J Korean Med Sci 1999; 14: 682-4
ISSN 1011-8934

Tenosynovial Giant Cell Tumor of Finger, Localized type : A Case Report

The authors report a typical case of tenosynovial giant cell tumor of the right middle finger of a 31-year-old man. Histologically, this tumor is characterized by a discrete proliferation of rounded synovial-like cells accompanied by a variable number of multinucleated giant cells, inflammatory cells, and xanthoma cells. Clinicopathologically, this tumor is a benign lesion that nonetheless possesses a capacity for local recurrence. Local excision with a small cuff of normal tissue is the treatment of choice in this tumor.

Key Words: *Giant cell tumor; Fingers; Muscle neoplasms*

Kun Hwang, Dae Kwang Lee, Se Il Lee

Department of Plastic and Reconstructive Surgery, College of Medicine, Inha University, Inchon, Korea

Received: 17 March 1999
Accepted: 13 May 1999

Address for correspondence
Kun Hwang, M.D.
Department of Plastic and Reconstructive Surgery, Inha University Hospital, 7-206 Sinheung-dong, Choong-gu, Inchon 400-103, Korea
Tel: +82.32-890-3514, Fax: +82.32-890-2918
E-mail: jokerhg@inha.ac.kr

INTRODUCTION

Tenosynovial giant cell tumor is a rare tumor of the hand. This tumor was first described by Chassaignac (1), and then has been designated by others as fibrous histiocytoma of synovium, pigmented nodular synovitis, nodular tenosynovitis, or benign giant cell synovioma. Clinically, two major forms are found, a localized nodular and a diffuse villous form. The nodular form preferentially affects tendon sheaths, whereas the diffuse villous form is mostly a lesion of joints, especially of the knee.

Only two cases of localized tenosynovial giant cell tumor found in knee joint (2) have been published in Korean literatures although many reports of tenosynovial giant cell tumor have been published in the literature. This is the first domestic report of this tumor found in the finger of Koreans. As these finger lesions frequently manifest themselves as dermal or subcutaneous nodules without obvious connection to tendons, we should be acquainted with this condition. As representing a typical case of tenosynovial giant cell tumor on the finger, we feel that a clinical, histological and therapeutic description of a case might contribute to the acquaintance of plastic or orthopedic surgeons.

CASE REPORT

A 31-year-old man was admitted to the plastic surgery department with a mass located in the volar part of distal phalanx of the right middle finger which was first discovered two months ago. Physical examination revealed a pea-sized, rubbery hard, nontender, movable, deep-seated nodule. No distinct connection to the distal interphalangeal joint was noted. Following xanthoma, mucus cyst of the finger, gout tophus and rheumatic nodule as

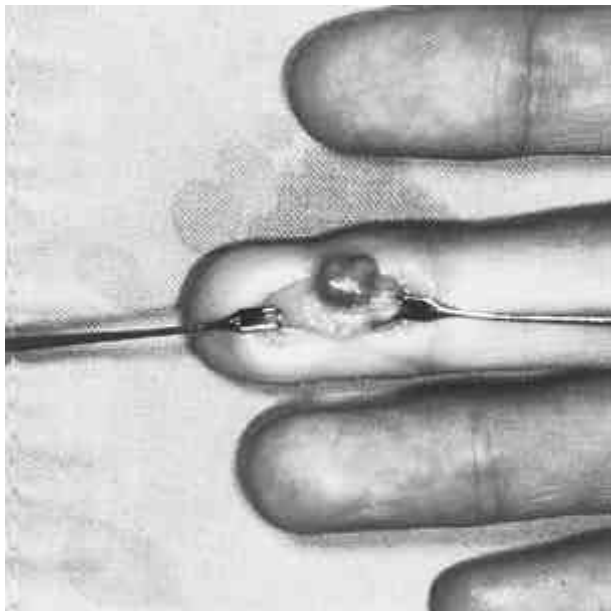

Fig. 1. Localized tenosynovial giant cell tumor located on the volar part of distal phalanx of the right middle finger. Lobulated mass is adjacent to tendon sheath. It is a brownish yellow, 0.6×0.5×0.3 cm sized, encapsulated mass.

