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Skeletal Radiology

Case report 515

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Radiological studies

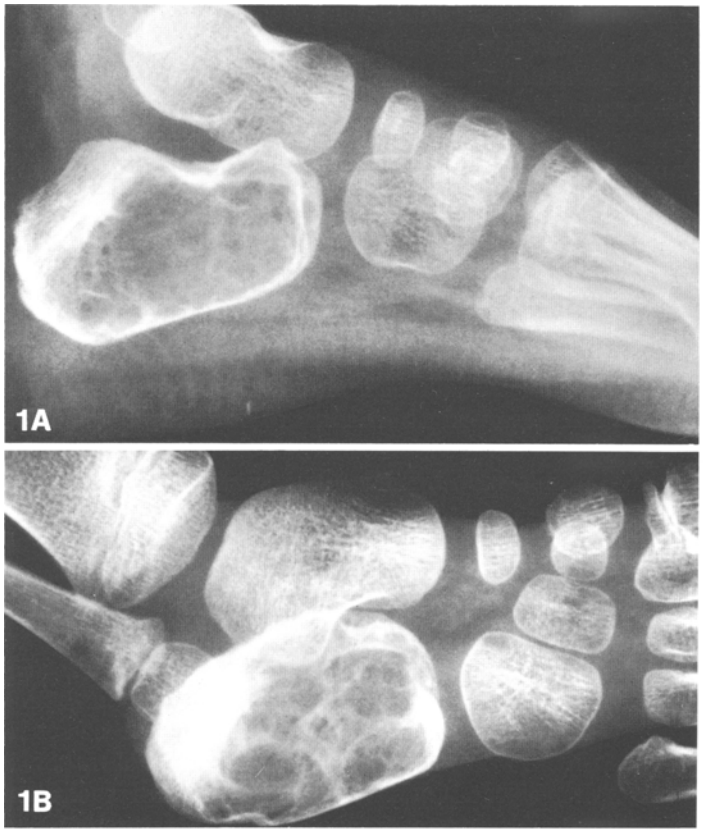

Fig. 1 A, B. Lateral and oblique views of the right foot show a "bubbly", lucent lesion involving almost the entire calcaneus. No pathological fracture or periosteal new bone is identified

Fig. 2. A CT study of the right calcaneus (the left is obtained for comparison) demonstrates marked expansion and ballooning of the calcaneus without a soft tissue mass

Clinical information

A 3-year-old white female child presented with a painless limp of the left leg which had persisted for 1 month. Past medical history was unremarkable except that the child was delivered by Caesarean section. Physical examination revealed normal position and range of motion of the hips, the knees, and the ankles. Motion at these joints was not painful. On palpation, tenderness on the posteromedial aspect of the calcaneus was noted. It was difficult to evaluate the gait because the child was reluctant to walk, but when she did, she walked with some inversion of the left foot and avoided heel-strike on that foot. Plain radiographs and computed tomography of the left foot showed an expanding, cystic lucency of the entire calcaneus with ballooning (Figs. 1 and 2). Laboratory studies were unremarkable.

An open biopsy was performed.

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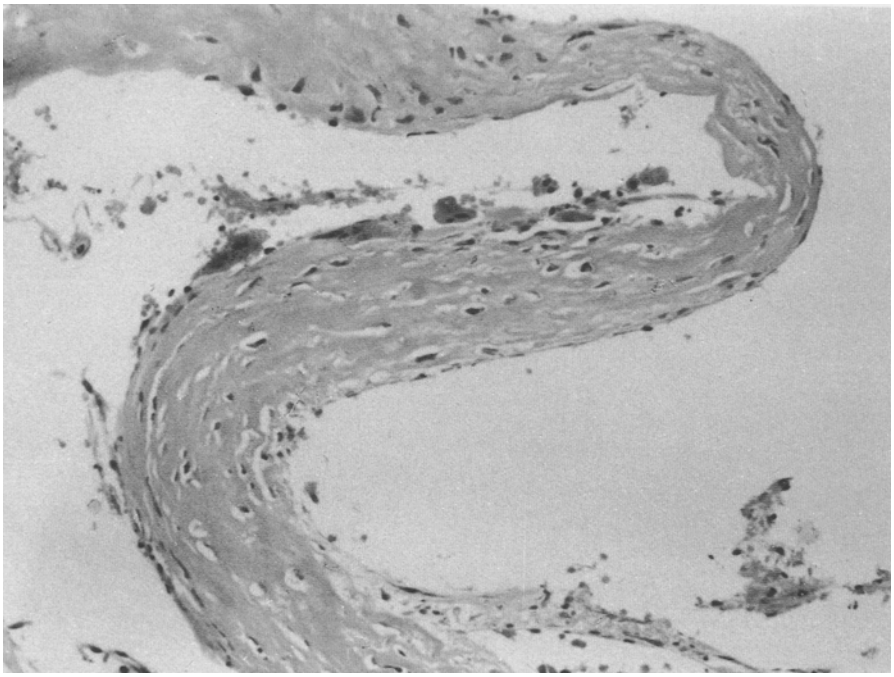
Diagnosis: Simple (solitary) bone cyst of the calcaneus

Differential diagnosis: aneurysmal bone cyst, chondroblastoma, chondromyxoid fibroma and lipoma; less commonly, pseudotumor of hemophilia, eosinophilic granuloma, fibrous dysplasia, and nonossifying fibroma.

The histopathology revealed scant fibrous tissue containing osteoid, multinucleated giant cells, hemosiderin pigment, all of which were associated with small fragments of a cyst-lining (Fig. 3).



Pathological section

Fig. 3. A photomicrograph of the lesional tissue shows a hypocellular fibrous tissue containing several multinucleated giant cells in the lining of the cyst wall (HE, ×100)

Discussion

Simple bone cyst, commonly referred to as solitary or unicameral bone cyst, is a relatively common lesion with a predilection for the proximal ends of the diaphysis of the humerus and femur in children and adolescents. These two sites account for approximately two-thirds of the lesions in any representative series [1–3]. In 1944, Jaffe and Lichtenstein discussed the criteria for diagnosis and described the clinical and radiographic features of simple bone cyst [1]. Although several theories regarding the genesis of this lesion have been proposed, the etiology remains unsettled [1, 2, 4, 5].

The calcaneus is a relatively uncommon site for simple bone cyst. However, the incidence and skeletal location of bone cysts, after age 17 years is striking. Less typical locations such as the ilium and calcaneus become more frequent, after age 17 years. More than 50% or the lesions in the older age group have a predilection for the innominate bones and calcaneus [6].

A definite male predominance exists in solitary bone cyst of the calcaneus [7, 8].

A clinical characteristic of calcaneal bone cysts is their relatively painless nature. In a small percentage of cases, symptoms of pain in the heel on weight bearing and mild tenderness in the same area may lead to assumption of solitary cyst [7–9]. Otherwise, these lesions are usually detected incidentaly after roentgenograms have been obtained for signs and symptoms referable to other parts of the foot or the ankle.

Roentgenographically, the location of the calcaneal cyst is constant. On the lateral roentgenogram, the cyst is centered at the base of the calcaneal neck just inferior to the anterior portion of the posterior facet. On the tangential view, the cyst abuts the lateral wall of the bone and extends one-half to two-thirds of the width of the calcaneus. Most of the cysts have a characteristic shape. The anterior margin of the cyst is usually straight and

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