

Sociodemographic and clinicopathological profile of 80 cases of oral squamous cell carcinoma

Perfil sociodemográfico e clinicopatológico de 80 casos de carcinoma de células escamosas de boca

Carolina Emerick¹; Tamires G. Magalhães¹; Maria Carolina L. J. M. Barki¹; Lívia R. Crescencio¹; Renata Tucci¹; Eleni Maria V. B. Barros²; Rebeca S. Azevedo¹

1. Instituto de Saúde de Nova Friburgo da Universidade Federal Fluminense (ISNF/UFF), Nova Friburgo, Rio de Janeiro, Brazil.

2. Hospital Municipal Raul Sertã, Nova Friburgo, Rio de Janeiro, Brazil.

ABSTRACT

Objective: To describe demographic and clinicopathologic profile of oral squamous cell carcinoma (OSCC) cases from incisional biopsies collected at the Nova Friburgo Health Institute of the Fluminense Federal University [Instituto de Saúde de Nova Friburgo da Universidade Federal Fluminense (ISNF/UFF)] and at the Raul Sertã Municipal Hospital [Hospital Municipal Raul Sertã (HMRS)]. **Methods:** Oral Pathology Laboratory records from the ISNF/UFF were reviewed and all cases of OSCC were primarily selected. Cases from ISNF/UFF and HMRS were selected and had their demographic data collected from the medical records. Clinical characteristics were evaluated using the images of the lesions taken on the biopsy day and the laboratory files. The histological slides were later reviewed. **Results:** Eighty cases of OSCC were identified. Most patients were male (56.7%), with a mean age of 60 years, smoker (62.71%) and/or alcoholic (44.55%). The most affected anatomic site was the tongue (39.49%), presenting mainly as an ulcer (39.49%). Microscopically, the well-differentiated lesions were more common (35.44%), and the mean counting of mitoses was 5.5/10 high-power field. **Conclusion:** The profile of OSCC patients in Nova Friburgo partly reflects the world literature, with emphasis on the following differences: low average number of mitoses found in the histopathological analysis and prevalence of well-differentiated lesions. Such differences may be a result of the characteristic variations of the local population, reinforcing the importance of conducting epidemiological studies that demonstrate OSCC peculiarities in different regions.

Key words: oral squamous cell carcinoma; epidemiology; census; oral medicine; oral pathology.

RESUMO

Objetivo: Traçar o perfil sociodemográfico e clinicopatológico dos casos de biópsia incisional de carcinoma de células escamosas bucal (CCEB) coletados no Instituto de Saúde de Nova Friburgo da Universidade Federal Fluminense (ISNF/UFF) e no Hospital Municipal Raul Sertã (HMRS). **Métodos:** Os arquivos do Laboratório de Patologia Oral foram revisados, e todos os casos de CCEB foram primariamente selecionados. Os casos oriundos do ISNF/UFF e do HMRS foram selecionados e tiveram seus dados demográficos coletados a partir dos prontuários. As características clínicas foram avaliadas com base nas fotografias das lesões tiradas no dia da biópsia e nas informações descritas nas fichas de requisição laboratorial. As lâminas histopatológicas foram revisadas posteriormente. **Resultados:** Oitenta casos de CCEB foram identificados. A maioria dos pacientes era do sexo masculino (56,7%), com idade média de 60 anos, tabagista (62,71%) e/ou etilista (44,55%). A localização anatômica mais acometida foi a língua (39,49%), apresentando-se, principalmente, como uma úlcera (39,49%). Microscopicamente, as lesões bem diferenciadas foram as mais comuns (35,44%), e a média de mitoses quantificada foi de 5,5/10 campos de grande aumento. **Conclusão:** O perfil dos pacientes com CCEB em Nova Friburgo reflete, em parte, a literatura mundial, com destaque para as seguintes diferenças: baixo número médio de mitoses encontradas na análise histopatológica e prevalência de lesões bem diferenciadas.

