Tenosynovial Chondromatosis of the Flexor Hallucis Longus Tendon: Case Report

Fleksör Hallusis Longus Tendonunda Sinoviyal Kondromatozis

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ABSTRACT Synovial chondromatosis is a rare benign condition, characterized by metaplasia and formation of multiple cartilaginous nodules in the synovium of the joints. The nodules may enlarge and detach from the synovium and secondary calcification and ossification commonly occur. Synovial chondromatosis occurs in middle-aged adults and frequently affects the knee, hip, ankle, elbow, shoulder and temporomandibular joints. Occasionally synovial chondromatosis also involves extraarticular sites such as within tendon sheath and bursae. The extraarticular process arises in synovium about the tendon or bursa. Synovial chondromatosis originating from the flexor hallucis longus tendon is rare. In this paper, a case of tenosynovial chondromatosis affecting the flexor hallucis longus tendon is presented in a 29 year-old male with right ankle pain.

Key Words: Ankle; chondromatosis, synovial; tendons

ÖZET Sinoviyal kondromatozis, eklemdeki sinoviyumun multiple kartilajinöz nodüller formasyonu ve metaplazisi ile karakterize nadir rastlanan benign bir durumdur. Bu nodüller büyür, sinoviyumdan ayrılır ve ikincil kalsifikasyon ile ossifikasyon sıklıkla meydana gelir. Sinoviyal kondromatozis orta yaşlı yetişkinlerde görülür ve sıklıkla diz, kalça, ayak bileği, el bileği, omuz ve temporamandibular eklem etkilenir. Sinoviyal kondromatozise nadiren, tendon kılıfı, bursa gibi eklem dışı bölgelerde de rastlanır. Eklem dışı patoloji, bursa ve tendonda bulunan sinoviyumdan gelişir. Fleksör hallusis longus tendonundan gelişen sinoviyal kondromatozis nadirdir. Bu yazıda fleksör hallusis longus tendonunu etkileyen sinoviyal kondromatozisi bulunan sağ ayak bileği ağrısı olan 29 yaşındaki erkek olgu sunulmuştur.

Anahtar Kelimeler: Ayak bileği; kondromatozis, sinoviyal; tendonlar

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Synovial chondromatosis represents an uncommon benign neoplastic process with hyaline cartilage nodules in the subsynovial tissue of a joint, tendon sheath or bursa.[1-3] Synovial chondromatosis has been divided into primary and secondary forms. Primary synovial chondromatosis (PSC), develops from the joint or tendon synovium. Secondary synovial chondromatosis, is associated with joint abnormalities such as mechanical or arthritic conditions, that cause intraarticular chondral bodies.[1,2,4,5] Primary synovial chondromatosis (PSC) is more common in men than in women, with a ratio of 2:1, usually occurring in the third to fifth decades of life.[2,6-9] PSC, originating from the joint most commonly affects the knee,

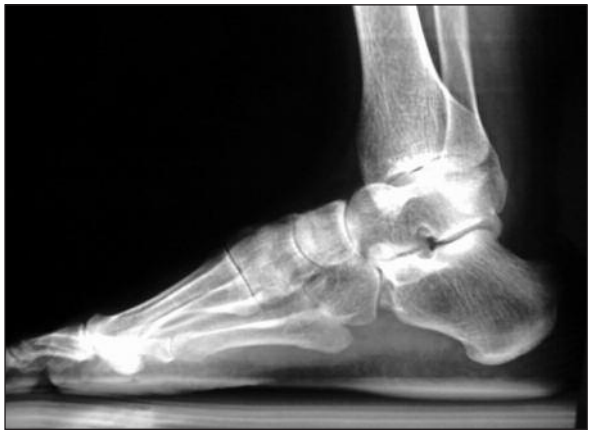

FIGURE 1: Lateral radiograph of the right ankle does not reveal any calcification.

hip and wrist joints, whereas the disease originating from the tendon sheath most frequently involves the feet and fingers.[1,6,9,10] PSC, originating from the flexor hallucis longus tendon is rare. In this report, we present a patient with synovial chondromatosis originating from the flexor hallucis longus tendon.

