Brazilian Dental Science
Ciência Odontológica Brasileira
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UNIVERSIDADE ESTADUAL PAULISTA "JÚLIO DE MESQUITA FILHO"
Instituto de Ciência e Tecnologia
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ORIGINAL ARTICLE

doi: 10.14295/bds.2016.v19i2.1195

Brazilian Oral pathology: a retrospective survey of 245 cases from a Surgical Pathology Hospital Laboratory

Patologia oral: uma pesquisa retrospectiva brasileira de 245 casos provenientes do Laboratório Hospitalar de Patologia Cirúrgica

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ABSTRACT

Objective: The aim of this study was to determine the range of oral histopathological diagnoses in a Brazilian survey obtained from a surgical pathology hospital laboratory. **Materials and Methods:** A retrospective cross-sectional study was performed, and all histological slides from the oral and maxillofacial region during a 14-year period were reviewed. The diagnoses were grouped into five major diagnostic categories, and age and sex were specified. **Results:** A total of 769 samples were collected and submitted for histopathological analysis. There were 245 oral cases, which were divided into 48 different diagnoses. There was no sex predilection, and the mean age was about 44 years old. Proliferative non-neoplastic lesions (43.2%) and malignant neoplasms (26.5%) comprised the main two groups of diagnoses. **Conclusion:**The malignant neoplasmsprevalence observed in this Brazilian sample may be due to the nature of the population or, most probably, to the nature of the source, a referral hospital center in the city.

KEYWORDS

Mouth; Biopsy; Epidemiology; Hyperplasia; Carcinoma.

RESUMO

Objetivo: O objetivo deste estudo foi determinar a variação de diagnósticos histopatológicos da cavidade oral em uma amostra brasileira obtida a partir de um laboratório hospitalar de patologia cirúrgica. **Material e Métodos:** Um estudo transversal retrospectivo foi realizado e todas as lâminas histopatológicas da região oral e maxilofacial durante um período de 14 anos foram revisadas. Os diagnósticos foram agrupados em cinco categorias principais de diagnóstico, sendo o sexo e a idade especificados. **Resultados:** Um total de 769 amostras foram coletadas e submetidas a análise histopatológica. Foram identificados 245 casos de lesões orais, que foram subdivididas em 48 diferentes diagnósticos. Não houve predileção por sexo, e idade média foi de 44 anos. Lesões proliferativas não-neoplásicas (43,2%) e neoplasias malignas (26,5%) representaram os dois principais grupos de diagnóstico. **Conclusão:** A prevalência de neoplasias malignas observada nesta amostra brasileira pode ser explicada devido a natureza da população ou, mais provavelmente, pela natureza da fonte, um hospital de referência na cidade.

PALAVRAS-CHAVE

Boca; Biópsia; Epidemiologia; Hiperplasia; Carcinoma.

INTRODUCTION

Epidemiological studies have an important role in public health because theyprovide information about the prevalence and distribution of a group of diseases in the specific population where the study is conducted [1,2]. Studies focusing on oral and maxillofacial pathology may be based on clinical and radiological diagnoses [2-4], on clinical and histological diagnoses [1,5-7],and solely on histological diagnoses [8-22].

There are relatively few papers evaluating the profile of histologically diagnosed oral diseases,and most of them are limited to certain age groups, such as children [12,16,18-20], adults [17], or the elderly [10,11,13];or describedspecimens received only by general dental practitioners[14];or studied only specific disease groups, such asodontogenic cysts [23], salivary gland tumors [24], or mucosal non-neoplastic lesions [21].Therelative frequency and the distribution of oral and maxillofacial diseases with histological confirmation, including all diagnostic and age groups, is not commonly reported, especially in studies derived from hospital-based surgical pathology [8,9]. Thus, the aim of this study was to describe the oral diseases that were histologically diagnosed in a hospital-based surgical pathology laboratoryin Brazil.