Tais diferenças podem ser resultado das variações características da população local, reforçando a importância da realização de estudos epidemiológicos que evidenciem as particularidades de CCEB em diferentes regiões.

Unitermos: carcinoma de células escamosas bucal; epidemiologia; censo; medicina bucal; patologia bucal.

RESUMEN

Objetivo: Trazar el perfil sociodemográfico y clínico de los casos de biopsia incisional de carcinoma oral de células escamosas (COCE) recogidos en el Instituto de Saúde de Nova Friburgo de la Universidade Federal Fluminense (ISNF/UFF) y en el Hospital Municipal Raul Sertã (HMRS). **Métodos:** Se revisaron los archivos del Laboratorio de Patología Oral, y todos los casos de COCE han sido primariamente seleccionados. Los casos procedentes del ISNF/UFF y del HMRS han sido seleccionados y sus datos demográficos han sido recogidos a partir de los historiales médicos. Las características clínicas fueron evaluadas basándose en las fotografías de las lesiones sacadas en el día de la biopsia y en las informaciones descritas en las boletas de solicitud del laboratorio. Los portaobjetos histopatológicos fueron posteriormente revisadas. **Resultados:** Ochenta casos de COCE fueron identificados. La mayoría de los pacientes era del sexo masculino (56,7%), con edad media de 60 años, fumadores (62,71%) y/o alcohólicos (44,55%). La localización anatómica más afectada fue la lengua (39,49%), presentándose, principalmente, como una úlcera (39,49%). Microscópicamente, las lesiones bien diferenciadas fueron las más comunes (35,44%), y la media de mitosis cuantificada fue de 5,5/10 campos de aumento mayor. **Conclusión:** El perfil de los pacientes con COCE en Nova Friburgo refleja, parcialmente, la literatura mundial, destacando las siguientes diferencias: bajo número medio de mitosis encontradas en el análisis histopatológico y prevalencia de lesiones bien diferenciadas. Dichas diferencias pueden ser resultado de variaciones características de la población local, reforzando la importancia de la realización de estudios epidemiológicos que evidencien las particularidades de COCE en diferentes regiones.

Palabras clave: carcinoma oral de células escamosas; epidemiología; censo; medicina oral; patologia bucal.

INTRODUCTION

Oral cancer represents a major health problem on the global scenario; it is the seventh most common cancer for men and the twelfth for women⁽¹⁾. Brazil is the country with the highest incidence of oral malignant tumors in South America, and over 90% of cases are represented by the oral squamous cell carcinoma (OSCC)⁽²⁾.

The OSCC mainly affects adult men between the sixth and seventh decades of life. The most affected sites are tongue (lateral border and 2/3 anterior), oropharynx (1/3 posterior tongue and soft palate), lips, floor of the mouth, gingiva, hard palate and jugal mucosa. Small lesions are usually asymptomatic, while advanced lesions, which are usually the most common, may be associated with pain, halitosis, as well as speech, chewing and swallowing difficulties^(3, 4). Alcohol consumption and/or smoking is considered a major risk factor for OSCC development. In patients who do not smoke and do not drink alcohol, other factors such

as human papillomavirus (HPV), diet and genetic predisposition may increase the risk of developing the disease; however, the role of these factors remains unclear⁽⁵⁾. In the specific case of lip OSCC, ultraviolet radiation (UVR) is the main etiological factor⁽⁶⁾. In addition, studies indicate that populations with low socioeconomic status are more at risk for developing oral cancer compared with populations with high socioeconomic status⁽⁷⁾.

It is important to know the most prevalent risk factors and major sites of OSCC involvement in each population to identify regional variations, to help understanding the clinical behavior of the malignancy, and to be able to assist in the development of more targeted oral cancer prevention campaigns. In this context, this study aims to evaluate the sociodemographic and clinicopathological profile of OSCC cases of patients attended at the Stomatology Clinic of the Nova Friburgo Health Institute (Instituto de Saúde de Nova Friburgo) of the Universidade Federal Fluminense (ISNF/UFF) and the Raul Sertã Municipal Hospital [Hospital Municipal Raul Sertã (HMRS)] and diagnosed by the ISNF/UFF Oral Pathology Laboratory.

