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Clinical and histopathological analysis of oral Squamous cell carcinoma of young patients in Mashhad, Iran: A retrospective study and review of literatures

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Abstract

Objectives: Oral Squamous cell carcinoma (OSCC) is primarily a disease that mainly occurs in males in their sixth and seventh decades of life and is rare in young adults.

Study Design: In this retrospective study, records of patients under the age of 40, with the diagnosis of OSCC in the Oral Medicine Department of Mashhad Dental Faculty during the past 13 years were analyzed. Their socio-economic data, demographic, clinical and histopathological characteristics, risk factors, familial history were assessed and applicable studies and case reports in the literatures were reviewed. PCR (Polymerase chain reaction) analysis was also done for detection of human papilloma virus (HPV).

Results: From 158 cases of OSCC diagnosed in our centre, 21 patients were younger than 40 years. Most of them were young men (12 cases). There was no significant risk factor in this group. The most common site of involvement was the tongue. The most common clinical presentation was exophytic lesion with ulcer. No HPV DNA was detected in these patients.

Conclusion: Characteristics of OSCC in young patients are different from older age group. Major risk factors (smoking and alcohol consumption and HPV) were not etiologic factors for OSCC in young patients in our province.

Key words: *Oral squamous cell carcinoma, oral cancer, young patients, risk factors, Iran, retrospective study.*

Introduction

Oral squamous cell carcinoma (OSCC) of head and neck is a major health problem world wide that usually appears in patients older than 50 years of age. Several studies showed that between 1 to 6 percent of oral cancers have been presented in patients under the age of 40 (1-3).

Although there has been a declining trend in the overall incidence of OSCC, the incidence in young adults seems to be increasing worldwide (2,3, 4-6).

It seems that biological behavior and etiology of OSCC in young patients are unlike older age groups and some studies suggest that oral cancer in young patients is more aggressive (6). Recent studies revealed that there is no difference between clinical course and survival rate (2, 7-9).

Iran is a large country located in the Middle East and Khorasan is one of the largest provinces in Iran covering 7.8% of the total area of this country. This province has a population of about 7 millions and is located in the northeast of Iran.

The purpose of conducting this study was to obtain the socioeconomic data and to analyze the clinical and pathological findings of OSCC in young patients in our centre.

Material and Methods

This is a retrospective study based on the records of the patients in the archive of Oral Medicine and Oral Pathology Department of Mashhad dental Faculty. Twenty-one cases of OSCC have been diagnosed in young patients in our center from 1996 to 2009. Demographic data and clinical features were recorded upon archive of Oral Medicine Department and histopathological characteristics were obtained from Oral Pathology Department of our centre.

These Departments receive nearly most of the oral pathology specimens from private and public hospitals and clinics throughout the entire province.

We divided the sites into the tongue, floor of mouth, buccal mucosa, alveolus and the gingiva. The World Health Organization classification was used to assess the histopathological type, and all specimens were tested for presence of HPV by using PCR analysis. Malignant neoplasm of major salivary glands was not included in this study. Only cases of primary oral cancers were considered in this report; no recurrent, in situ or benign lesions were included.

SPSS version 12.0 statistical software was used for data entry and analysis. Descriptive statistics such as mean and standard deviations (SD) was used for age. Frequency and percentages for gender, risk factors, sites, and biopsy were calculated.

Results

Sociodemographic data:

The total number of new malignant oral cancers for the period from 1996 to 2009 was 158. Twenty-one cases of OSCC have been diagnosed in young patients. Fifty-seven percent of our patients were male (Male to female ratio was 1.3/1) with an age range of 20-40 years (Mean age of 30.19; S.D. =4.24 years). The mean age for males and females was comparable. (Males: mean age of 30.25; SD =4.09 years and females: mean age of 30.11; SD =4.70 years)

Sites:

The most common site of involvement was the tongue (66%). Most of the tongue SCCs involved the lateral border.

Risk factors:

No major risk factor were found in the patients and they were all healthy, only in one case there was a history of gastric bypass because of overweight, performed one year before appearance of the lesion. None of the patients had familial history of cancer.

