ORIGINAL ARTICLE

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Clinico-pathological analysis of oral squamous cell carcinoma in a period of 8 years in a hospital in South of Brazil

Abstract:

Oral cancer is multifactorial disease with high morbidity and mortality rates. The knowledge of patient profiles with this neoplasm can help to determine the extension of the problem and guide public health policies. The present study aimed to identify the prevalence and to describe the clinico-pathological characteristics of oral squamous cell carcinoma, by means of medical records from Hospital São Lucas, at Pontifícia Universidade Católica do Rio Grande do Sul. Medical records from fifty-six patients consulted between 2007 and 2015 were included. Data from age, sex, race, occupation and residence, tobacco and alcohol consumption, tumor characteristics, treatment and clinical outcomes were analyzed. The sample presented a mean age of 59.37 (±10.997) years and the majority were males (4.6:1 male: female ratio), Caucasians (87.5 %), living in an urban area (56.4%). In this study, 80.00 % of participants declared to be smoker or former smokers, while 51.8 % declared to be alcoholics or former alcoholics. The lip was the most involved anatomic site (33.9 %). Regarding the tumor characteristics, most of them were classified as T3/T4 (41.1 %), with an involvement of regional lymph nodes (35.7 %) and histologic grading I/II (60.7 %). Our results indicate that oral cancer continues to show late diagnosis, which leads to invasive treatment, negatively influencing in patients survival. For the success of studies like this, it is crucial to fill in the medical records completely and legibly.

Keywords: Mouth Neoplasms; Tobacco Smoking; Alcohol Drinking; Retrospective Studies.

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INTRODUCTION

Oral cancer represents a worldwide health problem due to the high morbidity and mortality.[1,2] Nearly 90 % of oral tumors are squamous cell carcinomas.[3-11] The incidence rates vary among different races, age groups and sex.[3-5] According to National Cancer Institute, 11,200 new cases of oral cancer in men and 3,500 in women have been estimated for 2018, in Brazil. These numbers correspond to an estimated risk of 11.20 new cases at every 100 thousand men and 3.50 at every 100 thousand women.[12]

The main risk factors associate with oral cancer are tobacco and alcohol consumption, and the association between them significantly increases the risk of development of tumor. Moreover, virus infection by human papillomavirus (HPV), poor oral hygiene, nutritional deficiencies, systemic disorders and low socioeconomic conditions are important features that have been associated with oral cancer.[1,2,4,5,8,9,13-18]

This tumor type mostly affects individuals in a mean age of 60 years, and the male sex is the most affected.[2,4,5,7,9-11] The tumor commonly presents as a ulcerated lesion, with a necrotic center, limited by irregular elevated borders with firm consistency.[1,3,19] The most frequent site is the posterior lateral border of the tongue followed by mouth floor, soft palate, gingiva, buccal and labial mucosa, hard palate and oropharyngeal region.[1,4,6-9,11,12,19]

Surgery is the main therapeutic approach, which is frequently associated to radiotherapy. Chemotherapy is an adjuvant treatment mostly used in advanced cases.[1,6,11,18-20] Despite the therapeutic advances, the survival rates still remain 5 years.[1,4,6-9,13] Currently, oral squamous cell carcinoma is still a condition of late diagnosis, with up to half the patients diagnosed in late stages, which implicates in smaller survival rates.[10,14] The study of demographical characteristics of this type of tumor is relevant and can allow the elaboration of preventive measures, early diagnostic and proper treatment. The knowledge of patient profiles with this neoplasm can help to determine the extension of the problem and guide public health policies.

The present study aimed to investigate the prevalence and describe the clinico-pathological characteristics of oral squamous cell carcinoma, by means of medical records from Hospital São Lucas da Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS) from Porto Alegre city, RS.

MATERIAL AND METHODS

The present observational, cross-sectional and retrospective study was approved by the Research Ethics Committee of PUCRS (CEP-PUCRS, protocol #1.964.767/2017). All cases of patients with an oral squamous cell carcinoma diagnosis attending the Hospital São Lucas (PUCRS) in a period of 8 years (2007-2015) were reviewed, and in total, a hundred and forty records were analyzed. Data from age, sex, race, occupation and residence, tobacco and alcohol consumption, tumor site, tumor staging, histological graduation, treatment and recurrence was analyzed. Records of patients with less than 80% of information were excluded from the analysis. Fifty six medical records were included in the study.

