Chondromyxoid Fibroma Involving the Entire Metacarpal: A Case Report

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The occurrence of chondromyxoid fibroma in the hand is rare. We report a case of chondromyxoid fibroma involving the whole fourth metacarpal that was treated by curettage and cancellous bone allograft. (J Hand Surg 2005;30A:1083–1086. Copyright © 2005 by the American Society for Surgery of the Hand.)

Key words: Chondromyxoid fibroma, hand, metacarpal, tumor.

Chondromyxoid fibroma first was detected and distinguished from chondrosarcoma and enchondroma in 1948 by Jaffe and Lichtenstein.[1] Chondromyxoid fibroma is a rare benign tumor of the bone that represents less than 1% of all benign and malignant bone tumors. The metatarsals are involved frequently although it rarely is found in the metacarpals.[2–4] In the small tubular bones—especially in the metacarpals—it is rare that chondromyxoid fibroma involves the entire bone; because of its rarity chondromyxoid fibroma in the metacarpals is difficult to diagnose clinically.[2–6] We present a case report of chondromyxoid fibroma involving an entire metacarpal.

Case Report

A 28-year-old man presented to the hand clinic with a 2-month history of intermittent vague pain and swelling in the region of the fourth metacarpal of the left hand. No history of trauma or complaints suggestive of infection were detected. The physical examination showed slight edema over the patient's fourth metacarpal along with tenderness on palpation and increasing pain over the dorsum of the hand when making a fist. The laboratory test results indicated a slight increase of the erythrocyte sedimentation rate with normal alkaline phosphate values. The left-hand radiographs showed an expansive radiolucent lesion with sclerotic borders involving the entire fourth metacarpal. It caused a marked cortical thinning and symmetric ballooning with lobulated contour, resulting in an almost radiolucent metacarpal (Fig. 1). There was no fracture line present on plain radiographs.

Computed tomography showed cortical thinning and a pathologic fracture at the base of the metacarpal without mineralization of the matrix (Fig. 2). The magnetic resonance imaging studies showed an increased signal on T2-weighted images and a decreased signal on T1-weighted images. The bone scintigraphy showed an increased uptake in the fourth metacarpal.

An open biopsy procedure was performed and a grayish-white–, firm, lobular, translucent mass was found. The benign nature of the tumor was suggested by frozen section and the tumor was treated by curettage and cancellous bone allograft. The permanent histologic section examination confirmed the diagno-

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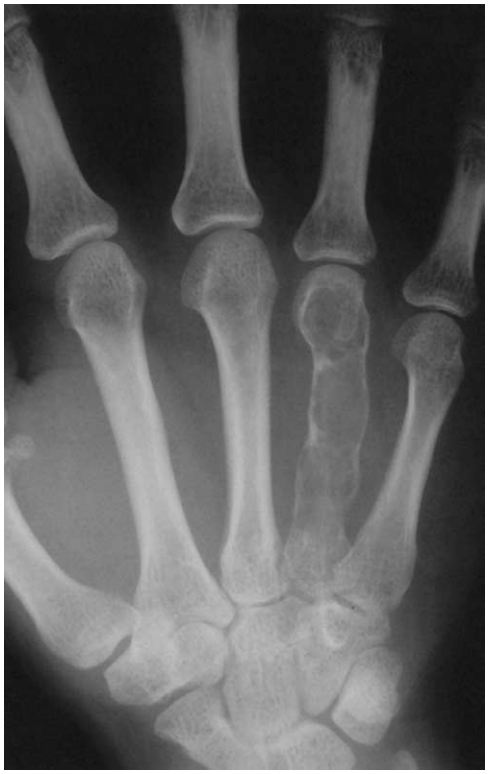

Figure 1. Preoperative anteroposterior x-ray film of the left fourth metacarpal showing a radiolucent tumor causing an expansion of the whole metacarpal with marked cortical thinning.

sis of chondromyxoid fibroma (Fig. 3). The postoperative course was uneventful and normal motion of the left ring finger was restored. A year after the surgery hand function was normal and the total active flexion of the ring finger was 225°. Plain radiographs of the affected hand were taken and no clinical or radiologic evidence of tumor recurrence was found (Fig. 4).

Discussion

Chondromyxoid fibroma is a rare benign bone tumor derived from cartilage and contains varying amounts of chondroid, fibrous, and myxoid tissue. Diagnosis and detection of chondromyxoid fibroma is difficult because of the cellular changes that are common to both chondrosarcoma and chondromyxoid fibroma.[2,3,7] The World Health Organization defines chondromyxoid fibroma as "a benign tumor characterized by lobulated areas of spindle-shaped or stellate cells with abundant myxoid or chondroid intercellular material, separated by zones of more cellular tissue rich in spindle-shaped or rounded cells, with varying numbers of multinucleated giant cells that may be present and can result in confusion with chondrosarcoma."[5]

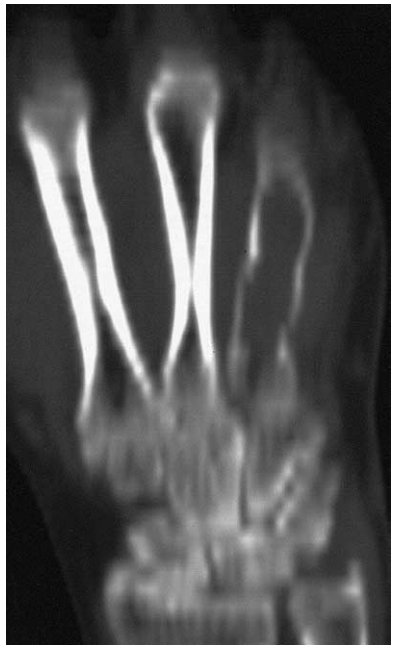

Figure 2. Computed tomographic image of the patient's left hand showing cortical thinning and pathologic fracture lines at the base of metacarpal without any mineralization of the matrix.

Chondromyxoid fibroma occurs primarily in the second and third decades. A male predilection (2:1) has been noted.[2] The proximal tibia is the most common site of involvement in all the large reported series, followed by the ilium, ribs, distal femur, metatarsals, and distal end of the tibia.[4,7] Chondromyxoid fibroma occurring in the hand is rare. In the various reported series of chondromyxoid fibromas there

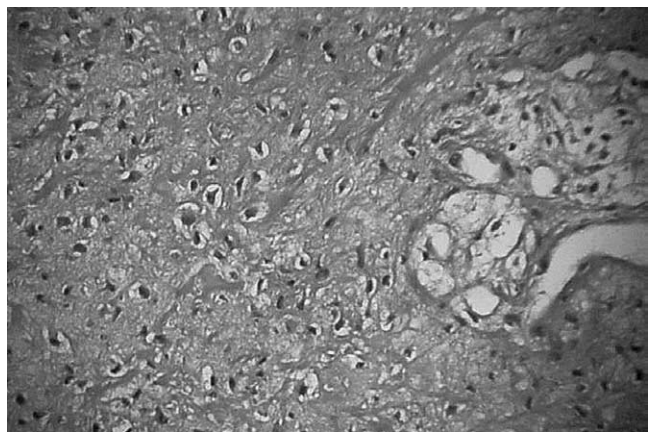

Figure 3. Histologic appearance of the tumor showing a lobular pattern that is composed of oval to stellate cells containing oval to spindled nuclei. The background is fibromyxoid in nature, associated with hypercellular and hypocellular areas. (Staining by hematoxylin-eosin; original magnification ×200.)