METHODS

Retrospective cross-sectional study approved by the Human Research Ethics Committee (CAAE nº 3799.0.000.258-09 and CAAE no. 70875617.8.0000.5626). All anatomopathological requisition forms from the Oral Pathology Laboratory of the ISNF/UFF were reviewed and all OSCC cases were selected, both from the ISNF/UFF Stomatology Clinic and from the HMRS.

Sociodemographic information (gender, age, smoking and alcohol consumption habits) were collected from the anatomopathological requisition forms and from the dental record.

For clinical analysis, in addition to the information contained in the requisition forms, the dental records were accessed and the photographs of the lesions on the day of diagnosis were evaluated in order to obtain the type of lesion and its location.

Hematoxylin and eosin (HE) stained slides were accessed from block file data and slides from the Oral Pathology Laboratory of the ISNF/UFF; the microscopic features, such as degree of histopathological differentiation, presence of inflammation, vascularization, and number of mitoses per 10 fields in the 40× objective were evaluated.

RESULTS

We identified 80 OSCC cases diagnosed at the ISNF/UFF Oral Pathology Laboratory of patients attended at the ISNF/UFF Stomatology Clinic and/or HMRS (**Table**). Fifty-six patients were male (70%) and the age group ranged from 39 to 89 years, with a mean age of 60 years; men presented average age of 58.6 years, and women, 63.4 years. Sixty-two patients were smokers (78%); 44, alcoholics (55%); 44, smokers and alcoholics (55%); and 18, non-smokers and non-alcoholics (22%).

The most common localization was the tongue (39 cases, 49%). The OSCC cases were located on the lateral border (16 cases, 41%), on the base (14 cases, 36%) and on the ventral surface (nine cases, 23%); the most common form of presentation was ulcer (39 cases, 49%) (**Figure 1**).

The most observed histopathological feature in all cases was the presence of surface epithelial tissue infiltration in the connective tissue, which characterizes the OSCC. Regarding the degree of histopathological differentiation, most were classified as well-differentiated OSCC (35 cases, 44%) or moderately differentiated (33 cases, 41%) (**Figure 2**). The number of mitoses per case

TABLE – Summary of sociodemographic and clinicopathological characteristics of the 80 OSCC cases diagnosed at the ISNF/UFF Oral Pathology Laboratory

Variables	n	%
Sex		
Male	56	70
Female	24	30
Age group		
Fourth decade	6	7.5
Fifth decade	10	12.5
Sixth decade	27	33.75
Seventh decade	20	25
Eighth decade	13	16.25
Ninth decade	4	5
Skin color		
White	57	71.25
Brown	10	12.5
Black	13	16.25
Smoking		
Yes	62	77.5
No	18	22.5
Alcoholism		
Yes	44	55
No	36	45
Lesion site		
Floor of the mouth	13	16.25
Lower lip	8	10
Tongue	39	48.75
Jugal mucosa	4	5
Palate	2	2.5
Alveolar ridge/gingiva	6	7.5
Not specified	8	10
Lesion type		
Ulcerated	39	49.75
Nodular	15	18.75
Plaque	13	16.25
Vegetating	5	6.25
Crusted	2	2.5
Bullous	1	1.25
Not specified	5	6.25
Degree of histopathological differentiation		
Good	35	43.75
Moderate	33	41.25
Poor	12	15
Mitosis for 10 fields of great magnification		
0	16	20
1-10	50	62.5
11-20	9	11.25
21-30	5	6.25
Inflammation		
Mild	18	22.5
Moderate	40	50
Intense	22	27.5
Vascularization		
Normal	69	86.25
Moderate	11	13.75

OSCC: oral squamous cell carcinoma; ISNF/UFF: Instituto de Saúde de Nova Friburgo da Universidade Federal Fluminense.

