



International Journal of Current Research and Academic Review

ISSN: 2347-3215 Volume 2 Number 12 (December-2014) pp. 122-129

www.ijcrar.com



Correlation of age with some of clinical and pathological characteristics of oral squamous cell carcinoma

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KEYWORDS

MRF excitation, SSNTDS, Magneto-conductivity, Hall coefficient.

A B S T R A C T

Cancer is considered as one of the important reasons of mortality in human societies. Oral cavity cancer is known as the 11th most prevalent malignancy in the world, the most prevalent of which is oral squamous cell carcinoma. OSCC mostly occurs in 60th and 70th among men while recently several younger cases have been reported. This research aims at studying the correlation of age with some clinical and pathological characteristics of OSCC. This research is a descriptive-sectional analytical survey. All files available in the pathology ward at the faculty of dentistry and Tabriz Imam Reza Treatment center from 21 Mar. 2009 to 20 Mar. 2014 were studied as full counting and the ones with OSCC were separated. The studied variables include age, gender, and occupation, place of the tumor, fumigant and non-fumigant smoking, place of residing and pathologic grade of tumor. Then the patients were divided into two age groups of 45 years old and younger and older than 45 years old. They were compared regarding the registered variables with each other and the results were statistically studied. The data from the study were studied and statistically analyzed with descriptive statistical methods (frequency, percent, mean, standard deviation) and chi-square or *t*-test via SPSS.16 statistical software. From among 52 patients with OSCC, 6 ones (11.5%) were in 45 years old and younger group and 46 ones (88.5%) were in older than 45 years old group. There was no significant difference between two genders in two age groups. Tongue was the most occurring place of tumor. In the age group older than 45 years old, most of the patients were farmer or housewife and in the age group younger than 45 years old, most of them were housewife. Also, most of the patients were in the age group older than 45 years old and all the patients in the age group younger than 45 years old were living in the city. There was no significant difference between microscopy grade and smoking in both age groups. OSCC is most prevalent among old patients and has no relationship with special gender while there is significant relationship between age of patients, occupation and their residing place.

Introduction

Cancer is one of the important reasons of mortality in human societies. In this regard, oral cavity cancer (oral malignant tumor) is considered as the 11th common malignancy in the world which constitutes about 90% of oral cavity malignancies (Nevile *et al.*, 2009; Sadri *et al.*, 2011; Kumar *et al.*, 2008; Andishe-Tadbir *et al.*, 2008).

OSCC is mostly (about 90–95%) occurred among men in 60th and 70th ages and is seen rarely in young age groups (Nevile *et al.*, 2009; Falaki *et al.*, 2011; Effiom *et al.*, 2008) While recently several cases of OSCC has been reported in ages lower than 45 years old (Iamaroon *et al.*, 2004; Ho *et al.*, 2008). This study was done regarding the researches in north Thailand (Iamaroon *et al.*, 2004), India (Kuriakose *et al.*, 1992) and England (Johnson and Warnakulasuriya, 1993; Llewellyn *et al.*, 2001) which recognized alcohol abuse and smoking as the main reasons of it while there is differences in the findings which can be resulted from climatic, tribal, cultural and custom differences (Sadri *et al.*, 2011). For example, Falaki *et al.* (2011) in their study at the faculty of dentistry in Mashhad mentioned that alcohol abuse (due to Islamic regulations governing in our country) and also less prevalence of consuming chewable tobacco are not considered as important risks in Iran while in India, the custom for consuming chewable tobacco is recognized as the main factors of OSCC especially among the youth (Falaki *et al.*, 2011; Iype *et al.*, 2001). The other involving etiological factors in this disease which is stated at different studies are viral factors (viruses such as HSV, HPV) (Sucly, 2005; Das *et al.*, 1993), diet (Llewellyn *et al.*, 2001; Steinmetz and Potter, 1996), work place (Coble *et al.*, 2003), using immunosuppressive drugs (Fortina *et al.*, 2004), Fancono Anemia

(Kaplan *et al.*, 1985) and genetic record (Foulkes *et al.*, 1995; Foulkes *et al.*, 1996).

