients (31.3%) with Stage II. 13 patients (19.4%) presented with Stage IV A, 2 patients (2.9%) with Stage I and one with Stage IV B.

Table 8 shows the histological differentiation of OSCC, 31 patients (46.26%) had well-differentiated OSCC followed by 27 patients (40.29%) with moderately differentiated and 9 (13.43%) had poorly differentiated OSCC.

## DISCUSSION

Oral cancer accounts for 90% of head and neck cancers. It is preventable or detectable at an early stage.<sup>13</sup> Tobacco consumption either in the form of smoking or in the form of chewing is the main aetiological agent of oral cancer.<sup>14</sup> Any

form of tobacco use and heavy consumption of alcohol have synergistic effect and considered as major risk factors.<sup>15</sup> In many parts of Asia, betel-quid and areca-nut chewing are common social and cultural habits. HPV, diet and genetic factors also play a role in the development of carcinoma in patients without any risk habits.<sup>1,7,8</sup> Early the diagnosis of oral cancer, better the prognosis. Morbidity and mortality is increased if diagnosed at a later stage. In the present study, the male-to-female ratio was 2.52: 1, which is consistent with the study of Mehrotra et al.<sup>16</sup> This ratio is seen in most published studies in India. It is similar to study by Muwonge et al.<sup>17</sup> in Kerala with 57.8% males and 42.2% females. Patel et al.<sup>18</sup> from Gujarat reported 75% were males with oral cancer. Males are affected in a higher percentage because they have the high-risk habits like smoking, consuming alcohol, tobacco and areca nut chewing.<sup>19</sup> In recent years females are also being affected in large numbers, because of the change in the habits. In the present study, 4 cases who had oral cancer due to the habit of smoking were beedi smokers.

The mean age of occurrence of oral cancer in the present study is 52 years. The youngest being 28 years and the eldest is 76 years. This is in accordance with Ganesh et al.,<sup>20</sup> Bhardwaj et al.<sup>21</sup> In the present study, 20 patients were in the age group of 31 to 40 years followed by 15 in the group of 51-60 years. The incidence of oral cancer in younger age group is increasing due to the habit of gutkha and pan masala chewing. Gupta et al.,<sup>22</sup> Chattopadhyaya et al.<sup>23</sup> and Mathew et al.<sup>24</sup> observed increase in incidence of oral cancer in younger age group.

In the present study, buccal mucosa is the most commonly involved site with 44.8% followed by tongue with 33.8% and labial mucosa being the least involved with 1.5%. Our results are consistent with Krishna et al.<sup>25</sup> The practice of chewing 'pan' is the most common cause of the involvement of buccal mucosa. Studies related to Mehrotra et al.<sup>16</sup> and Iype EM et al.<sup>14</sup> showed tongue to be the common site of occurrence. Mandibular alveolus was the most frequently affected site according to the study of Shenoj et al.<sup>26</sup> The variation in the site of occurrence may be attributed to the use of chewing tobacco.

In the present study, 7.5% of patients had oral submucous fibrosis and 1.5% had oral leukoplakia. 7.6% of oral submucous fibrosis has the potential for malignant transformation<sup>27</sup> and oral leukoplakia is the most frequent potentially malignant disorder of oral mucosa.<sup>28</sup> Malignant transformation of leukoplakia includes various factors like age, gender, tobacco, alcohol consumption, anatomical location and size of the lesion. In the present study, most of the cases were in Stage III with 44.8% followed by Stage II with 31.3%. This was in accordance with the study of Shenoj et al.<sup>26</sup> Tobacco consumption either in the form of smoking or chewing and areca nut chewing are the important risk factors in the development of oral cancer.

## CONCLUSION

In this study, we have depicted the epidemiological profile of the population of North Chennai who have been diagnosed as OSCC. The youngest been diagnosed is 28 years old and the age of occurrence is 52 years. The site commonly involved is buccal mucosa. Most common risk habits associated are smoking, tobacco chewing, areca nut chewing and alcohol.