CASE REPORT

A 29-year old man presented with the right ankle pain for nine months. The pain was located mainly around the posteromedial aspect of the ankle. He did not have a history of trauma, infection or systemic rheumatologic disease. There was no swelling or tenderness around the ankle and no limitation range of motion. The plain radiographs of the ankle were unremarkable (Figure 1). Magnetic resonance imaging (MRI) of the right ankle revealed the presence of multiple focal areas of low signal intensity with all pulse sequences within the flexor hallucis longus tendon (Figure 2 a-c). There was contrast enhancement of hipointens lesions following contrast material administration (Figure 3 a, b). Loose bodies were excised by open synovectomy. The pathologic results were consistent with synovial chondromatosis.

DISCUSSION

PSC, is a rare condition characterized by chondrometaplasia of the synovium. The cause of this condition is unknown but the pathogenesis involves the development of chondroid foci in the synovial membrane that eventually break free to become cartilaginous loose bodies within the joint and tendon sheath. Later, they become calcified and ossified.[3,5-11] In the largest synovial chondromatosis series, Fetsch et al. termed chondromatosis originating from the tenosynovial membrane as "tenosynovial" or "extraarticular" chondromatosis.[12] In our case the lesion was classified as tenosynovial chondromatosis because of its origin from the tendon sheath. Extraarticular manifestation of PSC, is extremely rare.[2] Walker et al. encountered one pa-

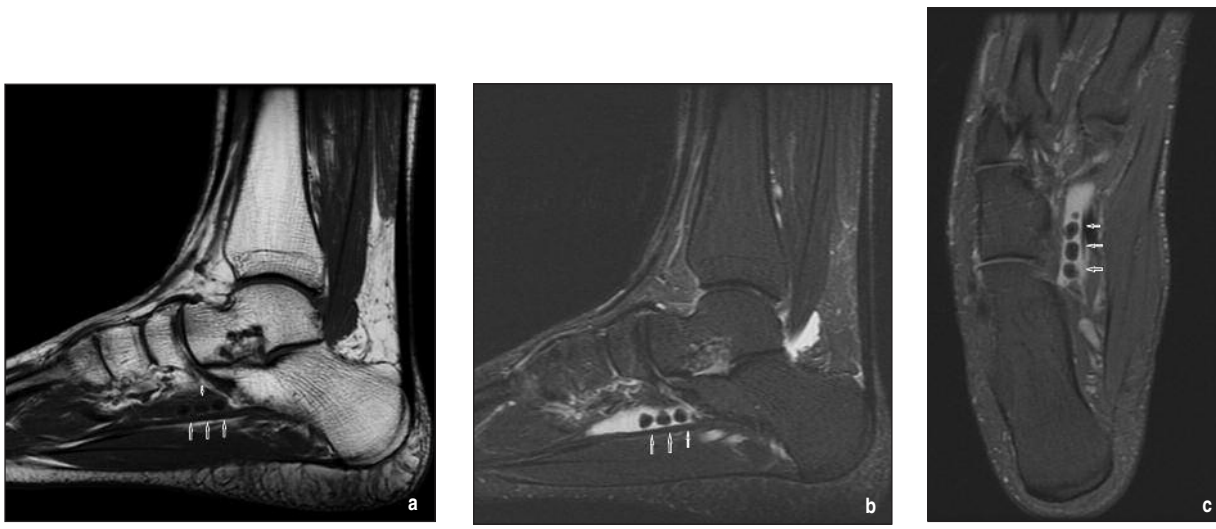

FIGURE 2a) Sagittal T1- weighted and **(b)** sagittal T2 - weighted images fat suppression and **(c)** axial T2- weighted image with fat suppression MRI of the ankle demonstrates low signal intensity focal areas (arrow) within the flexor hallucis longus tendon sheath. The focal area is secondary to calcification.