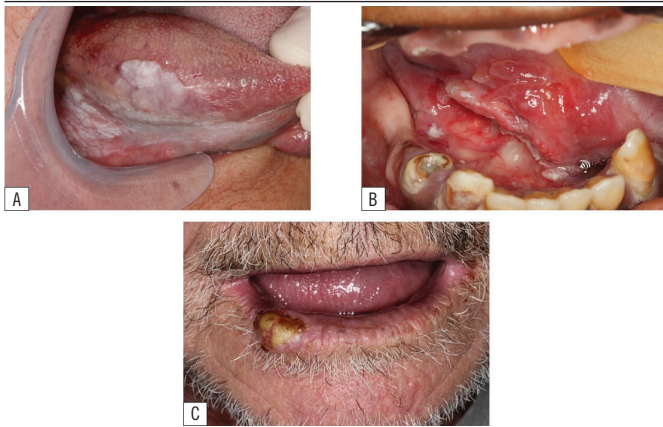


FIGURE 1 – Main sites affected of 80 OSCC cases diagnosed at the ISNF/UFF Oral Pathology Laboratory

A) heterogeneous leukoplakia on right lateral border of the tongue; B) raised edge ulcer in right floor of the mouth; C) crusted nodule on right lower lip.

OSCC: oral squamous cell carcinoma; ISNF/UFF: Instituto de Saúde de Nova Friburgo da Universidade Federal Fluminense.

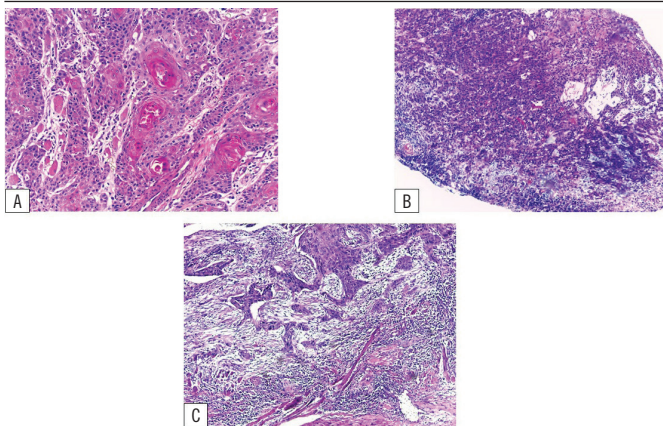


FIGURE 2 – Degrees of histopathological differentiation of 80 OSCC cases diagnosed at the ISNF/UFF Oral Pathology Laboratory (HE, 20×)

A) lesion classified as well differentiated, very similar to the lining epithelium of the mucosa of origin, including the formation of keratin pearls; B) lesion classified as moderately differentiated, showing less similarity to the lining epithelium of the mucosa of origin, but still maintaining some evidence and well-characterized intercellular bridging cells; C) lesion classified as poorly differentiated, showing little similarity to the lining epithelium of the mucosa of origin, including smaller and more dispersed neoplastic cells.

OSCC: oral squamous cell carcinoma; ISNF/UFF: Instituto de Saúde de Nova Friburgo da Universidade Federal Fluminense; HE: hematoxylin and eosin.

of OSCC ranged from 0 to 30, with an average of 5.5 per case. All lesions presented some degree of inflammation on histopathological analysis (100%), and most cases presented normal vascularization (69 cases, 87%). In 39 cases, other histopathological changes were observed: muscle infiltration (11 cases, 28%), glandular infiltration (six cases, 15%), clear cells (four cases, 10%), neural infiltration (three cases, 8%), acantholysis (two cases, 5%), calcification (two cases, 5%), vascular infiltration (two cases, 5%), germinal center (one case, 3%), and necrosis (one case, 3%) (**Figure 3**).

