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ABSTRACT

BACKGROUND: Oral cavity cancer (OCC) accounts for approximately 3% of cancer diagnoses, with an increase in the incidence of OCC among young patients being reported.

METHODS: We identified OCC patients in the Utah Cancer Registry from 1996-2012. OCC patients were separated in to a young (≤50 years) and old cohort (>50 years). Prevalence of comorbidities, particularly among autoimmune, immunodeficiency, or bone marrow failure syndromes conditions were evaluated.

RESULTS: 1,053 OCC patients were included in the study. Tongue cancer was more common in young patients than older patients (48.7% vs. 29%; p<0.001). There were no significant differences in rates of autoimmune, immunodeficiency, or bone marrow failure syndromes between groups.

CONCLUSIONS: This study found no difference in comorbidity rates of autoimmune, immunodeficiency, and bone marrow failure syndromes between young and old OCC patients. Future research should explore other potential differences in the younger and older patients to explain this epidemiologic trend.

INTRODUCTION

- Recently, increasing rates of OCC in young patients ≤50 years, particularly young women, have been reported.¹
- The literature suggests that outcomes among this subset of patients is equal to older tongue cancer patients, despite their younger age and minimal medical comorbidities.
- Determining possible contributing factors to the development of OCC in young patients is of the utmost importance.
- To date, the literature has explored differences in exposure to traditional risk factors (smoking, drinking)², genetics³, hormonal expression⁴, and social contributors⁵.
- The aim of this study is to evaluate clinicopathologic differences between young (≤50 years age) versus old (>50 years age) squamous cell carcinoma (SCC) OCC patients, with an emphasis on determining differences in comorbidities, particularly among autoimmune, immunodeficiency, or bone marrow failure syndromes conditions.

METHODS

- The data used for this study originated from the Utah Populations Database (UPDB).
- Differences between young (≤50) and old (>50) OCC patients were elucidated.
- Chi² tests were used to determine categorial differences between groups.
- Logistic regression was performed to determine odds ratios (OR) of being diagnosed with OCC for comorbidities with enough comparative data.

RESULTS

Table 1: Patient Demographics of OCC Patients ≤50 and >50 Years of Age

	≤50 Years		>50 Years		P-value
	N=197		N=856		
	N	%	N	%	
Sex					
Female	62	31.47	343	40.07	0.025
Male	135	68.53	513	59.93	
Race					
White	193	98	834	97.4	0.90
Black	1	0.5	3	0.4	
Native American	1	0.5	6	0.7	
Asian	1	0.5	9	1.1	
Pacific Islander	0	0	2	0.2	
Other/missing	1	0.5	2	0.2	
Hispanic					
Yes	16	8.1	43	5	0.08
No	181	91.9	813	95	
History of Smoking					
Yes	29	14.7	124	14.5	0.93
No	168	85.3	732	85.5	
History of Alcohol Use					
Yes	13	6.6	67	7.8	0.55
No	184	93.4	789	92.2	
Family history of any cancer					
No	83	42.1	347	40.5	0.68
Yes	114	57.9	509	59.5	
Family history of HNC					
No	182	92.4	775	90.5	0.42
Yes	15	7.6	81	9.5	
Family history of diabetes					
No	90	45.7	371	43.3	0.5499
Yes	107	54.3	485	56.7	
Family history of heart diseases					
No	75	38.1	325	38	0.9784
Yes	122	61.9	531	62	

