

Comparison between periodontal disease and gingival carcinoma with emphasis on radiographic imaging

Comparação entre a doença periodontal e o carcinoma gengival com ênfase na imagem radiográfica

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ABSTRACT

The majority of published papers deal mainly with prevalence, pathogenesis and treatment of squamous cell carcinoma of the gingiva (SCCG). On the other hand, little is discussed about the comparison between periodontal disease and gingival carcinoma with emphasis on radiographic imaging. In this case report we discuss the importance of the radiographic aspects in inflammatory periodontal disease and SCCG. This case report shows the importance of differentiating a localized severe periodontal disease and SCCG considering the radiographic aspects of the inflammatory bone loss and tumoral bone loss. The oral health care providers need to be familiar with the radiographic imaging of periodontal disease and SCCG

Keywords: Gingival carcinoma; Squamous cell carcinoma; Periodontal disease; Dental radiograph.

RESUMO

A maioria dos trabalhos publicados discute, principalmente, a prevalência, patogenia e o tratamento do carcinoma de células escamosas de gengiva (SCCG). Por outro lado, pouco se tratou sobre a relação entre doença periodontal e o carcinoma gengival com ênfase em imagens radiográficas. Neste relato de caso nós discutimos a importância dos aspectos radiográficos da doença periodontal inflamatória e SCCG. Este relato de caso mostra a importância de diferenciar uma doença periodontal grave localizada e o SCCG considerando os aspectos radiográficos de perda óssea inflamatória e perda óssea tumoral. Os profissionais da área de saúde bucal precisam estar familiarizados com a imagem radiográfica da doença periodontal e SCCG.

Palavras-chave: Carcinoma Gengival; Carcinoma de Células Escamosas; Doença Periodontal; Radiografia Dental

INTRODUCTION

The majority of published papers deal mainly with prevalence, pathogenesis and treatment of SCCG. On the other hand, little is discussed about the comparison between periodontal disease and gingival carcinoma with emphasis on radiographic imaging. "Oral malignant tumors are the sixth most common malignancies worldwide¹". Squamous cell carcinoma (SCC) is the most common malignancy of the oral cavity² and the gingiva is the least common site to be affected, representing about 2 to 12% of diagnosed SCCA³

SCCG can invade the maxilla and mandible causing bone resorption, followed

by tooth mobility that can mimic a localized periodontal disease³. Although the patient's complaint is periodontal disease, dentists are usually the first professionals to care for patients with SCCG. Therefore, the dental professional should be aware of the first signs of these lesions because the early detection of SCCG can result in a better prognosis based on the differential diagnosis³.

The differential diagnosis between SCCG and other lesions is very important when making decisions about treatment. Based on the wide range of clinical aspects of SCCG, others lesions can mimic SCCG such as pseudoepitheliomatous hyperplasia, epithelial dysplasia, pyogenic granuloma,

benign pemphigoid, lichen planus³, verruciform xanthoma, peripheral ossifying fibroma and keratoacanthoma⁴. In addition to these lesions it is important to consider the specific lesions related to periodontal structures such as aggressive periodontal disease, necrotizing ulcerative gingivitis, and inflammatory lesions of endodontic and periodontal origin.

The majority of bone loss involving teeth originates in periodontal disease. However, under these circumstances, dentists need to consider SCCG in relation to periodontal bone loss⁵. The literature has shown the radiographic patterns of bone loss related to SCCG and many authors have described the bone loss in the following ways: erosion of alveolar bone, ill-defined radiolucency, no corticated border, widening of the periodontal ligament space (PDL), with lamina dura resorption^{3,5-6}.

Reviewing the dental literature about SCCG we were not able to find published papers discussing the comparison between the radiographic imaging of periodontal disease and gingival carcinoma. Therefore, the aim of this case report is to discuss a case of SCCG that appeared to be localized periodontal disease.

CASE REPORT

A 52 year-old white female presented herself for evaluation at the Department of Oral Diagnosis and Surgery with the chief complaint of tooth mobility in the left posterior maxilla and swelling on buccal and lingual gingiva which began two months earlier. At that time the professional had recommended tooth extraction. She was placed under anti-inflammatory medication and mouth wash. Despite this treatment, the tooth mobility worsened and became painful. The patient decided to come to the Dental School for another opinion. Her medical history consisted of treatment for weight loss. Social history was negative for factors such as tobacco or alcohol.

Clinical examination revealed erosive/erythematous areas and keratotic papules of the buccal and lingual gingiva on teeth #27 and #28, no spontaneous bleeding, exposition of the roots and grade 3 mobility which was more evident in tooth #27 (Figure 1 and 2). Clinical differential diagnoses were: periodontal disease, epithelial dysplasia, benign mucous membrane pemphigoid, lichen planus or paracoccidioidomycosis.



Figure 1



Figure 2

Panoramic and periapical radiographic examinations showed an area of radiolucency which corresponded to a severe bone resorption in the maxilla posterior region, related to the roots of teeth #27 and #28 with no limited borders. The related tooth #27 seemed to be floating in the radiolucency area. The lamina dura was not present and the periodontal ligament space could not be visualized. In contrast to the clinical examination, the radiographs showed signs of malignancy because the alveolar bone destruction appeared as an invasive and erosive aspect, non-corticated and with ill-defined borders (Figures 3 and 4).

Based on radiographic examination, the differential diagnosis for this lesion included gingival squamous cell carcinoma.