Clinical feature:

The most common clinical presentation was exophytic lesion with ulcer, but some rare features like odontogenic SCC (in one patient) or exophytic SCC with smooth and intact surface (in two patients) were also observed. Duration of the lesions in our patients ranged from 2 weeks to 7 months.

The main clinical findings are summarized in (Table 1).

Histopathology:

Histopathological examination revealed that most of the tumors were well differentiated. No poorly differentiated SCC was detected in our patients. HPV was not found in our samples.

Discussion

Oral cancer is one of the ten most common cancers in our province (10). Although the incidence of OSCC in patients less than 40 is low, we encountered 21 cases out of a total number of 158 cases (13%) in Mashhad Dental Faculty during a 13 years period (from 1996 to 2009).

Similar studies in Iran showed approximately the same results; ranging 11%-15% of patients in Shiraz and Tehran and 21.6 % in Kerman (10-12).

Oral cancer is predominantly a disease of men in all age groups (2,3) as we noticed in our study, but some studies revealed a female predilection in young patients with OSCC (4,6).

The most common site of involvement was the tongue. It was compatible with other studies in Iran (10-12) and the study of Sasaki et al. (UK) (2) and Siriwardena (Sri Lanka) et al. (4) and in contrast to some other Asian countries such as Thailand, Taiwan and India, which buccal mucosa was the most common site of involve-

Table 1. Characteristics of 21 patients with OSCC (M: Male, F: Female).

No.	Age	Sex	Location	Clinical feature	Grade	Duration
1	35	F	Tongue	Exophytic lesion&ulcer	2	3 months
2	31	M	Posterior mandibular ridge	Exophytic lesion	2	2 weeks
3	38	F	Tongue	Ulcer	1	4 months
4	31	F	Maxilla	Exophytic lesion	1	1 month
5	35	M	Tongue	Exophytic lesion	1	2 months
6	24	F	Tongue	Exophytic lesion	2	3 weeks
7	29	M	Posterior mandibular vestibule	Exophytic lesion	1	1 month
8	20	M	Posterior mandibular ridge	Exophytic lesion	1	25 days
9	32	M	Tongue	Exophytic lesion	1	1.5 months
10	24	F	Tongue	Ulcer	2	7 months
11	28	F	Tongue	Ulcer	1	3 months
12*	29	F	Tongue	White Plaque	1	1 month
13	29	M	Tongue	Exophytic lesion	1	2 weeks
14	35	M	Posterior mandibular ridge	Exophytic lesion	1	3 months
15	29	F	Tongue	Exophytic lesion&ulcer	3	2 months
16	31	M	Tongue	Exophytic lesion&ulcer	1	1 month
17	33	F	Tongue	Exophytic lesion&ulcer	1	2 months
18	27	M	Tongue	Ulcer	2	2 weeks
19	31	M	Buccal mucosa	Exophytic lesion&ulcer	1	7 months
20	29	M	Tongue	Exophytic lesion&ulcer	1	2 months
21	34	M	Lip	Ulcer	1	1 month

* Patient with history of gastric bypass.

Table 2. Summary of studies and cases reporting OSCC in patients between 20 and 45 years of age in the English literature cited.

	No. of patients	Years	Sex (M/F)	Age	Site*	Stage **	G ***	Country
Siriwardena et al (4)	56	1996-2001	45/11	Under 40	T			Sri Lanka
Manuel et al (14)	76	1990-94	48/28	20-45	T	III/IV	W	India
Lype et al (9)	115	1982-96	74/41	Less 35	T	III/IV	W	India
Ho et al (8)	28	1999-2005	27/1	27-45	B	I/II		Taiwan
Llewellyn et al(3)	116(6%)	1990-97	65/51	20-45	T	I/II		UK
Pitman et al (7)	122	1982-94	70/52	16-39	T	I/II		US
Kuriakose et al (6)	37(1.8)	1988-90	17/20	21-34	T	III	W	India
Sasaki et al (2)	35(6%)	1990-99	20/15	20-40	T	I	W	UK
Iamaroon et al(5)	75(12.8%)	1991-2000	M>F	<45	T	IV	M to W	Thailand
Hirota et al (1)	13(10.7%)	1994-2004	8/5	20-40	T			Brazil
Chitapanarux et al(19)	18	1999-2003	10/8	20-40	T	III,IV	W	Thailand
Braakhuis et al (18)	6%	1989-2006	442/138	Less 40	T	I		Netherland
Chidzonga et al (20)	46(12.8%)	1982-91	26/20	20-40	F		W	Zimbabwe
Falaki et al	21(13%)	1996-2009	12/9	21-38	T		W	Iran

