



Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com/en



Review article

Bone cysts: Unicameral and aneurysmal bone cyst



E. Mascard^{a,*,b,c}, A. Gomez-Brouchet^{a,d}, K. Lambot^{a,e}

^a Clinique Arago, 93, boulevard Arago, 75014 Paris, France

^b Service de chirurgie orthopédique, hôpital Necker, 149, rue de Sèvres, 75015 Paris, France

^c Département de pédiatrie, institut Gustave-Roussy, 94805 Villejuif cedex, France

^d Service d'anatomopathologie, institut universitaire du cancer de Toulouse oncopole, Toulouse, France

^e Service de radiologie pédiatrique, hôpital Necker-Enfants-Malades, 149, rue de Sèvres, 75015 Paris, France

ARTICLE INFO

Article history:

Accepted 12 June 2014

Keywords:

Simple bone cyst
 Unicameral bone cyst
 Aneurysmal bone cyst
 Bone tumor
 Curettage
 Biopsy

ABSTRACT

Simple and aneurysmal bone cysts are benign lytic bone lesions, usually encountered in children and adolescents. Simple bone cyst is a cystic, fluid-filled lesion, which may be unicameral (UBC) or partially separated. UBC can involve all bones, but usually the long bone metaphysis and otherwise primarily the proximal humerus and proximal femur. The classic aneurysmal bone cyst (ABC) is an expansive and hemorrhagic tumor, usually showing characteristic translocation. About 30% of ABCs are secondary, without translocation; they occur in reaction to another, usually benign, bone lesion. ABCs are metaphyseal, excentric, bulging, fluid-filled and multicameral, and may develop in all bones of the skeleton. On MRI, the fluid level is evocative. It is mandatory to distinguish ABC from UBC, as prognosis and treatment are different. UBCs resolve spontaneously between adolescence and adulthood; the main concern is the risk of pathologic fracture. Treatment in non-threatening forms consists in intracystic injection of methylprednisolone. When there is a risk of fracture, especially of the femoral neck, surgery with curettage, filling with bone substitute or graft and osteosynthesis may be required. ABCs are potentially more aggressive, with a risk of bone destruction. Diagnosis must systematically be confirmed by biopsy, identifying soft-tissue parts, as telangiectatic sarcoma can mimic ABC. Intra-lesional sclerotherapy with alcohol is an effective treatment. In spinal ABC and in aggressive lesions with a risk of fracture, surgical treatment should be preferred, possibly after preoperative embolization. The risk of malignant transformation is very low, except in case of radiation therapy.

© 2014 Elsevier Masson SAS. All rights reserved.

Simple and aneurysmal bone cysts are benign lesions, usually encountered in children and adolescents. Differential diagnosis is essential, as they may in some cases mimic malignant tumor, and their respective treatments are different. The present paper will not deal with subchondral cysts as encountered in osteoarthritis, or with cystic maxillary lesions or soft issue aneurysmal cysts.

1. Simple or unicameral bone cyst

Simple bone cyst is a benign fluid-filled cystic lytic lesion, which may be unicameral (UBC) or partially separated.

1.1. Epidemiology

UBC is a very frequent lesion, with 2 or 3 to 1 male predominance. About 80% of patients are in their second decade [1–4]. UBC is usually solitary.

1.2. Location

UBC mainly involves the long bones, and especially the proximal humerus, followed by the proximal femur; these two locations account for more than 80% of cases [1–4]. Other locations are rarer (proximal or diaphyseal tibia, diaphyseal or distal humerus, diaphyseal or distal femur, fibula, forearm) or exceptional (metacarpus, phalanx, carpal bone, foot bones, scapula, mandible). Iliac bone, rib and radius lesions mainly affect older adolescents and adults [1,2,5].

Calcaneal UBC may be revealed by pain, fissure or true fracture. It is not to be confused with calcaneal pseudocyst, which is triangular and due to rarefaction of cancellous bone trabeculae; imaging

* Corresponding author. 4, place Wagram, 75017 Paris, France.
 Tel.: +33 1 55 43 10 72, +33 1 44 40 20 70; fax: +33 1 55 43 10 75.
 E-mail address: eric.mascard@wanadoo.fr (E. Mascard).