Meanwhile less consumption of chewable tobacco among women is one of the reasons for less prevalence of this carcinoma among females. Several recent studies showed that the occurrence of OSCC has been increased among women in young age group, the reason of which can be increasing their desire for smoking, consumption of alcohol and chewable tobacco especially in several societies among women (Siriwardena *et al.*, 2006).

Posterior lateral and ventral surfaces of tongue, floor of mouth, soft palate, gum, buccal and labial mucosa, hard palate are the prevalent areas involving in OSCC (Nevile *et al.*, 2009; Hirota *et al.*, 2008). A study by Andishe-Tadbir *et al.* (2008) in Shiraz concluded that the most prevalent place of involving in OSCC is tongue and buccalmucosa while the study done by Sadri *et al.* knew it connected with age and stated that in the age group older than 45 years old, tongue, lower jaw mucosa and floor of mouth are the most involved areas and in the age group if 5 years old and younger tongue is reported as the most prevalent place. In this study which was done on patients referring to Institute of Oncology at Imam Khomeini hospital, Taleghani hospital and Bu-alo Tehran between 2007 to 2009 (170 patient), the following results were obtained: type A blood group was the most blood group among the infected ones in both age groups. In young group, men infected more than 4 times of women and most of them in each age group residing in north of Iran and were at advanced phase of disease (Sadri *et al.*, 2011).

Meanwhile the study by Hirota *et al.* (2008) done in Brazil, the family record was recognized as the only important risk factors

related to OSCC. The study by Tremblay et al showed that reducing the occurrence of GSPT1 protein which plays a key role in detoxification of body in young age group infected with OSCC which increases the sensitivity of this age group to carcinogens (Tremblay *et al.*, 2006). The results of above studies showed that biologic behavior of OSCC among young patients maybe different from elder patients and what is usually mentioned in reference book. Since there is few information about the relationship between frequency of occurring OSCC in young population and the factors related to it, this research aims at determining the relationship between age with several individual-social particulars and pathologic characteristics of OSCC in Tabriz.

Methods and Materials

This research is a descriptive-sectional analytical survey. All files available in the pathology ward at the faculty of dentistry and Tabriz Imam Reza Treatment center from 21 Mar. 2009 to 20 Mar. 2014 were studied as full counting and the ones with OSCC were separated. In this study, all files were filed with clinicians fully and the pathology result was decisive diagnosis of a SCC in mouth and also all particulars of patient including age, gender, and occupation, place of the tumor, fumigant and non-fumigant smoking, place of residing and pathologic grade of tumor were considered in it. Then related sample for each file was studied by dental pathologist and it entered the study in case of re-verification. The information unavailable in the file was asked from the patient or his relatives.

Finally the required information were extracted from files and stipulated in a form made for it. This form included age, gender, occupation, place of the tumor, fumigant and

non-fumigant smoking, place of residing and pathologic grade of tumor. Then the forms were divided into two age groups of 45 years old and younger (young) and older than 45 years old (elderly). The mentioned variable were compared and studied.

The data from the study were studied and statistically analyzed with descriptive statistical methods (frequency, percent, mean, standard deviation) and chi-square or t-test via SPSS.16 statistical software. $P < 0.05$ was statistically considered as significant in this study.

Result and Discussion

In five-year study, the files available in pathology ward at faculty of dentistry in Tabriz Imam Reza hospital, totally 52 patients were infected to OSCC including 34 men (65.4%) and 18 women (34.65). 6 ones were in age group of 45 years old and younger (11.5%) and 46 ones were in age group of older than 45 years old (88.5%). 23 ones were smoking (44.2%) and 29 ones were not smoking (55.8%). 32 ones were residing in city (63.5%) and 19 ones were residing in village (36.5%).

The findings were studied by Chi-square. In both age groups of older and younger than 45 years old, there was no statistically significant relationship between patients' gender and their age (P value=0.079) and in young age group, the number of females were more than males. Number and percent of patients based on gender and age was shown in Table 1.