A biopsy of the left maxillary gingiva was performed. Microscopic examination of the gingival tissues showed a stratified squamous epithelium that exhibited dysplastic changes such as pleomorphism, atypical mitosis with sheets of malignant epithelial cells invading the sub mucosa, individual cell keratinization and keratin pearl formation in the connective tissue. The

final diagnosis was well-differentiated gingival squamous cell carcinoma.

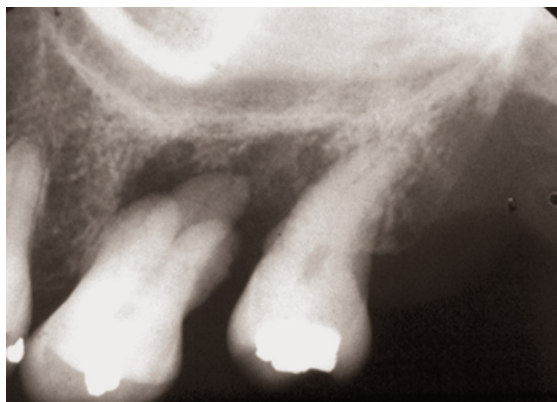


Figure 3

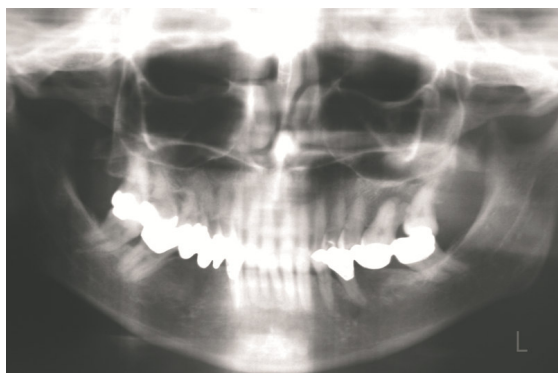


Figure 4

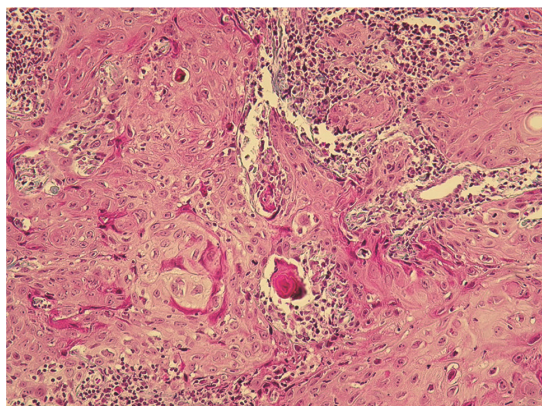


Figure 5

DISCUSSION

Early diagnosis and treatment of gingival squamous cell carcinoma is essential in decreasing the disease's lethal potential. The SCCG could be mistaken for localized severe periodontal disease. In our case, the clinical aspects were not conclusive for malignant tumor.

The radiographic aspects of the periodontal disease consist of horizontal bone loss or vertical osseous defects, increasing the periodontal ligament space, and interradicular bone loss. However, SCCG can invade the bone around teeth, increasing the periodontal ligament space and causing lamina dura resorption. Based on the radiographic aspects we suspected that the lesion was malignant. The radiographic aspects were typical of malignant tumor showing the related teeth floating in the radiolucency area. The lamina dura was not present and the periodontal ligament space could not be visualized. The alveolar bone destruction appeared as an invasive and erosive aspect, non-corticated border and the lesion presented ill-defined limits. Other authors have described the same radiographic aspects^{3,5-7}.

Severe periodontitis is characterized by extensive bone loss and mobility of the remaining teeth. The dental mobility results from alveolar bone loss and can be present in the SCCG⁵. Yoon et al (2007) reported a case of gingival SCC that mimicked localized periodontal disease³. The signs present were swelling, erythematous tissue and grade 3 mobility of the first molar. In our case, the patient also presented dental mobility involving the molars and clinical similarities to advanced localized periodontal disease.

The severe bone loss with a diagnosis of SCCG can be explained based on the results of Seoane et al (2006) due to early tumor invasion to the bone⁸. This affirmation demonstrates the importance of radiographic examination in early stages of SCCG.

Malignant tumors located in distant sites may spread to the jaw bones and are denominated metastasis. Jaw metastasis occurs in less than 1% of metastatic malignancies found elsewhere. The most common primary lesion that causes metastasis in the jaw is located on the breast, kidney and lung⁵.

The radiographic features of the metastasis are similar to gingival malignancies, related to radiographic aspects and the localization. The posterior areas of the jaw are more commonly affected, the mandible being favored over the maxilla. Also, lesions may be located in the periodontal ligament space mimicking inflammatory periodontal disease. Metastatic carcinoma must be differentiated from the more common, locally invading squamous carcinoma based on the medical history and

biopsy of gingival tissue. In this case, there is no medical history for primary malignant tumor. In this way, we arrived at the final diagnosis through microscopic examination.

SCCG can mimic periodontal disease. Thus, dental professionals need to consider the possibility of carcinoma when examining periodontal lesions^{3-4,6-7,9}. Since dentists and clinicians initially see most patients, these professionals should be vigilant of all lesions in the oral cavity and provide a detailed clinical and radiographic examination. If a final diagnosis can not be made through clinical and radiographic examination, it is very important to perform a biopsy.

CONCLUSION

This case report shows the importance of differentiating a localized severe periodontal disease and SCCG considering the radiographic aspects of the inflammatory bone loss and tumoral bone loss. The oral health care providers need to be familiar with the radiographic imaging of periodontal disease and SCCG.

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