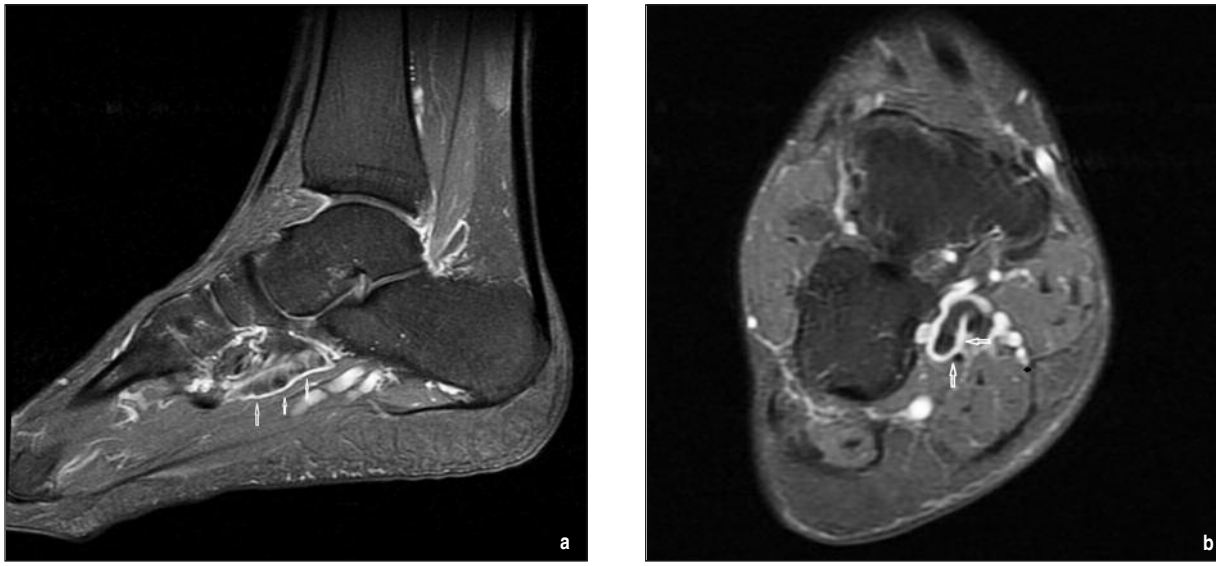

FIGURE 3: (a) Sagittal contrast -enhanced T1- weighted (b) coronal contrast - enhanced T1- weighted MRI with fat suppression demonstrate peripheral enhancement (arrow) about the chondral bodies.

tient with flexor hallucis longus tendon sheath involvement in their 25 case synovial chondromatosis series.[13]

Clinical symptoms of tenosynovial or bursal chondromatosis are most frequently pain,painless masses or only mild tenderness upon palpation of the lesions. Swelling, decreased range of motion are less frequently seen. Durations of symptoms are frequently long. Extraarticular chondromatosis most commonly involve the hands, feet, wrists and ankles.[9,13-15]

The clinical diagnosis of PSC can be difficult as the clinical history and examination are non-spesific. There are no helpful laboratory test or markers.[5] Imaging features of PSC are frequently pathognomonic.[1] Imaging techniques for tenosynovial chondromatosis include plain radiographs and MRI. Calcification is observed on radiographic examination in 70-95% of cases; however, as in our case, radiographs may appear normal.[1,5,9,12] The appearance of tenosynovial chondromatosis in MRI is variable and depends on the relative predominance of synovial proliferation and loose body formation. Kramer described three subtypes based on the MRI signal of the osteochondral nodules.[16] Subtype A, accounts for 16% of all cases, and unmineralized chondral lesions on MRI are difficult to distinguish from the synovial fluid and mass, as both of them display low/intermediate signal intensity on T1- weighted and high signal intensity on T2-weighted images. In such cases, intravenous contrast medium injection may be helpful in distinguishing nodules from synovial fluid. Subtype B occurs in 74% of cases, where there is calcification of some or all of the cartilaginous nodules on plain radiographs. There are areas of low signal intensity with all pulse sequences corresponding to the calcification. Other features are similar to those of subtype A. The nodules in subtype C (9%) contain fatty marrow and consequently are isointense to fat with high and intermediate signal on T1- and T2- weighted imaging. They show signal suppression on fat saturation sequences with a low signal rim on all sequences.[14,16] The MRI findings of our case is classified as subtype B tenosynovial chondromatosis.