Data regarding tobacco and alcohol consumption was classified as a categorical variable. Patients were classified as users or non-users according to medical record. Patients who have not consumed tobacco or alcohol during at least 6 months were classified as former users. The TNM staging system is presented according to the eighth edition of the American Joint Committee on Cancer (AJCC) Staging Manual.[15]

Statistical analysis

Data were analyzed by means of descriptive (mean, standard deviation, absolute and relative frequency) and inferential statistics. Chi-square test and Student t test were used to compare the variables between sexes. Chi-square test was used to compare the variables between anatomical site of tumor and patient occupation. Data were processed in SPSS 18.0 (IBM Corp., Armonk, NY, USA) at a significance level of 5%.

RESULTS

The mean age was 59.37 (±10.997) years. The classification of sample according to age showed 26.79% of participants classified between 25 and 50 years, 66.07 % between 50 and 70 years and 7.14 % of participants between 75 and 100 years old. The socio-demographic and behavioral profile of patients is depicted in Table 1. The ratio men: women was 4.6:1, with a frequency of 82.14 % and 17.86 % respectively. Regarding the type of occupation, there was a higher frequency of non-rural workers (37.50 %), compared to rural workers (14.29 %). Overall, the local of residence, rural or urban, did not seem to influence the frequency of oral

Table 1. Socio-demographic and behavioral profile of the sample

Variable	Absolut frequency (n°)	Relative frequency (%)
Color of skin		
White	49	87.50%
Black	3	5.36%
Brown	2	3.57%
Non informed	2	3.57%
Sex		
Male	46	82.14%
Female	10	17.86%
Occupation		
Non rural worker	21	37,05%
Rural worker	8	14.29%
Non informed	27	48.21%
Residence		
Urban	31	55.36%
Rural	25	44.64%
Tobacco consumption		
Yes	23	41.1%
Former smoker	22	39.3%
No	5	8.9%
Non informed	6	10.71%
Alcohol consumption		
Yes	15	26.8%
Former alcoholic	14	25.0%
No	11	19.6%
Non informed	16	28.6%
Anatomic site		
Tongue	18	32.1%
Hard and soft palate	9	16.1%
Retromolar trigone	6	10.7%
Lips	19	33.9%
Mouth floor	3	5.4%
Buccal mucosa	1	1.8%

cancer cases in the studied population. The tongue (32.14 %) and the lips (33.93 %) were the most affected anatomic sites.

When the variables of tobacco and alcohol consumption were analyzed, those subjects that declared themselves smokers or former smokers represented 41.1 % and 39.3 % of the cases, respectively. Concerning the alcohol consumption, the frequencies observed were 26.8 % and 25.0 %, for alcoholics and former alcoholics, accounting for more than 50.0 % of the cases. The variables tobacco and alcohol presented a clear effect on the frequency of oral cancer. Due to this reason, a graphic was elaborated specifically for showing these features according to sex

(Figure 1). The frequency of male patients exposed to tobacco and alcohol was, respectively, 88 % and 61 %, which was similar to that seen in female patients, with 96 % and 64 % ($p = 0.488$ and $p = 0.609$; Chi-square test).

Figure 2 shows a significant higher frequency associated to lip carcinoma in rural workers compared to non-rural workers ($p = 0.017$; Chi-square test). This graphic was elaborated considering the affected site in relation to the occupation of patients.

The clinical and histopathological features of tumors from evaluated participants are presented in the Table 2. According to the histological grading, the majority of cases were classified as grades I and II, with a frequency of 60.71 %. As for TNM staging, an important number of cases did not present such description (33.93 %), with 41.07 % of cases corresponding to T3/T4 classification. As for lymph nodes involvement, most of cases were classified as N1/N2/N3 (35.72 %). None case was classified as M1; however, 19.64 % of cases were classified as MX. The variable clinical staging showed a frequency of non-informed cases of 33.93 % and stages III/IV showed 50.01 %. Regarding the treatment, the majority of cases were surgically treated (41.07 %). The evaluation of tumor recurrence did not provide much data, since the percentage of non-informed cases was highly elevated (76.79 %).