MATERIAL AND METHODS

This cross-sectional retrospective study was carried out with the approval of the Research Ethics Committee. Archives originated from the oral and maxillofacial regions were reviewed. Casesout of oral pathologists' scope, such as those from skin and nasal cavity, were not included in the sample.All available oral specimens submitted to the Surgical Pathology Laboratory,Municipal Hospital Raul Sertã (Nova Friburgo, Rio de Janeiro, Brazil), from 1996 to 2010 were selected,and 5-μm hematoxylin and eosin (HE)-stained slides were prepared from paraffin blocksand reviewed.Additional histochemicalstains and immunohistochemicalreactions were performed when the routine stain was not sufficient for determining the final diagnosis. Clinical data, including age, gender, and site of the lesions, were retrieved from the laboratory records. After diagnosiswas established, the diseases were classified into five major categories—proliferative non-neoplasticlesions, benign neoplasms, malignant neoplasms, cysts, and miscellaneous conditions—and were descriptively analyzed.

RESULTS

From a total of 769 biopsies derived from the oral and maxillofacial region, there were 260 casesthat originated from the oral cavity (33.8%). It was not possible to establish a definitive diagnosis in 15 cases because there wasnot sufficient material for analysis, and thus,the final sample was composed of 245cases.

There were 120 femalesand 121 males, and information about gender was not available in four cases. Age at the time of diagnosis ranged from 6 to 88 yearsold with a mean age of 44.6 yearsold (43 for females and 46for males), and patients in their fiftieswere the most commonly affectedage group. Considering each group of diagnosis, patients affected by malignant neoplasms showed the highest mean age (57 years).The anatomical distribution of the lesions showed that lips (62 cases; 24.6%), tongue (61 cases; 24.9%), buccal mucosa (24 cases; 9.8%), palate (22 cases; 9.0%), gingiva (11 cases; 4.5%) and floor of the mouth (10 cases; 4.1%) were respectively themost commonlyaffectedsites. The location was generic reported as mouth or oral mucosa in 13 cases (5.3%).

After the histological review, 48 different diagnoses were established and separated into five major groups: proliferative non-neoplastic disorders (107 cases, 43.7%), malignant

neoplasms (65 cases, 26.5%), benign neoplasms (19 cases, 7.8%), cysts (9 cases, 3.7%),and miscellaneous conditions (32 cases, 13.1%). Thirteen cases (5.3%) rendered an inconclusive descriptive diagnosis.The final diagnosis was similar to the original diagnosis in 161 cases (65.7%).The ten most common diagnoses weresquamous cell carcinoma (22.4%),fibrous hyperplasia/ inflammatory fibrous hyperplasia (22%), mucous extravasation phenomenon (mucocele) (13%), pyogenic granuloma(3.2%), nonspecific inflammation (2.8%),radicular cyst (2.4%),paracoccidioidomycosis (2%), lipoma(2%), pleomorphic adenoma(1.6%), and leukoplakia (1.2%)(Tables I–V).

Table 1 - Distribution of the proliferative non-neoplastic disorders diagnosed on the sample according with gender and age of the affected patients

Diagnosis	Number (%)	Male	Female	Male:Female	Mean age (range)
Fibrous hyperplasia/ Inflammatory fibrous hyperplasia	54 (50.46%)	18	36	1:2	45 (11-76)
Mucocele	32 (29.92%)	15	17	1:1.13	23 (9-73)
Pyogenic granuloma	8 (7.49%)	2	6	1:3	31 (9-74)
Squamous papilloma	6 (5.62%)	2	4	1:2	44 (8-80)
Peripheral ossifying fibroma	4 (3.72%)	1	3	1:3	32 (11-42)
Verruca vulgaris	1 (0.93%)	0	1	0:1	53 (53)
Peripheral giant cell lesion	1 (0.93%)	0	1	0:1	52 (52)
Adenomatoid hyperplasia of minor salivary glands	1 (0.93%)	0	1	0:1	58 (58)
TOTAL	107 (100)	38	69	1:1.8	-

Table 2 - Distribution of the benign neoplasms diagnosed on the sample according with gender and age of the affected patients

