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Intracortical chondromyxoid fibroma of humerus

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Abstract The clinicoradiologic and pathologic aspects of an intracortical, diaphyseal chondromyxoid fibroma of the humerus are reported. Because of the location of the lesion, the possibility of chondromyxoid fibroma was not considered radiologically. The diagnosis was made only after histologic examination of tissue obtained via an open biopsy, which led to the appropriate treatment, surgical curettage.

Keywords Chondromyxoid fibroma · Humerus · Cortex · Radiographs · CT · MRI

Introduction

Chondromyxoid fibroma (CMF) is a rare benign neoplasm of cartilaginous origin. It usually occurs in the metaphyseal region of the long tubular bones, particularly the upper tibia, at a variable distance from the growth cartilage and often in close contact with it. The juxtacortical and intracortical areas are unusual locations for this tumor with only a few sporadic cases reported in the English language medical literature [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]. We report here a rare case of an intracortical CMF in the diaphysis of the humerus in a 25-year-old woman.

Case report

A 25-year-old woman presented with intermittent pain in her right upper arm of 6 months' duration. On physical examination, a small, non-movable, bony hard mass was palpated at the anterolateral aspect of the upper arm.

Routine roentgenography as well as computed tomography (CT) studies showed an ovoid, well-defined, radiolucent intracortical lesion in the middle of the humeral shaft with extension to the endosteal cortical surface but without communication with the medullary cavity (Fig. 1 A–C). There was no calcification within the tumor matrix. A magnetic resonance imaging (MRI) study showed a well-defined, homogeneous lesion in the cortex. The inner margin of the cortex was intact and adjacent bone marrow was of normal signal intensity. The outer margin of the lesion was also clearly defined and extension into adjacent soft tissue was not evi-

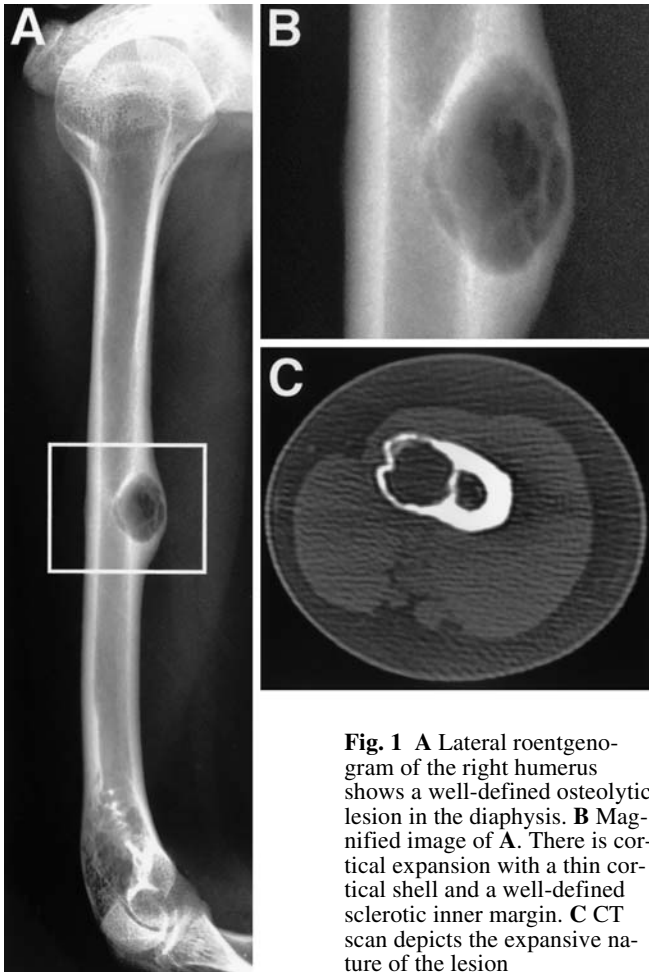


Fig. 1 **A** Lateral roentgenogram of the right humerus shows a well-defined osteolytic lesion in the diaphysis. **B** Magnified image of **A**. There is cortical expansion with a thin cortical shell and a well-defined sclerotic inner margin. **C** CT scan depicts the expansive nature of the lesion

dent. On T1-weighted images (Fig. 2A) the lesion was isointense to muscle, while on T2-weighted images (Fig. 2C, E) the lesion was of high, heterogeneous signal intensity. The contrast study with gadolinium diethylene-tripentaacetic acid (Gd-DTPA) showed heterogeneous enhancement (Fig. 2B, D). With these findings, the radiologic differential diagnosis included osteoblastoma, eosinophilic granuloma or osteoid osteoma.

