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Tenosynovial Giant Cell Tumor Of Ankle Region

Case Report

Ayak Bileğinin Tenosinovial Dev Hücreli Tümörü

Olgu Sunumu

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ABSTRACT

Localized tenosynovial giant cell tumor of tendon sheath (L-TGCT) is a slowly-growing benign tumor of the synovial tissue. The tumors most commonly occur in hands and feet, but also may be found around the ankle and knee joints. We present ultrasonography (US), magnetic resonance imaging (MRI) and pathological findings of a L-TGCT located in ankle region

Key words: *Ankle, Giant cell tumor, Ultrasonography, Magnetic resonance imaging*

ÖZET

Tendon kılıfının lokalize tenosinovial dev hücreli tümörü sinovial dokunun yavaş büyüyen iyi huylu bir tümörüdür. Tümörler en sık olarak elde ve ayaklarda gelişir, fakat ayak bileği ve diz eklemi etrafında da bulunabilir. Biz ayak bileği bölgesinde yerleşim gösteren lokalize tenosinovial dev hücreli tümörün ultrasonografi (US), manyetik rezonans görüntüleme (MRG) ve patoloji bulgularını sunduk.

Anahtar kelimeler: *Ayak bileği, Dev hücreli tümör, Ultrasonografi, Manyetik rezonans Görüntüleme*

INTRODUCTION

Tenosynovial giant cell tumor is a rare soft tissue tumor, which was first described by Chassaignac CME in 1852 (1). These tumors has two subtypes as localized nodular and diffuse villous forms while the diffuse villous form affects joints, however localized nodular form likes tendon sheats (2). Localized tenosynovial giant cell tumor of tendon sheath (L-TGCT) is thought to arise from the synovium of tendon sheaths, frequently affecting interphalangeal joints of the hands, feet, ankles and knees. It affects women more than man, with a common presentation between the age of the 30 and 50 years (3). In addition to ultrasonography (US), magnetic resonance imaging (MRI) is capable of identifying and characterizing the tumor. In our case, we present US, MRI and pathological findings of L-TGCT located in ankle region.

CASE REPORT

A 51-year-old female was admitted to orthopedic surgery department with a nontender mass, located posterior to the left ankle joint. The mass was first noticed three years ago by the patient who occasionally had pain but no history of trauma. We evaluated the mass with US and MRI (1.5T Philips Gyroscan Intera). US imaging showed solid, homogeneous, hypoechoic lobulated mass located on the posterior of left ankle joint, extending to the subcutaneous fat tissue posterolaterally. The mass was 4x3.8x3.5 cm in diameter. Color Doppler US examination revealed that tumor has detectable blood flow (Figure 1). On MRI, the lobulated tumor was located posterior to talus and posterosuperior to calcaneus. The mass was found to surround the flexor hallucis longus tendon from posterior and laterally and was close proximity with the peroneus tendons laterally. On T1 weighted images the lesion had signal intensity similar to skeletal muscle. Although the mass was containing nodular hypointense areas on T2 weighted images, it was hyperintense on STIR sequences with prominent internal hypointensities were more prominent. Postcontrast T1-fat suppressed sequences showed intense enhancement of the tumor (Figure 2). The mass was surgically excised and the histopathological examination showed that tumor was multinodular and yellowish cream in color. In addition the tumor was hypercellular, formed by round, polygonal mononuclear cells, multinucleated giant cells and histiocytelike foamy cells (Figure 3). Mitotic activity was low. There was no necrosis, and the tumor cells was present also in some surgical margins.

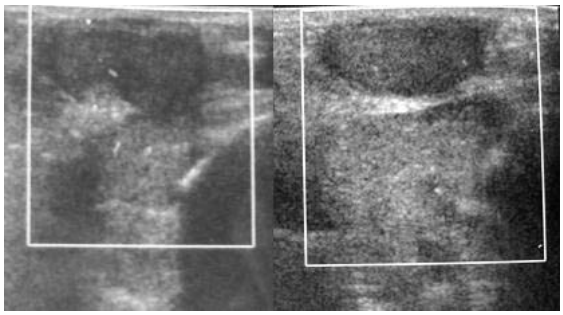

Figure 1: *US imaging shows solid, homogeneous, hypoechoic lobulated mass located on the posterior of left ankle joint, extends to subcutaneous fat tissue posterolaterally. Color Doppler US reveals that tumor has detectable blood flow.*