Occurrence of OSCC can be minimised by creating awareness among the public regarding the high-risk habits. This can be achieved by conducting camps in rural and urban areas and by counselling the public regarding cessation of habits.

Early detection of potentially malignant disorders, early treatment intervention improves the life span of the patients.

Cases	No. of Cases (n= 67) (%)
Male	48 (71.6%)
Female	19 (28.3%)

**Table 1. Prevalence of OSCC according to Gender**

Age Group	No. of Cases	Percentage
20-30	3	4.5%
31-40	20	29.9%
41-50	13	19.40%
51-60	15	22.4%
61-70	13	19.40%
>70	3	4.5%

**Table 2. Prevalence of OSCC according to Age Distribution**

Habits	No. of Cases	Percentage
Tobacco chewing alone	15	22.4%
Smoking alone	4	5.97%
Pan masala/ mawa chewer	25	37.31%
Tobacco chewing + Alcohol	1	1.49%
Tobacco chewing + Smoking	2	2.98%
Pan/mawa chewing + Alcohol	9	13.43%
Chewing + Smoking + Alcohol	7	10.44%
No habits	4	5.97%

**Table 3. Habits associated with OSCC**

Duration	No. of Patients	Percentage
Less than 10 years	23	36.5%
11-20 years	13	20.6%
21-30 years	9	14.3%
31-40 years	5	7.9%
41-50 years	2	3.2%

**Table 4. Duration of Habits**

Site	No. of Patients	Percentage
Buccal mucosa	30	44.8%
Tongue	22	33.8%
Mandibular alveolus	6	8.9%
Maxillary alveolus	2	2.9%
Retromolar trigone	4	5.9%
Floor of mouth	2	2.9%
Labial mucosa	1	1.5%

**Table 5. Primary Site of Tumour**

Pre-Malignant Disorder	No. of Patients	Percentage
Oral submucous fibrosis	5	7.5%
Leukoplakia	1	1.5%

**Table 6. Pre-Malignant Disorders associated with OSCC**

Stage	No. of Patients	Percentage
Stage I	1	1.5%
Stage II	21	31.3%
Stage III	30	44.8%
Stage IVA	13	19.4%
Stage IVB	1	1.5%

**Table 7. Staging**

Histological Grading	No. of Patients	Percentage
Poorly differentiated	9	13.43%
Moderately differentiated	27	40.29%
Well differentiated	31	46.26%