A specific analysis of the relationship between the size and the oral site of tumor is provided in Figure 3. Most of the lip tumors, the most affected anatomic site observed in this study were classified as T1/T2. The tongue was the most affected site of larger tumors.

Since the lip was the most affected site, a separated analysis of clinical features and risk factors according to anatomical site is showed in table 3, where tumors were classified as intraoral and lip tumors. Even though the sample was mostly composed of men, no statistical difference was observed between
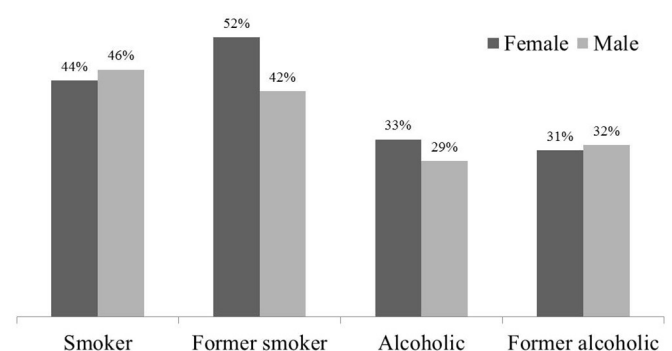
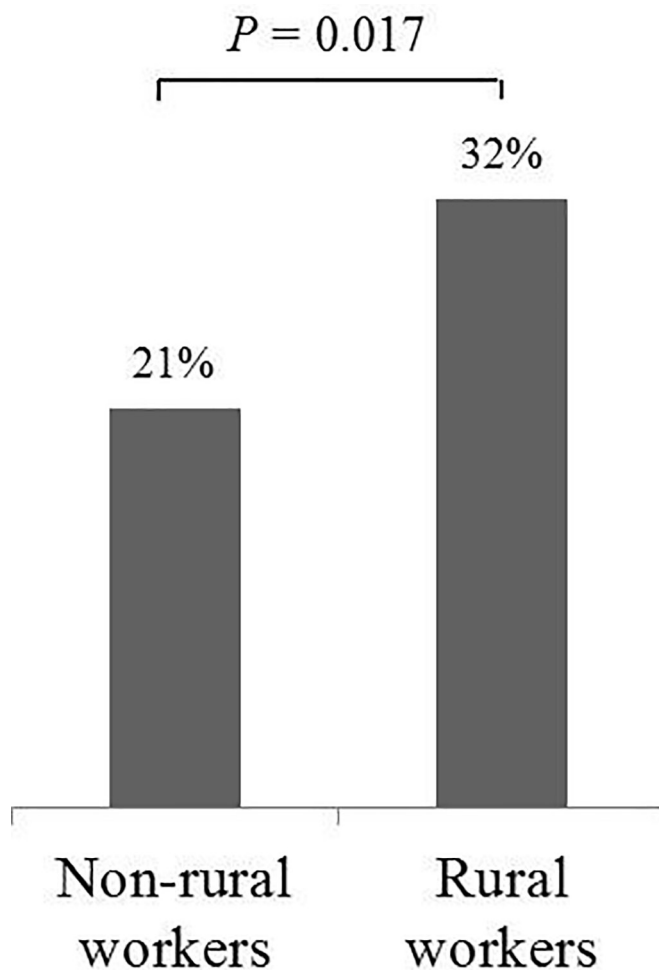**Figure 1.** Association of anatomic site and patient occupation

