



Epidemiological features of oral squamous cell carcinoma

Ahmad Jafari¹, Abbas Karimi^{2*}, Mitra Salamat³

1. Department of Community Oral Health, School of Dentistry, Tehran University of Medical Sciences, Tehran, Iran.

2. Department of Oral and Maxillofacial Surgery, School of Dentistry, Craniomaxillofacial Research Center, Tehran University of Medical Sciences, Tehran, Iran.

3. Dentist, School of Dentistry, Tehran University of Medical Sciences, Tehran, Iran.

ARTICLE INFO

Article Type: Original Article

Received: 3 Feb. 2018

Revised: 2 Mar. 2018

Accepted: 1 Apr. 2018

*Corresponding author:

Abbas Karimi

Department of Oral and Maxillofacial Surgery,
School of Dentistry, Craniomaxillofacial Research
Center, Tehran University of Medical Sciences, Teh-
ran, Iran.

Tel: +98-21-84902473

Fax: +98-21-84902473

Email: abbaskarimi@yahoo.com

ABSTRACT

Background: Squamous cell carcinoma (SCC) is the most common head and neck cancer. According to the role of epidemiological data in planning and effective interventions, the aim for the current study was a five-year review of oral squamous cell carcinoma.

Materials and Methods: In this cross-sectional study, the data was derived from 76 recorded files of patients with oral SCC (OSCC) in Shariati hospital at the Tehran University of Medical Sciences from 2010 to 2015. The data included demographic variables, risk factors and lesion characteristics. The collected data has been analyzed by SPSS software and descriptive analysis was presented.

Results: In this study 52 patients were male (68.4%) and 24 patients were female (31.6%). The mean age of patients was 60.5 ± 12.80 years. The prevalence of OSCC among men was 2.2 times more than women. The most common sites of tumor were buccal mucosa (36.8%) and then mandibular ridge (34.2%) and the most common clinical symptoms of tumor were painful tooth/teeth which are not mobile (69.7%) and ulcer (64.5%). Based on histological grading, 64.5% of patients had well-differentiated lesions.

Conclusion: The results of this study indicate that OSCC was more common in men and seniors. It also has involved buccal mucosa and mandibular ridge. The majorities of OSCC lesions were well-differentiated in the oral cavity, and were in stages two and three in TNM system.

Keywords: Oral cancer, Squamous cell carcinoma, Oral squamous cell carcinoma.

Introduction

Cancer is a complex group of diseases with many possible causes. They are the second most common cause of death after cardiovascular diseases in many countries; and more than half of the patients eventually die from it (Ma & Yu 2006). Cancers considered the third death causes in Iran since more than thirty thousand people lose their lives because of cancer annually. It is estimated that each year more than seventy thousand new cancer cases occur in Iran (Mousavi Gouya et al. 2009). Cancer can involve any tissue or organ. (Perez De Fre-

itas et al. 2007) One of the 10 most common cancers in the world is oral cancer (Sankaranarayanan Ramadas et al. 2015) and Oral squamous cell carcinoma is the sixth most common cancer in the world (Murugan Hong et al. 2009). Oral and oropharyngeal Squamous cell carcinoma (OSCC) constitute about 3% of all cancers in men and 2% in women. OSCC is considered to be one of the most threatening diseases in human life (Pakfetrat Falaki et al. 2010). Reducing delays in diagnosis and treatment leads to improvement in oral cancer's prognosis (Sargeran Mur-

toma et al. 2009), while eliminating harmful habits can significantly increase its survival rate between 5-10 years (Ariyawardana & Vithanaarachchi 2005). In many parts of the world, a wide range of annual prevalence and mortality of OSCC is observed and among different countries these numbers vary up to twenty times. Many of these differences are certainly because of differences in habits, life style, health education and accessibility of medical records (Neville Damm et al. 2009).

The epidemiological studies show health and disease pattern and its related factors in society. They also build health related research infrastructure and these types of studies help to determine the disease risk factors and achieve ideal treatments (Nutter 1999). The aim of the current study was a five-year review of oral squamous cell carcinoma cases in the one of the main oral cancer treatment centers in Tehran.

