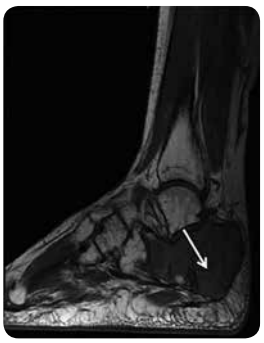

Aneurysmal Bone Cyst: Case Report

Quiste óseo aneurismático: Presentación de un caso

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Summary

The aneurysmal bone cyst is an expansive, thin-wall lesion with cystic content, and with the presence of liquid-liquid levels. Its etiology is uncertain, usually associated with trauma, probably due to a venous obstruction or the formation of fistulas that are produced by contusion. Patients report pain, which may be of insidious onset or abrupt onset due to a pathological fracture. Aneurysmal bone cysts are classified according to their etiology in primary, or secondary to an underlying lesion, such as fibrous dysplasia, chondroblastoma, giant cell tumor or osteosarcoma. We present the case of a patient who consulted for pain located in left plantar region, not associated with trauma, who was diagnosed with an aneurysmal bone cyst, with definitive magnetic resonance findings and histological verification.

Key words (MeSH)

Bone cyst
Bone neoplasms
Cyst fluid

Resumen

El quiste óseo aneurismático es una lesión expansiva, de pared fina, de contenido quístico, y con niveles líquido-líquido. Su etiología es incierta, suele asociarse a traumatismo, probablemente debido a obstrucción venosa o a la formación de fístulas que se producen tras la contusión. Los pacientes refieren dolor, que puede ser de comienzo insidioso o abrupto debido a una fractura patológica. Los quistes óseos aneurismáticos se clasifican, según su etiología, en primarios o secundarios a una lesión subyacente, como displasia fibrosa, condroblastoma, tumor de células gigantes u osteosarcoma. Se presenta el caso de una paciente que consulta por dolor localizado en la región plantar izquierda, no asociado a traumas, a quien se le diagnosticó un quiste óseo aneurismático, con hallazgos definitivos en resonancia magnética (RM) y comprobación histológica.

Palabras clave (DeCS)

Quistes óseos
Neoplasias óseas
Líquido quístico

Introduction

Aneurysmal bone cyst is an expansive lesion that contains thin-walled cystic cavities with a hematic content of a non-neoplastic nature (1). They can be etiologically classified as primary (classical) or secondary to an underlying lesion, such as fibrous dysplasia, chondroblastoma, giant cell tumor, or osteosarcoma (2). It has a lower incidence than the unicameral bone cyst, estimated at 0.14 per 100,000 of the population per year, with greater involvement of the long bones (67 %) (3). There is often a commitment to metaphysics. It manifests itself with pain, sometimes edema, and more rarely fracture. In simple X-rays it is seen as an eccentric, osteolytic, expansive and sometimes trabecular lesion with thin-walled cystic cavities. The contours are defined, but when they are lost it can indicate an aggressive injury. Magnetic resonance imaging (MRI) is the test of choice to complement conventional radiography. The typical aspect is an expansive, lobular or septate lesion; multiple liquid-liquid levels can be detected in T2-weighted sequences; although the non-specific ones are highly suggestive (3).

The case of a patient who consults for pain located in the posterior plantar region is presented. The findings by simple radiography were not definitive, due to suspicion of an old fracture associated with osteopenia, an MRI scan was performed that suggested the diagnosis of an aneurysmal bone cyst, with subsequent confirmation by histopathological study.

Imagenology

Patient of 46 years of age, referred on an outpatient basis to the radiology department initially for a simple calcaneal x-ray, with localised pain in the posterior plantar region of the foot of appro-

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ximately 6 months of evolution, which began after blunt force trauma in this region. A simple X-ray of the calcaneus was performed due to clinical suspicion of spur, which showed an old consolidated fracture in the calcaneus without free bone fragments, associated with findings suggestive of osteopenia (Figure 1), which were not definitive; He had an MRI scan showing an expansive bone lesion in his calcaneus, with liquid-liquid levels in sequences with T2 and STIR information (Figure 2), with low signal border in all sequences (Figure 3) and high signal focal areas in sequences with T1 information (Figure 4) and T2, representing areas of bleeding in different stages of oxidation