An incisional biopsy was performed. Histologic examination of the biopsy tissue disclosed lobulated fibromyxoid tissue with both myxochondroid and cellular areas (Fig. 3). The myxochondroid areas contained elongated or stellate cells with eosinophilic cytoplasm. A few osteoclast-like giant cells and oval mononuclear cells, without mitotic activity, were present in the cellular areas. A diagnosis of CMF was made, and a subsequent curettage of the lesion was done. At operation, a non-vascularized soft tissue mass was found. The lesion and walls of the remaining cavity were excised until healthy cortical bone was reached, and the surface of the cavity was burned with a surgical airtome. The patient was free of disease at 7 months follow-up.

Discussion

Chondromyxoid fibroma is a rare benign bone neoplasm, characterized by chondral, myxoid and fibrous tissue differentiation, that was first described by Jaffe and Lichtenstein in 1948 [12]. It accounts for less than 1% of bone tumors [13]. There is no sex predilection. It preferentially occurs in young patients during the second or third decades of life [13].

The most common anatomic site is the metaphyseal region of the long tubular bones; the proximal tibial metaphysis is a particularly frequent site [13]. Our case is unusual due to its origin in the humerus, its location in the diaphysis, and the fact that it was intracortical. In the largest published series of CMF, which reviewed 278 cases, 5.4% occurred in the humerus and 5.8% involved the diaphysis [13]. An intracortical location as found in our case is extremely rare, since chondromyxoid fibroma is usually an eccentric lesion in the medulla [13]. Only 15 cases of juxtacortical or intracortical CMF have been reported in the English language medical literature [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]. Furthermore, only three of 15 were purely intracortical CMF; two cases were in the proximal tibial metaphysis [3] and another in the diaphysis of the humerus, which is illustrated by Greenfield in his textbook [11]. An oval intracortical chondromyxoid fibroma that had not penetrated the medullary canal was seen on the radiograph of the humerus. Intracortical CMF is rare. On imaging it has features of a benign lesion, and in the absence of calcification its cartilaginous nature is difficult to predict. Its histologic features are as characteristic as CMF in more conventional locations.

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Fig. 2 **A** Coronal T1-weighted image (TR/TE: 400/12.2). The lesion is isointense to muscle. **B** Coronal gadolinium-enhanced T1-weighted image with fat suppression (TR/TE: 500/12.2). This image shows the heterogeneous enhancement of the lesion. **C** Coronal T2-weighted image with fat suppression (TR/TE: 4000/89.1). The lesion reveals high, heterogeneous signal intensity. **D** Axial gadolinium-enhanced T1-weighted image (TR/TE: 500/10.7). **E** Axial T2-weighted image (TR/TE: 4000/86.6)

