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Do we need a different staging system for tongue and gingivobuccal complex squamous cell cancers?

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ABSTRACT

Objectives: To determine the need for a separate staging system for gingivobuccal complex squamous cell cancers (GBCSCC) based on 5-year overall survival (OS), disease-specific survival (DSS), and recurrence-free survival (RFS) data from one institution.

Patients and methods: An Institutional Review Board (IRB)-approved retrospective analysis was performed on an oral cavity cancer patient database. Patients from 1985 to 2012 with primary surgical treatment for biopsy-proven squamous cell cancer (SCC) from either the oral tongue (TSCC Group) or gingivobuccal complex (GBCSCC Group), were selected as two separate subgroups. The clinicopathologic data were used to stage the patients based on the American Joint Committee on Cancer 7th edition. Survival outcomes including 5-year OS, RFS, and DSS were calculated and analyzed. A multivariate analysis was performed to identify if subsite was an independent predictor for the survival outcomes, adjusting for other variables. A p-value of less than .05 was considered statistically significant.

Results: 936 patients with TSCC and 486 patients with GBCSCC were considered eligible for the analysis. Patients with GBCSCC were more likely to be older ($p < .001$) and presented with more advanced disease ($p < .001$) compared to patients with TSCC. Unadjusted hazard ratio (HR) suggested GBCSCC had poor OS compared to TSCC. However, after adjusting for other variables, the adjusted HR was not significant ($p = .593$). There was no difference in 5-year DSS or RFS in either of the study groups.

Conclusion: With similar survival outcomes by stage, there is no justification for using a different staging system for GBCSCC.

Introduction

Oral cavity squamous cell cancer (OCSCC) accounts for 3.8% of all cancer cases and is responsible for 3.6% of cancer deaths worldwide [1]. A unique characteristic of the oral cavity is the presence of multiple subsites within it. Though anatomically congruent, these sites have specific characteristics as far as potentially malignant disorders and tumor spread are concerned [2]. The two most commonly involved subsites of the oral cavity are the oral tongue, more common in North America and Europe, and the lower gingivobuccal complex, more common in Southeast Asia [3]. Lower gingivobuccal complex SCC (GBCSCC) are those arising from the buccal mucosa, lower gum, and the retromolar trigone [4].

In Southeast Asia, GBCSCC are thought to have different etiological and clinicopathological characteristics when compared to oral tongue squamous cell cancer (TSCC) [3,5], raising the argument that these cancers should have a different staging system compared to other oral cavity cancers. However, there has been no single study that has compared the survival data between GBCSCC and TSCC with stage-wise comparisons. Therefore, we present our own single-center experience with these two entities to determine if there is a need for a separate staging system for GBCSCC.

Patients and methods

We carried out a retrospective analysis of our oral cavity cancer patient database. The patient records were accessed after the study protocol was approved by the Institutional Review Board (IRB). All patients with biopsy-proven SCC either from the oral tongue or GBC who had received primary surgical treatment at Memorial Sloan

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Table 1
Clinical characteristics.

Variable		GBCSCC[a] N[b] (%)	TSCC[c] N (%)	p-Value
Total no. of cases		486	936	
Sex	Female	219 (45.1)	415 (44.0)	.707
	Male	267 (54.9)	524 (56.0)	
Age	< 60	177 (36.4)	491 (52.5)	< .001
	> 60	309 (63.6)	445 (47.5)	
Alcohol	Never	139 (28.8)	308 (33.0)	.109
	Ever	343 (71.2)	625 (67.0)	
Smoking	Never	146 (30.2)	387 (41.4)	< .001
	Ever	338 (69.8)	548 (58.6)	
Comorbidities	No	336 (69.1)	715 (76.4)	.003
	Yes	150 (30.9)	221 (23.6)	
Clinical T stage	T1	101 (20.8)	402 (42.9)	< .001*
	T2	172 (35.4)	392 (41.9)	
	T3	42 (8.6)	94 (10.0)	
	T4	159 (32.7)	38 (4.1)	
	Tx	12 (2.5)	10 (1.1)	
Clinical N stage	N0	308 (63.4)	691 (73.8)	
	N+	178 (36.6)	245 (26.2)	< .001
	N1	92 (18.9)	107 (11.4)	
	N2	84 (17.3)	133 (14.2)	
	N3	2 (0.4)	5 (0.5)	
Neck dissection	No	86 (17.7)	228 (24.4)	< .001
	Elective	226 (46.5)	466 (49.8)	
	Therapeutic	174 (35.8)	242 (25.9)	
LVI[d]	No	310 (86.4)	585 (84.7)	.464
	Yes	49 (13.6)	106 (15.3)	
PNI[e]	No	269 (74.9)	450 (65.1)	.001
	Yes	90 (25.1)	241 (34.9)	
Margin	Negative	280 (57.8)	646 (69.1)	< .001
	Close	107 (22.1)	193 (20.6)	
	Positive	97 (20.0)	96 (10.3)	
Pathological T stage	T1	166 (36.2)	555 (63.2)	< .001**
	T2	118 (25.7)	211 (24.0)	
	T3	24 (5.2)	47 (5.4)	
	T4	151 (32.9)	65 (7.4)	
Pathological N stage	N0	296 (60.9)	643 (68.7)	.003
	N+	190 (39.1)	293 (31.3)	
Adjuvant therapy	None	263 (54.1)	649 (69.4)	< .001***
	PORT[f]	190 (39.1)	240 (25.7)	
	PORT + chemotherapy	33 (6.8)	46 (4.9)	

[a] GBCSCC, gingivobuccal complex squamous cell cancer.
[b] N, number.
[c] TSCC, tongue squamous cell cancer.
[d] LVI, lympho-vascular invasion.
[e] PNI, peri-neural invasion.
[f] PORT, post-operative radiotherapy.
* Tx not included in p-value for clinical T stage.
** Pathological T staging – data of 85 patients missing.
*** Patient had Chemotherapy only.

Kettering Cancer Center from 1985 to 2012 were included in the study. Surgical treatment was defined as excision of the primary tumor with adequate margins with or without neck dissection. The patients also received adjuvant treatment based on current National Comprehensive Cancer Network guidelines or, in some cases, after multidisciplinary team consultations. Patients who had distant metastatic disease at the time of initial presentation or had received non-surgical therapy as neo-adjuvant or primary treatment were excluded.

The demographic profiles of the patients were evaluated to identify differences in age, smoking status, alcohol exposure, and comorbidities. The histopathology reports were analyzed to identify the tumor characteristics. The patients were staged as per the American Joint Committee on Cancer (AJCC) 7th edition. We did not use the AJCC 8th staging system for this cohort of patients as DOI was not reported regularly as a pathological tumor variable prior to 2002 and thus in our patient cohort from 1985 to 2012 there were lot of patients that could not be staged according to the new guidelines. Overall survival (OS) was calculated from the date of surgery to either the last date the patient was known to be alive, regardless of disease status, or death date. An OS event was defined as death from any cause. Disease-specific survival (DSS) was calculated from the date of surgery to last date of disease assessment or death date. A patient was only considered to have a DSS event if he/she died of disease or if the patient had active disease at the date of last disease assessment. All other patients were censored for DSS at the last date of disease assessment by a medical professional. Recurrence-free survival (RFS) was calculated from the date of surgery to date of recurrence or date of last disease assessment. A RFS event was defined as any local, regional, or distant recurrence. If the patient did

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