Print ISSN: 2321-6379
Online ISSN: 2321-595X
DOI: 10.17354/ijss/2016/395

Original Article

Oral Squamous Cell Carcinoma in Patients Younger than 40 Years: A 10 Year Retrospective Study

V T Beena[1], S S Binisree[2], T Ayswarya[2], Ismayil Paikkadan[2], S K Padmakumar[3], R Sivakumar[3]

[1]Professor and Head, Department of Oral Pathology and Microbiology, Government Dental College, Kottayam, Kerala, India, [2]Post Graduate Student, Department of Oral Pathology and Microbiology, Government Dental College, Trivandrum, Kerala, India, [3]Assistant Professor, Department of Oral Pathology and Microbiology, Government Dental College, Trivandrum, Kerala, India

Abstract

Background: Oral squamous cell carcinoma (OSCC) is one of the leading causes of morbidity and mortality in India. It is considered as a disease of elderly with the majority of cases found in the fifth to eighth decades of life. Recently, it has been reported that there is an increasing incidence of OSCC in younger individuals, and this is believed to be etiologically distinct from OSCC in older adults, due to less significant exposure to the common risk factors such as tobacco and alcohol and a more aggressive course.

Materials and Methods: Archival records of 10 years were reviewed and all the cases of OSCC below 40 years with complete records were retrieved from the Department of Oral Pathology and Microbiology, Government Dental College, Thiruvananthapuram.

Results: A total of 740 histologically proven cases of OSCC were obtained. Out of this, 61 patients (8.3%) were under 40 years of age. Among these, 46 (75.4%) were males and 15 (24.6%) were females. The tongue was the most common site (40; 65.6%). Moderately differentiated carcinoma was the most common histological subtype (40; 65.6%). Family history had a significant influence in patients younger than 40 years (8.2%) when compared to those >40 years (1%).

Conclusion: The demographic details of OSCC in patients <40 years in a tertiary health care center have been described. There is increasing the incidence of OSCC in young patients in the recent years. Although the biological behavior was indistinct from that of the older, family antecedents of malignancy were higher in the younger age group. Furthermore, most of the cases were reported in the advanced stage. This warrants the need for oral health programs for screening, early detection, management, and proper follow-up of oral cancer.

Key words: Epidemiology, Oral squamous cell carcinoma, Young patients

INTRODUCTION

Squamous cell carcinoma is the most common of oral malignancies, holding the eighth position among the cancers worldwide. It is known that oral cancer incidence increases with age. Recent studies suggest that 4-6%[1] of oral squamous cell carcinoma (OSCC) occur at ages younger than 40 years. Several studies examining risk factors for oral cancer in the young provide evidence that many younger patients have never smoked or consumed alcohol, which are the recognized risk factors in older groups. Besides the duration of exposure may be too short for malignant transformation to occur. Information on many aspects of etiology for this disease in the young implicating occupational, familial risk, immune deficits, and virus infection are meager. The purpose of this study is to determine the frequency of OSCC in individuals <40 years and to describe the distribution according to gender, site, habits, genetic predisposition, and histopathologic types of OSCC reported over a period of 10-year in a tertiary health care center in Southern Kerala, India. We would like to add a note that this institute being the only tertiary dental health care center in Southern Kerala a relatively good cross-section of diagnosed non-healing ulcers and lesions suggestive of cancer are referred to this institution.

Access this article online

www.ijss-sn.com

Month of Submission : 05-2016
Month of Peer Review : 06-2016
Month of Acceptance : 07-2016
Month of Publishing : 07-2016

Corresponding Author: Dr. S S Binisree, Department of Oral Pathology and Microbiology, Government Dental College, Trivandrum, Kerala, India. Phone: +91-9496809733. E-mail: sreebini@gmail.com