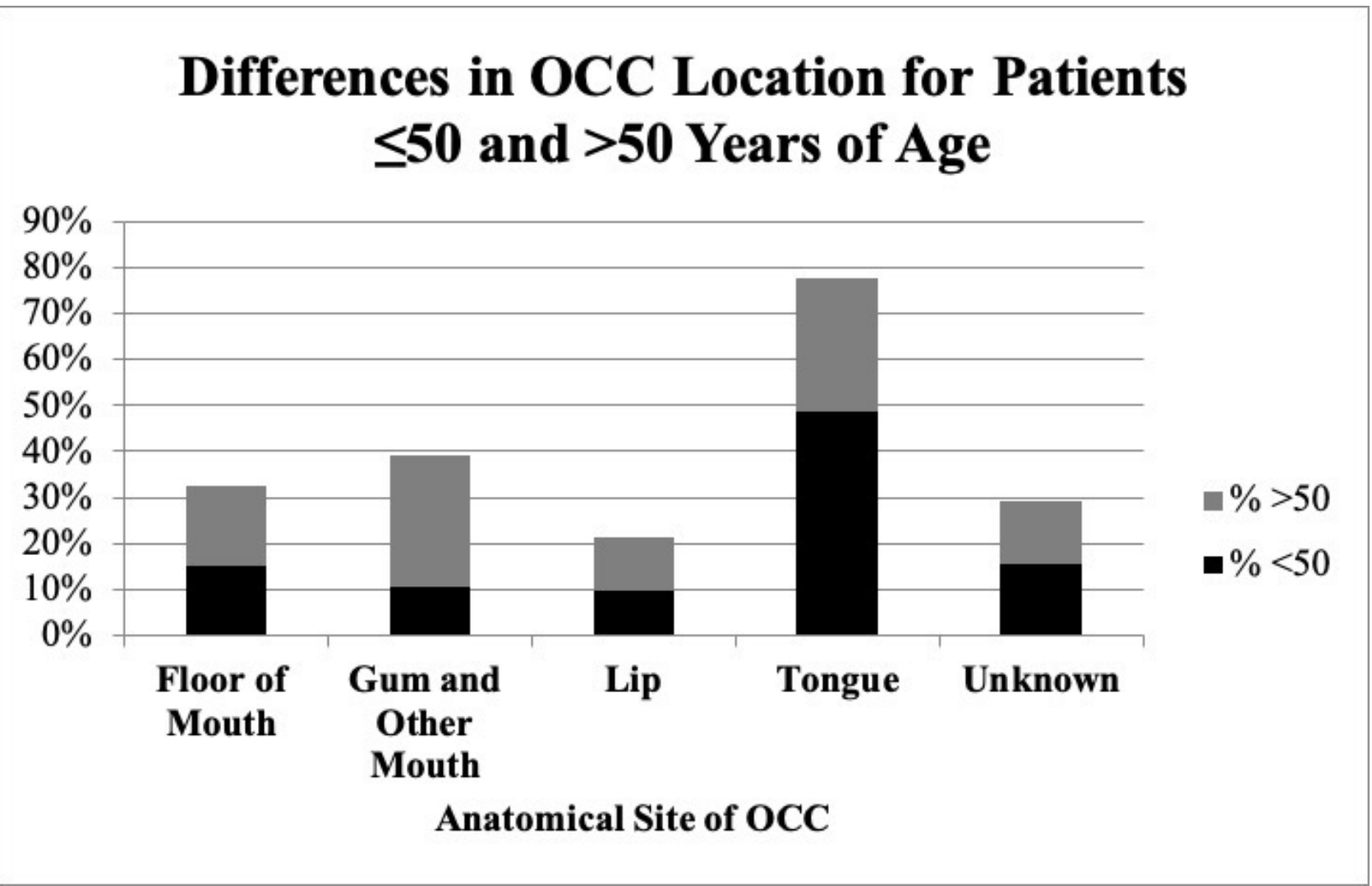


Figure 1. Anatomical Differences Between Groups

Table 2. Assessment of Selected Comorbidities for Patients ≤50 and >50 Years of Age

	≤50 Years		>50 Years		P-value
	N=197		N=856		
	N	%	N	%	
Stroke	1	0.5	26	3.0	0.043
Rheumatoid arthritis	1	0.5	27	3.2	0.037
Ankylosing spondylitis	0	0.0	2	0.2	0.497
Systemic lupus erythematosus	1	0.5	4	0.5	0.941
Sjogren's syndrome	0	0.0	8	0.9	0.173
Idiopathic inflammatory myopathies	17	8.6	108	12.6	0.119
DiGeorge Syndrome	1	0.0	0	0.0	0.037
Fanconi's Anemia & Other bone marrow failure syndromes	0	0.0	10	1.2	0.127
Lichen Planus	2	1.0	11	1.3	0.757
Chronic pulmonary disease	27	13.7	161	18.8	0.091
Anemia	7	3.6	62	7.2	0.059
Renal failure	0	0.0	16	1.9	0.053
Obesity	12	6.1	68	7.9	0.376
Congestive heart failure	3	1.5	60	7.0	<.0001
Hypothyroidism	1	0.5	0	0.0	0.037
Diabetes	1	0.5	98	11.5	<.0001
Hyperlipidemia	8	4.1	182	21.3	<.0001
Hypertension	21	10.7	322	37.6	<.0001

DISCUSSION

- With increasing numbers of OCC in young patients, determining the possible factors associated with this trend is a critical first step to develop responsive public health interventions.
- There were no significant differences between young and old patients and having a diagnosis of autoimmune, immunodeficiency, bone marrow failure syndromes.
- Our study did find an increased risk among older patients with hypertension, hyperlipidemia, diabetes, hypothyroidism, and congestive heart failure when compared to younger patients.
- Ultimately there is a higher risk of mortality from OCC among patients >50 years of age which could be attribute to a baseline level of poor health with a myriad of comorbidities.

REFERENCES

- Patel SC, Carpenter WR, Tyree Set al. Increasing incidence of oral tongue squamous cell carcinoma in young white women, age 18 to 44 years. J Clin Oncol. 2011;29:1488-1494.
- Kuriakose M, Sankaranarayanan M, Nair MKet al. Comparison of oral squamous cell carcinoma in younger and older patients in India. Eur J Cancer B Oral Oncol 1992;28b:113-120.
- Jin YT, Myers J, Tsai ST, Goepfert H, Batsakis JG, el-Naggar AK. Genetic alterations in oral squamous cell carcinoma of young adults. Oral Oncol. 1999;35:251-256.
- Grimm M, Biegner T, Teriete Pet al. Estrogen and Progesterone hormone receptor expression in oral cavity cancer. Med Oral Patol Oral Cir Bucal. 2016;21:e554-558.
- 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;22:180-187.