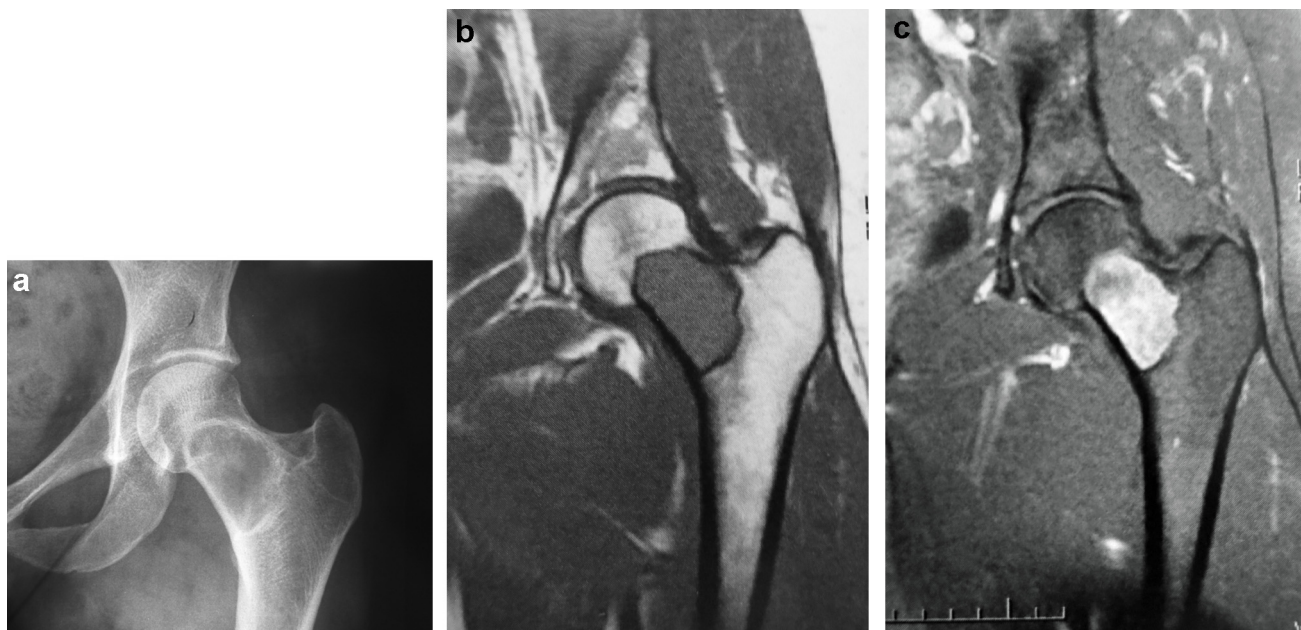


Fig. 1. a. Radiographic aspect of UBC of the femoral neck. b and c. MRI coronal slice: intermediate aspect or hyposignal in T1 and intense hypersignal in T2-weighted sequences, homogeneous, indicating exclusively fluid content.

differentiates, CT revealing the wall of the condensed cyst and MRI showing the fluid content [3,6].

Residual diaphyseal cyst in adults is due to cyst migration during growth [2,3]. Post-traumatic UBC may follow fracture of both forearm bones [2,7]. UBC may be complicated by secondary aneurysmal cyst. A few cases of double UBC have been reported.

1.3. Etiology and pathogenesis

UBC seems to be a dysplastic or reactive lesion rather than a true tumor. Onset is caused by venous circulation disorder in the cancellous bone. Bone resorption seems due to blockage in the venous flow, increasing pressure, and to an elevated inflammatory protein level in the intracystic fluid [2–4]. Exceptional cytogenetic abnormalities have been described, but are isolated [1].

1.4. Clinical symptomatology

UBC is often without clinical impact. Femoral neck lesions are sometimes discovered serendipitously – for instance, on spinal X-ray – and calcaneal lesions on emergency X-ray for ankle trauma.

Fracture is the usual context of revelation: spontaneous superior humeral fracture or post-traumatic femoral neck fracture. In other cases, fissuring of the cyst induces pain or limping [3,4].

1.5. Complementary examinations

On plain X-ray, UBCs are mainly found (90–95%) on the metaphysis of the long bones, and are juxtaphyseal, radiotransparent, moderately expansive, well-contoured, centered, oblong along the longitudinal axis of the bone, usually unicameral, with fine bony margins and thinning of the facing cortical bone (Fig. 1). Exceptionally, simple bone cysts may be found on the diaphysis, where they are large, multicameral and only slightly expansive [4]. In fractures, there may be a small “fallen fragment” that has migrated via the intracystic fluid (Fig. 2) [3]; this “fallen fragment sign” is considered by some to be pathognomic [2]. Likewise, an aspect with a gas bubble that has migrated upward (“rising bubble sign”) is also

suggestive of UBC [8]. The aspect is often characteristic enough to require no complementary exploration.

Computed tomography (CT) finds a thin-walled lesion, often with pseudo-septum (Fig. 3), and may show a fissure in the cyst. This examination serves mainly to assess cyst wall thickness and fracture risk. It can be used to assess lesion extension in complex regions such as the spine or pelvis [2].

Magnetic resonance imaging (MRI) can confirm the cystic nature of the lesion by showing a liquid signal (Fig. 1B, C). The fluid level is rarely found. The periphery and any septa may show enhancement on gadolinium injection. Fractured UBCs may contain fluid levels and show nodular-like enhancement [2].



Fig. 2. Iliac bone UBC fracture in a 16 year-old girl. Multiple cortical fragments within cyst.

Download English Version:

<https://daneshyari.com/en/article/4081106>

Download Persian Version:

<https://daneshyari.com/article/4081106>

[Daneshyari.com](https://daneshyari.com)