

Clinicopathological analysis of oral squamous cell carcinoma in Iraq During period (2001-2013)

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ABSTRACT

Background: Oral cancer is a highly lethal and disfiguring disease. Squamous cell carcinoma of the oral cavity constitutes about 90% of all oral malignancies. The aims of the study was to achieve an epidemiological description of the oral squamous cell carcinoma in Iraq in general and in Iraqi governorates except Kurdistan region retrospectively during period 2001-2013

Materials and Methods: Data were collected from department of oral and maxillofacial pathology, college of dentistry, university of Baghdad, Nuclear medicine and radiotherapy hospital, Iraqi cancer registry center, Main hospitals in Baghdad and Iraqi governorates, Private labs. for histopathological examinations. The descriptive and inferential statistical methods were used (frequency distributions, percentages, incidence rate, standardized ratio and relative risk)

Results: In Iraq from 2001-2013, there were 1664 cases with overall M:F ratio (1.4 : 1). The most affected age group was (50-69 yrs), tongue was the most common affected site, grade II was the most common, and the highest number of OSCC was reported in Baghdad governorate. A negative time trend was observed in the overall (crude) incidence rate of all registered OSCC in Iraq.

Conclusion: The incidence rate (crude rate) of OSCC decreased in Iraq from 2001 to 2013, and the standardized ratio showed that there is a decrease in tumor risk with advancing time.

Key words: Oral squamous cell carcinoma, incidence rate, Iraq. (J Bagh Coll Dentistry 2015; 27(2):58-65).

INTRODUCTION

Squamous cell carcinoma (SCC) of the oral cavity constitutes about 90% of all oral malignancies ⁽¹⁾. The annual incidence and mortality rates vary between different races, genders, and age groups. World wide OC show high incidence in males more than females. ^(2,3). An estimated 263,000 new OC cases were reported annually over the world which accounts 2.1% of all new cancers, for this reason, OC considered as a major health problem worldwide. ⁽⁴⁾. Geographical and regional varieties with respect to OC incidence show that the socio-cultural aspect of a population's life style plays an important role in this disease ⁽⁵⁾. In the United States, approximately 22,000 new cases of OSCC are diagnosed annually ⁽⁶⁾. In some industrialized countries, OC witnessed an increase. From 1990 to 1999, in the UK there was a statistical significance increase in OCs especially in lip cancer ⁽²⁾. On the other hand, other countries reported a decrease in OC like the USA, Italy, Hong Kong, France, Germany and Australia ⁽⁷⁾.

The highest rates of OC have been reported in countries such as India, Sri-Lanka, South Vietnam, the Philippines, Hong Kong and Taiwan ⁽⁸⁾. OC showed a high relative frequency among Yemenis ⁽⁹⁾, OC is believed to be relatively rare amongst Africans and 1.2% of all malignant lesions are OSCC ⁽¹⁰⁾.

Several studies were carried out on the occurrence of OC in Iraq, mainly retrospective in nature. In Iraq, OC account for about 4.5% of all cancer cases according to Iraqi cancer registry and SCC represents about 91.5% of all OC and 37% of the head and neck cancer ⁽¹¹⁾. During the period (1991-2000) in Iraq, the incidence of OCs was unchanged ⁽¹²⁾. The commonest malignant lesions were OSCC (56.1%) ⁽¹³⁾. Also in Iraqi study during the period 2003-2006, the highest prevalence of OSCC was observed in tongue 72 (55.81%) while the lowest prevalence was found in the floor of the mouth 5 (3.87%). The age groups 51-60 years were highly affected by SCC 45(34.88%), Baghdad governorate had the highest prevalence of OSCC 53(41.08%) ⁽¹⁴⁾. From 2000 to 2008, there were 1787 new OCs registered in Iraq, 1035 in men and 752 in women. OC accounted for approximately 2% of all cancers. SCC was the most common oral malignancy accounting 90.92% for histopathological analysis from C00 to C06 ⁽¹⁵⁾.

This research was attempted due to lack of dependable and documented data reporting OSCC during the past years from 2001 to 2013 especially in Iraqi governorates level.

MATERIALS AND METHODS

Cases of OSCC in Iraq and in Iraqi governorates except Kurdistan region were collected during the period (2001-2013) from the following centers after attaining the legal acceptances:- Department of oral and

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maxillofacial pathology, college of dentistry, university of Baghdad , Nuclear medicine and radiotherapy hospital , Iraqi cancer registry center at the ministry of health , Main hospitals in Baghdad and Iraqi governorates , Private labs. for histopathological examinations.