$P = 0.017$

32%

21%

Non-rural workers   Rural workers

Figure 2. Distribution of tumors acording to size and site

Table 2. Clinical and histopathological features of tumors

Variable	Absolute frequency (n°)	Relative frequency (%)
Histological grade		
Grade I and II	34	60.71%
Low differentiaded	6	10.71%
Non informed	16	28.57%
Size		
Tx	1	1.79%
T1/T2	13	23.51%
T3/T 4	23	41.07%
Non informed	19	33.93%
Regional lymph node involvement		
N0	16	28.57%
N1	4	7.14%
N2	11	19.65%
N3	5	8.93%
Non informed	20	35.71%
Distant metastasis		
MX	11	19.64%
M0	26	44.64%
M1	0	0.00%
Non informed	20	35.71%
Clinical staging		
I	2	3.56%
II	7	12.50%
III	3	5.36%
IVA	17	30.36%
IVB	8	14.29%
Non informed	19	33.93%
Treatment		
Surgery	23	41.07%
Radiotherapy	4	7.14%
Radiotherapy and chemotherapy	14	25.00%
Surgery and radiotherapy	8	14.29%
Surgery, radiotherapy and chemotherapy	6	10.71%
Non informed	1	1.79%
Recurrence		
Yes	13	23.21%
No / Non informed	43	76.79%

sexes when the sample is categorized according to anatomical site of tumor. A higher time of exposure to tobacco is observed in patients with lip carcinoma than intraoral carcinoma (p=0.028; Student t test). A higher number of participants with intraoral carcinoma were exposed to alcohol than participants with lip carcinoma (p=0.000; Chi-square test).exposure according to site of tumor SD=standard deviation; *p value, α=0.05; [a]Student t test; [b] Chi-square test

DISCUSSION

The present study analyzed fifty-six medical records of patients diagnosed with oral squamous cell carcinoma, attending at Hospital São Lucas (PUCRS), a teaching hospital from Porto Alegre, a city located at the south of Brazil.

The sample of this study showed a mean age of 59.39 years and was mostly composed by men. This data is in accordance to previous literature, that associates oral cancer to male sex in patients with age between 50 and 60 years.[2,3,4,5,6,9,11] Among the evaluated participants, 26.79 % were under 50 years, in which the youngest was 37-years-old. Most cases were registered in participants
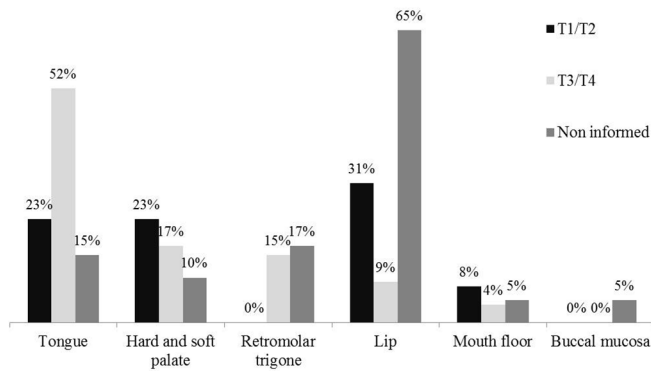
Figure 3. Distribution of lip cancer according to patient occupation. *p* value for Chi square test, α = 0.05.

from 50 to 75 years (66.07 %). It is important to highlight that the oral carcinoma is mostly common among older people, although an increase of numbers of young people affected by this disease has been observed in the last years.[3,16,17] Analyzed data agrees to a study developed in another university hospital of Porto Alegre city.[5]

The place of residence and occupation of participants analyzed in this study showed that 55.36 % lived in urban areas whereas 44.64 % lived in the rural area of Rio Grande do Sul. From 56 patients, 37.50 % declared to be non-rural workers and 14.29 % declared to be rural workers. These data suggest that there is not a significant difference between urban and rural areas, with a tendency to a greater number of cases among non-rural workers regarding the general incidence of oral squamous cell carcinoma.

Epidemiology studies show that tobacco and alcohol are the main etiologic factors oral cancer and that when those factors are combined they exhibit a synergistic effect.[1,2,3,5,6,9] In this study, 80.4 % of participants declared to be smokers or former smokers and 51.8 % alcoholics or former alcoholics. The percentage of participants exposed to tobacco and alcohol did not show significant difference between females and males. Another relevant result is that there is no difference between smokers and former smokers, corroborating the idea that tobacco carcinogenic effects are cumulative.[5]