Diagnosis	Number (%)	Male	Female	Male:Female	Mean age (range)
Lipoma	5 (26.31)	2	3	1:0.25	62 (58-68)
Pleomorphic adenoma	4 (21.05)	0	4	0:4	27 (12-46)
Melanocytic nevus	3 (15.80)	0	3	0:3	38 (31-45)
Hemangioma	3 (15.80)	2	1	1:0.5	61 (55-71)
Lymphangioma	2 (10.52)	1	1	1:1	17 (11-23)
Hemangiolymphangioma	1 (5.26)	1	0	0:1	30 (30)
Schwannoma	1 (5.26)	1	0	1:0	N/A*
TOTAL	19 (100)	7	9	1:1.7	-

* N/A = information not available.

Table 3 - Distribution of the cysts diagnosed on the sample according with gender and age of the affected patients

Diagnosis	Number (%)	Male	Female	Male:Female	Mean age (range)
Radicular cyst	6 (66.66)	2	4	1:2	45 (29-67)
Epidermoid cyst	1 (11.11)	1	0	1:0	24 (24)
Lingual cyst with respiratory epithelium	1 (11.11)	0	1	0:1	N/A
Nasopalatine duct cyst	1 (11.11)	1	0	1:0	N/A *
TOTAL	9 (100)	4	5	1:1.24	-

* N/A = information not available.

Table 4 - Distribution of the malignant neoplasms diagnosed on the sample according with gender and age of the affected patients

Diagnosis	Number (%)	Male	Female	Male:Female	Mean age (range)
Squamous cell carcinoma	55 (84.61)	42	13	1:0.3	58 (39-83)
Adenoid cystic carcinoma	2 (3.07)	1	1	1:1	58 (58)
Basal cell carcinoma	1 (1.54)	0	1	0:1	80 (80)
Leiomyosarcoma	1 (1.54)	1	0	1:0	40 (40)
Kaposi's sarcoma	1 (1.54)	1	0	1:0	37 (37)
Carcinosarcoma	1 (1.54)	0	1	0:1	28 (28)
Acinar cell carcinoma	1 (1.54)	0	1	0:1	N/A*
Oral metastasis	1 (1.54)	0	1	0:1	6 (6)
Undifferentiated malignant neoplasm	1 (1.54)	1	0	1:0	68 (68)
Nonspecific sarcoma	1 (1.54)	0	1	0:1	64 (64)
TOTAL	65 (100)	46	19	1:0.4	-

* N/A = information not available.

Table 5 - Distribution of the miscellaneous conditions diagnosed on the sample according with gender and age of the affected patients

Diagnosis	Number (%)	Male	Female	Male:Female	Mean age (range)
Nonspecific inflammation	7 (21.89)	5	2	1:0.4	32 (15-58)
Paracoccidioidomycosis	5 (15.64)	4	0	4:0 *	38 (27-50)
Leukoplakia	3 (9.39)	3	0	3:0	51 (44-64)
Lichenoid lesion	3 (9.39)	1	2	1:2	46 (27-57)
Actinomycoses	1 (3.12)	1	0	1:0	65 (65)
Actinic cheilitis	1 (3.12)	1	0	1:0	36 (36)
Actinic keratosis	1 (3.12)	0	1	0:1	60 (60)
Median rhomboid glossitis	1 (3.12)	1	0	1:0	40 (40)
Sinusitis	1 (3.12)	0	1	0:1	60 (60)
Sjögren syndrome	1 (3.12)	0	1	0:1	53 (53)
Periapical granuloma	1 (3.12)	1	0	1:0	9 (9)
Subgemmal neurogenous plaque	1 (3.12)	1	0	1:0	57 (57)
Abscess	1 (3.12)	1	0	1:0	8 (8)
Reactional hyperkeratosis	1 (3.12)	1	0	1:0	14 (14)
Erythroplakia	1 (3.12)	0	1	0:1	88 (88)
Periapical scar	1 (3.12)	0	1	0:1	N/A**
Nonspecific ulcer	1 (3.12)	1	0	1:0	74 (74)
Oral melanocytic macule	1 (3.12)	0	1	0:1	37 (37)
TOTAL	32 (100)	21	10	1:0.5	-

* Gender of the patient was not available in one case; ** N/A O information not available.