The ICD-O-10 coding system was used for reporting topographical information for lip (C00), tongue (C01&C02), gingival (C03), floor of the mouth (C04), palate (C05), other and unspecified parts of the mouth (C06). Histopathological grading of OSCC was: grade I (well differentiated), grade II (moderately-well differentiated), grade III (moderately-poor differentiated) and grade IV (poorly differentiated). A special patient case sheet was used for collecting the data. The descriptive and inferential statistical methods were used for the collected data (frequency distributions, percentages, incidence rate, standardized ratio and relative risk).

RESULTS

A total of 1664 cases (976 male and 688 female, M:F ratio (1.4 : 1) with a final histopathological diagnosis as OSCC were recorded in Iraq (except Kurdistan region) during the period 2001-2013. The most affected age group was (50-69 yrs) (48.9%) in both men and women as in tables (1)&(2). According to the ICD-10 the most common affected site was tongue (42.7%) and the highest percentage of oral subsite was reported in tongue –NOS (Not Otherwise Specified) (70%) followed by the lip

(23%) as in table (3). The NOS was the dominant and most commonly reported oral subsite in all oral sites from C00 to C06 according to ICD-O-10. SCC of lip, tongue, floor of the mouth, palate and others and unspecified parts of the mouth were most common in men than in women as in table (4).

The most common grade was grade II which represented by (36.9%) as in table (5). The highest value of frequency distribution and percentage of OSCC cases was reported in Baghdad governorate (25.7%) and the lowest value was reported in Al-Muthana (1.2%) as in table (6).

During (2001-2013) a negative time trend was observed in the overall (crude) incidence rate of all registered OSCC in Iraq in both males and females and by measuring the relative risk of male compared to female, the risk of OSCC was always higher in male compared to female in all years studied as in table (7).

The highest incidence rate and relative risk in age groups was found in (70+ yrs) in all years as in table (8)

The highest incidence rate (1.23 per 100,000 per year) was found in Al-Basrah in 2006 followed by Wasit (1.12 per 100,000 per year) in 2009. In Baghdad, the highest IR (0.72 per 100,000 per year) in 2006 whereas in Ninawa, the highest IR (0.67 per 100,000 per year) in 2004 as in Fig. (1,2,3,4). There was a decrease in the standardized ratio for each year that measure the risk of OSCC with advancing time from 2001 to 2013 as in Fig. (5)

Table 1: Gender and age distribution for OSCC cases

Gender	N	%
Male	976	58.7
Female	688	41.3
Total	1664	100
Male to Female ratio 1.4 : 1		
Age Group	N	%
<20 yrs	26	1.6
20-49 yrs	350	21
50-69 yrs	813	48.9
70+ yrs	475	28.5
Total	1664	100

Table 2: Gender distribution of OSCC cases in relation to age. groups

Age Group (years)	Gender				M:F ratio
	Male		Female		
	N	%	N	%	
<20	21	2.2	5	0.7	4.2 : 1
20-49	202	20.7	148	21.5	1.4 : 1
50-69	476	48.8	337	49	1.4 : 1
70+	277	28.4	198	28.8	1.4 : 1
Total	976	100	688	100	

Table 3: Site distribution of OSCC cases according to ICD-10

Site	ICD Code	N	%
Lip	C00	382	23
Tongue	C01 & C02	711	42.7
Gingiva	C03	83	5
Floor of the mouth	C04	98	5.9
Palate	C05	72	4.3
Other and unspecified parts of the mouth	C06	318	19.1
Total		1664	100

Table 4: Gender distribution of OSCC cases in relation to oral site according to ICD-10

Site	ICD Code	Gender				M : F ratio
		Male		Female		
		N	%	N	%	
Lip	C00	248	25.4	134	19.5	1.9 : 1
Tongue	C01 & C02	410	42	301	43.8	1.4 : 1
Gingiva	C03	39	4	44	6.4	0.9 : 1
Floor of the mouth	C04	55	5.6	43	6.3	1.3 : 1
Palate	C05	50	5.1	22	3.2	2.3 : 1
Other and unspecified parts of the mouth	C06	174	17.8	144	20.9	1.2 : 1
Total		976	100	688	100	

Table 5: Distribution of histopathological grading for OSCC cases

Histopathological Grading	N	%
Grade I - Well differentiated	522	31.4
Grade II - Moderately –well differentiated	615	37
Grade III - Moderately - Poorly differentiated	195	11.7
Grade IV – poorly differentiated	36	2.2
Not stated (missing)	296	17.8
Total	1664	100

