SHORT COMMUNICATION

Solitary bone cyst

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ABSTRACT

The solitary or traumatic bone cyst (TBC) is an uncommon non-epithelial lined cavity of the jaws. The lesion is mainly diagnosed in young patients most frequently during the second decade of life. The majority of them are located in the mandibular body between the canine and the third molar. Clinically, the lesion is asymptomatic and is often accidentally discovered on routine radiological examination. The definite diagnosis of traumatic cyst can only be determined at surgery. Often, the material for histological examination may be scanty or non-existent. We present a documented case of a solitary bone cyst involving the body of the mandible. A brief review of literature regarding the main characteristics of the lesion is provided.

Key words: Cyst, non-epithelial, mandible body

NOMENCLATURE AND ETIOLOGY

Traumatic bone cyst (TBC) was first described as a separate lesion in 1929 by Lucas and Blum.[1] However, it was not until 1946 that the diagnostic criteria of this cyst were established. These criteria remain valid today. The TBC is defined as a generally single radiolucent lesion without an epithelial lining, surrounded by bony walls and either lacking contents or containing liquid and/or connective tissue.

Alternate nomenclature for the solitary bone cyst include hemorrhagic bone cyst, simple bone cyst, hemorrhagic traumatic bone cyst, progressive bone cavity, unicameral bone cyst, extravasation cyst, and idiopathic bone cavity. These different names indicate that the underlying etiopathogenesis is not well defined. Different causal factors have been proposed such as low-grade infection, local alterations in bone growth, venous obstruction, increased osteolysis, intramedullary bleeding, local ischemia, bone tumor degeneration, altered calcium metabolism, or a combination of such factors.[2] It has been suggested that any form of trauma, including tooth extraction, could give rise to a cyst of this kind.

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Clinical features

These lesions are generally diagnosed in patients of age below 30 years, with an approximate mean age of 20 years. There is no gender preference and the cysts tend to be asymptomatic, being diagnosed in routine studies.

Radiological features

TBCs usually appear as a radiolucent image with irregular or scalloped, but well-defined, margins. The size is variable, and a fine sclerotic margin is sometimes seen. When the cyst affects the interdental bone spaces, the lesion appears lobular or scalloped.[3] Root resorption is rare and can cause disappearance of the lamina dura. Suei *et al.*[4] compared the characteristics of TBCs in conventional X-rays and computed tomography (CT) scans. They showed the absence of water/air levels in these cysts on CT examination. This circumstance was traditionally accepted as part of the X-ray features of these lesions.

Histopathologic features

The lesion appears as a cancellous bone cavity that may be empty and without a lining, or present a thin connective tissue layer with a scant liquid content. In any case, the absence of an epithelial lining is a constant characteristic of these lesions.[2]

Management

Surgery is the treatment of choice, particularly to confirm the diagnosis. Simple curettage of the bone walls are required, with healing after 6–12 months. Clinical and

radiological follow-up after surgery is thus indicated. Some cases of relapse have been documented.[5]

CASE REPORT

A 40-year-old man was referred to the surgical clinic for evaluation of a radiolucent lesion of the mandible, discovered during a radiographic examination [Figure 1]. The lesion was a unilocular, well-circumscribed radiolucency in the left body of the mandible, extending from tooth number 34 to 37. It had a scalloped outline and a partially sclerotic border. The patient gave no history of previous trauma to the jaws. He was totally asymptomatic. There was no evidence of a swelling or cortical bone expansion. The teeth in the area of the lesion tested positive for vitality. There was no tooth mobility and the overlying mucosa appeared normal. There was no palpable regional lymph node enlargement. The patient's medical history was unremarkable. Routine biochemical and serological tests were within normal limits. A clinical diagnosis of solitary bone cyst was made and the patient offered a choice of surgical exploration and biopsy. Surgery revealed an empty cavity in the right side of the mandible. Curettage of the bony cavity was done and the scant connective tissue material sent for histopathologic examination [Figure 2] which revealed fibrous wall with no lining epithelium and collections of cholesterol clefts, lymphocytes, foam cells and a few foreign body giant cells. The patient made an unremarkable recovery after the surgery. Follow-up radiograph at 5 months showed good healing with 70% of the cavity replaced by regenerated normal bone [Figure 3].

