



Squamous Cell Carcinoma of Tongue: Analysis of Clinico Pathological Features

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Authors' contributions

This work was carried out in collaboration among all authors. Author SF designed the study, wrote the protocol and wrote the first draft of the manuscript. Authors MH, SAB and FAB managed the analysis of the study. Author SF had performed data entry, statistical analysis and result write up. Authors RAS and FA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aims: Squamous cell carcinoma of tongue (SCCOT) is the most common malignant neoplasm of oral cavity. It is a major health concern and causes significant morbidity and mortality. There is high prevalence of exposure to risk factors of SCCOT in our region, therefore the present study is designed to provide an insight of clinicopathological parameters of SCCOT that will help in identifying any specific trends.

Study Design: Cross sectional study.

Place and Duration of Study: Department of histopathology, Ziauddin Hospital, Karachi, from January 2020 to November 2020.

Methodology: 27 biopsy specimens of SSSOT were taken. Clinicopathological parameters of SCCOT were evaluated. Data was subjected to appropriate statistics using SPSS version 20.

Results: Out of the 27patients, 15(55.6%) were men and 12(44.4%) were women. The overall

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mean age at presentation was (46.77+/-14.05) years. Lateral borders of tongue were involved in 16(59.3%) of patients. Of the total, 22 (81.5%) patients had moderately differentiated carcinoma. T3 size of tumor was present in 12 (44.4%) of patients. Cervical lymph node metastasis was found in 15 (55.5%) of patients. At presentation, 20(74%) had advanced Stage (III-IV) disease.

Conclusion: It is an alarming situation that most patients presented with advance stages of SCCOT. Emphasis should be given on early diagnosis of SCCOT. There is also need on increasing oral cancer awareness among the public to reduce the burden of this disease.

Keywords: Squamous cell carcinoma; tongue; clinicopathological parameters.

1. INTRODUCTION

Oral cancer is recognized globally as 8th most common cancer and a major cause of mortality and morbidity [1]. In Pakistan oral cancer contributes as the 2nd most common malignancy [2]. It is estimated that worldwide 3 % of new oral cancer cases are found, where as in Pakistan 15 % of new oral cancer cases are found [3]. Squamous cell carcinoma of oral cavity is the most prevalent oral cancer corresponding to more than 90 % of oral cancers [4]. Multiple risk factors are associated with development of oral squamous cell carcinoma such as the use of tobacco either in smoked or chewed form, alcohol intake, malnutrition, certain viruses, syphilitic infections, increased genetic susceptibility to cancers, immunosuppression and occupational risks [5]. In Pakistan use of tobacco related products is the major cause of oral squamous cell carcinoma [6].

The most common site for oral squamous cell carcinoma is tongue. [7]. Squamous cell carcinoma of tongue has a high potential for regional invasion and a high tendency to metastasize in the cervical lymph nodes [8]. Cervical lymph node metastasis is a significant prognostic factor for squamous cell carcinoma of tongue [9]. The complexity of anatomical function of tongue which include taste, speech and swallowing makes carcinoma of tongue difficult to treat [10].

A large number of epidemiological studies have shown buccal mucosa as a common subsite of oral cavity for the occurrence of squamous cell carcinoma in Pakistan [11] but few studies also mentioned tongue as a common site for oral squamous cell carcinoma [12,13]. Keeping in mind the limitless of data regarding demographic profile of tongue squamous cell carcinoma, the aim of present study was to determine the clinicopathological features of tongue squamous cell carcinoma. In this study tumor related factors

such as subsite of tongue involved, clinical presentation, histological grading and metastasis to cervical lymph nodes were focused.

2. MATERIALS AND METHODS

This descriptive, retrospective study was conducted in department of histopathology Ziauddin hospital, which receives samples from all over the city being a tertiary care hospital. Simple random sampling technique was selected. 27 biopsy specimens of patients, irrespective of age and gender, who underwent simultaneous neck dissection for resection of primary tumor for squamous cell carcinoma of tongue were selected. The study duration was from January 2020 to November 2020. Patients for whom adequate histologic material was available or could be obtained were included in the study.

