Giant Cell Tumor of Metacarpal

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Giant cell tumors of bone are common in young adults with a peak incidence of 30 years of age. The common sites are the distal ends of the radii and knee joints. However, giant cell tumors of the hand bones are rare. Awareness of the lesion is important for correct diagnosis and treatment. A 50-year-old woman presented with a 6-month history of progressive enlargement of a mass on her left hand. Radiographs showed a markedly expansile bone lesion in the diaphyseal region of the third metacarpal. Patient age and location of the tumor cannot be used exclusively to rule out giant cell tumor. Although giant cell tumors of the bones of the hand are rare, awareness of its typical radiographic appearance are important for correct diagnosis and treatment. For patients with an obviously expansile bone lesion in metacarpals, giant cell tumor should be included in the differential diagnoses. **(Mid Taiwan J Med 2006;11:196-200)**

Key words

metacarpal bone, giant cell tumor

INTRODUCTION

Giant cell tumors of bone are common in young adults with a peak incidence at 30 years of age. They usually occur in the distal ends of the radii, knee joints and humeral heads. Most tumors occur in the subarticular regions of bones. Giant cell tumors of the hand bones are rare; however, awareness of the lesion is important for correct diagnosis and treatment. We report a 50-year-old female who presented with a giant cell tumor in the third metacarpal of her left hand. The expansile lesion was located in the diaphysis rather than in the subarticular region.

CASE REPORT

A 50-year-old woman presented with a mass on the palmar side of her left hand. The lesion had been growing gradually during the previous six months. She had no history of trauma. Her clinical history showed no evidence of underlying malignant disease. Physical examination of the hand showed a soft tissue lesion, but no evidence of local tenderness or redness was evident.

Radiographs of her left hand in postero-anterior projection showed an expansile lesion in the diaphyseal region of the third metacarpal. It was highly expansile, with a maximum diameter of 18 millimeters. The lesion had no sclerotic margin; however, the peripheral area of the cortex remained intact (Fig. 1). No abnormal soft tissue component was present.

The differential diagnoses were enchondroma, fibrous dysplasia, and aneurysmal bone cyst. We did not include giant cell tumor at that time.The chest radiograph of the patient was normal. Bone scan showed local uptake at the third metacarpal; no other bone lesions in the skeleton were detected (Fig. 2). Magnetic resonance imaging revealed low signal intensity on T1-weighted images and high signal intensity in T2-weighted images (Figs. 3A, 3B). Epiphyseal extension was noted. However, no evidence of cortical breakthrough was present. Gd-DTPA-enhanced scan showed heterogeneous enhancement of the mass.

An open biopsy revealed a giant cell tumor.

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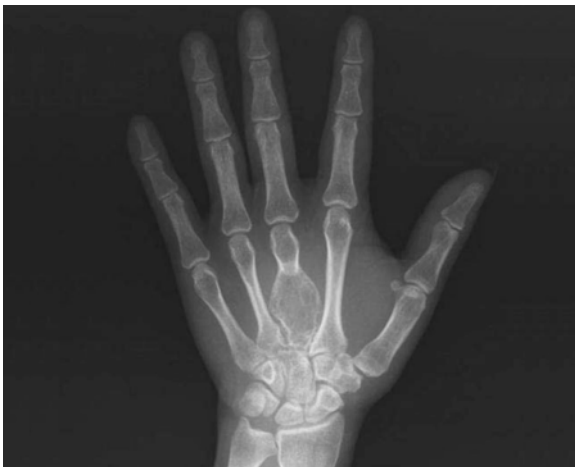

Fig. 1. Radiographs of left hand in AP projection show an expansile bone lesion in the diaphyseal region of the third finger. No periosteal reaction is evident.

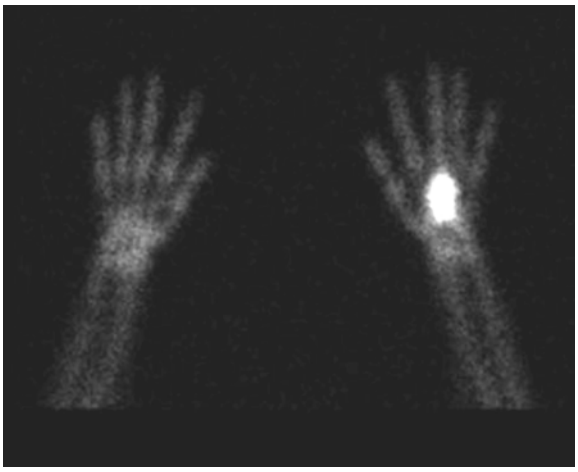

Fig. 2. Bone scan study shows strong uptake at the third metacarpal.

