

To assess the aggressiveness of oral squamous cell carcinoma in the young population

Shafqat Ali Shaikh,¹ Syed Akbar Abbas,² Muhammad Ehteram Ul Haq,³ Bushra Ayub,⁴ Talha Ahmed Qureshi,⁵ Amna Khalil⁶

Abstract

Objective: To assess the recurrence and disease-free survival in oral squamous cell carcinoma patients, and to compare them between two age groups.

Method: Data were extracted from Patel hospital cancer registry database of patients admitted from January 1st 2008 to December 31st 2018 based on retrospective diagnosed with oral squamous cell carcinoma. Patient stratified in to two groups i.e. patients with less than or more than 40 years. Various etiological factors, staging, treatment, site of the tumor and recurrence and mortality were assessed.

Results: Of the 450 patients, 124(27.5%) were in group A and 327(72.5%) were in group B. There were 101(81%) males in group A and 240(73.4%) males in group B. The overall mean age was 43.63±10.75 years (range: 22-70 years). The most common site of the tumour was cheek 232(51.5%). Recurrence of tumour was 45(36%) in group A and 120(37%) in group B (p=0.653). Overall mortality in group A was 67(54%) compared to 168(51%) in group B (p=0.811).

Conclusion: Mortality and disease recurrence in both age groups was almost the same. Cheek was the most common site of presentation.

Keywords: Oral cavity, SSC, Survival, Recurrence, Young age. (JPMA 72: 1937; 2022)

DOI: <https://doi.org/10.47391/JPMA.1771>

Introduction

Oral squamous cell carcinoma (OSCC) is a major health problem worldwide due to its high prevalence, very high morbidity and mortality. The prevalence of oral cancer presents 20-fold variations among different countries, age groups, gender, races, and ethnic groups. South Asian countries, like Pakistan, India and Bangladesh, account for one-third of the global oral cancer burden, and over 90% of these cancers are attributed to tobacco consumption in various forms in the region.¹ Global cancer statistics had forecast in 2018 that about half of the cases and over half of the cancer deaths in the world will occur in Asia.²

Lip and oral cavity cancers in Pakistan are the second most common cancer, with a 5-year prevalence among all age groups to be 36,560.² The number of new cases of lip and oral cavity cancers tends to be 10.9% in Pakistan, and it is the second most common cancer in females after breast tumour, and the most common cancer in males after excluding non-melanoma skin cancers.²

^{1,5}Department of Otolaryngology and Head and Neck Surgery, Patel Hospital, Karachi, ²Department of Otolaryngology and Head and Neck Surgery, Aga Khan University Hospital, Karachi, ³Department of Surgery and Allied, The Kidney Centre, Karachi, ⁴Department of Surgery and Allied, Patel Hospital, Karachi, ⁶Department of Otolaryngology and Head and Neck Surgery, Dow University of Health Sciences, Karachi, Pakistan.

Correspondence: Shafqat Ali Shaikh. Email: alishafqat17@yahoo.com

According to the Karachi Cancer Registry (KCR) data, 33,309 malignant cases were reported from 8 different centres in 2019 which showed that oral cancer was the leading malignancy in Karachi where 36% males and 44% females chew pan or pan with tobacco.³

Studies have suggested that since in the younger population OSCC is present at an advanced stage with local and regional spread compared to the elder population, a high degree of suspicion should be kept for chronic ulcerated lesions with early diagnosis and aggressive treatment options, including definitive curative surgery with chemotherapy, and radiotherapy should be implied in the management of OSCC presenting at a younger age which can decrease mortality and morbidity in the respective population. It has also been suggested that younger OSCC patients have better survival compared to the older population.⁴⁻⁷

The current study was planned to assess the recurrence and survival in OSCC patients, and to compare them between young and old age groups.

Materials and Methods

This is a retrospective cohort study, conducted at Patel hospital in the department of otolaryngology, head and neck surgery. ERC approval has been taken from our institute having ERC#62 dated: April 17th, 2019. We took patients from January 1st, 2008 to December 31st, 2018. Patients of either gender aged 21-80 years with biopsy-

proven OSCC affecting lips, tongue, floor of the mouth, hard palate, alveolar ridge, retromolar trigone, or buccal mucosa were included. Patients with non-squamous cell carcinoma on histology or second primaries, cancer at another sub-site, or recurrence or SCC of the site other than oral cavity or carcinoma in situ or having had previous cancer surgery elsewhere and those with follow-up <6 months were excluded.