Considering the group of malignant neoplasms, the most common tumor was squamous cell carcinoma, accounting for 84.6% of cases. Malignant salivary gland tumors, including adenoid cystic carcinoma, acinar cell carcinoma,and carcinosarcoma and, as a

group, accounted for 6.2% of the malignant tumors. Unusual soft-tissue malignant neoplasms, such as Kaposi´s sarcoma and leiomyosarcoma, were diagnosed by the use of immunohistochemical reactions in one case of each. Kaposi´s sarcoma affected the hard palate of a 37-year-old HIV-positive male, and was histologically characterized as a proliferation of malignant neoplastic spindle cells that were positive for CD34 and HHV8 (Figure1). Oral leiomyosarcoma affected the mandible of a 47-year-old male, and was histologically characterized by a proliferation of malignant spindle cells withintenselyeosinophiliccytoplasm and blunt-ended nuclei, which were positive for vimentin, muscle-specific actin, α-smooth-muscle actin, and calponin, and negative for H-caldesmon and CD34 (Figure 2).

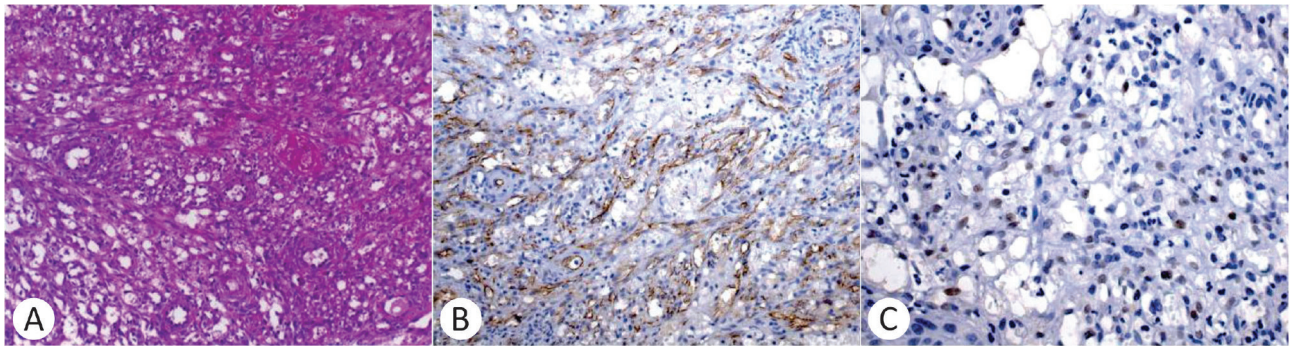

Figure 1 - Kaposi's sarcoma. A: A spindle cell proliferation showing vascular spaces associated with hemorrhage and local inflammation (HE, original magnification x200). B: Immunohistochemical staining for CD34 (immunoperoxidase, original magnification x200). C: Immunohistochemical staining for HHV-8 (immunoperoxidase, original magnification x400).