Materials and Methods

In this retrospective study, after taking ethical committee's permission, 76 medical files of patients with OSCC in Shariati Hospital archive; as one of the reference centers for treatment of oral cancer in Tehran, from 2010 to 2015 were gathered and evaluated. Demographic variables (age, sex and place of residence), risk factors (smoking, alcohol and the presence of underlying disease) and lesion characteristics (the primary site of lesion, the patient's initial symptoms, and the degree of histological grading of the lesion, TNM classification and stage of disease) were confidentially recorded in a special form for each patient. The gathered data has been analyzed using SPSS and presented as descriptive statistics in tables.

Results

According to the results, 52 patients were male (68.4%) and 24 patients were female (31.6%) whereas, prevalence in men was 2.2 times more likely than women (Table 1). The majority of subjects in the sixth to eighth decade of their lives had been diagnosed with oral cancer. The mean age of patients was 60.5 ± 12.80 years. Minimum age of patients was 28 and maximum age was 85. Figure 1 shows the histogram of age according to the studied years. Urban or rural residency, which can be an effective factor in the patient visiting time to medical centers, indicated that 62 patients (81.6%) lived in city and the other (18.4%) lived in rural areas (Table 1). According to the table 2, 48 patients (63.2%) were smokers or had a history of smoking at the time of study. Besides, 20 patients (26.3%),

according to their statements, had History of alcohol consumption while 45 patients (59.2%) had a history of underlying disease. By studying Characteristics of malignant lesions, buccal mucosa and mandibular ridge were the most common tumor sites. The most common clinical symptom of primary lesion in patients were painful tooth/teeth and ulcer. Also, 13 patients (17.1%) had not certain histological grading in their pathology report. 49 patients (64.5%) had well-differentiated lesions. Table 3 shows more details.

Evaluation of the clinical characteristics of the tumor using the TNM system was shown in table 4. Based on this data majority of the patients were in T3 (30.3%) and T2 (27.6%) and 30.3% of patients had N2 scale and stratifying patients based on M scale indicated that only 4 patient (5.3%) had distant metastasis. Studying the prevalence of patient according to their disease's stage indicated that 13 patients were in stage 1 (17.1%), 14 patients were in stage 2 (18.5%), 29 patients were in stage 3 (38.1%) and finally 20 patients were in stage 4 (26.3%).

Discussion

In this study the mean age of patients was 60.5 years. 44.73% of patients were less than or equal to 60 years old and 55.26% were older than 60. The minimum and maximum age of patients, were 28 and 65 respectively. The mean age of this study was alike to that of Sargeran's study conducted in Iran where the mean age was reported 61.2 years (Sargeran Murtooma et al. 2006). Furthermore Warnakulasuriya (Warnakulasuriya 2010) conducted a study in England where the mean age was 62. While in a study by Chamani et al. (Chamani Zarei et al. 2009) conducted in 2008 in Kerman, the patients' mean age was reported 54.6 years, 6 years less than the mean age in the current study this reason can be due to the life style and more tobacco consumption in this city. Also in a study by Bhurgria (Bhurgria 2005) which was conducted in India only 23% of patients were older than 60 years. In countries with high prevalence of oral cavity cancer a lower mean age is expected compared to other countries (Warnakulasuriya 2010). It also seems that lower life expectancy in the country is the reason for this age range of patients. The current study indicates a higher prevalence of OSCC in men. According to the results, 68.4% of patients were men. Oral Cancer has always been known as a more common cancer in men. In a study by Brandizzi et al. (Brandizzi Chuchurru et al. 2005) in Argentina evaluating epidemiological factors of oral cancer it was stated that from 1992 to 2000 the prevalence in men was

1.24 times more likely than women. Warnakulasuriya conducted a study in England (Warnakulasuriya 2010) and indicated that men are 1.5 times in danger to the risk of oral cancer than women. Also in several studies performed by Sargeran et al. (Sargeran Murtooma et al. 2006), Eshghyar et al. (Eshghyar Motahari et al. 2005) and Andisheh et al. (Andisheh-Tadbir Mehrabani et al. 2008) in Iran the number of men suffering from this cancer were more than women. Generally it seems that the reasons for the higher prevalence in men are outdoor profession, exposure to solar radiation and more contact with main etiologic factors like tobacco and alcohol (Arotiba Ladeinde et al. 2006).

