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ORIGINAL ARTICLE

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Rushton bodies: a pathological enigma

Corpos de Rushton: um enigma patológico

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ABSTRACT

The most common inflammatory odontogenic cyst is the radicular cyst. It forms as a result of pulp necrosis due to the presence of carious teeth. Rushton bodies may be seen as irregular structures on the surface epithelium of odontogenic cysts. We present a rare case of a radicular cyst showing rushton bodies in a 47-year-old male patient.

KEYWORDS

Rushton bodies; Radicular cyst; Inflammatory cyst.

RESUMO

O cisto odontogênico inflamatório mais comum é o cisto radicular. Ele se forma como resultado de necrose pulpar devido à presença de dentes cariados. Os corpos de Rushton podem ser vistos como estruturas irregulares na superfície do epitélio dos cistos odontogênicos. Este relato apresenta um caso raro de um cisto radicular mostrando corpos de Rushton em um paciente do sexo masculino de 47 anos de idade.

PALAVRAS-CHAVE

Corpos de Rushton; Cisto radicular; Cisto inflamatório.

INTRODUCTION

Radicular cysts being inflammatory in origin can arise from epithelial residues in the periodontal ligament. It occurs as a result of an apical periodontitis following the death and necrosis of the pulp tissue. This cyst commonly occurs between the third and fifth decades of life in the maxillary anterior region. [1] Rushton bodies (RB) or hyaline bodies have been observed in the histopathological sections of odontogenic cysts. They are seen as eosinophilic, irregular or rounded, straight or curved structures within the epithelial lining of the cysts. [2] There has been a hot debate about the origin and nature of RB.

CASE REPORT

A 47-year-old male patient reported with a complaint of a swelling in the upper jaw, which was gradually increasing in size since three months. A detailed history revealed that there was a traumatic injury to his upper anterior tooth region seven years ago. The injury had resulted in pain and swelling in relation to the maxillary anterior teeth. He had consulted a dentist for the same; who then performed a root canal treatment for the maxillary central incisors followed by an apicoectomy. But, the relief obtained was not permanent, and the condition further deteriorated with pus discharge from the upper labial vestibule. An orthopantamogram revealed a large, well-defined radiolucent lesion with sclerotic borders. The lesion extended from maxillary right first premolar to the maxillary left first premolar. A provisional diagnosis of a radicular cyst was arrived. The cyst was surgically enucleated under general anaesthesia. Histopathological examination showed the cyst to be lined by stratified squamous epithelium of

variable thickness. The outer connective tissue wall showed a dense infiltrate of lymphocytes and plasma cells. The epithelium showed groups of acellular, variable-sized eosinophilic structures of different shapes varying from straight, linear, to irregular circular forms suggestive of RB (Figure 1). Occasional ones had concentric laminations. Some RB were refractile but not birefringent. These bodies were periodic acid-Schiff negative but strongly positive with Masson's Trichrome and Orcein stains (Figure 2).

DISCUSSION

Rushton bodies were first described in detail by MA Rushton in 1955. [2] They are seen exclusively within the epithelial lining of odontogenic cysts. They are not seen within the lining of nasopalatine duct cysts or fissural cysts. [3,4] RB may also show up in examination of the gross specimen as small, white, dome-shaped swellings measuring up to 0.1 mm on the epithelial surface and protruding into the cyst cavity as observed in the present case (Figure 3). [1] A single case of RB occurring within a plexiform ameloblastoma has been reported. [5] In a histopathological section, the RB appears tucked within the epithelium as acellular, eosinophilic, linear, straight, curved or hairpin shaped, circular or polycyclic forms, often with a granular core and at times laminated concentrically. The presence of these

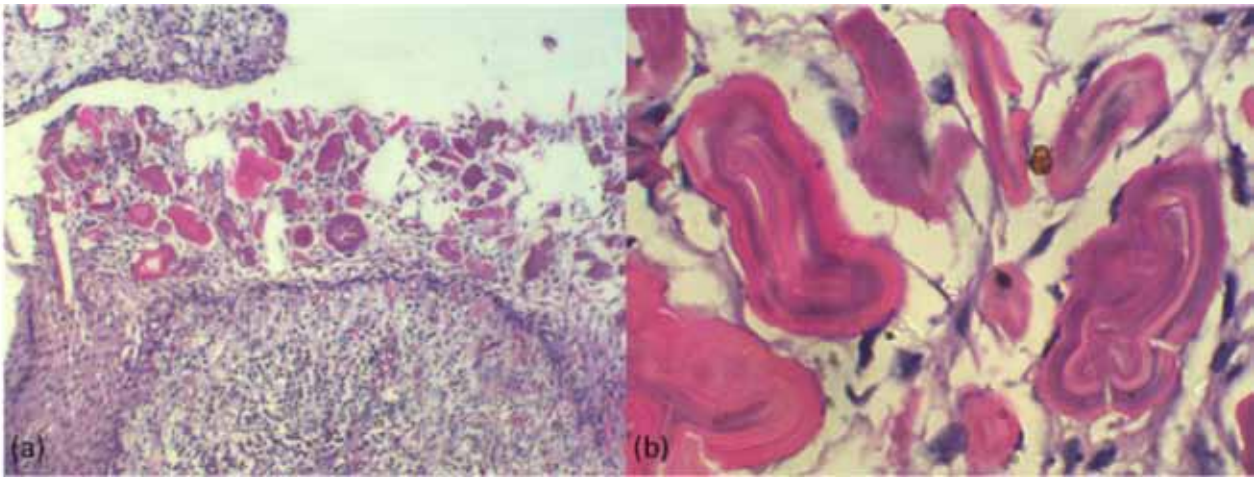

Figure 1 - a) Rushton bodies seen as acellular, eosinophilic structures within the epithelial lining of the cyst. (H and E stain, X10). b) Rushton bodies seen as acellular, eosinophilic structures within the epithelial lining of the cyst. (H and E stain, X40)