Discussion

Aneurysmal bone cysts (ABCs) are rare lesions, accounting for approximately 5 % of primary bone tumours (4). Its incidence is 0.14 per 100,000 of the population per year, with a slight female prevalence (5). They occur at all ages, but most patients are in their second decade; 75 % to 90 % of cases occur before the age of 20, are more rare after the age of 30 and are rare after the age of 50 (3). It is an osteolytic, expansive and hemorrhagic lesion. There are two forms of classic aneurysmal ABC cyst, corresponding to a primary, lytic, metaphyseal bone lesion, consisting of multiple cells with blood content, separated by septa; and ABC secondary to a traumatic or pre-existing lesion, such as an essential bone cyst, fibrous dysplasia or a brown tumor and a giant cell tumor (GCT). Other possible precursors include osteoblastomas, non-ossifying fibroids, chondromixoid fibroids, fibrous histiocytomas and eosinophilic granulomas (5). ABC may also be secondary to a malignant lesion: telangiectal osteosarcoma, angiosarcoma, chondrosarcoma, fibrosarcoma (5).

It is classified as an undetermined or intermediate (locally aggressive) malignant tumor. Its cause was thought to be intraosseous or subperiosteal hemorrhage due to abnormal venous circulation, which activated osteoclasts and induced bone resorption and local modification. This theory is no longer accepted for primary ABC, which involves rearrangement of the USP6 oncogene, on chromosome 17, but the previous theory remains possible for secondary aneurysmal bone cyst, which does not show such translocation (3).

Histologically, it shows a disorganized structure, with vascular lagoons separated by fibrous membranes composed of fibroblasts, giant multinucleated cells and osteoclasts, which represent a multicompartmental aspect. ABC cells have a phenotype similar to osteoclasts (CD51þ, CD14, catepsin Kþ, TRAPþ) and are responsible for lacunar resorption (6).

They are usually discovered accidentally, after some kind of trauma (3). Among the local manifestations are pain and swelling of weeks or years of evolution. Injuries to flat or irregular bones can produce prominent masses and lead to pathological fractures (1).

ABC is generally a single lesion, although very rare cases of multiple localization have been described. It is located, by, in descending order of frequency, in the long bones of the lower limb, in the long bones of the upper limb, in the axial skeleton and finally in the flat bones. Location in the hands and feet is more infrequent and is often limited to the tubular bones (5).

Simple x-ray findings depend on the maturation phase in which the ABC is present. In the lytic phase, an eccentric or subperiosteal radiolucent lesion is observed; in the active expansive phase, periosteal rejection towards the soft tissues is observed, but still without peripheral periosteal ossification, even with Codman's triangle, without clear delimitation between the ABC and the soft tissues; In the stabilization phase, internal partitions and a peripheral bony rim that circumscribes the cyst appear; and in the healing phase, the QOA undergoes progressive ossification resulting in dense bone mass of irregular structure. The peripheral edge and the partitions are thickened and the contours are better defined (5).

There is a subclassification of the ABCs located in the long bones, the so-called juxtapository ones, located on the cortical surface of the long bone (5).

Fluid levels may be visualized by computed tomography (CT) scans, which are due to sedimentation of the blood. CT scans are used to assess the limits of the lesion, as well as the possible destruction of the cortex (5).

MRI shows a multi-loculated lesion with low signal content in T1-enhanced sequences and high signal content in T2-enhanced sequences in which it is easier to identify liquid-liquid levels. The T1-powered images allow a better evaluation of the bone cortex. Liquid-liquid levels are not unique to ABC, but multiple cells separated by intra-cystic septa are much more constant (100 % of cases) (3).

The bone scan shows hypercaptation in the contour of the ABC while the center moderately captures the radiotracer or not at all (5).

Differential diagnoses are made with simple bone cyst, eosinophilic granuloma, non ossifying fibroma and chondromixoid fibroma (differentiated by lack of blood content); with monostotic fibrotic dysplasia (which in MRI shows low intensity with T1 and T2 information); with giant cell tumor (rare in children); and telangiectal osteosarcoma (indistinguishable imaging) (3).