Patients with recurrent SCCOT and patients with previous history of treatment for squamous cell carcinoma of the oral cavity by any modality (surgical resection, chemotherapy or radiation) were excluded from the study.

All biopsy specimens were received in 10% formalin. After gross examination, these were processed for paraffin embedding, sectioned and finally stained with Hematoxylin and Eosin. Only histologically confirmed cases of SCCOT were included.

The data on gender, age, sub site of tumor and side involved was extracted from the clinical forms provided with the samples.

The degree of tumor differentiation was classified according to Border's classification into well differentiated (WDSCC), moderately differentiated (MDSCC) and poorly differentiated (PDSCC). TNM status [14] and staging of the tumors was done according to the American Joint Committee on Cancer Classification [15].

3. RESULTS AND DISCUSSION

Data was subjected to descriptive statistical analysis using the statistical package for the social sciences (spss), version 20.

Continuous variable, such as age, was analyzed as mean and standard deviation. The categorical data, that is, gender, subsite and side of tongue involved, grade of tumor, T stage, N stage, and clinical staging were analyzed as frequencies and percentages.

3.1 Results

This study included 27cases of SCCOT. Based on clinical data provided by records of patients with SCCOT, the overall mean age of all patients was found to be 47.77+/- 14.05 (mean and standard deviation) years with age range of 23-75 years. Highest frequency of cases were found to be in 5th decade of life in males where as in females more cases were found in 4th decade of life.

55.6% patients were males where as 44.4% patients were females. The male to female ratio was found to be: 5:4. The predominant targeted subsite of tongue for squamous cell carcinoma was found to be lateral borders of tongue in 59.3% of cases whereas dorsum of tongue was involved in 29.6% of cases and 3.7% of cases were involved in each ventral surface of tongue and base of tongue. 3.7% cases were found in both dorsum and lateral surface of tongue. In 55.6% of cases left side of tongue was effected by SCCOT while right side was involved in 40.7% of cases. 3.7% of cases were found in both right and left side of tongue.

Tumor description was found to be ulcerated in 85% of cases. 7.4% of lesions were found to be each exophytic and endophytic lesions. Assessment of histological grade revealed that

moderately differentiated carcinoma was the most frequent type of SSCOT found in 81.5 % cases, followed by poorly differentiated and well differentiated squamous cell carcinoma in 11.1 % and 7.4% of cases respectively. Evaluation of TNM classification showed 44.4% of patients were classified as T3 and 37.0% of patients were classified as T2. Only 18.5 % of patients were classified as T1, indicating that few patients presented at early stage of disease. Assessment of regional spread showed that 44.4% patients were classified as no metastasis to regional lymph nodes (N0). N2 was the most commonly lymph node involved in 25.9% of the patients while N3 and N1 were involved in 15.4 % and 14.8% of cases respectively (Table 1).

Clinical staging showed that late stages were predominantly found in most of the cases. 40.7 % of cases presented in stage IV while 33.3 % of cases in stage III. Early stage carcinomas were found in 14.8 % of patients in stage II and in 11.1 % of cases in stage I (Table 2).

Table 1. Tumor characteristics of patients

Tumor Description	Frequency %
Ulcerative	23(85.2%)
Exophytic	2(7.4%)
Endophytic	2(7.4%)
Histological grade	
Well differentiated	2(7.4%)
Moderately differentiated	22(81.5)
Poorly differentiated	3(11.1%)
T- category	
T1	5(18.5%)
T2	10(37.0%)
T3	12(44.4%)
N-category	
N0	12(44.4%)
N1	4(14.8%)
N2	7(25.9%)
N3	4(14.8%)