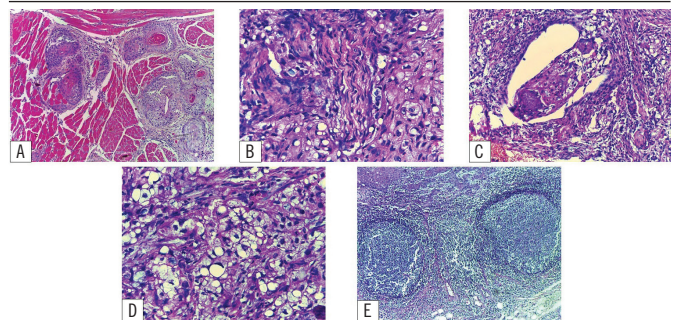


FIGURE 3 – Other histopathological features of 80 OSCC cases diagnosed at the ISNF/UFF Oral Pathology Laboratory (HE)

A) muscle infiltration (20×); B) neural infiltration (40×); C) vascular infiltration (20×); D) clear cells (40×); E) germinal centers (40×).

OSCC: oral squamous cell carcinoma; ISNF/UFF: Instituto de Saúde de Nova Friburgo da Universidade Federal Fluminense; HE: hematoxylin and eosin.

DISCUSSION

In Brazil, the OSCC comprises more than 90% of cases of oral cancers, which is the fifth most frequent site in men and the twelfth in women, varying from region to region. It is worth mentioning the importance of epidemiological surveys⁽⁸⁾ that may show variations depending on the population studied.

The profile of individuals affected by the OSCC are men aged between 45 and 80 years, a result also observed in this research, in which male were predominant in about two thirds of the cases analyzed, with a mean age of 60 years; almost 90% of the cases included were between the fifth and eighth decades of life^(9, 10). However, although male gender is a majority, approximately one third of the cases were women. This data expresses the change in lifestyle, with frequent exposure of women to carcinogens, such as tobacco and alcohol⁽¹¹⁾. Similarly, we observed an increase in the fourth decade of life patient group; all of these individuals are over 35 years old (cut-off age considered in most studies evaluating prevalence, incidence, and risk factors associated with OSCC in young people who are, generally, associated with other carcinogenic agents, especially HPV infection)⁽¹²⁾.

Still regarding the age group, the average age of men who participated in the survey was 4 years younger than women, who may suggest that male are exposed to OSCC risk factors earlier than female. However, it is worth noting that there is also a group of OSCC patients classified as non-smokers and non-alcoholics, in which there is a higher prevalence of older women⁽¹³⁾. In this context, it is important to highlight that among the 18 cases of non-smoking and non-alcoholic patients in our study, 10 were female, representing more than half of the cases (56%).

According to a survey conducted by the World Health Organization (WHO)⁽¹⁴⁾, in 2018, 12% of men and 8% of Brazilian women were smokers; the type of smoking most used by Brazilians is cigarettes. The prevalence rate of smokers in this survey was high, as expected, since smoking is the main risk factor associated with OSCC, and is directly associated with the time and frequency of exposure to this risk factor for the development of oral cancer⁽¹⁵⁾. Alcohol consumption by the patients in this survey was present in more than half of the cases, a result also justified by the fact that alcoholism is the second most important risk factor for the development of OSCC⁽¹⁶⁾, usually in a synergy relationship with the tobacco⁽²⁾, as also observed in patients from this study group.

A limitation during data collection in the requisition forms and dental records were the incorrect completion of information, either due to the absence or omission of crucial characteristics for the full understanding of patients and their oral lesion. Data related to the intensities of smoking/drinking habits were almost always described nonspecifically and therefore could not be evaluated. It is critical that dentists, and especially undergraduate dentistry students, are adequately educated about the risk factors associated with the OSCC and the importance of the presence of this very detailed information when sending a biopsy sample to the pathological anatomy laboratory.