T: Tongue * The most common site
 B: Buccal mucosa ** The most common stage
 F: Floor of the mouth *** Grade (M: Moderate, W: Well differentiated)

ment. This difference seems to be related to different habits (5,12).

None of our cases had a special risk factor or habit. It was consistent with some previous studies, whereby no major risk factor (smoking and/or drinking) were present (3,8).

Low alcohol consumption due to Islamic rules, and risky behaviors among people of this province such as chewing tobacco and eating spicy foods might explain showing no risk factor in our cases.

The study of Llewellyn et al in south east of England showed that 25% of young patients had no usual risk factor (3).

Familial history has been suggested as an important etiological factor in young people. Some researchers believe that familial history is more significant than tobacco and alcohol consumption in developing of OSCC in the young (1,8).

Viral infections (13), deficiency of fresh fruits and vegetables in diet (14) nutritional deficiencies (particularly of iron and folic acid) (15), have been suggested as the risk factors of OSCC in young people in the literature.

In this research there were no evidence of family history or HPV infection in our cases, but an interesting

finding was a history of gastric bypass because of over weight in patient No.12, done one year before OSCC presentation. To the best of our knowledge it is the first report of such finding.

Patients undergoing mal-absorptive weight-loss procedures such as gastric bypass are at increased risk of calcium, vitamin D, copper and iron deficiency which is predisposing factors for anemia, neutropenia, and leukopenia (15). These conditions have been suggested as predisposing factors for OSCC (15).

The most common clinical presentation of OSCC in our patients was exophytic lesion, but in the study of kuria-kose et al. and Manuel et al. ulceroproliferative lesions were more common (6,14). This may be related to different habits of different cultures.

We noticed two extremely rare presentations of OSCC, raised lesion with smooth and intact surface and one case of primary intraosseous odontogenic carcinoma (PIOC) in our cases (three out of 20; 15%of cases).

One lesion was located in the tongue of a 31-year old man and the other in the buccal mucosa of a 29-year old woman. We didn't find any similar reports in the literature; only one case of OSCC with smooth surface was reported in the buccal mucosa of a 75- year old woman (16).

PIOC in our patient was derived from a keratocystic odontogenic tumor and perforated the cortex of bone which is extremely rare for this lesion and was reported in the literature before (17).

There is a major controversy about the prognosis and clinical course of OSCC between young and old patients in the literature. Sasaki et al. believed that there are minimal differences between the younger and the older patients in clinical and histological characteristics (2). But other studies have reported fewer recurrences and distant metastasis and better survival rate in the young patient population (8).

Histopathological examination revealed probable better prognosis (SCC grade 1) in most of our patients. It is in agreement with the literature (6,14) however, some authors believe that oral cancer in young adults has more aggressive behavior and poorer prognosis and some other studies showed similar survival among younger and older patients (6,7).

Late diagnosis and treatment of OSCC will result in severe debilitation due to mutilating surgery, often associated with extensive destruction of oral and facial structures, so early diagnosis and proper management is needed to achieve a better quality of life and higher survival rate. Although OSCC is rare in young people and may be misdiagnosed or neglected by both medical and dental practitioners and patients themselves, fortunately, most of our cases were diagnosed in stage I and lead to a better prognosis. Report of such cases and their clinical features may help scientists to find other possible predisposing factors, to better understand the biologic behavior of tumor, which will finally lead to an increase in the awareness and experience of the clinicians and patients, as well.

Characteristics of OSCC in younger age groups according to the literatures are summarized in (Table 2).

More future studies in large populations should be done to achieve a reliable and definite conclusion about the nature of OSCC in young patients, its etiology and risk factors and to determine whether OSCC in these patients have a worse prognosis and warrant more aggressive treatment.

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