Table 2. AJCC staging of patients

Stage	Frequency %	TNM Stage	Frequency %
Stage I	3 (11.1%)	T1N0M0	3(11.1%)
Stage II	4 (14.8%)	T2N0M0	4 (14.8%)
Stage III	9 (33.3%)	T2N1M0	3 (11.1%)
		T3N0M0	5 (18.5%)
		T3N1M0	1(3.7%)
Stage IV	11(40.7%)	T1N2M0	2(7.4%)
		T2N2M0	2(7.4%)
		T3N2M0	3(11.1%)
		T3N3M0	3(11.1%)
		T2N3M0	1(3.7%)

3.2 Discussion

3.2.1 Age

In present study mean age of patients with SCCOT was found to be 46.77+/ 14.05 which is similar to a study conducted in Pakistan with mean age of 47.5+7.5 [16]. Important finding of this study regarding age of patients is that more patients belong to age group of 45> years. Similar study [17] also mentioned that SCCOT is frequently found in older age groups than younger age groups. It is assumed that for most cases of tongue carcinomas, the exposure time for young adults is too limited for malignant transformation.

3.2.2 Gender

Tongue carcinomas has always been considered a diseases that effects men more than women [18]. The gender distribution of present study also indicates more cases in males (55.5%) than females. similar results are reported by other studies showing increased prevalence of SCCOT in males than females [19]. In Pakistani culture males are more exposed to risk factors of SCCOT which includes intake of tobacco, niswar and betel quid as compared to females, leading to increase in development of this disease.

3.2.3 Tumor description

Ulcerated lesions are the most common description of tumors found in the present study. This is in agreement with study showing ulcers as most common clinical presentation of lesions for oral cancers including SCCOT as well [20].

3.2.4 Sub site

The predominant sub site of tongue involved in our study is found to be lateral borders of tongue (59.3%) with left side more commonly effected than right side (55.6%). This is in accordance with a study conducted in India where left borders of tongue were more involved than right borders, however they reported a higher value of lateral border involvement than our findings [21,22].

3.2.5 Tumor grade

SCCOT is typically classified into well, moderate and poorly differentiated carcinomas on the basis of degree of differentiation. In present study most cases of SCCOT were found to be moderately

differentiated carcinomas (81.5 %). Similar results are reported by other studies also where moderate grade of tumor was most common among all grades of tumors [17,23]. However in some studies well differentiated tumors represented most common grade of SCOT [24] [21]. Such variability could be attributed to difference in number of samples, different amounts of consumption of tobacco and exposure to other risk factors of SSCOT.

3.2.6 T stage

The predominant T stage in the present study is found to be T3 (44.4 %) while least common is found to be T1 (18.5 %). A study conducted in Mexico, reported T2 as common size of tumor found in their study (78.3%) [25]. These findings suggests that majority of patients seek medical help when size of lesion is already large or when it starts to disturb them. Most patients do not consider early cancer lesions as harmful and thinks about it as any other oral cavity lesion. Some patients also prefer alternative treatments over professional treatments which is also a very important factor that contributes to further worsening the condition.

3.2.7 N stage

The frequency of neck metastasis in the present study is found to be 55.5% across all T stages with N2 being the most common (29.9 %). Neck positivity around 54.2% is also found in a study conducted in Iran (54.2%) [26] Whereas only 25.6% of neck positivity is reported in a similar study [16]. This variation in result is likely to be attributed by the presence of patients with different stages of SCCOT at the time of study.

3.2.8 Clinical stage

Most of patients in the present study were found to be at advance clinical stages, stage III (33.3%) and stage IV (40%) similar studies also reported stage III and IV as common stage of patients with SSCOT [27,28]. These findings of such late presentation of tongue carcinoma are extremely disturbing and alarming. There are several factors responsible for late presentation of this fatal disease such as painless nature of disease, difficulty in self-examination and diagnosis (mostly for posterior one third lesions of tongue) and lack of self-awareness in public about oral cancer. Financial problems and difficulty in access to seek professional help especially, for people belonging to lower socio

economic status are also main causes for late presentation of this deadly disease [29].