The data was stratified into patients aged <40 years in group A and those aged >40 years in group B. Patients after surgical treatment of the tumour were sent for radiotherapy and chemotherapy at another tertiary care hospital. The routine registry form was used for data collection. For missing data, medical record files were reviewed and patients were contacted over the telephone as well. Details of histopathology report, including tumour, node and metastasis (TNM) stage, tumour type, tumour size, grade, margin, depth of invasion, perineural invasion, bone involvement, vessel invasion, muscle invasion and extracapsular spread, were noted for each patient. Patients were staged according to the American Joint Committee on Cancer (AJCC) 8th edition TNM staging.⁸

Demographic, pathological, surgical and clinical factors as well as tumour staging and radiation were analysed. Follow-up details of all the patients were recorded. Surveillance was done in terms of the presence or absence of regional or distant metastasis. Patients were followed up from the date of surgery for more than a year or mortality within that time.

Data was analysed using SPSS 21. Quantitative variables were presented as mean \pm standard deviation, while qualitative variables were expressed as percentages and frequencies. Shapiro Kolmogorov was applied to check data normality. Non-parametric Kruskal Wallis test was applied to check the association between factors of different groups. Survival analysis was done using Kaplan Meir analysis. $P < 0.05$ was considered statistically significant.

Results

Of the 450 patients, 124(27.5%) were in group A and

327(72.5%) were in group B. There were 101(81%) males in group A and 240(73.4%) males in group B. The overall mean age was 43.63 ± 10.75 years (range: 22-70 years). The most common site of the tumour was cheek 232(51.5%). Multiple clinical and pathological comparisons were done

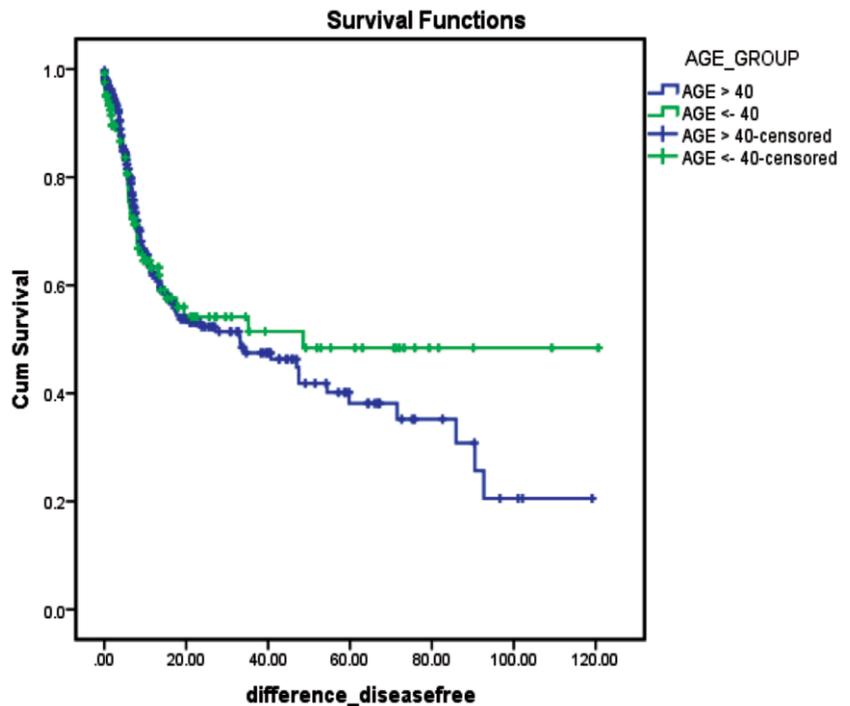


Figure-1: Comparison of disease-free survival (DFS) between the two age groups.