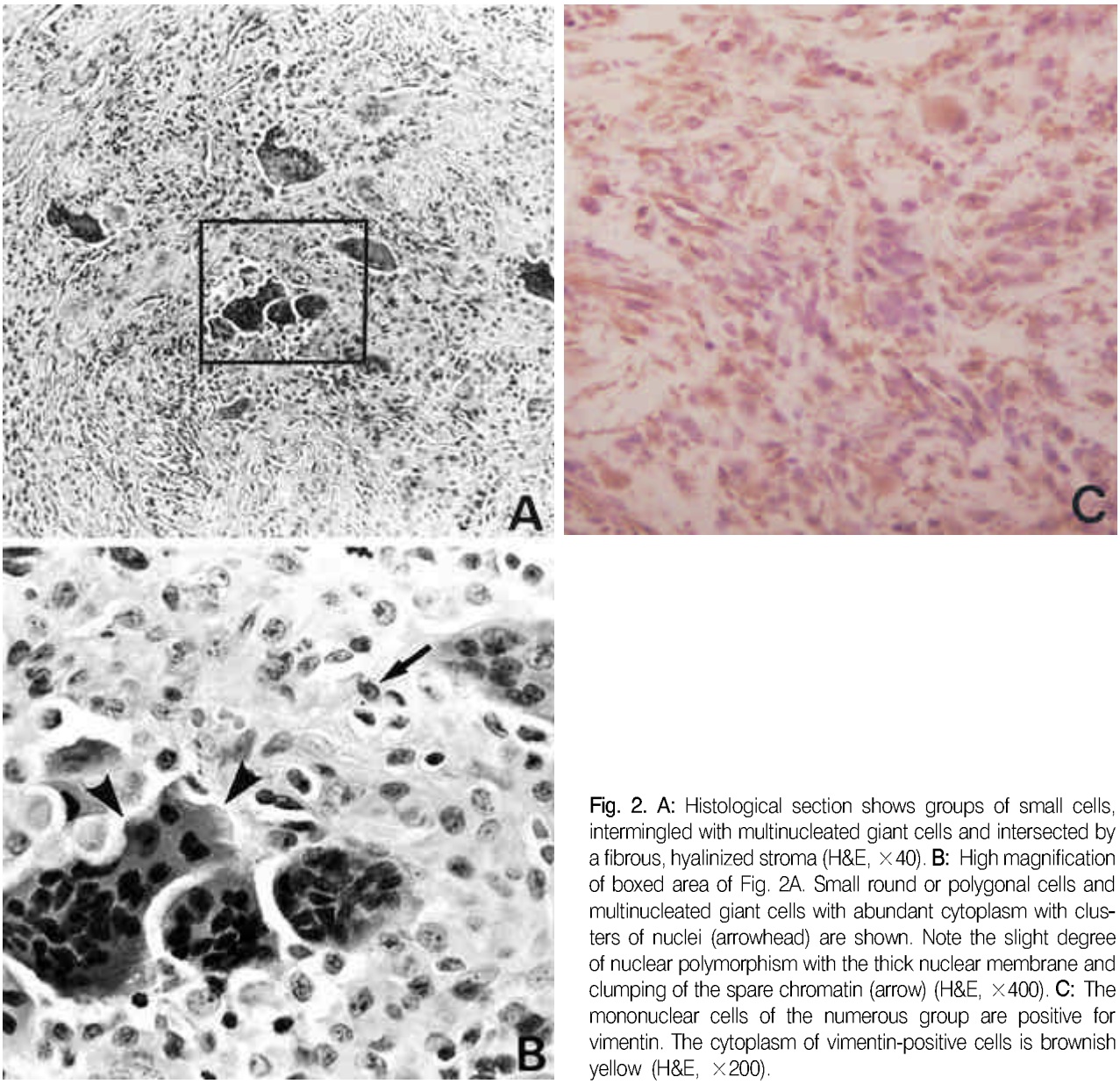

Fig. 2. A: Histological section shows groups of small cells, intermingled with multinucleated giant cells and intersected by a fibrous, hyalinized stroma (H&E, ×40). **B:** High magnification of boxed area of Fig. 2A. Small round or polygonal cells and multinucleated giant cells with abundant cytoplasm with clusters of nuclei (arrowhead) are shown. Note the slight degree of nuclear polymorphism with the thick nuclear membrane and clumping of the spare chromatin (arrow) (H&E, ×400). **C:** The mononuclear cells of the numerous group are positive for vimentin. The cytoplasm of vimentin-positive cells is brownish yellow (H&E, ×200).

differential diagnosis, a presumptive diagnosis of tenosynovial giant cell tumor was made.

The mass was removed under local anesthesia. Grossly, it was a brown-yellow, 0.6×0.5×0.3 cm-sized, adherent to tendon sheath, encapsulated and lobulated mass (Fig. 1). Histological examination revealed a highly cellular proliferation within a distinctly hyalinized collagenous stroma. Two major cell types were easily recognized; the great majority being small, round or polygonal cells with amphophilic cytoplasm. The cells closely resembled synovial cells. In areas more fusiform-like cells were seen. These mononuclear cells were loosely arranged or forming sheets. This tumor displayed no signs of malignancy, but rare mitosis and a certain degree of pleomorphism were seen. Several multinucleated giant cells were scattered among these mononuclear cells. These giant cells revealed a distinctly amphophilic and abundant cytoplasm with clusters of nuclei (up to 15), mostly located in the center (Fig. 2A-B). The mononuclear cells of the numerous group were positive for vimentin on immunohistochemical study (Fig. 2C). The patient was followed up for six months and no recurrence was observed.