About the occupation of patients, regarding Table 2, it can be concluded that in the age group of older than 45 years old, most of the patients were farmer or housewife and in the age group younger than 45 year sold, most of the patients were housewife.

Table.1 Number and percent of patients based on gender and age

Gender	Number of patient (percent)	
	45 years old and younger	Older than 45 years old
Female	4(7.7)	14(26.9)
Male	2(3.8)	32 (61.5)

Table.2 Number and percent of patients based on their occupation and age

Occupation	Number of patient (percent)	
	45 years old and younger	45 years old and younger
Farmer	0	15(28.8)
Self-employed	2(3.8)	6(11.5)
Housewife	3(5.8)	14(26.9)
Carpet weaver	1(1.9)	0
Retired	0	6(11.5)
Worker	0	2(3.8)
Unemployed	0	3(5.8)

Table.3 Number and percent of patients based on smoking or non-smoking and their age

Smoking	Number of patient (percent)	
	45 years old and younger	45 years old and younger
No	4(7.7)	25(48.1)
Yes	2(3.8)	21(40.4)

Table.4 Number and percent of patients based on their residing place and age

Residing place	Number of patient (percent)	
	45 years old and younger	45 years old and younger
Village	0	19(36.5)
City	6(11.5)	27(51.9)

Table.5 Number and percent of patients based on place of tumor and their age

Place of tumor	Number of patient (percent)	
	45 years old and younger	45 years old and younger
Tongue	5(9.6)	20(38.5)
Upper lip	0	3(5.8)
Lower lip	0	13(25)
Buccalmucosa and floor of mouth	0	2(3.8)
Buccalmucosa	1(1.9)	1(1.9)
Floor of mouth	0	1(1.9)
Tongue and floor of mouth	0	3(5.8)
Palate	0	1(1.9)
Mandibular ridge	0	1(1.9)
Lower jaw alveolar ridge	0	1(1.9)

Table.6 Number and percent of patients based on microscope grade and their age

Microscope grade	Number of patient (percent)	
	45 years old and younger	45 years old and younger
Well-differentiated	5(9.6)	45(86.5)
Well to moderately differentiated	1(1.9)	1(1.9)

For studying the statistically significant relationship between patients' age with their occupation, chi-square test was used, the significant level of test was 0.05. The results of this test showed that there was statistically significant relationship between patients' age with their occupation (P-value=0.041).

Number and percent of patients based on smoking and non-smoking and their age in brought in Table 3 in which the results of chi-square does not show significant relationship between age and smoking P-value=0.568).

Regarding the residing place, most of the patients in the age group older than 45 years old and all the patients in the age group younger than 45 years old were residing in the city which shows that there is significant relationship between age of patients and their residing place (P-value=0.048). Number and percent of patients based on their residing place and age was shown in Table 4. Number and percent of patients based on the place of tumor and their age is brought in Table 5.

Regarding the results in Table 5, it can be concluded that in both age groups, tongue is most involved and the results of chi-square showed that there was no statistically significant relationship between age of patients and place of occurring tumors (P-value=0.543). Number and percent of patients based on microscope grade and their age was shown in Table 6.

Regarding the microscope grade of tumor wall well differentiated in most of patients in both age groups and the results of tests does not show significant relationship between patients' age and microscope grade of tumor (P-value=0.083).

Oral cavity cancer is considered as one of the most prevalent malignancy in the world (11th common malignancy in the world) the most well-known of it is oral squamous cell carcinoma which constitutes about 90% of oral cavity malignancies (Nevile *et al.*, 2009; Sadri *et al.*, 2011; Kumar *et al.*, 2008; Andishe-Tadbir *et al.*, 2008).

OSCC is mostly (about 90–95%) occurred among men in 60th and 70th ages and is seen rarely in young age groups (Nevile *et al.*, 2009; Falaki *et al.*, 2011; Effiom *et al.*, 2008). The results of this study showed that in two studying centers at the definite period, 88.5% of patients were older than 45 years old and 11.5% if patients were younger than 45 years old which shows that the more frequency is in elderly group. Regarding the age group of 45 years old and younger in studies by Lamaroon in Thailand, Sirivardena in Sri Lanka and Sadri in Iran, the frequencies of 12.8%, 5% and 18.8% were reported (Sirivardena *et al.*, 2006; Iamaroon *et al.*, 2004; Sadri *et al.*, 2011).