In the description of the clinical characteristics, the absence of some data was also evident, however, such problem was remedied by the possibility of evaluating the clinical photographs taken routinely from all patients with lesions treated at the Stomatology Clinic of the ISNE/UFF – sending source of most of these biopsies –, thus reinforcing the role of photographic documentation in the oral diagnostic services. We emphasize that the integration between stomatology and other dental clinical specialties and oral pathology, an essentially laboratory specialty, is valuable not only for developing studies, but also for the improvement and speed at setting the definitive diagnosis of a patient and, consequently, their treatment and prognosis.

The most affected location of OSCC lesions was the tongue, which is characterized by the presence of lesions with higher level of aggressiveness, and represented almost half of the cases⁽¹⁷⁾. The lateral border and the ventral surface, which comprise the oral portion of the tongue, are almost always associated with smoking and drinking, and together account for about 65% of OSCC cases, while the tongue base, which comprises the oropharynx, is not

always directly associated with smoking and drinking but with HPV, and accounted for about 35% of cases. Nevertheless, in this sample, only 14% of the cases were not associated with smoking. Lower lip lesions represented the third most common site, which usually presents less aggressive clinical manifestations⁽¹⁸⁾, probably related to the ease of visualization and diagnosis.

Regarding the lower lip, it is important to note that in the city of Nova Friburgo, which is located in the north-central region of Rio de Janeiro state, which is of Swiss-German colonization and presents a considerable amount of light-skinned and light-eyes individuals working in agriculture, potentially malignant lesion of actinic cheilitis is also common^(19, 20).

Incisional biopsy is the best tool for OSCC diagnosis in most diagnostic centers, and is useful in understanding the microscopic profile in the diagnosis of cases and, consequently, in their evolution, however, it may be a limiting factor in terms of prognostic definition. In this context, the fact that more than 80% of cases were classified as well- or moderately-differentiated does not necessarily mean that in this lesion there are no poorly differentiated or even undifferentiated areas. Nevertheless, even when such a limitation is present, it is important to note that it was possible to identify areas of infiltration into muscle, gland, nerve and blood vessels in more than a quarter of cases. Regardless of whether an incisional or excisional biopsy evaluation is performed, the most significant factor in defining the prognosis of these lesions is clinical staging⁽²¹⁾.

CONCLUSION

According to a survey of 80 cases of incisional OSCC biopsies from the ISNE/UFF Oral Pathology Laboratory, the predominant profile of the patients was male, white skin, between the sixth and seventh decades of life, smokers and/or alcoholics. The lesion will usually present as an ulcer, nodule or plaque on the tongue, floor of the mouth or lower lip. Microscopically, the OSCC lesions should be classified as well- or moderately-differentiated, with a number of mitoses ranging from 0 to 10, when analyzing 10 fields in 40× objective, and moderate inflammation. Areas of muscle, glandular, neural or vascular infiltration may be observed, but only the clinicopathological association of the surgical specimen will allow defining the final prognosis.

REFERENCES

1. 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. *CA Cancer J Clin.* 2018; 68(6): 394-424.

2. Leite AA, Leonel ACLS, Castro JFL, et al. Oral squamous cell carcinoma: a clinicopathological study on 194 cases in northeastern Brazil. A cross-sectional retrospective study. *Sao Paulo Med J.* 2018; 136(2): 165-9.
3. Oliveira MLC, Wagner VP, Sant'ana Filho M, Carrard VC, Hugo FN, Martins MD. A 10-year analysis of the oral squamous cell carcinoma profile in patients from public health centers in Uruguay. *Braz Oral Res.* 2015; 29.