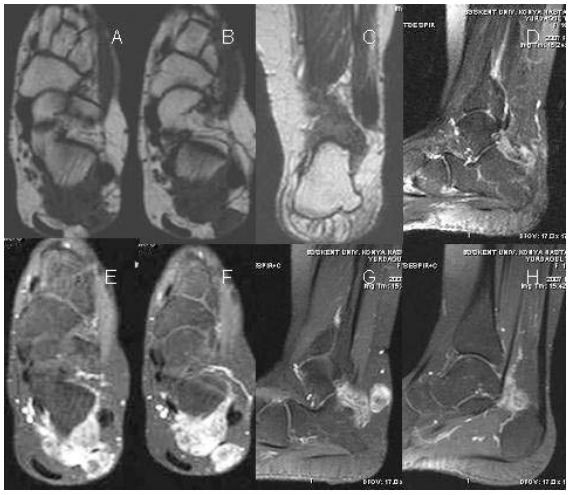

Figure 2: *The mass surrounds the flexor hallucis longus tendon from posterior and laterally and is close proximity with the peroneus tendons laterally. On T1 weighted images, the lesion has signal intensity similar to skeletal muscle. There are nodular hypointense areas in the mass on T2 weighted images. The lesion is hyperintense on STIR*

sequences and internal hypointensities are more prominent. Postcontrast T1-fat suppressed sequences shows intense enhancement of the tumor.

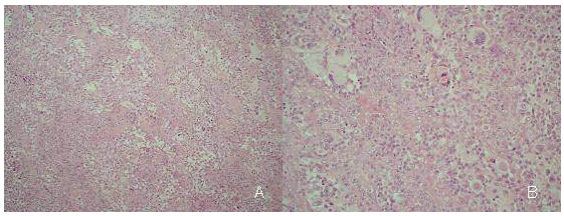

Figure 3: *The mass has hypercellular, formed by round, polygonal mononuclear cells, multinucleated giant cells and histiocytelike foamy cells on the histopathological examination.*

DISCUSSION

L-TGCT is slowly-growing benign tumor of the synovial tissue. The tumors most commonly occur in hands and feet, but also found around the ankle and knee joints. Pathologically, the tumor is identical to pigmented villonodular synovitis. These tumors contain histiocytelike foamy or multinucleated cells and fibroblastlike cells, may have hemosiderin deposits. Some lesions can be cellular and show atypical nuclei, mitotic activity can be observed (4). These tumors are idiopathic proliferative lesions that can cause bone erosions, where malignant changes are rare (5). Most giant cell tumors are treated with surgical excision. Radical excisions with negative margins are not indicated. In the literature in rare aggressive lesions, local recurrence may necessitate resection and radiation therapy. The reported recurrence rate varies from approximately 10% to 20% (6). Clinical findings are pain and soft tissue swelling. Middleton et. al. showed that tumor did not move with the tendon when the tendon was flexed and extended in any of their cases, indicating that is expected because the lesion arises from the sheath but not from the tendon itself (7).

L-TGCT is a relatively rare tumor in ankle region. Monaghan reported incidence of eight cases of L-TGCT each year and the mean size was 1.75 cm. He reported three cases involving the feet in 71 cases (4). Where he described that tumors were all near the joints. Our case was also adjacent to talocalcaneal and tibiotalar joints but in our case a giant sized tumor with subcutaneous extension was present. The flexor hallucis longus tendon was encased by the tumor posterolaterally.

In the review of sonographic features about L-TGCT, the most common appearance was a solid, homogeneous, hypoechoic mass that was associated with a tendon containing internal vascularity (7). The diagnosis of it should be strongly considered whenever a solid-appearing, hypoechoic mass with detectable blood flow is identified adjacent to the flexor tendons of the hands and feet. No cystic elements or hyperechoic areas were encountered in the lesion (8).