4. CONCLUSION

Male predominance, ulceration on lateral borders of tongue with predominantly moderately differentiated carcinomas representing commonly in late stages of diseases were highlighted clinic pathological parameters found in the present study. It is an alarming situation that most patients presented with advance stages of SCCOT. Emphasis should be given on early diagnosis of SCCOT. There is also need on increasing oral cancer awareness among the public to reduce the burden of this disease. This study contributes in unreported global and regional data that may serve as forum for further research on SCCOT.

CONSENT

Written Inform consent was taken from patients/Guardians.

ETHICAL APPROVAL

Ethical approval was obtained from Ziauddin university ethics review committee (reference code: 0040218SFOPATH).

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Siegel RL, Miller KD, Jemal A. Cancer statistics. *Ca: A Cancer Journal for Clinicians*. 2016;66(1):7-30.
2. Cancer registry and clinical data management (crcdm) – shaukatkhanum memorial cancer hospital and research center (skmch and rc) – (<http://shaukatkhanum.org.pk/>). Report based on cancer cases registered at skmch and rc from dec. 1994-dec. 2018 and in 2018; 2019.
3. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: Globocan 2008. *International journal of cancer*. 2010;127(12):2893-917.
4. Sloan P, Gale N, Hubter K, Lingen M, Nykander K, Riebel J, et al. Squamous cell carcinoma. In: El-Nagar AK, Chan JKC, Grandis JR, Takata T, Slootweg PJ. *Who classification of head and neck tumours*. 4th ed. Iarc, Lyon. 2017;109-11.
5. Kumar M, Nanavati R, Modi TG, Dobariya C. Oral cancer: Etiology and risk factors: A review. *Journal of cancer research and therapeutics*. 2016;12(2):458.
6. Awan KH, Hussain QA, Patil S, Maralingannavar M. Assessing the risk of oral cancer associated with gutka and other smokeless tobacco products: A case-control study. *J Contemp Dent Pract*. 2016;17(9):740-744.
7. Dhanuthai K, Rojanawatsirivej S, Thosaporn W, Kintarak S, Subarnbhesaj A, Darling M, Kryshtalskyj E, Chiang CP, Shin HI, Choi SY, Lee SS. Oral cancer: A multicenter study. *Medicina Oral, Patologia Oral y Cirugiabucal*. 2018;23(1):23.
8. O-charoenrat P, Pillai G, Patel S, Fisher C, Archer D, Eccles S, Rhys-Evans P. Tumour thickness predicts cervical nodal metastases and survival in early oral tongue cancer. *Oral Oncology*. 2003;39(4):386-90.
9. Kumar T, Patel MD. Pattern of lymphatic metastasis in relation to the depth of tumor in oral tongue cancers: A clinico pathological correlation. *Indian Journal of Otolaryngology and Head and Neck Surgery*. 2013;65(1):59-63.
10. Chang KW, Kao SY, Tzeng RJ, Liu CJ, Cheng AJ, Yang SC, Wong YK, Lin Sc. Multiple molecular alterations of fhit in betel-associated oral carcinoma. *The Journal of Pathology: A Journal of the Pathological Society of Great Britain and Ireland*. 2002;196(3):300-6.
11. Akram S, Mirza T, Mirza MA, Qureshi M. Emerging patterns in clinico-pathological spectrum of oral cancers. *Pakistan Journal of Medical Sciences*. 2013;29(3):783.
12. Sahaf R, Naseem N, Anjum R, Nagi Ah, Path Fr. A study of 89 cases of oral squamous cell carcinoma presenting at teaching hospitals of Lahore, Pakistan.
13. Ulhaq Me, Abid H, Hanif Mk, Warraich RA, Mahmood HS, Saddique K. Frequency and pattern of oral and maxillo-facial