Cases of spontaneous healing, more frequent in adults, have been described, as well as cases of malignant transformation. In children, they can cause growth alterations (5).

Among the therapeutic measures are radiotherapy, embolisation - which brings with it possible complications, such as embolisation of vital vessels and the consequent ischaemia - and protamine injection, which has shown very good results, although, as a complication, pulmonary embolism has been generated in up to 7% of cases (5). Cryotherapy, in turn, offers good results and reduces the risk of recurrence; in addition, intralesional curettage and bone grafting also substantially reduces the risk of recurrence (3.2 %) (7). Many authors prefer cryotherapy as a less invasive measure (2,5,7).

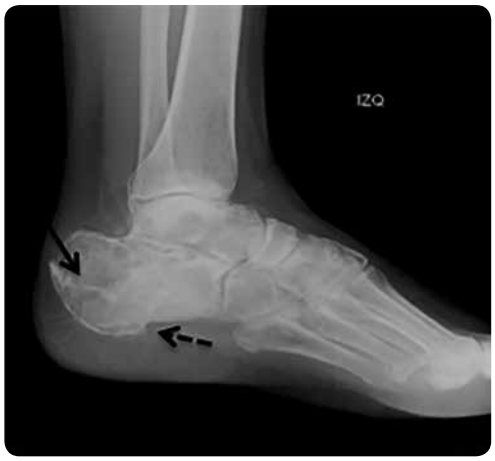

Figure 1. Lateral ankle x-ray, interruption of the bony cortex, with oblique stroke of the calcaneus (continuous arrow). Osteopenia. Bone spur (discontinuous arrow).

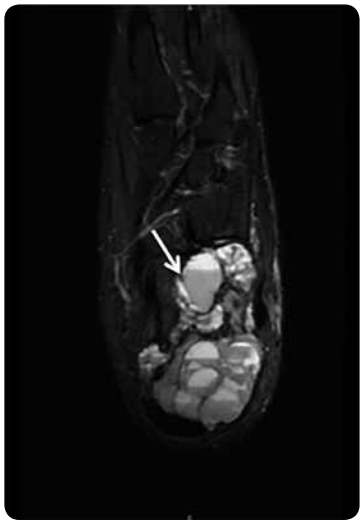

Figure 2. STIR axial sequence MRI: multiple thin-walled cysts with liquid-liquid levels (white arrow).

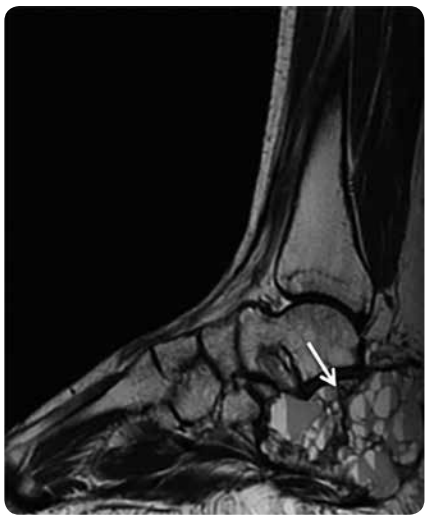

Figure 3. MRI in lateral sequence with T2 information: The low-signal edge of the cysts (arrow) is evident.

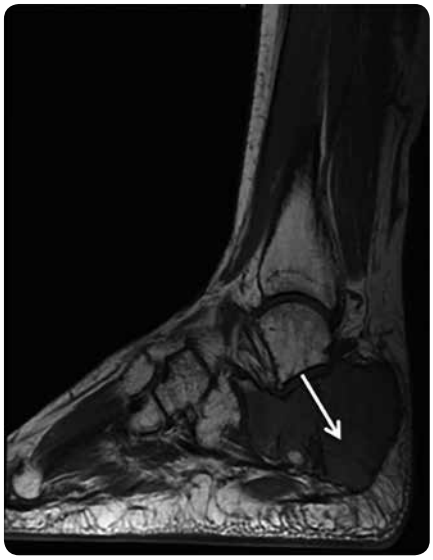

Figure 4. MRI in sagittal sequence with information in T1: focal areas of signal increase, related to bleeding (arrow).

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