In addition to sonography, MRI is capable of identifying and characterizing giant cell tumor of the tendon sheaths. On T1-weighted MRI sequences, the lesions of giant cell tumor of the tendon sheath characteristically have signal intensity similar to or slightly hyperintense to skeletal muscle. On T2-weighted sequences, the masses are also iso- to hypointense to skeletal muscle and interspersed with scattered areas of lower and higher signals. Gadolinium injection has been reported to result in moderate to intense enhancement (9). The large areas of low signal intensities found in the mass on the T1- and T2-weighted images indicate fibrous composition, calcification, or hemosiderin deposition. However, calcification is not visible on the radiographs. When giant cell tumor of the tendon sheath is pigmented with hemosiderin deposition, blooming may be seen on gradient-echo sequences, especially when the TE is longer than 15 milliseconds. MRI findings of our case were similar to literatures.

In the differential diagnosis of this tumor, desmoid tumor, fibroma and ganglion cyst should be kept in mind encountered clinically. But radiologic findings are typical. The sonographic appearance of

ganglion cysts are cystic. But, giant cell tumors are solid. Desmoid tumor is larger in size than giant cell tumor and shows hyperintensity on T2- weighted images (9). Fibromas of the tendon sheath may have an MRI appearance on T1-weighted images similar to giant cell tumor of the tendon sheath, with a signal isointense to skeletal muscle. Signal intensity on T2-weighted sequences is more variable, with areas of hypo-, iso-, and hyperintensity. With gadolinium injection, enhancement can vary from minimal to marked. In our case, however, the mass was larger and more nodular than that seen in reported cases of fibroma of the tendon sheath, which is usually < 2.5 cm in diameter and ovoid in appearance (10)

In conclusion, giant cell tumors of tendon sheath have a characteristic sonographic and MRI findings and occur in predictable locations. The diagnosis should be strongly considered in case of a solid-appearing, hypoechoic mass with detectable blood flow is identified adjacent to tendons of the hands and feet. MRI findings may be variable related to hemosiderin pigment, foamy histiocyte cells and hyalin tissue. This MRI appearance, combined with the multinodular configuration, the painless slow growth, and the location adjacent to a tendon, are all characteristic findings of giant cell tumor of the tendon sheath.

REFERENCES

1) Chassaignac CME. Cancer de la gaine des tendons. Gaz Host Civ Milit 1852;47:85-91

2) Hwang K, Lee DK, Lee SI. Tenosynovial giant cell tumor of finger, localized type: a case Report. J Korean Med Sci 1999;14(6): 682-4

3) Choudhury M, Jain R, Nangia A, Logani KB. Localized tenosynovial giant cell tumor of tendon sheath. A case report. Acta Cytol 2000;44(3): 463-6

4) Monaghan H, Salter DM, Al-Nafussi A. Giant cell tumor of tendon sheath (localised nodular tenosynovitis): clinicopathological features of 71 cases. J Clin Pathol 2001;54(5): 404-7

5) Bertoni F, Unni KK, Beabout JW, Sim FH. Malignant giant cell tumor of the tendon sheaths and joints (malignant pigmented villonodular synovitis). Am J Surg Pathol 1997;21(2):153-163

6) Martin RC, Osborne DL, Edwards MJ, Wrightson W, McMasters KM. Giant cell tumor of tendon sheath, tenosynovial giant cell tumor, and pigmented villonodular synovitis: defining the presentation, surgical therapy and recurrence. Oncol Rep 2000;7(2): 413-9

7) Middleton WD, Patel V , Teefey SA, Boyer MI. Giant cell tumors of the tendon sheath: analysis of sonographic findings. AJR Am J Roentgenol 2004;183(2):337-9

8) Ho CF, Chiou HJ, Chou YH, Chang CY. Peritendinous lesions: the role of high-resolution ultrasonography. Clin Imaging 2003;27(3): 239-50

9) Jelinek JS, Kransdorf MJ, Shmookler BM, Aboulafia AA, Malawer MM. Giant cell tumor of the tendon sheath: MR findings in nine cases. AJR Am J Roentgenol 1994;162(4):919-22

10) Fox MG, Kransdorf MJ, Bancroft LW, Peterson JJ, Flemming DJ. MR imaging of fibroma of the tendon sheath. AJR Am J Roentgenol 2003;180(5):1449-53