Case report 696

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Imaging studies

Fig. 1. Anteroposterior view of the right hip reveals an expanding "bubbly" lesion involving the proximal part of the right superior pubic ramus and the adjacent part of the acetabulum. Note the thin, interrupted cortex and the calcified matrix.

Fig. 2A, B. Computed tomogram of the right hip. A Axial slice through the acetabulum, showing the expansion of the anterior column, irregular thinning, and interruption of the cortex. B Axial slice at a lower level, showing the expanding lesion with shell-like, interrupted cortex and calcified matrix. No soft-tissue mass is identified.

Fig. 3A, B. Magnetic resonance images of the right hip. A Axial T1-weighted image (SE 500/30), showing isointense signal of the lesion. B Axial T2-weighted image at the same level as A (SE 2000/85) demonstrates increased intensity signal at the site of the lesion. The spotty, low-intensity signals seen within the lesion represent calcifications in the tumor matrix.

Clinical information

A 60-year-old man presented for progressive pain in the right hip of 15 months duration. Physical examination showed a healthy looking man in no distress. Examination of the right hip revealed limited internal rotation. The other motions were full. The left hip showed full range of motion. There was minimal tenderness over the right groin. The laboratory analyses were unremarkable.

Bone scan, plain radiography, computed tomography (CT), and magnetic resonance (MR) were performed. These studies revealed an expanding bubbly lesion that involved the anterior column and quadrilateral plate of the right acetabulum and the right superior pubic ramus. Part of the matrix of the lesion was calcified. The cortex was thinned and interrupted. The lesion was well contained within the bone without a soft-tissue component (Figs. 1–3).

A biopsy was performed (Fig. 4).
Diagnosis: Chondroblastoma of the right acetabulum and superior pubic ramus

The differential diagnosis included chiefly chondrosarcoma, malignant fibrous histiocytoma, plasmacytoma, and even metastatic bone disease.

Discussion

Chondroblastoma is a rare tumor that represents less than 1% of all primary bone tumors [4]. Jaffe and Lichtenstein in 1942 introduced the term “benign chondroblastoma” to emphasize its distinction from giant cell tumor [9]. Although the age range is wide, chondroblastomas usually occur in the 2nd decade and about 20% in the 3rd decade [7, 11, 17]. Most patients present with pain that is usually mild and often of long duration, sometimes lasting many years. Swelling and local tenderness are also encountered [11, 16].

Chondroblastoma is a benign, chondroid-forming tumor usually originating in the epiphysis. Rarely, it may begin in the metaphysis [2, 6]. The bones of the lower extremity are affected more frequently than those of the upper extremity. The femur, humerus, and tibia are the most frequent sites of involvement. However, the tumor may arise in any portion of the axial or appendicular skeleton. About 20% affect flat bones and short tubular bones of the hands and feet, particularly the epiphysoid bones such as the talus and calcaneus [3, 10, 12]. When they arise in the pelvis, chondroblastomas, like other cartilaginous tumors, show a marked tendency to originate in the acetabulum at the site of the triradiate cartilage. Of 72 chondroblastomas reported by McLeod and Beabout 9 involved the acetabulum [11]. In another series of 104 chondroblastomas, 2 occurred in the pelvis [3].

The radiographic features of chondroblastomas are characteristic, consisting of an eccentric or centrally located osteolytic lesion that involves an epiphysis or other secondary ossification center. The lesion is usually round or oval, with sharply defined margins. Some 60% of the lesions have a sclerotic rim. The lesion is usually subchondral but may extend into the joint space and into the metaphysis. Metaphyseal involvement occurs in 25%-50% of cases. The tumor is usually less than 6 cm in size. Calcific foci within the lesion are documented in 30%-50% of patients. The degree of calcification varies, and its identification may require CT imaging. Soft-tissue masses and pathological fractures are rare [3, 7, 11, 13]. Periostitis in the adjacent metaphysis or diaphysis occurs in 30% of cases [1, 11, 14]. Only one report of multifocal chondroblastoma exists in which the tumor occurred in two different bones, with the second tumor following the first by several years [15].

Histologically, chondroblastomas are characterized by areas of round, oval, and polyhedral chondroblasts with well-defined cytoplasm. The nuclei are ovoid or vesicular and may be folded. In the chondroblastic tissue are multinucleated, osteoclast-like giant cells. They are usually smaller and less numerous than those observed in giant cell tumors and are randomly and evenly distributed. Some 15%-25% of chondroblastomas have associated cystic blood spaces with spindle cells that duplicate the histological features of aneurysmal bone cyst [5, 8, 16].

In our case, the tumor involved the superior ramus of the right pubic bone and the adjacent part of the acetabulum. Although the lesion had a calcified matrix and arose near the triradiate cartilage (a common site for cartilaginous tumors including chondroblastomas), its shell-like, ill-defined, and interrupted cortex in a 60-year-old patient dissuaded us from this diagnosis. Other possibilities were considered such as metastatic disease, myeloma, and chondrosarcoma.

In summary, a case of chondroblastoma involving the right acetabulum and superior pubic ramus in a 60-year-old man has been presented. Tissue was obtained by open biopsy. The clinical and radiographic characteristics of chondroblastoma in general, and this tumor in particular, were discussed. The histopathology and differential diagnosis were also considered. The relatively uncommon site of the tumor and its occurrence in an older patient made the radiographic diagnosis difficult, and other possibilities were discussed.

References