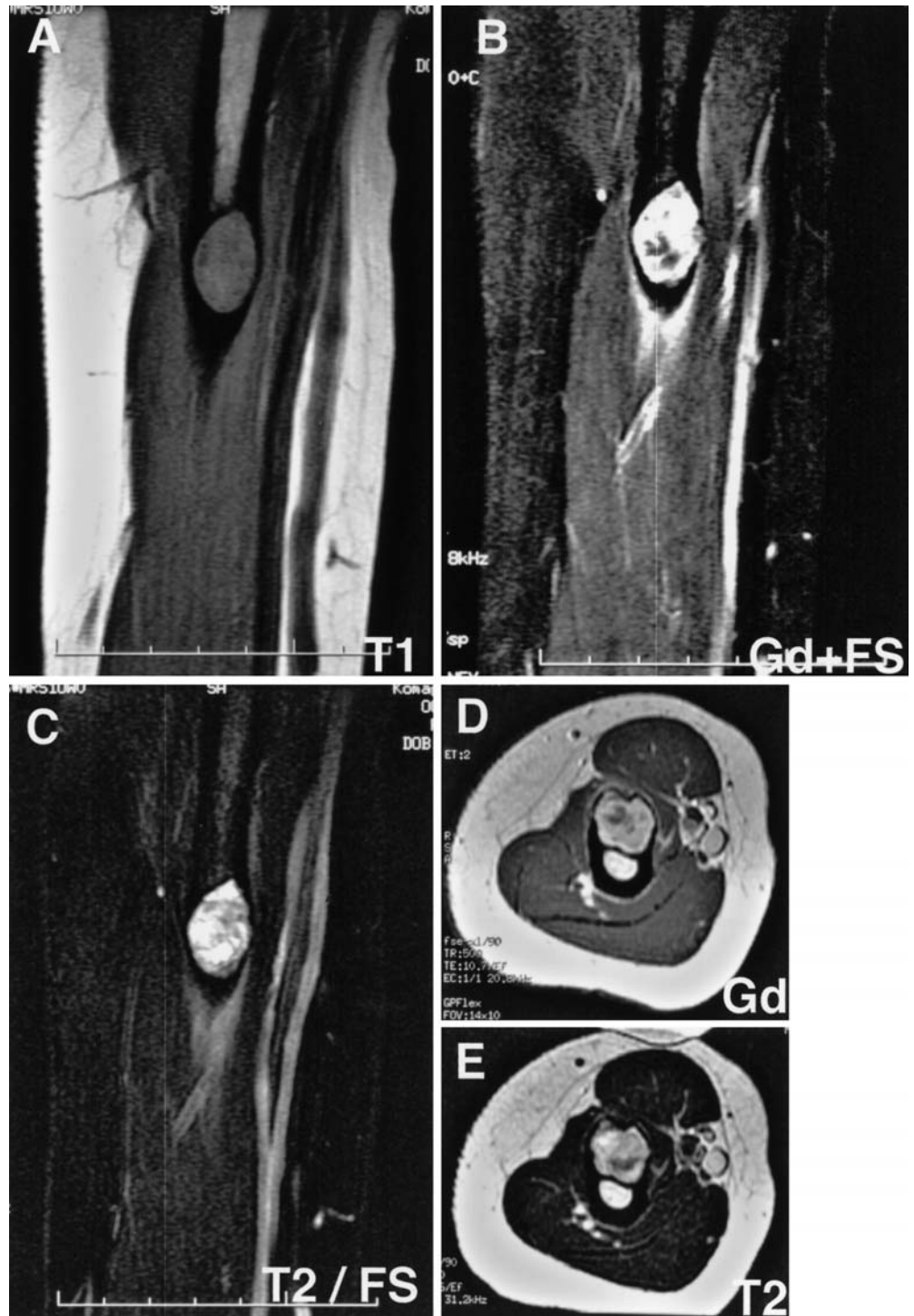
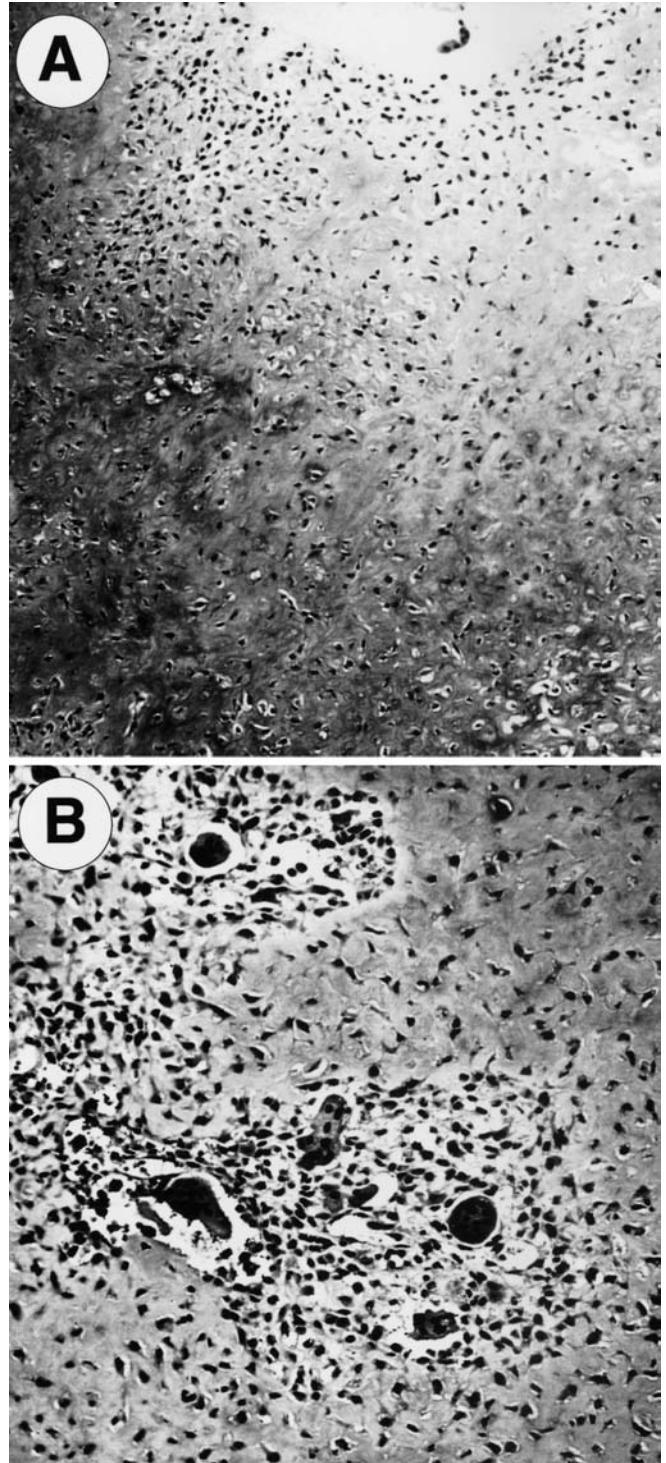


Fig. 3 **A** Section (hematoxylin and eosin) of the tumor shows predominantly myxoid tissue with both chondromyxoid and cellular areas. **B** The chondromyxoid areas contain elongated or stellate cells with eosinophilic cytoplasm. A few osteoclast-like giant cells and oval mononuclear cells, without mitotic activity, are also present



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