In this study 63.2% of patients were smokers. Indeed several studies refer to different types of smoking including cigarettes and hookah as the main risk factors for oral cancer. Many studies have been done in most parts of the world and proved the same results (Maleki Ghojzadeh et al. 2015). Besides in some dental reference book using tobacco is considered as the main etiologic factor for OSCC (Neville Damm et al. 2009; Regezi Sciubba et al. 2009). In the current study, the most common site of involvement was buccal mucosa, regardless of the age groups. These findings are similar to the result of the studies carried out in such Asian countries as Thailand (Iamaroon Pattanaporn et al. 2004), India (Zaidi & Mallick 2014), and Taiwan (Huang Chu et al. 2007), indicated that buccal mucosa was the most common site of involvement and SCC of buccal mucosa was associated with chewing tobacco. Since this habit is not common in Iran other risk factors such as smoking and diet can be the major reasons (Chidzonga & Mahomva 2006).

The most important methods for recognizing and classifying lesions is the histological appearance of the lesions (Anneroth Batsakis et al. 1987). Histological and clinical conditions is the essential for evaluation of lesions and choosing treatment method (Anneroth

Batsakis et al. 1987). Evaluating the histological lesions, proved that the majority of studied tumors had moderate to well differentiation and only a small percentage were poorly differentiated, which is consistent with the study results of Eshghyar et al. (Eshghyar Motahari et al. 2005) The results of this study indicated that most patients were in stage two and three of TNM system, and this finding was consistent with that of Iamaroon et al. (Iamaroon Pattanaporn et al. 2004) and Yahalom et al. (Yahalom Dobriyan et al. 2008). It seems that early stages of cancers or oral premalignant lesions were recognized in the periodic examinations neither by the patients nor dentists. Likewise Iamaroon et al. (Iamaroon Pattanaporn et al. 2004) and Chitapanarux et al. (Chitapanarux Lorvidhaya et al. 2006) reported that 55% of young patients with OSCC were in stage three and four. They emphasized on the need for radical treatment of this carcinoma in younger age groups.

Based on the results it is concluded that oral squamous cell carcinoma is more common in men and in their sixth to eighth decade of life. OSCC involves buccal mucosa and mandibular ridge more than other parts while its metastasis to other parts of the body was low. The majorities of OSCC lesions were well-differentiated in the oral cavity, and were in stages two and three in TNM system. It is recommended that dentists perform careful screening tests for cancer diagnosis in at-risk patients.

<i>Demographic Variables</i>		<i>No</i>	<i>%</i>
<i>Gender</i>	<i>Male</i>	52	68.4
	<i>Female</i>	24	31.6
<i>location</i>	<i>City</i>	62	81.6
	<i>Village</i>	14	18.4

Table 1. The frequency of OSCC lesions in the patients according to gender and location.

Risk factor		No	%
Smoking	Yes (now or before)	48	63.2
	Never	28	36.8
Drinking Alcohol	Yes (now or before)	20	26.3
	Never	56	73.7
History of underlying disease	Yes	31	40.8
	No	45	59.2

Table 2. The frequency of risk factors of OSCC lesions in the patients.

Distribution characteristics of OSCC		No	%
Lesions location	Buccal mucosa	28	36.8
	Floor of the mouth	6	7.9
	Tongue	21	27.6
	Mandibular ridge	26	34.2
	Maxillary ridge	7	9.2
	Soft palate	0	0
	Hard palate	4	5.3
	Other parts of the oral cavity	3	3.9
Clinical signs of lesions	Painful tooth/teeth	53	69.7
	Wound	49	64.5
	Swelling	47	61.8
	Swollen lymph nodes	31	40.8
	Exudate secretion	13	17.1
The degree of histologic differentiation of lesions	Moderately differentiated	14	18.4
	Well differentiated	49	64.5
	Not reported	13	17.1

Table 3. The frequency distribution characteristics of OSCC lesions in the patients.