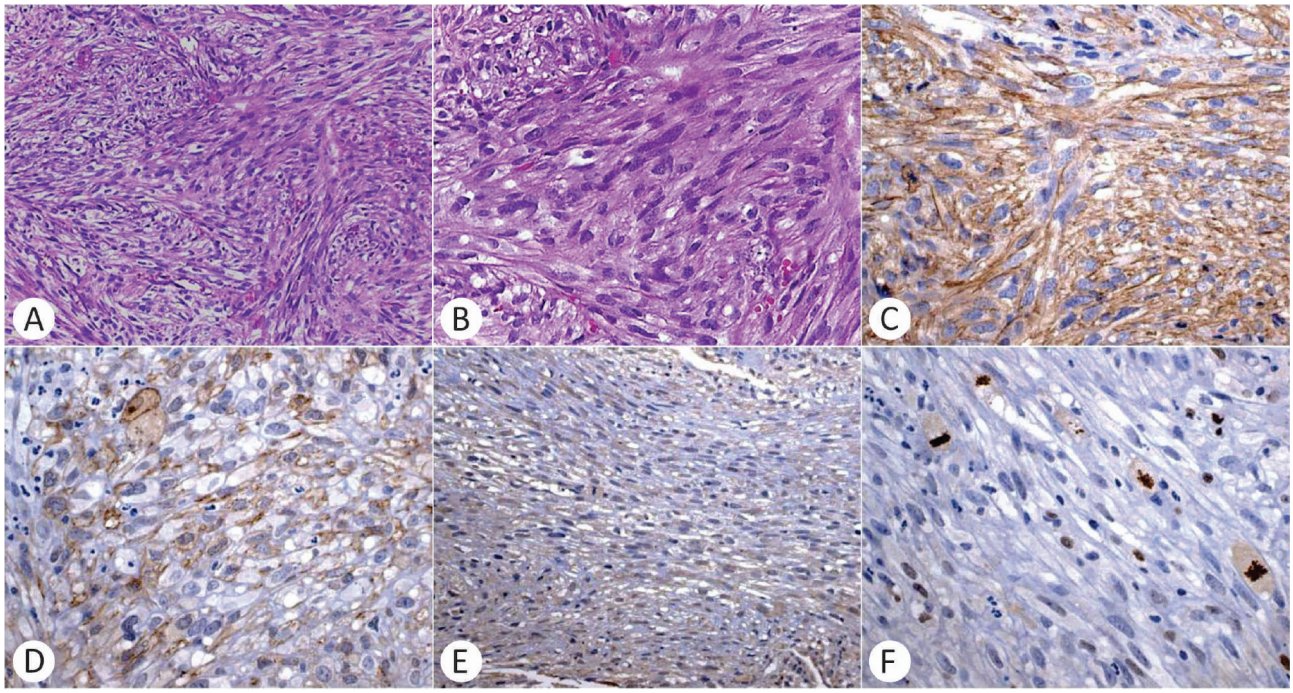

Figure 2 - Leiomyosarcoma. A: A spindle cell proliferation arranged on interlacing fascicles (HE, original magnification x100). B: Detail of the hyperchromatic "cigar-shaped" nuclei (HE, original magnification, x 200). C: Immunohistochemical staining for muscle-specific actin (immunoperoxidase, original magnification x400). D: Immunohistochemical staining for α-smooth-muscle actin (immunoperoxidase, original magnification x400). E: Immunohistochemical staining for calponin (immunoperoxidase, original magnification x400). F: Immunohistochemical staining for Ki-67 on neoplastic cells exhibiting atypical mitosis (immunoperoxidase, x400).

DISCUSSION

Evaluation may reveal a great variability of diagnoses, and to simplify this analysis, the literature suggests that lesions are groupedinto related diagnoses. Even so, these groups are usually different in each study, which may lead to it being difficult to make an accurate comparison between them [8-22].

In general, studies analyzing oral and maxillofacial microscopic diagnoses that originated from pathology laboratories reveal no predilection for gender or a slight predominance of males 5,9,10]or female [17,18,22],and cover a wide age range with a peak prevalence between the 3rd and 6th decades of life [5,10,16,22].In the present findings, a similar distribution of males and females was observed; nonetheless, malignant neoplasms presented a male predominance, and proliferative non-neoplastic lesions and benign neoplasms had a female predominance.

Lips, tongue and buccal mucosa are the most common sites identified in this sample of oral pathologies. It is noticeable that lipfiguresas the most one,considering that oral squamous cell carcinoma, which mainly involves the tongue, was the most common diagnosis. This finding may be justified as a geographical trait of Nova Friburgo, a country town in Brazil that was colonized by Swiss and German and has agriculture as an important economic activity; therefore, favoring the development of actinic cheilitis, a premalignant disorder.