MATERIALS AND METHODS

The 10 years archival records of patients who were histologically diagnosed with OSCC at the Department of Oral Pathology and Microbiology, Government Dental College, Trivandrum, between 2004 and 2014 were retrospectively reviewed. The data extracted were analyzed to determine the frequency of OSCC in individuals younger than 40 years and its distribution according to gender, site, habits, genetic predisposition, and histopathologic types. The patients were divided into 4 groups according to their ages at diagnosis: Group 1 (20-40 years); Group 2 (41-60 years); Group 3 (61-80 years); and Group 4 (above 80 years). The anatomical sites reviewed in this study included lip, buccal mucosa, alveolus, hard palate, tongue, floor of mouth (FOM), and gingiva. Variables analyzed for each patient included age, gender, site, family history, habits, and histologic grading. All variables were entered in a database for analysis. Unfortunately, recurrent OSCC patients very often directly report to Regional Cancer Centre, Trivandrum, and are lost to follow-up. Hence could not be included as a variable in this study.

RESULTS

A total of 740 patients with OSCC in the 10-year period from 2004 to 2014 were retrospectively analyzed in the present study. Among this 61 patients were below the age of 40 years and 679 patients were above 40 years. The mean age at presentation was 30.7 years. A significantly high male preponderance was noted in patients younger than 40 years ($P = 0.039$). There were 46 (75.4%) males and 15 (24.6%) females in the present study, with a male to female ratio of 2:1.

The tongue was the most common site identified with 40 (65.6%) patients followed by buccal mucosa in 12 (19.7%), alveolus in 6 (9.8%), FOM in 2 (3.3%) and palate in 1 (1.9%). Family history of OSCC was present in 5 (8.2%) patients who were younger than 40 years ($P < 0.01$), when compared to only 1 patient (0.1%) older than 40 years. More than half of the patients were habituated to either tobacco chewing, smoking or alcohol.

Histological confirmation was present in all 61 patients that were considered in the present study. Among these, 40 (65.6%) were moderately-differentiated tumors, 16 (26.2%) were well differentiated, and 5 (8.2%) were poorly differentiated tumors.

The statistical data of the considered variables in relation to age are represented in Tables 1-3 and Graphs 1-3.

Table 1: Percentage distribution of the sample according to selected variables

Variables	Number (%)
Age	
20-40	61 (8.3)
41-60	300 (40.6)
61-80	347 (47.0)
>80	31 (4.2)
Gender	
Male	467 (63.2)
Female	272 (36.8)
Site	
Buccal mucosa	228 (30.9)
Tongue	284 (38.4)
Alveolus	148 (20.0)
Hard palate	26 (3.5)
FOM	30 (4.1)
Gingiva	9 (1.2)
Lip	14 (1.9)
Grading	
WDSCC	262 (35.5)
MDSCC	445 (60.2)
PDSCC	32 (4.3)
Family history	
Nil	6 (0.8)
Tobacco	526 (71.2)
Alcohol	81 (11.0)
Pan chewing	243 (32.9)
Trauma	88 (11.9)
Family history	6 (0.8)

FOM: Floor of mouth, WDSCC: Well-differentiated squamous cell carcinoma, MDSCC: Moderately differentiated squamous cell carcinoma, PDSCC: Poorly differentiated squamous cell carcinoma

Table 2: Association between factors like gender, site and grading of cancer with age

Variables	Count (%)		χ^2	*P*
	≤40	>40		
Gender				
Male	46 (75.4)	421 (62.1)	4.27*	0.039
Female	15 (24.6)	257 (37.9)		
Site				
Buccal mucosa	12 (19.7)	216 (31.9)	21.72**	0.001
Tongue	40 (65.6)	244 (36.0)		
Alveolus	6 (9.8)	142 (20.9)		
Hard palate	1 (1.6)	25 (3.7)		
FOM	2 (3.3)	28 (4.1)		
Gingiva	0 (0.0)	9 (1.3)		
Lip	0 (0.0)	14 (2.1)		
Grading				
WDSCC	16 (26.2)	246 (36.3)	4.21	0.122
MDSCC	40 (65.6)	405 (59.7)		
PDSCC	5 (8.2)	27 (4.0)		

**Significant at 0.01 level, *Significant at 0.05 level. FOM: Floor of mouth, WDSCC: Well-differentiated squamous cell carcinoma, MDSCC: Moderately differentiated squamous cell carcinoma, PDSCC: Poorly differentiated squamous cell carcinoma