TNM	Sub-Group	No	%
T (Tumor size)	Tx	0	0
	T0	0	0
	Tis	0	0
	T1	19	25.0
	T2	21	27.6
	T3	23	30.3
	T4	13	17.1
	N (Involvement of regional lymph node)	Nx	0
N0		19	25.0
N1		21	27.6
N2		23	30.3
N3		13	17.1
M (Distant metastases)	Mx	0	0
	M0	72	94.7
	M1	4	5.3

Table 4. The frequency of patients with OSCC examined in the TNM system.

Conflict of Interest

There is no conflict of interest to declare.

Acknowledgements

The Research Vice-Chancellery of Tehran University of Medical Sciences is greatly appreciated for providing the expenses to conduct this research project.

References

- [1] Cooper GM. *The Cell: A Molecular Approach*. 2nd edition. Sunderland (MA): Sinauer Associates; 2000. *The Development and Causes of Cancer*. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK9963/>.
- [2] Fritz A, Percy C, Jack A, Shanmugaratnam K, Sobin L, Parkin DM, et al. *International classification of diseases for oncology*. 3rd ed. Geneva, Switzerland: World Health Organization; 2000.
- [3] Andisheh-Tadbir A, Mehrabani D, Heydari ST (2008) Epidemiology of squamous cell carcinoma of the oral cavity in Iran. *J Craniofac Surg* 19(6), 1699-1702.
- [4] Anneroth G, Batsakis J, Luna M (1987) Review of the literature and a recommended system of malignancy grading in oral squamous cell carcinomas. *Scand J Dent Res* 95(3), 229-249.
- [5] Ariyawardana A, Vithanaarachchi N (2005) Awareness of oral cancer and precancer among patients attending a hospital in Sri Lanka. *Asian Pac J Cancer Prev* 6(1), 58-61.
- [6] Arotiba GT, Ladeinde AL, Oyenyin JO, Nwawolo CC, Banjo AA, Ajayi OF (2006) Malignant orofacial neoplasms in Lagos, Nigeria. *East Afr Med J* 83(3), 62-68.
- [7] Bhurgri Y (2005) Cancer of the oral cavity - trends in Karachi South (1995-2002). *Asian Pac J Cancer Prev* 6(1), 22-26.
- [8] Brandizzi D, Chuchurru JA, Lanfranchi HE, Cabrini RL (2005) Analysis of the epidemiological features of oral cancer in the city of Buenos Aires. *Acta Odontol Latinoam* 18(1), 31-35.
- [9] Chamani G, Zarei MR, Rad M, Hashemipoor M, Haghdoost AA (2009) Epidemiological Aspects of Oral and Pharyngeal Cancer in Kerman Province, South Eastern Iran *Iranian J Publ Health* 38(2), 90-97.
- [10] Chidzonga MM, Mahomva L (2006) Squamous cell carcinoma of the oral cavity, maxillary antrum and lip in a Zimbabwean population: a descriptive epidemiological study. *Oral Oncol* 42(2), 184-189.
- [11] Chitapanarux I, Lorvidhaya V, Sittitrai P et al. (2006) Oral cavity cancers at a young age: analysis of patient, tumor and treatment characteristics in Chiang Mai University Hospital. *Oral Oncol* 42(1), 83-88.
- [12] Eshghyar NO, Motahari P, Khorshidian A (2005) Evaluation of clinical and histological parameters in patients with oral squamous cell carcinoma referred to Tehran Faculty of Dentistry (1966 – 2002). *J Islamic Dent Assoc Iran* 17(2), 62-67.
- [13] Huang CH, Chu ST, Ger LP, Hou YY, Sun CP (2007) Clinicopathologic evaluation of prognostic factors for squamous cell carcinoma of the buccal mucosa. *J Chin Med Assoc* 70(4), 164-170.
- [14] Iamaroon A, Pattanaporn K, Pongsiriwet S et al. (2004) Analysis of 587 cases of oral squamous cell carcinoma in northern Thailand with a focus on young people. *Int J Oral Maxillofac Surg* 33(1), 84-88.
- [15] Ma X, Yu H (2006) Global burden of cancer. *Yale J Biol Med* 79(3-4), 85-94.
- [16] Maleki D, Ghojzadeh M, Mahmoudi SS et al. (2015) Epidemiology of Oral Cancer in Iran: a Systematic Review. *Asian Pac J Cancer Prev* 16(13), 5427-5432.
- [17] Mousavi SM, Gouya MM, Ramazani R, Davanlou M, Hajsadeghi N, Seddighi Z (2009) Cancer incidence and mortality in Iran. *Ann Oncol* 20(3), 556-563.
- [18] Murugan AK, Hong NT, Cuc TT et al. (2009) Detection of two novel mutations and relatively high incidence of H-RAS mutations in Vietnamese oral cancer. *Oral Oncol* 45(10), e161-166.
- [19] Neville B, Damm D, Allen C, Bouguot JE (2009) *Oral and maxillofacial pathology* 2nd ed. 2009; chap 10: . 2 nd edn; Philadelphia: W.B saunders
- [20] Nutter FW (1999) Understanding the Interrelationships Between Botanical, Human, and Veterinary Epidemiology: The Ys and Rs of It All. *Ecosystem Health* 5(3), 131-140.
- [21] Pakfetrat A, Falaki F, Esmaily HO, Shabestari S (2010) Oral cancer knowledge among patients referred to Mashhad Dental School, Iran. *Arch Iran Med* 13(6), 543-548.

