



Epidemiological study of squamous cell carcinoma in Iraq over a 13-year period

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Abstract

Squamous cell carcinoma (SCC) is rare neoplasms that create interest because of their histopathological variety and clinical behavior. Moreover, squamous cell carcinoma is considered as an epithelial malignancy comprising several anatomical locations as well as it is the most common cancer that has an able of widespread metastatic. The objectives of the current study were to search clinicopathological aspects of squamous cell carcinoma diagnosed at different hospitals in Iraq and compare the results with epidemiological data from different governorates locations. Cases of tumor in different sites of mouth and tongue region at different governorates in Iraq during the period between 2008 and 2020 were presented. Age group, patient gender, topography, morphology and annual patients of the tumor were introduced. According to the available of whole information about these aspects was reflected the inclusion criteria. The frequencies of factor was computed from descriptive statistical analysis of the data. Among the 999 patients of SCC in mouth and tongue area, there was found seven types of squamous cell carcinoma, the most common types 848 (84.80%) cases of SCC were diagnosed. Baghdad governorate has a highly patents than other governorates. 2015 year is the highest value (111) cases as compared to the other years. (514) cases with (51.45 %) of male gender and (485) cases and (485) cases with (48.55) of female gender. The male to female ratio was (1.05:1). The most age group effected (448) cases (44.80 %) in (60+).

Keywords: Squamous cell carcinoma, epidemiological, epithelial malignancy, anatomical sites

Introduction

Squamous cell carcinoma (SCC) is defined as an epithelial malignancy, which appears in organs that are typically enclosed (Codipilly *et al.*, 2018) [4]. It can be raised in several different anatomic locations comprising the lips, mouth, skin, esophagus, urinary tract, cervix, prostate, lungs, and vagina (Jung and Lim, 2022). There are found four that make up the main of SCC cases: head and neck cancer, non-melanoma skin cancer, non-small cell lung cancer and esophageal cancer (Ferris *et al.*, 2016) [6]. Moreover, SCC is considered one of the most aggressive malignancies universal and can be accounted for more than 90% of the whole head and neck cancers (Vigneswaran and Williams, 2014) [15]. Mouth floor and buccal mucosa and the side ventral surface of the tongue are considered as the most common sites of SCC (Kim and Myoung, 2017) [7].

Squamous cell carcinoma (SCC) is rare neoplasms that create interest because of their histopathological variety and clinical behavior (Johnson *et al.*, 2020). The most general location of intraoral squamous cell carcinoma is the ventral surface and lateral border of the tongue, it followed by the oropharynx, gingiva, buccal mucosa, mouth floor, lip, and palate. (Orbak *et al.*, 2005) [10].

On the other hand, SCC often produces abnormality of the covering mucosa of the oral cavity and oropharynx. Though the mucosa impacted by SSC generally displays ulceration, tumor formation, or leukoplakia. Several cases in which mucosal thickening is the only abnormal clinical indicator (Chi *et al.*, 2015) [3].

Furthermore, it is accounted for more than 90% of the whole malignant lesions in the head and neck (Pai and Westra, 2009) [11]. The impacted population age group was <40 years in great-occurrence countries like Pakistan, Sri Lanka and India (Omar, 2013) [9]. Alveolar ridge SSC is accounted for 4% of the whole cases with head and neck SCC (Patel *et al.*,

2019) [12]. Alveolar ridge SSC is accounted for the second site, with the first becoming carcinoma of the tongue for each site specificity (Chi *et al.*, 2015) [3]. For each local repetition ratio by site, mandibular alveolus carcinoma has the maximum local repetition rate (26/42), the second becoming carcinoma of the tongue (20/47) (Abraham *et al.*, 2019) [1].

Materials and methods

This study was conducted at the Department of oral and Maxillo-Facial Pathology, University of Karbala. A total of 999 diagnosed cases of different governments of Iraqi hospitals from 2008 to 2020.

Data must be treated to use as a raw data with any noise and used in a computerized database format. These database was applied different stage to check for errors using range and logical data cleaning methods. This study was a respective retrieval using departmental records and an expert statistical advice using SPSS ver. 26-computer software in related with Microsoft Excel 2016. Incidence distribution and percentages for designated variables describing the recorded patients with SCC were done.

Results

(999) cases were collected as squamous cell carcinoma, which were recorded in (10) Iraqi governorates during 2008 to 2020 including: Baghdad (646), Basrah (69), Babil (56), Thiqr (50), Al-Najaf (40), Maysan (36), Al-Diwanyia (34), Karbala (28), Wasit (26) and Al-Muthanna (14), as illustrated in Table 1. The maximum percentage (64.7%) was recorded in Baghdad governorate and the minimum percentage (1.4%) was recorded in Al-Muthanna governorate.

Table 1: Frequency distribution of the Iraq governorates.