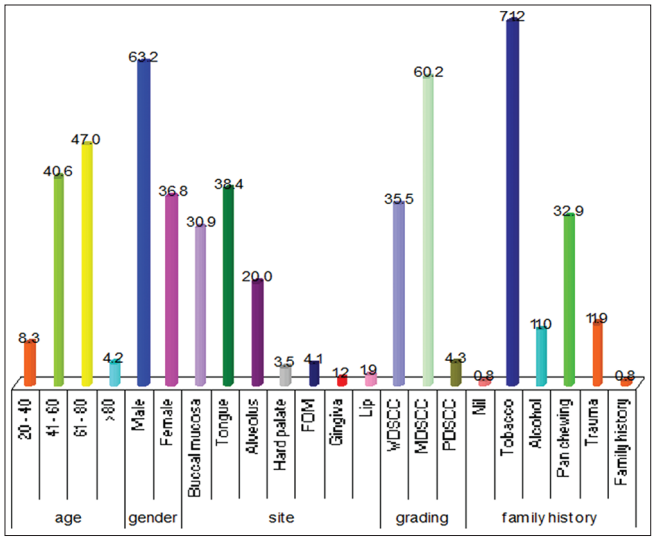
DISCUSSION

With the data collected from our Institutional Archives, this study confirms that OSCC affects predominantly older

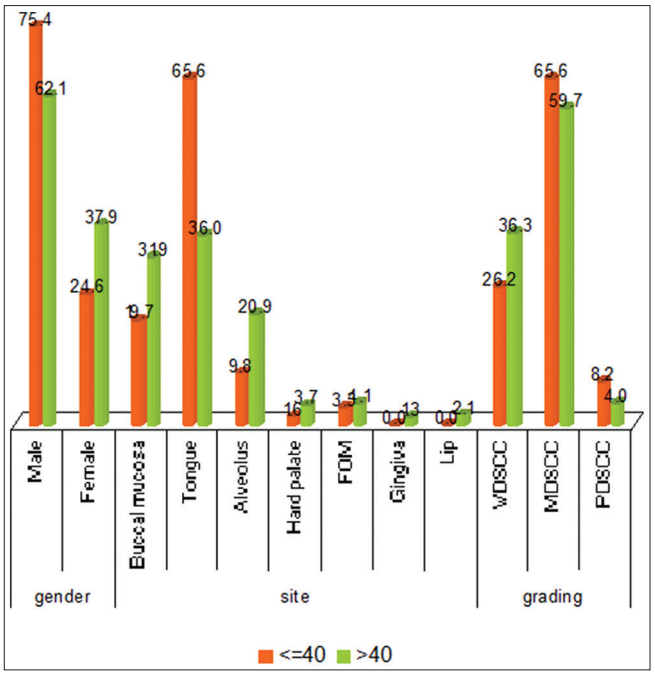
Table 3: Association between history and age

Variables	Count (%)		χ^2	P
	≤40	>40		
Any history				
No	58 (95.1)	675 (99.6)	13.92**	0.000
Yes	3 (4.9)	3 (0.4)		
Tobacco				
No	18 (29.5)	195 (28.8)	0.02	0.902
Yes	43 (70.5)	483 (71.2)		
Alcohol				
No	51 (83.6)	607 (89.5)	2.01	0.156
Yes	10 (16.4)	71 (10.5)		
Pan chewing				
No	52 (85.2)	444 (65.5)	9.9**	0.002
Yes	9 (14.8)	234 (34.5)		
Trauma				
No	49 (80.3)	602 (88.8)	3.82	0.051
Yes	12 (19.7)	76 (11.2)		
Family history				
No	56 (91.8)	677 (99.9)	45.03**	0.000
Yes	5 (8.2)	1 (0.1)		