The treatment of choice for PSC, whether intraarticular or extraarticular, is surgical resection. Surgical treatment is synovectomy and excision of loose bodies. Synovectomy can be performed by open surgery or arthroscopically.[1,4,5,11]

The diagnosis of synovial chondromatosis is frequently confused with tenosynovitis , arthritis, giant cell tumor of the tendon sheath, synovial hemanjioma and synovial cyst.[4,11] In conclusion, te-

nosynovial or bursal chondromatosis demonstrates multiple osteochondral calcifications. In addition to the imaging features, the diagnosis of tenosynovial or bursal chondromatosis can be confirmed by the lesion location which is optimally depicted by MRI.[1,13]

REFERENCES

1. Murphey MD, Vidal JA, Fanburg-Smith JC, Gajewski DA. Imaging of synovial chondromatosis with radiologic-pathologic correlation. Radiographics 2007;27(5):1465-88.
2. Kirchhoff C, Buhmann S, Braunstein V, Weiler V, Mutschler W, Biberthaler P. Synovial chondromatosis of the long biceps tendon sheath in a child: a case report and review of the literature. J Shoulder Elbow Surg 2008;17(3):e6-e10.
3. Maurice H, Crone M, Watt I. Synovial chondromatosis. J Bone Joint Surg Br 1988;70(5): 807-11.
4. Ozcelik IB, Kuvat SV, Mersa B, Pilancı O. Synovial chondromatosis of metacarpophalangeal joint of the ring finger. Acta Orthop Traumatol Turc 2010;44(4):337-9.
5. McKenzie G, Raby N, Ritchie D. A pictorial review of primary synovial osteochondromatosis. Eur Radiol 2008;18(11):2662-9.
6. Wilson WJ, Parr TJ. Synovial chondromatosis. Orthopedics 1988;11(8):1179-83.
7. Crotty JM, Monu JU, Pope TL Jr. Synovial osteo-chondromatosis. Radiol Clin North Am 1996;34(2):327-42.
8. Ryan RS, Harris AC, O'Connell JX, Munk PL. Synovial osteochondromatosis: the spectrum of imaging findings. Australas Radiol 2005;49 (2):95-100.
9. Oakley J, Yewlett A, Makwana N. Tenosynovial osteochondromatosis of the flexor hallucis longus tendon. Foot Ankle Surg 2010;16 (3):148-50.
10. Özaksoy D, Manisalı M, Çakır V, Çapar AE. [Magnetic resonance imaging of the Hip]. Turkiye Klinikleri J Radiol-Special Topics 2011;4(1):45-55.
11. Tutun S, Ozgonenel L, Cetin E, Aytekin E. Two rare involvement sites: synovial chondromatosis. Rheumatol Int 2011;31(5):687-9.
12. Fetsch JF, Vinh TN, Remotti F, Walker EA, Murphey MD, Sweet DE. Tenosynovial (extraarticular) chondromatosis: an analysis of 37 cases of an underrecognized clinicopathologic entity with a strong predilection for the hands and feet and a high local recurrence rate. Am J Surg Pathol 2003;27(9):1260-8.
13. Walker EA, Murphey MD, Fetsch JF. Imaging characteristics of tenosynovial and bursal chondromatosis. Skeletal Radiol 2011;40(3): 317-25.
14. Patel MR, Desai SS. Tenosynovial osteochondromatosis of the extensor tendon of a digit: case report and review of the literature. J Hand Surg Am 1985;10(5):716-9.
15. Karlin CA, De Smet AA, Neff J, Lin F, Horton W, Wertzberger JJ. The variable manifestations of extraarticular synovial chondromatosis. AJR Am J Roentgenol 1981;137(4):731-5.
16. Kramer J, Recht M, Deely DM, Schweitzer M, Pathria MN, Gentili A, et al. MR appearance of idiopathic synovial osteochondromatosis. J Comput Assist Tomogr 1993;17(5):772-6.