DISCUSSION

Tenosynovial giant cell tumor may occur at any age, but it is most common between the ages of 30 and 50 years. The annual incidence of this tumor is 9.2 per million in Caucasian and Blacks, however, there is no

epidemiologic study of Asians. For Koreans, only two cases of this tumor observed in the knee joint have been reported (3). The sex ratio is skewed toward females (4-6). This tumor occurs predominantly in the hand. Less common sites include the feet, ankles, and knees. Finger lesions are typically located adjacent to the interphalangeal joint (4). Jaffe et al. originally commented on the preferential location of the tumors for the flexor surface (7), yet subsequent studies have shown that the lesions may be more evenly distributed between flexor and extensor tendons (4). Our case was typical for this clinical characteristic of this tumor. The tumors develop gradually over a long period. The patient complains of a painless mass in almost every instance. The tumor is usually firm, lobulated, and nontender. The masses are somewhat fixed to the underlying structures. Radiographic studies usually document a circumscribed soft tissue mass in about half of the patients and occasionally various degenerative changes of adjacent joint. In only a small portion of patients, however, does cortical erosion of bone occur (4, 8). This was due to tumor applying pressure. At operation, the tumors are found to be adherent to tendon sheath or joint capsule, or both, in every instance. In our case, the mass revealed as a firm, nontender, deep-seated nodule adherent to tendon sheath. As to the nature of this tumor, most authors nowadays agree with the interpretation of Jaffe et al. (7). They considered this tumor as a benign hyperplastic lesion of synovial origin (4). Eisenstein studied two cases of this tumor by electron microscopy. His findings supported the interpretation that this tumor is a hyperplastic lesion of synovial origin (9). On immunohistochemical study using vimentin, PG-M1, KP1, LCA and HHF35, Cavaliere et al. suggested synovial cell origin for this tumor (10). But, in recent years, both enzymatic and cell studies have supported the hypothesis that the cells are most closely related to monocytes and macrophages (3). The origin of this tumor is still not clear. Also, we tried immunohistochemical study for vimentin. On our study, mononuclear cells of the numerous groups were positive for vimentin (Fig. 2C).

In most reports, recurrence occurs in about 10% to 20% (3, 4). Wright (6) reported a recurrence rate of 44% and indicated that extended follow-up data of outpatients account for the higher rate. Recurrence seems to develop more often in very cellular lesions with increased mitosis (6) and in patients who have simple enucleations, since microscopic residua are invariably left behind at the deep margin. In spite of this strong tendency to recur after excision, these tumors never seem to metastasize (6). Local excision with a small cuff of normal tissue is usually considered adequate therapy. Unless, however, the local excision is reasonably wide and carried out with some knowledge of the nature of the tumor and its probable deep attachments, recurrence is by no means unlikely. All cases, especially those where the tumor is of the more cellular type, should certainly be followed up for at least six months, since the majority of recurrences develop within this period. If the tumor recurs, it should be excised in its early stage, as its development is likely to be progressive and amputation may eventually be necessary.

If there is a small, round mass of flexor or extensor surface of the hand, we should suspect tenosynovial giant cell tumor as well as ganglion, inclusion cyst, mucus cyst and glomus tumor and approach it like its acquaintance. After excision of this tumor, a long-term follow up should be done to detect recurrent tumor and early local excision should be made in cases of recurrence.

REFERENCES

1. Chassaignac CME. *Cancer de la gaine des tendons. Gaz Host Civ Milit 1852; 47: 185-91.*
2. Son SW, Son KJ. *Localized tenosynovial giant cell tumor in knee joint; a case report. J Korean Knee Joint Assoc 1996; 8: 137-9.*
3. Myers BW, Massi AT, Feigenbaum SL. *Pigmented villonodular synovitis and tenosynovitis: a clinical epidemiologic study of 166 cases and literature review. Medicine 1980; 59: 223-38.*
4. Jones FE, Soule EH, Coventry MB. *Fibrous histiocytoma of synovium (giant cell tumor of tendon sheath, pigmented nodular synovitis). J Bone Joint Surg 1969; 51A: 76-86.*
5. Mason ML, Woolston WH. *Isolated giant cell xanthomatic tumors of the fingers and hand. Arch Surg 1927; 15: 499-529.*
6. Wright CJE. *Benign giant cell synovioma. Br J Surg 1951; 38: 257-71.*
7. Jaffe HL, Lichtenstein L, Sutro CJ. *Pigmented villonodular synovitis, bursitis, and tenosynovitis: a discussion of the synovial and bursal equivalents of the tenosynovial lesions commonly denoted as xanthoma, xanthogranuloma, giant cell tumor, or myeloplaxoma of the tendon sheath, with some consideration of the tendon sheath lesion itself. Arch Pathol 1941; 31: 731-65.*
8. Fletcher AG, Horn RC. *Giant cell tumors of tendon sheath origin. Ann Surg 1951; 133: 374-85.*
9. Eisenstein R. *Giant cell tumor of tendon sheath. J Bone Joint Surg 1968; 50A: 476-86.*
10. Cavaliere A, Sidoni A, Bucciarelli E. *Giant cell tumor of tendon sheath: immunohistochemical study of 20 cases. Tumori 1997; 83: 841-6*