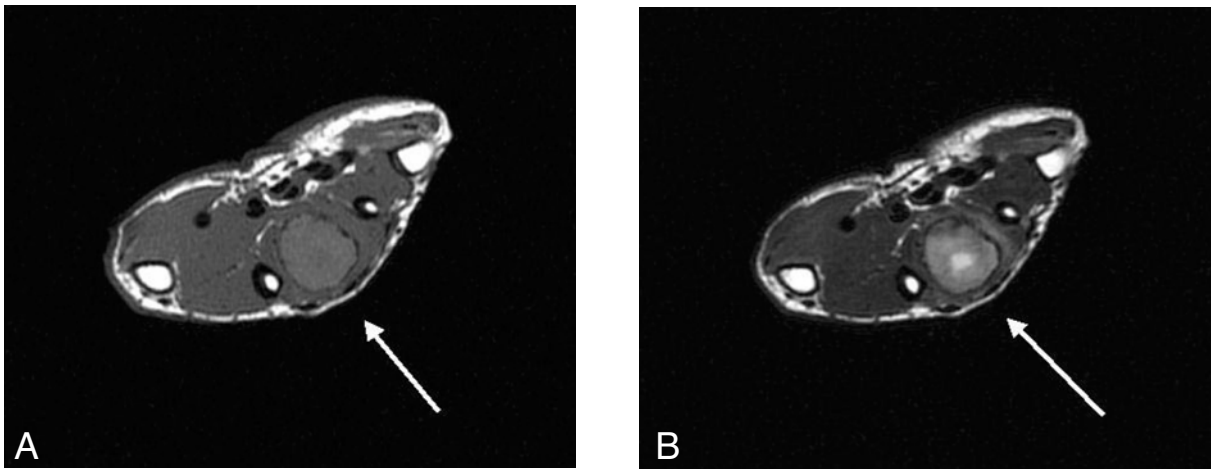

Fig. 3. A: Low signal intensity on T1WI MRI of the left hand. B: High and heterogenous signal intensity is noted inside the lesion in T2WI.

En bloc excision and reconstruction with an auto bone graft followed. Histological examination revealed that the lesion consisted of large multinucleated giant cells (Fig. 4). Radiograph of the hand was taken after operation (Fig. 5). It revealed en-bloc resection of the tumor and replacement with auto bone graft.

The patient visited our outpatient clinic three months later and was symptom-free. Long-term follow-up was advised for early detection of local recurrence. She was requested to visit our outpatient clinic regularly.

DISCUSSION

Giant cell tumors of bone usually occur at the epiphyses of long bones, such as the humerus, femur, tibia and wrist. They seldom occur in diaphyseal regions of long bones.

Giant cell tumors are rare in metacarpals [1-3], accounting for only 2% to 4% of reported cases [4,5]; most occurred in the phalanges or metacarpals. The tumors are often subarticular and have broken the surrounding cortex [6,7]. In the tubular bones of the hand, the tumors usually involve the epiphyseal region, and are generally central in location [4].

The tumor in our patient was unusual; it was located mainly at the diaphyseal region of the third metacarpal bone, and extended to the metaphyeal region. It was expansile with ill-

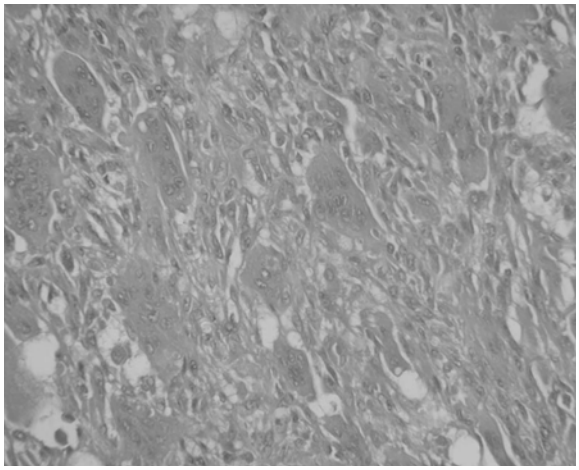

Fig. 4. Histological examination of the lesion reveals evenly-distributed osteoclast-like large multinucleated giant cells in the background composed of mononuclear stromal cells. (H&E stains, ×200)