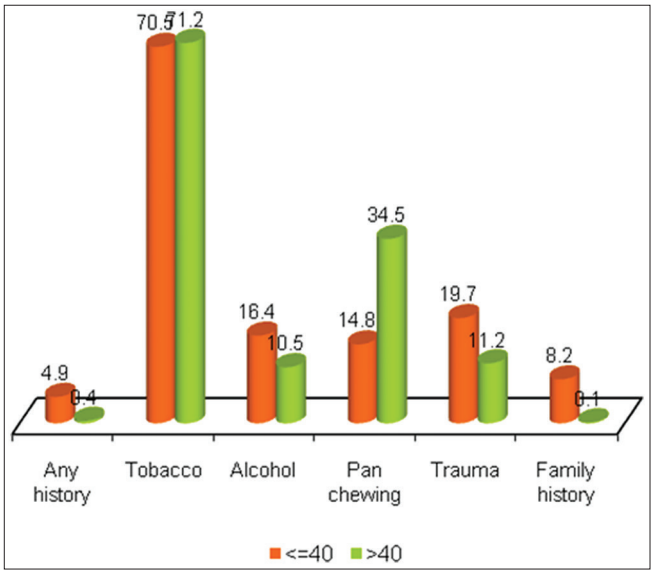
**Significant at 0.01 level



Graph 1: Percentage distribution of the sample according to selected variables



Graph 2: Association between factors like gender, site and grading of cancer with age



Graph 3: Association between history and age

patients (91%); however, there is a much higher incidence of this disease in the young patients (8.3%) than that reported by other authors, which has varied from 0.4% to 3.6%.[1,6,7] There is an overall male predominance in all intraoral subsites in patients younger than 40 years which is in agreement with most of earlier studies.[2,4,16]

The cause of OSCC is complex and multifactorial, and for young patients with OSCC possible risk factor seems to present a different pattern from that of the older patients.[13,17] As a result, many authors have tried to investigate and propose risk factors for OSCC in young subjects. This was also the focus of this study, with factors such as tobacco chewing, smoking, pan chewing, alcohol consumption, trauma, and family history taken into account. No statistical difference was found between the older and younger patients with regard to being a habitual consumer of tobacco and/or alcohol or not. Therefore, the higher occurrence of OSCC in patients over 40 years old seems to be due to a longer exposure and heavier consumption of tobacco and/or alcohol than to the habit itself. Although men and women in the older group were almost equally exposed to abnormal habits, men were more prone (60% vs. 7% for women) to consume tobacco, alcohol or pan chewing heavily, which explains the predominance of OSCC in older male patients.[4,8,9]

In contrast, OSCC of younger age group was almost equally distributed among those who were smokers and/or drinkers as compared to those who were not. Earlier, we had reported a case series of OSCC in non-habituate female patients younger than 40 years from our own department.[5] This points out that other factors such as genetic susceptibility, viral infection, hormonal and immunologic modulations, and other systemic diseases could have an upper hand in initiating and promoting OSCC.

A significant correlation ($P < 0.0001$) between OSCC in young patients and familial history of malignant neoplasm was obtained. In this study, we could not do any genetic evaluation but it was reported earlier from our own department that p53 was mutated in 51.5% of tumors in young patients, and an intense p53 expression was associated with large sized tumors[5] Such a relationship presumably indicate that this risk factor carries great weightage for young patients considering that the proposed risk factors like alcohol consumption and tobacco usage need a longer period of exposure for OSCC to develop.

Another important finding was that, in the younger patients, the disease occurred with greater frequency along the lateral border of the tongue (65.6%), whereas in the older patients this site was affected in only 36% of cases. This was in accordance with the study of Annertz *et al.*, who reported that 5.5% of tongue cancers occurred in patients aged 20-39 years, posterolateral border being the most implicated site.[15,18] To date, none of the studies have came up with any factor associated with the predominance of OSCC in the tongue of the young patients.[10-12]

Histopathological grading of tumors in this study showed that the majority of the tumors were moderately differentiated. This was not of much statistical significance and was consistent with the other studies done over the years.[6,7,11-14]

CONCLUSION

Recent studies have suggested that OSCC in young adults tends to be more frequently anaplastic resulting in a more aggressive behavior and poor prognosis.[2,3,16] As the survival rates are good if diagnosed in early stages of the disease, the need for early detection and clinical staging should be stressed. More in-depth studies are needed to investigate the etiology of intraoral cancer in younger patients. Any ulcer or lesion at a younger age should not be dismissed easily, even if it is not habit related. A high index of clinical suspicion should be attached in high incidence areas that would lead to further investigation and detection of the disease in an early stage, which is perhaps the only way to ensure a good prognosis.