The differences in findings can be resulted from climatic, tribal, cultural and custom differences, such that in India the custom for consuming non-fumgative tobacco is

recognized as the factors of occurring OSCC among the youth where there found no relationship between risky factors and premature occurrence of OSCC in many studies (Iype *et al.*, 2001).

In current study age two age groups of younger than 45 years old and older than 45 years old, gender was not influencing variable and there was no statistically significant relationship between age and gender of patients ($P=0.079$).

Although the study by Sadri in Iran on the age group of younger than 45 years old, the males constituted the most part of infected ones ($P=0.0012$) (Sadri *et al.*, 2011) this is like the results obtained from studies in Sri Lanka and south of Iran (Andishe-Tadbir *et al.*, 2008; Siriwardena *et al.*, 2006) while the research by Kuryakus *et al.*, (1992) in India and Johnson and Warnakulasuriya (1993) in England stated the most occurrence among the youth and women such difference may be due to cultural, climatic and carcinogen custom differences.

The results of this study showed that at both age groups, the most occurring place of tumor was tongue which is like the results available in reference books and other studies though the studies in Thailand, Taiwan and India, buccalmucosa was the most involving area. Meanwhile, Sadri *et al* in their research reported tongue, lower jaw mucosa, floor of mouth as the most involving areas age the age group older than 45 years old and tongue at the age group younger than 45 years old and such difference can be resulted from different habits (Sadri *et al.*, 2011; Andishe-Tadbir *et al.*, 2008; Falaki *et al.*, 2011; Iamaroon *et al.*, 2004; Kuriakose *et al.*, 1992). The results of chi-square test in this studies did not show statistically significant relationship between age and the place of occurring tumor ($P=0.543$).

The diverse studies know the role of using chewable tobacco as effective in occurring OSCC among the youth. In the societies which commonly use it, tongue is the place of occurring among the youth while the other studies show that in the societies where using chewable tobacco is not common, tongue is the most prevalent place of occurring this carcinoma among the youth and this is discussing that the reasons other than etiological factors can influence on occurring oral cancer (Kumar *et al.*, 2008; Iamaroon *et al.*, 2004; Kuriakose *et al.*, 2002; Iype *et al.*, 2001). As the study by Tremblay *et al* show the occurrence of GSPT1 protein at the young group with OSCC is decreased significantly which increases the sensitivity of this age group to carcinogens (Tremblay *et al.*, 2006).

The study by Toner *et al.* (2009) discussed the increasing of OSCC at young group and its occurrence among non-smoking ones and focused on the role of HPV virus in occurring OSCC among the youth.

Meanwhile the study by Hirota *et al.* (2008) done in Brazil recognized the family record as the only important risky factor related to OSCC of the youth.

In this research, most of patients at both age groups were well differentiated regarding microscope grade where there was no statistically significant relationship between patients' age with microscope age of tumor ($P=0.083$).

The current study showed that most of patients at the age group older than 45 years old were farmer and housewife and in the age group of younger than 45 years old, most of them ere housewife due to high frequency of females. Meanwhile, most of patients older than 45 years old and all the patients younger than 45 years old were

residing in the city. Regarding the results, it can be declared that most of farmer patients immigrated to the cities after some time of living in the village and probably the sunlight has no high effect on occurrence of the oral pathogens and this can be related to poisons, agricultural pests and chemical fertilizers which are used widely. The effectiveness of these factors requires more studies.

In conclusion, according to results of this study, oral squamous cell carcinoma is more prevalent among the elderly and is not related to a special gender. Tongue is the most prevalent place of occurring tumor among the infected ones. Most of the infected ones at both age groups were residing in the city and tumor was well differentiated. The elderly patients were mostly farmer and housewife and most of young patients were housewife.

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