Table 6: Iraqi governorates distribution for OSCC cases

Governorate	N	%
Baghdad	428	25.7
Ninawa	178	10.7
Al-Basrah	173	10.4
Babil	98	5.9
Thi-Qar	96	5.8
Salah Al-Din	90	5.4
Al-Najaf	79	4.7
Wasit	78	4.7
Al-Anbar	69	4.1
Diyala	67	4
Al-Ta'mim	60	3.6
Al-Qadisiyah	57	3.4
Karbala	42	2.5
Maysan	42	2.5
Al-Muthanna	21	1.2
Not stated (Missing)	86	5.2
Total	1664	100

Table 7: Overall IR (crude) & Gender specific yearly IR and relative risk of OSCC (per 100,000/Year) in Iraq from 2001 to 2013.

	IR of OSCC (per 100,000/Year)												
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crude Rate (Overall)	0.81	0.65	0.5	0.61	0.53	0.66	0.41	0.37	0.43	0.44	0.39	0.39	0.37
Male	0.89	0.8	0.6	0.64	0.65	0.81	0.49	0.43	0.52	0.47	0.46	0.46	0.41
Female	0.73	0.51	0.4	0.58	0.41	0.5	0.32	0.31	0.33	0.41	0.32	0.32	0.33
Relative Risk (RR) for Male compared to Female	1.2	1.6	1.5	1.1	1.6	1.6	1.5	1.4	1.6	1.1	1.4	1.4	1.2

Table 8: age specific yearly IR (per 100,000/Year) and relative risk of OSCC in Iraq from 2001 to 2013.

Age Group (years)	IR of OSCC (per 100,000/Year)												
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<20	0.02	0.02	0.01	0.02	0.02	0.03	0.02	0.01	0.01	0.02	0.01	0.01	0
20-49	0.53	0.26	0.31	0.35	0.29	0.37	0.29	0.26	0.27	0.19	0.2	0.22	0.16
50-69	5.66	4.65	3.46	4.33	3.67	4.03	2.49	2.41	2.73	2.71	2.18	2.28	2.21
70+	11.15	12.14	7.77	9.12	8.19	12.14	6.12	5.27	7.31	7.78	6.15	6.31	7.11
RR for (50-69) compared to (20-49)	10.7	17.9	11.2	12.4	12.7	10.9	8.6	9.3	10.1	14.3	10.9	10.4	13.8
RR for 70+ compared to (20-49)	21	46.7	25.1	26.1	28.2	32.8	21.1	20.3	27.1	40.9	30.8	28.7	44.4

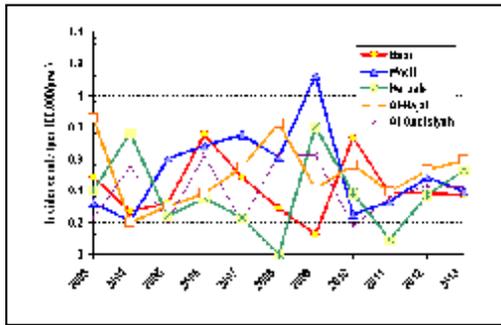


Figure 1

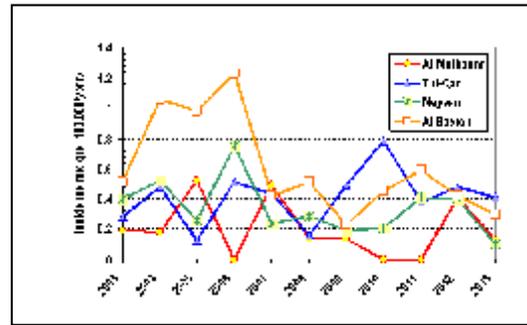


Figure 2

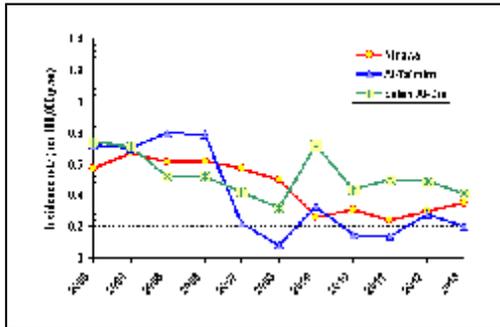


Figure 3

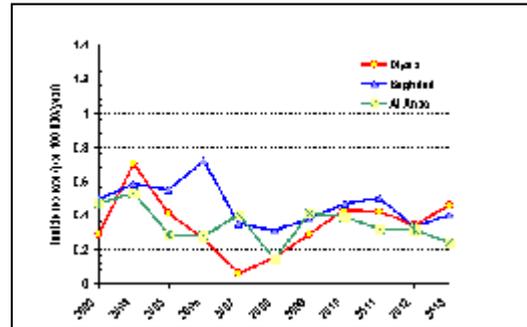


Figure 4

Figures 1-4: Iraqi governorates specific yearly IR of OSCC (per 100,000/Year)