Proliferative non-neoplastic lesions comprised the main group of diagnoses, and fibrous hyperplasia, including focal fibrous hyperplasia and inflammatory fibrous hyperplasia,wasone of themost commonlesions diagnosed, a regular findingin studiesthat consider mainly adults and elderly patients [10,11,13,14,17], even in studies containing a great number of squamous cell carcinoma [10,11,13]. Studies considering the pediatric group have found thatmucocele, especially the mucous extravasation phenomenon, is the most common diagnosis[12,16], a diagnosis that comprises 29.9% of the proliferative non-neoplastic group and 13.0% of all the diagnoses in our study. It is noteworthy that, excluding lesions with only one case diagnosed,mucocelehad the youngest mean age.

Benign neoplasmswere heterogeneous and uncommon, comprising 7.8% of all the diagnoses. Lesions included in this group were from the salivary glands, as well as epithelial and mesenchymal tissues.Lipoma, followed by pleomorphic adenoma and melanocytic nevus, was the most common diagnosis, a finding not commonly identified, especially considering the relativelyhigh frequency of pleomorphic adenoma, which is the most common salivary gland tumor [24].The present study identified pleomorphic adenoma in 1.6% of all cases, but, in general, the literature identifies pleomorphic adenoma in less than 1.0%of all biopsy samples [10-11,14,16-17].These differences may be justified because our study was performed with samples that originated from a hospital service, a place where biopsies from neoplastic salivary gland pathology are common.

Radicular cyst, the most common cyst in this study, is usually one of the most common diagnoses in oral pathology in both pediatric and adult groups, especially considering the studies that originated from oral pathology services inside a school of dentistry [12,14,16-17,22-23]. In the present study, only a few cases of radicular cysts were diagnosed, and this is also probably because of the origin of our samples since this is a diagnosis that is usually performed by a general dentist in a clinical practice inside its own clinic or at a school. Other non-odontogeniccysts, such as the nasopalatine duct cyst,which is usually the most common non-odontogenic jaw lesion, are rare [12].

Malignancies comprised 26.5% of our cases;88.6% of these and 22.4%of the entire sample were diagnosed as squamous cell carcinoma. This high relative frequency of

malignant tumors was not expected since it is usually observed in less than 15% of the total number of oral biopsies in elderly groups [10,11], less than 6% in adult groups [14,16], and less than 2% in pediatric groups [12,13,20]. In addition, except for children, it is well known that squamous cell carcinoma is the most common malignancy diagnosed by oral pathologists [10,11]. It is possible that this high relative frequency of malignancies in our sample occurs because of the source for this study being from the reference public hospital of the city.

Prevalence of odontogenic tumors, which are specific from oral pathology,is rare. Jones and Franklin [14] found only 0.8% of odontogenic tumors among specimens submitted for histopathological examination by general dental practitioners in a school of dentistry. Sixto-Requeijo et al.[22] also found a similar relative frequency,with 0.5% of odontogenic tumors among biopsies from an oral medicine and surgery unit in a school of dentistry. It was surprising thatthere were no cases of odontogenic tumors in the present study,being performed at a hospital setting presenting ageneral practitioner and bucomaxilofacial care. Thus, such absence may be justified as a geographical variation or, moreprobably, because it is particularly diagnosed by dentists within an oral pathology service. These data reinforce the notion that there are substantial differences between oral pathologies prevalence and distribution from an oral pathology laboratory and from a surgical pathology laboratory.

CONCLUSIONS

This oral and maxillofacial survey showed a prevalence of benign diseases, especially proliferative non-neoplastic lesions and miscellaneous conditions, but also presented a great number of malignant neoplasms, especially squamous cell carcinoma. The peculiarity of malignant prevalence observed in this Brazilian sample may be attributed to the nature of the population of the region or, most probably, to the nature of the source, a referral hospital center in the city.

ACKNOWLEDGEMENTS

This work had financial support fromFAPERJ and PROPPI-UFF. The authors thank OsleiPaes de Almeida for the immunohistochemical staining, and Daniele Silva do Couto for the histochemical staining.

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Date submitted: 2015 Nov 23

Accept submission: 2016 Jun 13