

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

Raid Razak Ali AL-Kafaji

Department of Dentist, Dentistry Collage, Karbala University, Iraq

### Abstract

Squamous cell carcinoma 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 sites as well as it is the most common cancer that has a capable of metastatic spread. 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 cases of squamous cell carcinoma in mouth and tongue region, there was found seven types of squamous cell carcinoma, the most common types 848 (84.80%) cases of squamous cell carcinoma, NOS were diagnosed. Baghdad governorate preponderance for the other governorates. 2020 year is the lowest value (28) 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 ratio of male to female is (1.05:1). The most age group effected (448) cases (44.80 %) in ( $\geq 360$ ).

**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 covered (Codipilly *et al.*, 2018) [4] with squamous epithelium which comprises many different anatomic sites, comprising the lips, mouth, skin, esophagus, urinary tract, prostate, lungs, vagina, and cervix (Yan *et al.*, 2011) [16]. 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]. The floor of the mouth 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 is common as a malignant neoplasm of mucosal origin. The most general site of intraoral squamous cell carcinoma is the lateral border and ventral surface of the tongue, it followed by the oropharynx, gingiva, buccal mucosa, floor of the mouth, 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 location, with the first becoming carcinoma of the tongue for each site specificity (Chi *et al.*, 2015) [3]. For each local repetition rate 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 were converted into a computerized database format. The database was checked for errors utilizing range and logical data cleaning techniques, and inconsistencies were remedied Different detailed clinical data was recovered from the respective departmental records and an expert statistical advice was sought for statistical analyses were done using statistical package for social sciences (SPSS) version 26-computer software in association with Microsoft Excel 2013. Frequency distribution and percentages for selected variables describing the recorded cases with squamous cell carcinoma were done.

### Results and discussion

The data collection were collected (999) cases, as squamous cell carcinoma that were recorded in (10) Iraqi governorates: 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 shown in Table 1.

**Table 1:** Frequency distribution of the Iraq governorates.

No.	Governorate	Cases	Percentage (%)
1.	Baghdad	646	64.7
2.	Basrah	69	6.9
3.	Babil	56	5.6
4.	Thiqar	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

From Table 1, it can be showed that the highest percentage (64.7%) was reported in Baghdad governorate while the lowest percentage (1.4%) was reported in Al-Muthanna governorate. The distribution of squamous cell carcinoma that it gathered for 10 governorates in Iraq from 2008 to 2020.

**1. The relative frequency of diagnostic categories of squamous cell carcinoma by annual patients**

The data collection were gathered (999) cases, as squamous cell carcinoma that were recorded in (13) years in Iraqi

governorates 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.

**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	

From Table 2, it can be clearly observed that the maximum value (111) was reported in 2015 year while the minimum value (28) was reported in 2020 year.

**2. The relative frequency of diagnostic categories of squamous cell carcinoma by gender**

Out of the total number of cases (999), (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).

**3. The relative frequency of diagnostic categories of squamous cell carcinoma by types**

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.

**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	99.9	100.0	100.0

From Table 3, it can be showed that the highest value (843) cases was reordered in squamous cell carcinoma, NOS, while the lowest value (30) case was recorded in poorly differentiated squamous cell carcinoma, invasive.

**4. The relative frequency of diagnostic categories of squamous cell carcinoma by age group**

The total number of cases is (999), 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.

**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

From Table 4, it can be observed that the maximum percentage (44.80 %) was found in age group (60+), while the minimum percentage (1.50 %) was found in age group (<15).

**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).

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]. 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). 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.

**References**

1. Abraham S, Mallika B, Reshma A, Kassim RM. An Atypical case of Oral squamous cell carcinoma of mandibular alveolus. *Case Reports in Dentistry*, 2019.
2. Bharanidharan R, Dineshkumar T, Raghavendhar K, Kumar AR. Squamous cell carcinoma of the gingiva: A diagnostic enigma. *Journal of Oral and Maxillofacial Pathology: JOMFP*, 2015;19(2):267.
3. Chi AC, Day TA, Neville BW. Oral cavity and oropharyngeal squamous cell carcinoma—an update. *CA: a cancer journal for clinicians*, 2015;65(5):401-421.
4. Codipilly DC, Qin Y, Dawsey SM, Kisiel J, Topazian M, Ahlquist D, Iyer PG. Screening for esophageal squamous cell carcinoma: recent

- advances. *Gastrointestinal endoscopy*, 2018;88(3):413-426.
5. Cook MB, Dawsey SM, Freedman ND, Inskip PD, Wichner SM, Quraishi SM, *et al.* Sex disparities in cancer incidence by period and age. *Cancer epidemiology, biomarkers & prevention*, 2009;18(4):1174-1182.
6. Ferris RL, Blumenschein Jr G, Fayette J, Guigay J, Colevas AD, Licitra L, *et al.* Nivolumab for recurrent squamous-cell carcinoma of the head and neck. *N Engl J Med*, 2016,375-1867.
7. Kim IH, Myoung H. Squamous cell carcinoma of the buccal mucosa involving the masticator space: a case report. *Journal of the Korean Association of Oral and Maxillofacial Surgeons*, 2017;43(3):191.
8. Markopoulos AK. Current aspects on oral squamous cell carcinoma. *The open dentistry journal*, 2012;6:126.
9. Omar EA. The outline of prognosis and new advances in diagnosis of oral squamous cell carcinoma (OSCC): review of the literature. *Journal of Oral Oncology*, 2013.
10. Orbak R, Bayraktar C, Kavrut F, Gündođdu C. Poor oral hygiene and dental trauma as the precipitating factors of squamous cell carcinoma. *Oral Oncology Extra*, 2005;41(6):109-113.
11. Pai SI, Westra WH. Molecular pathology of head and neck cancer: implications for diagnosis, prognosis, and treatment. *Annual review of pathology*, 2009;4:49.
12. Patel P, Dave H, Desai R, Cesar LMA, Yagnik PJ. Squamous cell carcinoma of left buccal alveolar ridge. *Cureus*, 2019, 11(7).
13. Szturz P, Vermorken JB. Treatment of elderly patients with squamous cell carcinoma of the head and neck. *Frontiers in Oncology*, 2016;6:199.
14. Tandon P, Dadhich A, Saluja H, Bawane S, Sachdeva S. The prevalence of squamous cell carcinoma in different sites of oral cavity at our Rural Health Care Centre in Loni, Maharashtra—a retrospective 10-year study. *Contemporary Oncology/Współczesna Onkologia*, 2017;21(2):178-183.
15. Vigneswaran N, Williams MD. Epidemiologic trends in head and neck cancer and aids in diagnosis. *Oral and Maxillofacial Surgery Clinics*, 2014;26(2):123-141.
16. Yan W, Wistuba II, Emmert-Buck MR, Erickson HS. Squamous cell carcinoma—similarities and differences among anatomical sites. *American journal of cancer research*, 2011;1(3):275.