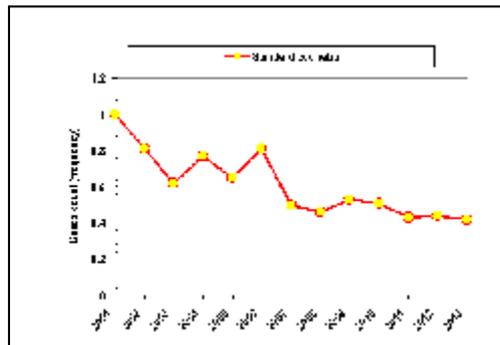


Figure 5: Time trend for the age and gender standardized ratio using the year 2001 age and gender specific IRs as a reference.

DISCUSSION

A negative time trend was observed in overall crude IR of all registered OSCC in Iraq from 2001-2013. Our results reported that the frequency distribution and incidence of OSCC declined during the study period. This observation was consistent with other studies ^(15,16) who reported that there was a decrease in count and incidence of OSCC during their study periods (1999-2006), (2000-2008) respectively. While other study reported that OC occurrence for (10) years (1991-2000) was unchanged and constant ⁽¹²⁾. The standardized ratio was calculated to estimate the risk of OSCC from 2001 to 2013 in Iraq. It is evident that the standardized ratios are

less than 1 with the recent years having a much smaller ratio than the older years indicating a decrease in tumor risk with advancing time.

The incidence of OC varies widely around the world and data in some cases are difficult to interpret since cancer registrations using international agreed criteria based on the ICD is comparatively recent. When the international data were observed, some countries had also reported a decrease in the incidence of OC like USA ⁽¹⁷⁾ Italy, Hong Kong, Germany ⁽⁷⁾. Amongst Africans, OC is believed to be relatively rare ⁽¹⁰⁾. Conversely, the present results disagree with several epidemiological studies about OSCC around the world that show a high incidence of OSCC in Brazil ⁽¹⁸⁾, in UK ⁽¹⁹⁾ as well as in Indian

subcontinent, Australia, France, Yemen^(6,9,20). Possible reasons for the increase in incidence of OSCC are tobacco and alcohol consumption, however in developed countries, both these cancer risk factors have shown a decrease, resulting in a decrease in OC incidence⁽⁸⁾. This highlights the need for tobacco and alcohol consumption prevention programs and an early diagnosis of OC, which could impact the prevalence and incidence of this neoplasm.

The negative time trend during (2001-2013) may be attributed to errors in collection of OC data in the providing resource, also in the past few years a considerable section of Iraqi population preferred to seek medical care outside Iraq (mainly in neighboring countries) therefore, such cases may not be included⁽¹⁵⁾. Besides that, according to Iraqi ministry of migration and displacement, a considerable number of Iraqi people migrated outside especially after 2003 war. In Iraq, although OSCC is a major problem, there is no complete registry of all cases of OSCC.

In this study the male were more affected than female with M:F ratio was (1.4 : 1) and this was compatible with the many international studies⁽²¹⁻²³⁾ and with many Iraqi studies^(11-13,15,16,24,25)

The difference in OC between men and women can be attributed to an increase in exposure of men to exogenous carcinogens. The variations in the contributions of smoking and alcohol were the possible causes of differences in OC between both genders.

The most affected age group was (50-69 yrs) during the whole period from 2001-2013, This is in agreement with many of Iraqi studies^(12-16,25). Also agreed with many international studies^(21,22,26,27). The substantial increase of OSCC cases in (50-69 yrs) age group can be explained by their lifestyle and the high exposure to carcinogenic factors like tobacco, alcohol and the professions.

The age specific yearly IR was higher in age group (70+yrs), the explanation for these results, is the low Iraqi population count in this age group that result in increase of their calculated IR when compared to the high population count of the age group (50-69 yrs). For the same mentioned reason, the relative risk of age group (70+yrs) was always higher than age group (50-69 yrs) when compared to age group (20-49 yrs). Taking in consideration that the age group (< 20) was not used as a reference category in spite of their lowest count because it is unstable as a result of very small count of cases therefore the age group (20-49) was used as a reference.