REFERENCES

1. Llewellyn CD, Linklater K, Bell J, Johnson NW, Warnakulasuriya S. An analysis of risk factors for oral cancer in young people: A case-control study. Oral Oncol 2004;40:304-13.
2. 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;47:171-6.
3. Bodner L, Manor E, Friger MD, van der Waal I. Oral squamous cell carcinoma in patients twenty years of age or younger - Review and analysis of 186 reported cases. Oral Oncol 2014;50:84-9.
4. Hirota SK, Braga FP, Penha SS, Sugaya NN, Migliari DA. Risk factors for oral squamous cell carcinoma in young and older Brazilian patients: A comparative analysis. Med Oral Patol Oral Cir Bucal 2008;13:E227-31.
5. Beena VT, Chauhan I, Heera R, Rajeev R. Oral cancer in young non-habituè females: A report of four cases and review of the literature. Aust Dent J 2011;56:322-7.
6. Majchrzak E, Szybiak B, Wegner A, Pienkowski P, Pazdrowski J, Luczewski L, *et al.* Oral cavity and oropharyngeal squamous cell carcinoma in young adults: A review of the literature. Radiol Oncol 2014;48:1-10.
7. Cusumano RJ, Persky MS. Squamous cell carcinoma of the oral cavity and oropharynx in young adults. Head Neck Surg 1988;10:229-34.
8. Burzynski NJ, Flynn MB, Faller NM, Ragsdale TL. Squamous cell carcinoma of the upper aerodigestive tract in patients 40 years of age and younger. Oral Surg Oral Med Oral Pathol 1992;74:404-8.
9. Chen YK, Huang HC, Lin LM, Lin CC. Primary oral squamous cell carcinoma: An analysis of 703 cases in southern Taiwan. Oral Oncol 1999;35:173-9.
10. Siriwardena BS, Tilakaratne A, Amaratunga EA, Udagama MN, Ogawa I, Kudo Y, *et al.* Analysis of histopathological and immunohistochemical differences of oral squamous cell carcinoma in young and old patients in Sri Lanka. J Oral Pathol Med 2007;36:357-62.
11. Martínez-Conde R, Aguirre JM, Burgos JJ, Rivera JM. Clinicopathological factors in early squamous cell carcinoma of the tongue and floor of the mouth, in Biscay (the Basque Country, Spain). Med Oral 2001;6:87-94.
12. McGregor AD, Rennie JS. Intra-oral squamous cell carcinoma in patients under 40 years of age. A report of 13 cases and review of the literature. Br J Plast Surg 1987;40:270-3.
13. Mackenzie J, Ah-See K, Thakker N, Sloan P, Maran AG, Birch J, *et al.* Increasing incidence of oral cancer amongst young persons: What is the aetiology? Oral Oncol 2000;36:387-9.
14. Llewellyn CD, Johnson NW, Warnakulasuriya KA. Risk factors for squamous cell carcinoma of the oral cavity in young people - A comprehensive literature review. Oral Oncol 2001;37:401-18.
15. Venables CW, Craft IL. Carcinoma of the tongue in early adult life. Br J Cancer 1967;21:645-50.
16. Byers RM. Squamous cell carcinoma of the oral tongue in patients less than thirty years of age. Am J Surg 1975;130:475-8.
17. Son YH, Kapp DS. Oral cavity and oropharyngeal cancer in a younger population. Review of literature and experience at Yale. Cancer 1985;55:441-4.
18. Annertz K, Anderson J, Moller T, Wennerberg J, *et al*. Incidence and survival of squamous cell carcinoma of the tongue in Scandinavia, with special reference to young adults. Int J Cancer 2002;101:95-9.

How to cite this article: Beena VT, Binisree SS, Ayswarya T, Paikkadan I, Padmakumar SK, Sivakumar R. Oral Squamous Cell Carcinoma in Patients Younger than 40 Years: A 10 Year Retrospective Study. Int J Sci Stud 2016;4(4):150-153.

Source of Support: Nil, **Conflict of Interest:** None declared.