No.	Governorate	Patients	Percentage (%)
1.	Baghdad	646	64.7
2.	Basrah	69	6.9
3.	Babil	56	5.6
4.	Thiqr	50	5.0
5.	Al-Najaf	40	4.0
6.	Maysan	36	3.6
7.	Al-Diwanyia	34	3.4
8.	Karbala	28	2.8
9.	Wasit	26	2.6
10.	Al-Muthanna	14	1.4
Total		999	100.0

For annual years, (13) years in Iraqi governorates were collected during the period 2008-2020: 2008 (53), 2009 (66), 2010 (78), 2011 (59), 2012 (84), 2013 (77), 2014 (108), 2015 (111), 2016 (104), 2017 (100), 2018 (99), 2019

(32), 2020 (28), as shown in Table 2. The highest value (111) was recorded in 2015 year and the lowest value (28) was recorded in 2020 year.

Table 2: Frequency distribution of annual patients.

No.	Year	Frequency	Percentage (%)	Valid Percentage	Cumulative Percentage
1	2008	53	5.3	5.3	5.3
2	2009	66	6.6	6.6	11.9
3	2010	78	7.8	7.8	19.7
4	2011	59	5.9	5.9	25.6
5	2012	84	8.4	8.4	34.0
6	2013	77	7.7	7.7	41.7
7	2014	108	10.8	10.8	52.6
8	2015	111	11.1	11.1	63.7
9	2016	104	10.4	10.4	74.1
10	2017	100	10.0	10.0	84.1
11	2018	99	9.9	9.9	94.0
12	2019	32	3.2	3.2	97.2
13	2020	28	2.8	2.8	100.0
Total		999	100.0	100.0	

For gender patients distribution, (514) cases of male and (485) cases of female that are classified into malignant tumor according to diagnosis. The number of male (514) cases is higher than female (485) cases and the ratio of male to female is (1.05:1).

The malignant squamous cell carcinoma is comprised Moderate differentiated squamous cell carcinoma, invasive (45) cases, poorly differentiated squamous cell carcinoma,

invasive (30) cases, squamous cell carcinoma, NOS (848), and well differentiated squamous cell carcinoma, invasive (76), as shown in Table 3. It can be observed that the maximum value (843) cases was reordered in squamous cell carcinoma, NOS and the minimum value (30) case was recorded in poorly differentiated squamous cell carcinoma, invasive.

Table 3: Frequency distribution of squamous cell carcinoma by types.

No.	Morphology	Frequency	Percent	Valid Percent	Cumulative Percent
1.	Moderate differentiated squamous cell carcinoma, invasive	45	4.5	4.5	4.5
2.	Poorly differentiated squamous cell carcinoma, invasive	30	3.0	3.0	7.5
3.	Squamous cell carcinoma, NOS	848	84.8	84.8	92.0
7.	Well differentiated squamous cell carcinoma, invasive	76	7.6	7.6	100.0
Total		999	999	100.0	100.0

For age groups patients, the age group can be classified into five groups. The most affected age group in squamous cell carcinoma was (60+) (448) cases, as shown in Table 4. It

can be showed that the highest value (448) with percentage (44.80 %) was found in age group (60+) and the lowest value (15) with percentage (1.50 %) in age group (<15).

Table 4: The relative frequency of diagnostic categories by age group.

Diagnosis	Age group (yrs.)									
	<15		(15-24)		(25-39)		(40-59)		60+	
	No.	%	No.	%	No.	%	No.	%	No.	%
squamous cell carcinoma	15	1.50	20	2.00	131	13.10	385	38.50	448	44.80

Discussion

The seven morphologically types of rare tumors arises from squamous cell carcinoma. These types have malignant behavior. Epidemiologic studies presented in different researchers of the world report differences in the occurrence. The current study introduced the demographic and clinicopathologic aspects of (999) cases of squamous cell carcinoma diagnosed at different hospital in Iraq and the results are in the overall agreement with data recorded in previous studies (Orbak *et al.*, 2005) ^[10] and (Markopoulos, 2012) ^[8].

From the findings, the most public morphology appearance of squamous cell carcinoma is squamous cell carcinoma, NOS. SCC are frequently asymptomatic and impact males more, with peak occurrence occurring the fifth decade of human life (Tandon *et al.*, 2017) ^[14]. Malignant behavior of squamous cell carcinoma tend to be underhand and fast growing, with a rapidly growing (often more than fifty years of evolution) and obey to deep layers (Bharanidharan *et al.*, 2015) ^[2, 18]. Typically at the early stages it is painless nevertheless can grow a burning sensation or pain when it is reached to the advanced stages (Markopoulos, 2012) ^[8]. Patient age group ranged from fifty or above years old, with a mean of 55 years (Szturz and Vermorken, 2016) ^[13]. The difference in comparison to previous studies was the similar male to female ratio (1.05:1) (Cook *et al.*, 2009) ^[5].

Conclusion

Squamous cell carcinoma is considered as the first most public malignant tumor affecting mouth and tongue. SCC is a fast rising tumor with a high partiality for local recurrence and distant metastasis. Moreover, SCC is the most biologically damaging and changeable tumor of the mouth and tongue appearing primarily in the fifth decades of human life. From experimental results, it can found seven morphology types of SCC, the most value (848) cases was found in squamous cell carcinoma, NOS type. The ratio of male to female is (1.05:1). The most affected of SCC of age group (60+) is (448) cases.

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