4. Marocchio LS, Lima J, Sperandio FF, Corrêa L, Sousa SOM. Oral squamous cell carcinoma: an analysis of 1,564 cases showing advances in early detection. *J Oral Sci.* 2010; 52(2): 267-73.
5. Goldemberg DC, Araújo LHL, Antunes HS, Melo AC, Santos Thuler LC. Tongue cancer epidemiology in Brazil: incidence, morbidity and mortality. *Head Neck.* 2018; 40(8): 1834-44.
6. Santos HBP, Santos TKG, Paz AR, et al. Clinical findings and risk factors to oral squamous cell carcinoma in young patients: a 12-year retrospective analysis. *Med Oral Patol Oral Cir Bucal.* 2016; 21(2): e151-156.
7. Krishna A, Singh RK, Singh S, Verma P, Pal US, Tiwari S. Demographic risk factors, affected anatomical sites and clinicopathological profile for oral squamous cell carcinoma in a north Indian population. *Asian Pac J Cancer Prev.* 2014; 15(16): 6755-60.
8. Ministério da Saúde I. Estimativa 2018: incidência de câncer no Brasil [Internet]. Rio de Janeiro: INCA; 2018 [cited on January 28, 2019]. Available at: <https://www.inca.gov.br/publicacoes/livros/estimativa-2018-incidencia-de-cancer-no-brasil>.
9. Fontes KBFC, Milagres A, Piragibe MMM, Silva LE, Dias EP. Contribution of cytopathology to the diagnosis of oral squamous cells carcinoma. *J Bras Patol Med Lab.* 2008; 44(1): 17-24.
10. Johnson N, Franceschi S, Ferlay J, et al. WHO Classification of Head and Neck Tumours – International Agency for Research on Cancer (IARC). 4th edition. Vol. 9. Geneva: World Health Organization; 2017.
11. Dhanuthai K, Rojanawatsirivej S, Thosaporn W, et al. Oral cancer: a multicenter study. *Med Oral Patol Oral Cir Bucal.* 2018; 23(1): e23-9.
12. Miranda-Galvis M. Clinicopathological features and expression of regulatory proteins of cell cycle and local invasion in oral squamous cell carcinoma affecting young patients [Internet]. 2016 [cited on December 11, 2018]. Available at: <http://repositorio.unicamp.br/jspui/handle/REPOSIP/321513>.
13. Wiseman SM, Swede H, Stoler DL, et al. Squamous cell carcinoma of the head and neck in nonsmokers and nondrinkers: an analysis of clinicopathologic characteristics and treatment outcomes. *Ann Surg Oncol.* 2003; 10(5): 551-7.
14. World Health Organization. WHO global report on trends in prevalence of tobacco smoking 2000-2025 – second edition [Internet]. Geneva [cited on January 28, 2019]. 121 p. Available at: <http://www.who.int/tobacco/publications/surveillance/trends-tobacco-smoking-second-edition/en/>.
15. Alam MS, Siddiqui SA, Perween R. Epidemiological profile of head and neck cancer patients in Western Uttar Pradesh and analysis of distributions of risk factors in relation to site of tumor. *J Cancer Res Ther.* 2017; 13(3): 430-5.
16. Kawakita D, Matsuo K. Alcohol and head and neck cancer. *Cancer Metastasis Rev.* 2017; 36(3): 425-34.
17. Dantas DDL, Ramos CCF, Costa ALL, Souza LB, Pinto LP. Clinicopathological parameters in squamous cell carcinoma of the tongue. *Braz Dent J.* 2003; 14(1): 22-5.
18. Shield KD, Ferlay J, Jemal A, et al. The global incidence of lip, oral cavity, and pharyngeal cancers by subsite in 2012. *CA Cancer J Clin.* 2017; 67(1): 51-64.
19. Câmara PR, Dutra SN, Takahama Júnior A, Fontes K, Azevedo RS. A comparative study using WHO and binary oral epithelial dysplasia grading systems in actinic cheilitis. *Oral Dis.* 2016; 22.
20. Oliveira JC, Câmara PR, Tucci R, Fontes K, Takahama Júnior A, Azevedo RS. Immunohistochemical expression of matrix metalloproteinases in actinic cheilitis according to epithelial dysplasia. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2018; 126: e166.
21. INCA. Carcinoma epidermoide da cabeça e pescoço. *Rev Bras Cancerol.* 2001; 47(4): 361-76.

CORRESPONDING AUTHOR

Carolina Emerick  0000-0001-6904-3242
e-mail: carolina.emerick@gmail.com



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