- carcinomas. Annals of King Edward Medical University. 2009;15(4):171.
14. Gospodarowicz MK, Brierley JD, Wittekind C, Editors. Tnm classification of malignant tumours. John Wiley and Sons; 2017.
 15. Edge SB, Compton CC. The american joint committee on cancer: The 7th edition of the ajcc cancer staging manual and the future of TNM. Annals of Surgical Oncology. 2010;17(6):1471-4.
 16. Ahmed SQ, Junaid M, Awan S, Kazi M, Khan HU, Halim S. Frequency of cervical nodal metastasis in early-stage squamous cell carcinoma of the tongue. International Archives of Otorhinolaryngology. 2018; 22(02):136-40.
 17. Loganathan P, Sayan A, HSU DW, Paraneetharan S, Ilankovan V. Squamous cell carcinoma of the anterior tongue: Is tumour thickness an indicator for cervical metastasis?. International Journal of Oral and Maxillofacial Surgery. 2017;46(4):407-12.
 18. Shaikh MH, Mcmillan NA, Johnson NW. Hpv-associated head and neck cancers in the asia pacific: a critical literature review and meta-analysis. Cancer Epidemiology. 2015;39(6):923-38.
 19. Rodrigues PC, Miguel MC, Bagordakis E, Fonseca FP, De Aquino SN, Santos-Silva AR, Lopes MA, Graner E, Salo T, Kowalski LP, Coletta RD. Clinicopathological prognostic factors of oral tongue squamous cell carcinoma: A retrospective study of 202 cases. International Journal of Oral and Maxillofacial Surgery. 2014;43(7): 795-801.
 20. Khaleel ME, Raza A, Ehsan A, Masood R, Javed M. Clinicopathological spectrum of oral squamous cell carcinoma at a public sector health facility. Biomedica. 2015; 31(1):21-6.
 21. Selvamani M, Yamunadevi A, Basandi PS, Madhushankari GS. Prevalence of oral squamous cell carcinoma of tongue in and around davangere, karnataka, india: A retrospective study over 13 years. Journal of Pharmacy and Bioallied Sciences. 2015;7(2):491.
 22. Azimi H, Khajehahmadi S, Rahpeyma A. Tongue squamous cell carcinoma: A clinical study. Iranian Journal of Pathology. 2014;9(1):28-32.
 23. Ramdass MJ, Harracksingh A, Maharaj K, Young Sing Q, Mooteeram J, Barrow S. Incidence of tongue carcinoma in Trinidad and Tobago, West Indies. Oncology Letters. 2015;9(3):1417-9.
 24. Shukla NK, Deo SS, Garg Pk, Manjunath NM, Bhaskar S, Sreenivas V. Operable oral tongue squamous cell cancer: 15 years experience at a tertiary care center in north India. Indian journal of surgical oncology. 2018;9(1):15-23.
 25. Ledesma-Montes C, Hernández-Guerrero JC, Durán-Padilla MA, Alcántara-Vázquez A. Squamous cell carcinoma of the tongue in patients older than 45 years. Brazilian Oral Research. 2018;32.
 26. Yazdi I, Khalili M. Grading of oral cancer: Comparison of different systems with respect to lymph node metastasis in tongue SCC. Arch Iran Med. 1999;2(2).
 27. Hamdy R, Halim A. Squamous cell carcinoma of the oral tongue: A single institution retrospective cohort study from Mansoura University hospital. Indonesian Journal of Cancer. 2019;12(4): 102-8.
 28. Sutandyo N, Ramli R, Sari L, Soeis DS. Profile and survival of tongue cancer patients in «dharmais» cancer hospital, Jakarta. Asian PAC J Cancer Prev. 2014;15(5):1971-5.
 29. Jafari A, Najafish, Moradi F, Kharazifard M, Khami M. Delay in the diagnosis and treatment of oral cancer. J Dent (Shiraz). 2013;14(3):146–150.

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