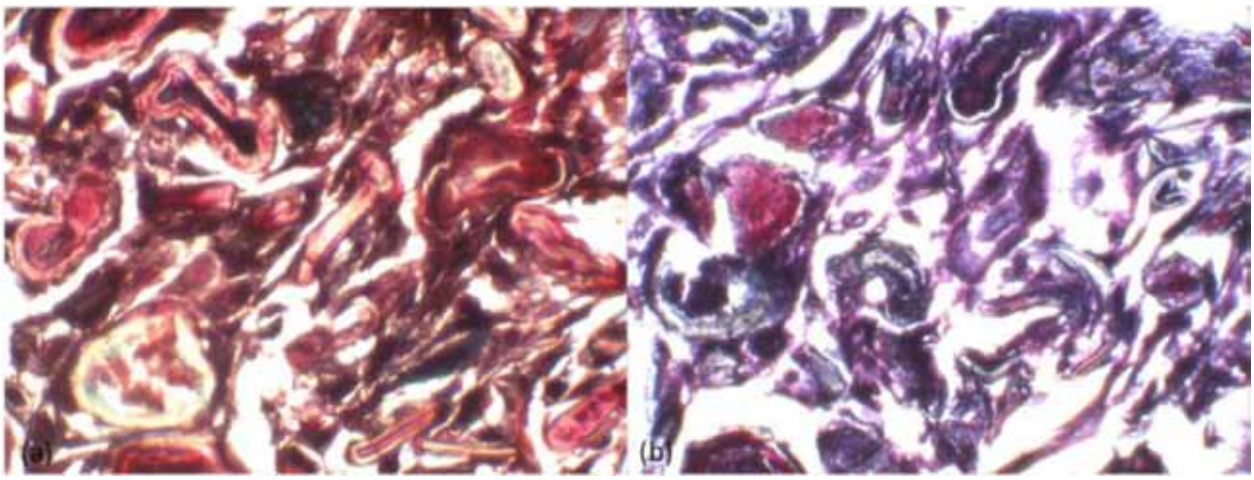

Figure 2 - Hyaline bodies stained positive with Masson's Trichrome (a) and Orcein (b) stains. (40X)

Figure 3 - Gross specimen showing small dome shaped nodules on the luminal surface of the infected cyst.

structures depends on the sectioning plane of the material, with their incidence ranging from 2.6% to 10.3%. The origin of hyaline bodies has not been well established. However, it is known that hyaline bodies result from the entrapment of blood vessels by the epithelium and consequent vessel thrombosis. Another hypothesis is that cell debris or cholesterol crystals present in the cyst might stimulate epithelial cells to secrete amorphous substances that later undergo to calcification, originating Rushton bodies. [6] RB are found almost always within the epithelial lining but can also be found rarely in the fibrous capsule. [1] RB gives a positive result with Periodic acid Schiff and Von kossa stains for calcium and mucopolysaccharides respectively. They stain strongly with orcein, Mallory aldehyde fuschin, Papanicolaou and Gomori. They may also show positivity for Prussian blue. RB within a cyst may show varying shapes and types. No association between the cyst type and any specific shape of the RB has been noted. [2,6,7] The lamellar variant seems to be composed of alternating electron dense electron lucent layers, whereas the granular form consists of amorphous material when viewed under an electron microscope.[8]

Numerous studies have investigated the histologic, enzyme histochemical, transmission and scanning electron microscopic, microprobe, micro-radiographic and immunocytochemical properties of RB. [3,4] According to Rushton, RB seems to originate from the odontogenic epithelium as a keratin product. Some investigators have postulated RB to be of a hematogenous origin or formed due to elastotic degeneration; some have even thought it to be formed as a cellular reaction to extravasated serum. [3,7-10] Because of their sole occurrence in odontogenic cysts, the odontogenic epithelium has been strongly implicated in the genesis of RB.

CONCLUSION

RB are a secretory product of odontogenic epithelium which are formed by apoptosis of epithelial cells accompanied by intracellular dystrophic calcification. [6] A radicular cyst may usually go unnoticed and may be discovered accidentally on a radiograph. Thus, the origin of RB seems to have come to a full circle with the published data available today supporting the view first expressed by Rushton that RB are odontogenic epithelial cell products formed in response to contact with particulate matter in a manner analogous to the formation of dental cuticle. [2] This paper presents a case of a radicular cyst showing RB which is rare. However, the clinical significance of RB is still very obscure.

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