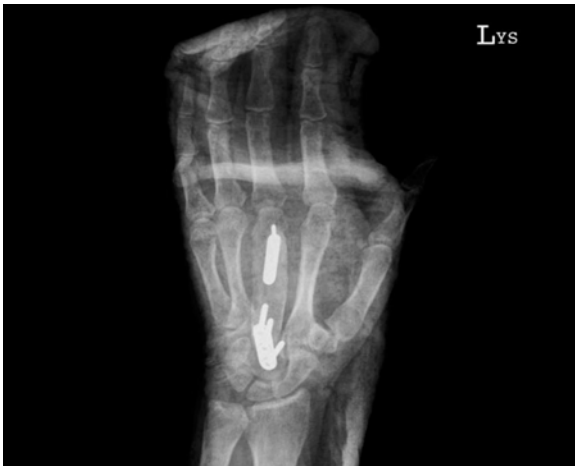

Fig. 5. Radiograph of the left hand after operation. En-bloc resection of the tumor and replacement with auto bone graft are visible.

defined margins, features common in giant cell tumors. No obvious subarticular extension was identified on radiographs.

Giant cell tumors of bones develop during the third decade, have a shorter duration of symptoms, and recur more rapidly when they occur in the hand than when they occur in other locations. Most giant cell tumors present in patients between the ages of 25 to 35 years. Our patient, however, was 50 years of age.

For differential diagnosis, one should distinguish the lesion from aneurysmal bone cyst, simple bone cyst, fibrous dysplasia and enchondroma. Aneurysmal bone cysts usually occur in children and young adults, ranging from 10 to 20 years in age. Simple bone cysts and aneurysmal bone cysts have liquid components, while giant cell tumors are solid. These features are easily revealed by magnetic resonance imaging. Enchondroma is common in the hand and shows mild to moderate degrees of expansion. Fibrous dysplasia has a marked degree of expansion, although it seldom occurs in the hand.

As the lesions may be multi-focal, a patient with documented giant cell tumor of the small bones should undergo a skeletal survey to search for other lesions [4]. The bone scan study in our patient revealed that the lesion was solitary. There are several treatment options; curettage, amputation, en bloc resection with fibular auto graft, silastic replacement, and cryosurgery [8-10]. The recurrence rate of giant cell tumors of bone ranges from 40% to 60% [11]. Curettage has been found to be ineffective with a reported recurrence rate ranging from 60% to 83% [12,13].

The prevention of local recurrence is of utmost important since recurrent giant cell tumors can be more aggressive [14]. In order to avoid local recurrence, our patient underwent an en bloc excision and reconstruction with an auto bone graft.

In summary, our 50 year-old patient had a giant cell tumor of the hand. However, typical age and site cannot be used exclusively to rule out giant cell tumor. Although giant cell tumors of the bones of the hand are rare, awareness of its typical radiographic appearance is important for correct diagnosis and treatment. For patients with an obvious expansile bone lesion in the metacarpal, giant cell tumor should be included in the differential diagnosis.

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手指骨巨大細胞瘤

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巨大細胞瘤在年輕人很常見，特別是三十歲左右，其好發的位置是徑骨遠端和膝關節周邊，但是發生在手指骨上卻是非常罕見的。我們報告一位50歲的婦女，她發現左手上有一腫瘤，半年內愈長愈大，其常規X光片顯示第三手指骨上有一強烈擴張性腫瘤於骨幹上。以病患年齡和病灶位置，不能排除巨大細胞瘤的可能性。雖然手指骨巨大細胞瘤並不常見，但是熟悉其放射線學診斷資訊，對診斷和治療極爲重要。（中台灣醫誌 2006;11:196-200）

關鍵詞

手指骨，巨大細胞瘤

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