**Table 8. Histological Differentiation of OSCC**

**REFERENCES**

- [1] Burnet FM. Immunological surveillance in neoplasia. Transplant Rev 1971;7:3-25.
- [2] Shah JP, Gil Z. Current concepts in management of oral cancer-surgery. Oral Oncology 2009;45(4-5):394-401.
- [3] Klein G. Tumour Immunology: a general appraisal. In: Symington T, Carter RL. eds. Scientific foundations of Oncology. London: W Heinemann 1976:497-504.
- [4] Neville BW, Day TA. Oral cancer and precancerous lesions. CA Cancer J Clin 2002;52(4):195-215.
- [5] Zygogianni AG, Kyrgias G, Karakitsos P, et al. Oral squamous cell cancer: early detection and the role of alcohol and smoking. Head and Neck Oncology 2011;3:2.
- [6] Brocklehurst P, Kujan O, Glenny AM, et al. Screening programmes for the early detection and prevention of oral cancer. Cochrane Database Syst Rev 2010;(11):CD004150.
- [7] Sanchez MJ, Martinez C, Nieto A, et al. Oral and oropharyngeal cancer in Spain: influence of dietary patterns. Eur J Cancer Prev 2003;12(1):49-56.
- [8] Garrote LF, Herrero R, Reyes RM, et al. Risk factors for cancer of the oral cavity and oro-pharynx in Cuba. Br J Cancer 2001;85(1):46-54.
- [9] Kalavrezos N, Scully C. Mouth cancer for Clinicians part 4: risk factors (traditional: alcohol, betel and others). Dent Update 2015;42(7):644-6, 648-50, 653-4.
- [10] Bagan J, Sarrion G, Jimenez Y, et al. Oral cancer: clinical features. Oral Oncology 2010;46(6):414-7.
- [11] Brandizzi D, Gandolfo M, Velazco ML, et al. Clinical features and evolution of oral cancer: a study of 274 cases in Buenos Aires, Argentina. Medical Oral Patol Oral Cir Bucal 2008;13(9):544-8.
- [12] Mazon R, Tao Y, Lusinchi A, et al. Current concepts of management in radiotherapy for head and neck squamous-cell cancer. Oral Oncology 2009;45(4-5):402-8.
- [13] Silverman S. Oral Cancer. 5<sup>th</sup> edn. Hamilton, Ont, Canada: BC Decker Inc., 2003:(1).
- [14] Iype EM, Pandey M, Mathew A, et al. Oral cancer among patients under the age of 35 years. J Postgrad Med 2001;47(3):171-6.
- [15] IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. Betel-quid and areca-nut chewing and some areca-nut derived nitrosamines. IARC Monogr Eval Carcinog Risks Hum 2004;85:1-334.
- [16] Mehrotra R, Singh M, Kumar D, et al. Age specific incidence rate and pathological spectrum of oral cancer in Allahabad. Indian J Med Sci 2003;57(9): 400-4.

- [17] Muwonge R, Ramadas K, Sankila R, et al. 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;44(5):446-54.
- [18] Bhat SP, Ramesh NCN, Swetadri GK, et al. Clinicopathological spectrum of malignancies of oral cavity and oropharynx-our experience in a referral hospital. *World articles in Ear, Nose and Throat* 2010;(3-1).
- [19] Balam P, Sridhar H, Rajkumar T, et al. Oral cancer in Southern India. The influence of smoking, drinking, paan-chewing and oral hygiene. *Int J Cancer* 2002;98(3):440-5.
- [20] Ganesh R, John J, Saravanan S. Socio demographic profile of oral cancer patient residing in TamilNadu- a hospital based study. *Indian J Cancer* 2013;50(1):9-13.
- [21] Bhardwaj N, Daniel MJ, Srinivasan SV, et al. Demographics, habits, and clinical presentation of oral cancer in Puducherry's population: an institutional experience. *J Indian Acad Dent Spec Res* 2015;2(2): 64-9.
- [22] Gupta PC, Murti PR, Bhonsle RB, et al. Effect of cessation of tobacco use on the incidence of oral mucosal lesion in a 10-yr follow up study of 12,212 users. *Oral Dis* 1995;1(1):54-8.
- [23] Chattopadhyay A. Epidemiologic study of oral cancer in eastern India. *Indian J Dermatol* 1989;34(3):59-65.
- [24] Iype ME, Pandey M, Mathew A, et al. Squamous cell carcinoma of the tongue among young Indian adults. *Neoplasia* 2001;3(4):273-7.
- [25] Krishna A, Singh RK, Singh S, et al. Demographic risk factors, affected anatomical sites and clinicopathological profile for Oral squamous cell carcinoma in a North Indian population. *Asian Pac J Cancer Prev* 2014;15(16):6755-60.
- [26] Sheno R, Devrukhkhar V, Chandhuri, et al. Demographic and clinical profile of OScC patients: a retrospective study. *Indian J Cancer* 2012;49(1):21-6.
- [27] Aziz SR. Oral submucous fibrosis: an unusual disease. *J N J Dent Assoc* 1997;68(2):17-9.
- [28] Rao PKJ. Potentially malignant lesion-oral leukoplakia. *Global Advanced Research J of Medicine and Medical Sciences* 2012;1(11):286-91.