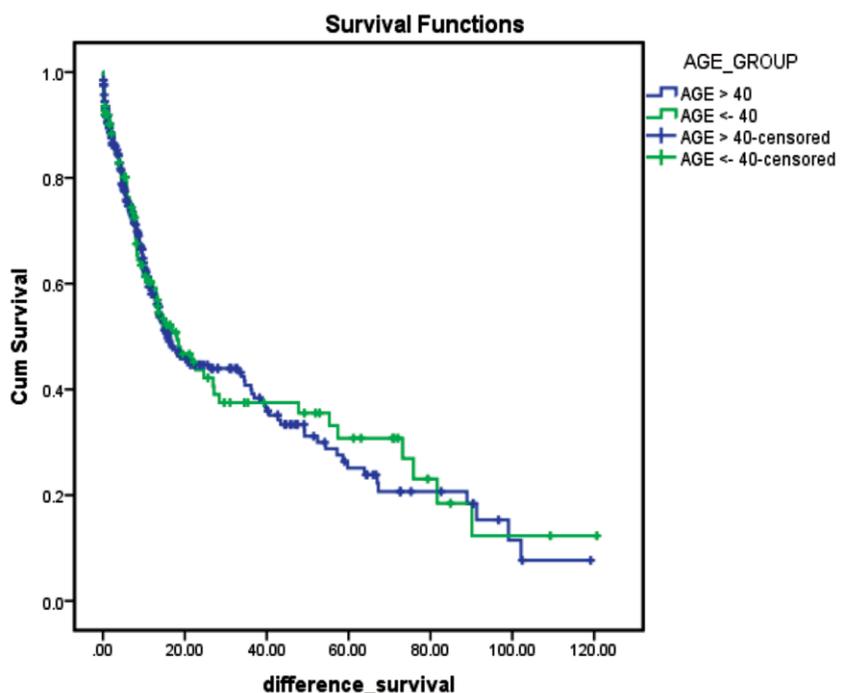


Figure-2: Comparison of overall survival (OS) between the two age groups.

Table-1: Distribution of multiple clinical and pathological factors.

Clinicopathological Factors	Age >40 years (n=327)	Age <40 years (n=124)
Age Median [IQR]	44 (40-48)	
Mean ± SD (range)	43.63 ± 10.75 (22-70)	
Gender		
Male	240(73.4%)	101(81%)
Female	87(27%)	23(18.5%)
Addiction		
None	51(16%)	8(6.5%)
Smoking	20(6.1%)	4(3.2%)
Pan	75(23%)	13(10.5%)
Supari/Chalia	14(4.3%)	17(14%)
Gutka	21(6.4%)	18(14.5%)
Multiple	128(39.1%)	55(44.4%)
Others	18(5.5%)	9(7.3%)
Comorbidities		
Diabetes	13(4%)	1(1%)
Hypertension	34(10.4%)	3(2.4%)
Ischaemic Heart Disease	5(1.5%)	Nil
Multiple	21(6.4%)	2(2%)
Others	27(8.3%)	10(8.1%)
None	227(69.4%)	108(87.1%)
Oral Site		
Floor Of Mouth	5(1.5%)	Nil
Cheek	158(49%)	74(60%)
Lower Alveolar Ridge	32(10%)	6(5%)
Upper Alveolar Ridge	5(1.5%)	5(4%)
Hard Palate	8(2.5%)	Nil
Retromolar Area	15(5%)	3(2.4%)
Lips	15(5%)	Nil
Soft Palate	6(2%)	Nil
Mandible	7(2.2%)	36(5%)
Ant 2/3 Tongue	68(21%)	27(22%)
Ant 2/3 Tongue Crossing Midline	1(0.3%)	3(2.4%)
Posterior Tongue	4(1.2%)	Nil
Histopathological Stage		
Situ	2(0.7%)	3(3%)
I	17(6.1%)	4(4%)
II	43(15.4%)	19(18%)
III	83(30%)	24(22%)
IVA	102(37%)	47(44%)
IVB	32(11.5%)	10(9.3%)
Radiotherapy		
Yes	242(74%)	98(79%)
No	85(26%)	26(21%)
Chemotherapy		
Yes	66(20.2%)	28(23%)
No	261(80%)	96(77.4%)

SD: Standard deviation, IQR: Interquartile range.

between the groups (Table-1).

Overall survival (OS) and disease-free survival (DFS) were not significantly different between the two groups (Table-

Table-2: Overall survival (OS) and disease-free survival (DFS) rate between the two age groups.

Age groups	Total	n (%)	Median Survival in Months	P-value
Overall Survival between groups				
AGE > 40 years old	327	168(51%)	15(12 to 32 IQR)	0.811
AGE ≤40 years old	124	67(54%)	18(11 to 38 IQR)	
Disease free survival between groups				
AGE > 40 years old	327	120(37%)	33(25 to 48 IQR)	0.653
AGE ≤40 years old	124	45(36%)	48(39 to 60 IQR)	

IQR: Interquartile range.