Regarding to oral site, tongue SCC was the first most common affected site. This is in agreement with many Iraqi studies⁽¹⁴⁻¹⁶⁾ and also

agreed with other international studies^(20,21,26,27). On the other side we disagreed with^(11-13,24,25) who reported that the lip was the first affected site.

Tongue SCC represents 30-40% of OC and is the most commonly observed OC into the oral cavity; traumatic lesions due sharp cusps or sharp edged teeth, by badly positioned teeth or by maladjusted dentures that chronically rub, leukoplakia and lichen planus are predominant precancerous conditions⁽²⁸⁾. Tongue is also reported to be bathed in carcinogens mixed with saliva pool at the bottom of the mouth⁽²⁹⁾. In this study regarding the topographical information about OSCC in all oral sites from C00 to C06 according to ICD-O-10, the NOS was the dominant and most commonly reported oral subsite. These results can be explained by the under-registration of tumor information about the oral subsite in the medical records, bad archiving and missing of some reports in patients files, poor application of ICD coding system that used incorrectly by medical sub-staff in our health institutes. The grade II had the highest percentage. These results were in agreement with others^(16,23,26). This disagreed with several studies^(11,12,20,21) who reported that grade I was the most common grade. Also disagreed with other research⁽³⁰⁾ who reported that grade III was the most common grade. Delayed detection of tumor is the underlying cause of advanced stages at the time of diagnosis⁽³¹⁾. The differences among grading is attributed to the methods of data collection and the size of studied sample⁽³²⁾. In addition to that, the determination of grade of OSCC is a subjective point and depend on the opinion of the histopathologist in his diagnosis and interpretation of the slide and this is may be an additional underlying cause for the high percentage of moderate differentiation.

The highest value of frequency distribution and percentage of cases was reported in Baghdad governorate. This is in agreement with all Iraqi researches that studied the geographical distribution of OC^(12,14,16).

The high number of population can explain the underlying cause behind the highest percentages of OSCC in Baghdad among other Iraqi governorates. Also the presence of many centers and hospitals, the location of the institute and hospital of radiotherapy and nuclear medicine center in Baghdad which made the referral cases reach the institute easier. Regarding the IR according to geographical distribution, the highest IR was found in Al-Basrah. The explanations for this include a change in population composition and the high population of governorate lead to

decrease its IR, so the higher population of Baghdad compared with Al-Basrah lead to shifting the IR of Baghdad to be lower than Al-Basrah.

Geographical and regional varieties with respect to OC incidence show that the socio-cultural aspect of a population's life style plays an important role⁽⁵⁾.

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الخلاصة

المقدمة: سرطان الفم هو مرض فتاك للغاية ومصحوب بتشوهات. سرطان الخلايا الحرشفية الفمي يشكل حوالي 90% من جميع الأورام الخبيثة عن طريق الفم. أهداف الدراسة هو وصف ايديمولوجي لسرطان الخلايا الحرشفية الفمي في العراق بشكل عام وفي المحافظات العراقية عدا إقليم كردستان خلال الفترة 2001-2013

المواد والطرق: تم جمع البيانات من المراكز التالية - قسم أمراض الفم والوجه والفكين، كلية طب الأسنان / جامعة بغداد، مستشفى الطب النووي والعلاج الإشعاعي، مجلس تسجيل السرطان العراقي، المستشفيات الرئيسية في بغداد والمحافظات العراقية ومختبرات خاصة للفحص النسيجي. تم استخدام الأساليب الإحصائية الوصفية والاستنتاجية

النتائج: في العراق من 2001-2013، كانت هناك 1664 حالة، نسبة الذكور الى الاناث هي (1:1.4)، وكانت الفئة العمرية الأكثر اصابة هي 50-69 عاماً، وكان اللسان هو الموقع الأكثر اصابة. أما درجة التميز النسيجي للسرطان الأكثر شيوعاً هي (التميز النسيجي الواسطي). سجلت محافظة بغداد أعلى قيمة من حيث التوزيع والنسبة المئوية لحالات سرطان الخلايا الحرشفية الفمي. خلال (2001-2013) لوحظ انخفاض في معدل الاصابة بحالات سرطان الخلايا الحرشفية الفمي المسجلة في العراق.

الاستنتاج: إن معدل الإصابة بسرطان الخلايا الحرشفية الفمي انخفض في العراق للفترة 2001-2013 كما ان هناك انخفاض في خطر الإصابة بالسرطان مع تقدم الوقت.

الكلمات الرئيسية: سرطان الخلايا الحرشفية الفمي، ومعدل الإصابة، العراق