DISCUSSION

The multiplicity of names given for the solitary bone lesion indicates the divergent views of the authors who coined them.[2] The terms traumatic bone cyst, hemorrhagic cyst, and extravasation cyst are widely used in jaw studies, whereas when those in extragnathic locations are usually termed solitary bone cyst or unicameral cyst. This has led to the popular theory that this cyst is usually of traumatic origin. However, we did not elicit any history of previous trauma. The term hemorrhagic bone cyst is also inappropriate for the above reason. In addition, there was no blood-filled cavity in association with this type of cyst. The terms extravasation cyst and idiopathic bone cavity are also problematic since they are often confused with salivary gland cyst (mucocele) and static bone cavity. These four terms are therefore considered inappropriate for diagnosis.

Solitary bone cysts are generally detected in patients in the second and third decades of life, though they can also be found in older age groups. Clinically, the patient of the present care was asymptomatic up until the time of surgery, and this is in agreement with the observations in the literature. The radiographic image did not differ significantly from the classical descriptions.

Confirmation of the cavity contents (fluid or blood) is essential to distinguish aneurismal bone cyst from the solitary bone cyst. In this case, the cavity was empty. There was no blood, fluid or gas. Histological examination is required to confirm the diagnosis. Studies made on a large

Figure 1: Preoperative radiograph

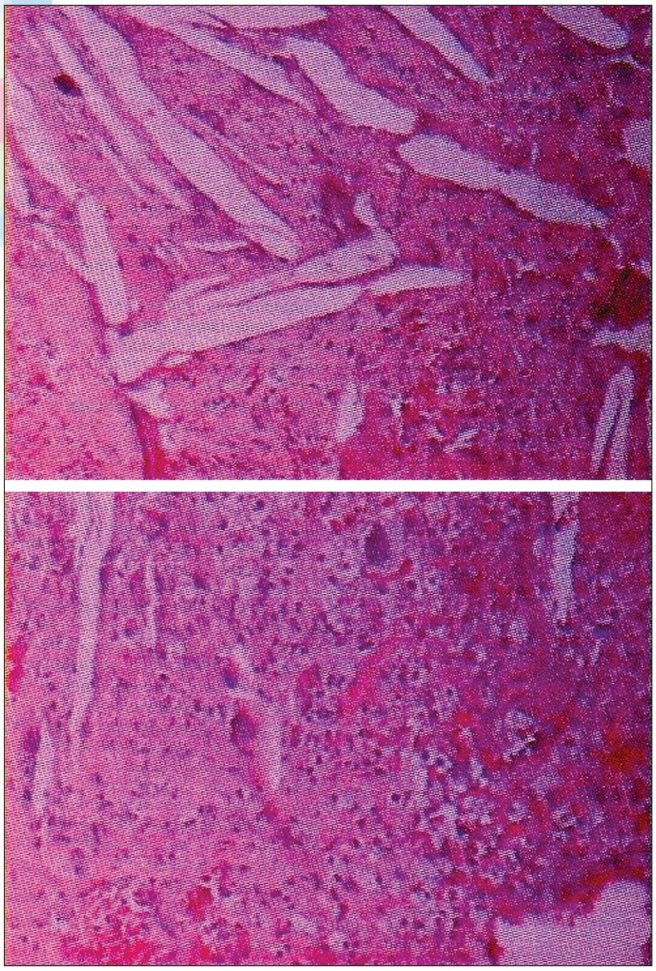

Figure 2: Histopathology

Figure 3: Postoperative radiograph

series of these cases have revealed that only in 9.52% of the cases could a histological evaluation be made of the material obtained, revealing the presence of vascular connective tissue without evidence of an epithelial component. This suggests that the absence of epithelial tissue is one of the most characteristic features of these lesions.

It has been suggested that solitary bone cysts may undergo spontaneous resolution. However, such a "wait and see" approach to management cannot be recommended because of the possibility of diagnostic error. In addition, failure to provide treatment may lead to complications such as pathological mandibular fracture.[6] Our treatment consisted of careful curettage of the bone walls, leading to satisfactory results characterized by progressive bone regeneration and the absence of relapse. Kuttenberg *et al.*[5] reported two cases of relapse following surgical curettage. In both the cases, re-treatment of the lesions was all that was necessary. Other alternative treatments such as filling of the cavity with bovine lyophilized bone or the introduction of autologous blood with bone from the patient or hydroxyapatite may be of interest. These may be useful when osteo-integrated implant rehabilitation of the affected zone is required. However, the introduction of radiopaque materials in the cavity may obscure the diagnosis of possible lesion relapse.

In conclusion, the solitary bone cyst constitutes a casual finding, and its etiology is, at the present time, unknown. The cavity is usually seen to be empty and without an epithelial lining. Careful curettage of the lesion favors progressive bone regeneration, offering a good prognosis and an almost negligible relapse rate.

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