2). Recurrence of tumour was 45(36%) in group A and 120(37%) in group B ($p=0.653$) (Figure-1). Overall mortality in group A was 67(54%) compared to 168(51%) in group B ($p=0.811$) (Figure-2).

Discussion

In the current study, the most common site of the tumour was cheek, followed by anterior two-third of the tongue as opposed to the evidence-based studies.⁹⁻¹³ Parikshit Sharma et al. showed that 82.71% cancer patients were in the 5th, 6th and 7th decades of life, whereas only 17.29% belonged to the 2nd and 3rd decades. A high proportion of cases were males and it was due to high prevalence of smokeless tobacco consumption, like pan, gutka and chalia.¹⁴

In recent studies, it was postulated that there are multiple factors, like genetics, nutritional alterations, as well as human papillomavirus (HPV) infection influence the development and behaviour of OSCC.^{15,16} Cancer prevalence is higher in patients who are addicted to alcohol and tobacco,^{11,17} but the current study observed that patients with increased incidence were exposed to multiple carcinogenic agents, and smoking was the less prevalent risk factor in the study population.

OSCC was rare in a younger population previously and because of that diagnosis was delayed in younger patients leading to morbidity and mortality among the young.¹⁸ Age should not be set as a criterion for surgical resection and aggressive treatment options for SCCs should be considered on a case-to-case basis^{15,16,19,20} which is the approach noticed in the current study. There has been an increase in the incidence of OSCCs in the younger population with a fairly advanced stage at presentation,^{4,21} but, the current study found ratios being similar for the presentation of cancer in the young and the elderly. Studies have shown a difference

in OS of OSCC patients, with higher survival rate in the young.^{7,22} The current study did not find such a difference. Studies showed that SCCs presenting at a younger age were more aggressive compared to presentation at an older age, but despite aggressive management of the tumour, OS and DFS of the patient remained unaffected.²³⁻²⁶

The current study has limitations, like it was conducted at a single centre where the patients mostly represent from mid to low socioeconomic status having limited resources. Besides, data of some patients had to be excluded due to lack of follow-up.

Large-scale, multicentre, prospective studies should be conducted to assess for mortality and recurrences in patients with a lower stage of cancer at the time of presentation.

Conclusion

Mortality and disease recurrence in both age groups was almost the same. Age had no impact on mortality and recurrence of the tumour. Cheek was the most common site of presentation.

Acknowledgement: We are grateful to bio-statistician Ahmed Raheem for providing the administrative and statistical guidance.

Disclaimer: The Abstract was part of a Poster Presentation at the Shaukat Khanum Symposium (2019) and at the Aga Khan Hospital Annual Conference 2020.

Conflict of Interest: None.

Source of Funding: None.