Table 3. Clinical features and risk factors exposure according to site of tumor

Clinical feature / Risk factor		Anatomical site			*p**
		Lip carcinoma	Intraoral carcinoma	Total	
Age (mean ± SD)		61.53 ± 10.346	58.27 ± 11.293	59.37 ± 10.997	0.286[a]
Sex					
Male	n	18	28	46	
	%	94.74	75.7	82.14	
Female	n	1	9	10	0.078[b]
	%	5.26	24.3	17.86	
Total	n	19	37	56	
	%	100.0	100.0	100.0	
Frequency of patients exposed to tobacco					
Current user	n	6	17	23	
	%	50.0	51.5	51.1	
Former user	n	6	16	22	0.529[b]
	%	50.0	48.5	48.9	
Total of patients exposed to tobacco	n	12	33	45	
	%	100.0	100.0	100.0	
Tobacco exposure in years (mean ± SD)	41.8±10.053	32.55±12.824	34.7±12.751	0.028a	
Frequency of patients exposed to alcohol					
Current user	n	1	14	15	
	%	100.0	50.0	51.7	
Former user	n	0	14	14	0.000[b]
	%	0.0	50.0	48.3	
Total of patients exposed to alcohol	n	1	28	29	
	%	100.0	100.0	100.0	

SD=standard deviation; *p* value, α=0.05; [a] Student t test; [b] Chi-square test

Literature presents the lateral border of the tongue as the most common anatomic site of oral squamous cell carcinoma, followed by the mouth floor.[1,3,5,7,8,9-11,18] However, in this study, the lip was the most affected site (33.93 %) followed by the tongue (32.14 %). The majority of sample with tumor on the lip were rural workers. Taking into account that this class of workers has a greater sun exposure, in addition to greater frequency of patients with white skin, it can be justified that those factors were probably aggravating for the development of squamous cell carcinoma in the lip. Another relevant result is the fact that a higher time of exposure to tobacco was observed in lip carcinoma which suggests that a combination of different variables can be related to the great number of lip cancer.

The TNM staging is an indicator of prognostic, treatment and survival of patients with malignant neoplasms.[3,6,8,11,12,15] The definition of treatment depends on clinical features of the lesion and the systemic conditions of the patient, although the main determinant factor is the TNM staging.[6,11,15,19] According to our results, it can be inferred that intraoral tumors were diagnosed belated, since most of cases were large tumors, classified as T3/T4, with an involvement of regional lymph nodes. On the other hand, most of the lip carcinomas were classified as T1/T2. This probably happen because these lesions are more visible, with aesthetic alterations, leading the patient to sought health services earlier.

The therapeutic possibilities consist of surgery, radiotherapy and chemotherapy, being the surgery the most indicated treatment, followed by an association of surgery and radiotherapy.[3,5,6,11,19,20] Chemotherapy, on the other hand, is commonly used as an adjuvant therapy to radiotherapy, or as a palliative conduct in advanced stages.[1,5,19,21,22] In the present study, the most frequent treatment was surgery (41.07 %), in accordance to literature. Unlike literature, the second most common treatment was the concomitant treatment with radiotherapy and chemotherapy (25.00 %). A possible explanation to this is that the majority of tumors presented advanced size. Besides that, since the most affected sites were lip and tongue, the fear of mutilation could induce the patients to choose for non-surgical therapies.

This study has the limitations of a retrospective design. A large number of medical records had to be excluded from the analysis, and, even some of the records included had missing data, which limits statistical analysis. This represents the importance of a correct fill in of medical records.

The results obtained in this study are in accordance to other epidemiological studies of oral squamous cell carcinoma, except for the anatomical site. A higher prevalence of lip carcinoma was observed in patients with combined risk factors such as sun exposure and alcohol and tobacco consumption. Moreover, it could be observed that intraoral carcinoma is late diagnosed presenting large sizes and involvement of regional lymph nodes, affecting the treatment choice.

The present epidemiological study, like others, is important to knowledge of the profile of local population and risk factors exposition, since oral cancer presents high morbidity and mortality rates. The early diagnosis is considered a very important factor to improve the patient's survival rates, although the best therapeutic conduct is prevention. Accordingly, those studies can contribute to development of social, educational and preventive measures for this cancer type, including the campaigns to reducing harmful habits and to stimulating the self-exam. Besides that, it is of great relevance the complete and legible filling of medical records, not only due to legal reasons, but also due to its importance for development of similar studies.

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