- [22] Perez RS, De Freitas SM, Dediritis RA, Rapoport A, Denardin OVP, Sobrinho JOA (2007) Epidemiologic study of squamous cell carcinoma of the mouth and pharynx. *Int Arch otorhinolaryngol* 11(3), 271-277.
- [23] Regezi JA, Sciubba JJ, Jordan RCK (2009) *Oral pathology: clinical pathologic correlations*, 5 th edn; Philadelphia: W.B saunders.
- [24] Sankaranarayanan R, Ramadas K, Amarasinghe H, Subramanian S, Johnson N (2015) Oral Cancer: Prevention, Early Detection, and Treatment. In: Gelband H, Jha P, Sankaranarayanan R, Horton S, eds. *Cancer: Disease Control Priorities, Third Edition (Volume 3)*. Washington DC: 2015 International Bank for Reconstruction and Development /The World Bank.
- [25] Sargeran K, Murtoma H, Safavi SM, Vehkalahti M, Teronen O (2006) Malignant oral tumors in Iran: Ten-year analysis on patient and tumor characteristics of 1042 patients in Tehran. *J Craniofac Surg* 17(6), 1230-1233.
- [26] Sargeran K, Murtomaa H, Safavi SM, Teronen O (2009) Delayed diagnosis of oral cancer in Iran: challenge for prevention. *Oral Health Prev Dent* 7(1), 69-76.
- [27] Warnakulasuriya S (2010) Living with oral cancer: epidemiology with particular reference to prevalence and life-style changes that influence survival. *Oral Oncol* 46(6), 407-410.
- [28] Yahalom R, Dobriyan A, Vered M, Talmi YP, Teicher S, Bedrin L (2008) A prospective study of surgical margin status in oral squamous cell carcinoma: a preliminary report. *J Surg Oncol* 98(8), 572-578.
- [29] Zaidi M, Mallick A (2014) A study on assessment of mast cells in oral squamous cell carcinoma. *Ann Med Health Sci Res* 4(3), 457-460.

Please cite this paper as:

Jafari A, Karimi A, Salamat M; Epidemiological features of oral squamous cell carcinoma. *J Craniomaxillofac Res* 2018; 5(3): 119-124