References

- Johnson NW, Amarasinghe HK. Epidemiology and aetiology of head and neck cancers. In: Bernier J, eds. *Head and Neck Cancer*. Springer, 2011; pp:1-57.
- Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics. 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *Canc J Clin*. 2018; 68:394-424.
- Pervez S, Jabbar AA, Haider G, Ashraf S, Qureshi MA, Lateef F, et al. Karachi Cancer Registry (KCR): Age-standardized incidence rate by age-group and gender in a Mega city of Pakistan. *Asian Pac J Canc Prev APJCP*. 2020; 21:3251-8.
- Jones J, Lampe H, Cheung H. Carcinoma of the tongue in young patients. *J Otolaryngol*. 1989; 18:105-8.
- Chitapanarux I, Lorvidhaya V, Sittitrai P. Oral cavity cancers at a young age: analysis of patient, tumour and treatment characteristics in Chiang Mai University Hospital. *Oral Oncol*. 2006; 42:82-7.
- Sarkaria JN, Harari PM. Oral tongue cancer in young adults less than 40 years of age: rationale for aggressive therapy. *Head Neck*. 1994; 16:107-11.
- Goldenberg D, Brooksby C, Hollenbeak CS. Age as a determinant of outcomes for patients with oral cancer. *Oral Oncol*. 2009; 45:57-61.
- Colevas AD, Yom SS, Pfister DG, Spencer S, Adelstein D, Adkins D, et al. NCCN guidelines insights: head and neck cancers, version 1.2018. *J Natl Compr Canc Netw*. 2018; 16:479-90.
- Viana TSA, de Barros Silva PG, Pereira KMA. Prospective evaluation of quality of life in patients undergoing primary surgery for oral cancer: preoperative and postoperative analysis. *Asian Pac J Cancer Prev*. 2017; 18:2093-100.
- Jerjes W, Upile T, Petrie A. Clinicopathological parameters, recurrence, locoregional and distant metastasis in 115 T1-T2 oral squamous cell carcinoma patients. *Head Neck Oncol*. 2010; 2:9.
- Sharma D, Singh G. Squamous cell carcinoma of the oral cavity and oropharynx in young adults. *Indian J Cancer*. 2016; 53:399.
- Müller S, Pan Y, Li R, Chi AC. Changing trends in oral squamous cell carcinoma with particular reference to young patients: 1971-2006. The Emory University experience. *Head Neck Pathol*. 2008; 2:60-6.
- Abdulla R, Adyanthaya S, Kini P, Mohanty V, D'Souza N, Subbannayya Y. Clinicopathological analysis of oral squamous cell carcinoma among the younger age group in coastal Karnataka, India: A retrospective study. *J Oral Maxillofac Pathol*. 2018; 22:180-7.
- Sharma P, Deb T, Ray JG, Singh AK, Gupta G, Das A, et al. Oral squamous cell carcinoma profile in North-Eastern regions of India from habits to histopathology: A hospital-based study. *Nat J Maxillofac Surg*. 2018; 9:56-60.
- Oliver R, Dearing J, Hindle I. oral cancer: Oral cancer in young adults: report of three cases and review of the literature. *Br Dent J*. 2000; 188:362.
- Yang AK, Liu TR, Chen FJ, Ma XF, Guo ZM, Song M. Survival analysis of 229 patients with advanced squamous cell carcinoma of the oral tongue. *Chinese Journal of Cancer*. 2008; 27:562-7.
- Hilly O, Shkedy Y, HodR. Carcinoma of the oral tongue in patients younger than 30 years: comparison with patients older than 60 years. *Oral Oncol*. 2013; 49:987-90.
- Pires FR, Ramos AB, Oliveira JB, Tavares AS, Luz PS, Santos TC. Oral squamous cell carcinoma: clinicopathological features from 346 cases from a single oral pathology service during an 8-year period. *J Appl Oral Sci*. 2013; 21:460-7.
- Malone JP, Stephens JA, Grecula JC, Rhoades CA, Ghaheri BA, Schuller DE. Disease control, survival, and functional outcome after multimodal treatment for advanced-stage tongue base cancer. *Head Neck*. 2004; 26:561-72.
- Zwetyenga N, Majoufre-Lefebvre C, Siberchicot F, Demeaux H, Pinsolle J. Squamous-cell carcinoma of the tongue: treatment results and prognosis. *Rev Stomatol Chir Maxillofac*. 2003; 104:10-17.
- Cinamon U, Hier MP, Black MJ. Age as a prognostic factor for head and neck squamous cell carcinoma: should older patients be treated differently? *J Otolaryngol*. 2006; 35:8-12.
- Ho HC, Lee MS, Hsiao SH, Hwang JH, Hung SK, Chou P, et al. Squamous cell carcinoma of the oral cavity in young patients: a matched-pair analysis. *Eur Arch Otorhinolaryngol*. 2008; 265:57-61.
- Kapila SN, Natarajan S, Boaz K. A comparison of clinicopathological differences in oral squamous cell carcinoma in patients below and above 40 years of age. *J Clin Diagn Res*. 2017; 11 : 4 - 6 .
<https://dx.doi.org/10.7860%2FJCDR%2F2017%2F27828.10600>
- Bell RB, Kademani D, Homer L, Dierks EJ, Potter BE. Tongue cancer: Is there a difference in survival compared with other subsites in the oral cavity? *J Oral Maxillofac Surg*. 2007; 65:229-6.
- Rusthoven KE, Raben D, Song JI, Kane M, Altoos TA, Chen C. Survival and patterns of relapse in patients with oral tongue

cancer. *J Oral Maxillofac Surg.* 2010, 68:584-589.
10.1016/j.joms.2009.03.056
26. Subramaniam N, Balasubramanian D, Low TH, Vidhyadharan S,

Menon A, Murthy S, et al. Squamous cell carcinoma of the oral tongue in young patients: outcomes and implications for treatment. *Indian J Surg Oncol.* 2020;11:274.
