Synovial Osteochondromatosis of the Retrocalcaneal Bursa: A Case Report

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Abstract

Synovial osteochondromatosis, a benign condition of unknown origin, is characterized by multiple cartilaginous and osteocartilaginous nodules arising from metaplasia of the synovial tissue. The most common sites are the knee, the elbow, and the hip joint; it rarely occurs in the ankle or foot. We report a rare case of synovial osteochondromatosis in the retrocalcaneal bursa.

A 31-year-old woman suffered from an insidious pain and swelling around the insertion of the right Achilles tendon for about two years. Gradually the hindfoot pain became severe, especially on weight bearing, and the swelling enlarged. Physical examination revealed a hard 1 cm mass with a smooth surface attached to the insertion of the Achilles tendon. There was marked tenderness over the mass, and the patient complained of pain of the hindfoot while she was walking. Routine radiographs of the right ankle were almost normal. A computed tomography scan revealed a faint soft tissue mass with a granular shadow at the anterolateral aspect of the Achilles tendon. A magnetic resonance image with T1-weighted sequences and T2-weighted sequences showed an image suggestive of multiple cartilaginous shadows with effusion in the retrocalcaneal bursa. The mass was removed. There was an elastic, hard mass with a fibrous capsule situated at the anterolateral border of the right Achilles tendon, which was contiguous with the paratenon of the Achilles tendon. Several hard whitish fragments, like cartilaginous nodules, were connected by fibrous tissues. Histopathological examinations showed proliferative hyaline cartilages in the hypertrophied synovial bursa with fibrous degeneration. These findings were compatible with a diagnosis of synovial osteochondromatosis of the retrocalcaneal bursa. Nine months after the operation, she was still free from symptoms. One should consider synovial osteochondromatosis of the retrocalcaneal bursa as a differential diagnosis of hindfoot pain.

INTRODUCTION

Synovial osteochondromatosis is a benign condition of unknown origin. It is characterized by the formation of multiple cartilaginous and osteocartilaginous nodules arising from metaplasia of the synovial tissue. The most common sites are the knee, the elbow, and the hip; it rarely occurs in the ankle or the foot.

We report a rare case of a patient with synovial osteochondromatosis, a retrocalcaneal bursa, hindfoot, magnetic resonance imaging, histopathological examination.

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ostechondromatosis in her retrocalcaneal bursa. Computed tomography scanning and magnetic resonance imaging were useful in deciding on an operative approach.

**CASE REPORT**

A 31-year-old woman suffered from an insidious pain and swelling around the insertion of the right Achilles tendon for about two years. She had played softball since junior high school age. Gradually the hindfoot pain became severe, especially on weight-bearing, and the swelling enlarged.

When she was first seen at Mie Prefectural Shima Hospital, a physical examination revealed a smooth, hard 1 cm mass attached to the insertion of the Achilles tendon (Fig. 1). The color and turgor of the skin were normal. There was marked tenderness over the mass, and the patient reported that she had pain of the hindfoot while walking. Active and passive motions of her right ankle were normal. Normal laboratory examinations included leukocyte count, erythrocyte sedimentation rate, C-reactive protein level, serum and urinary calcium level, and phosphorus and alkaline phosphatase level.

Routine radiographs of the right ankle were unrevealing (Fig. 2). A computed tomography scan revealed a faint soft-tissue mass with a granular shadow at the anterolateral aspect of the Achilles tendon.

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**Fig. 1** Inferior view of the hindfoot. There was a hard 1 cm mass with a smooth surface attached to the lateral side of the insertion of the right Achilles tendon.

**Fig. 2** Radiograph of the right foot. No abnormalities were seen.

**Fig. 3** Computed tomography scan of the foot. There was a soft-tissue mass with a granular shadow at the anterolateral aspect of the Achilles tendon.
granular shadow at the anterolateral aspect of the Achilles tendon (Fig. 3). A magnetic resonance image with T1-weighted sequences in the axial plane and T2-weighted sequences in the coronal plane showed an image suggestive of multiple cartilaginous shadows with effusion in the retrocalcaneal bursa (Fig. 4a and 4b). The differential diagnosis was osteochondroma, pigmented villonodular synovitis, Achilles tendinitis, bursitis, or atypical synovial osteochondromatosis.

The mass was removed under spinal anesthesia. Beneath the skin, there was an elastic, hard mass with a fibrous capsule at the anterolateral border of the right Achilles tendon, contiguous with the paratenon of the Achilles tendon. Within the mass there were several hard whitish fragments like cartilaginous nodules, and some fragments were connected to the fibrous tissue (Fig. 5).

Histopathological examinations showed the proliferative hyaline cartilages in the hyper-trophied synovial bursa with fibrous degeneration (Fig. 6a and 6b). These findings were compatible with a diagnosis of synovial osteochondromatosis.
of the retrocalcaneal bursa. After two weeks, the patient started bearing weight. She returned to full daily activities at six weeks after surgery. Nine months after the operation, she was still free from the symptoms.

DISCUSSION

Synovial osteochondromatosis most commonly involves the knees, the elbow, and the hip joint. Occurrence in the ankle joint is rare\(^1\sim7\). Synovial osteochondromatosis develops in the synovial tissue in a tendon sheath or bursal sac\(^6\sim9\). Routine radiographs can usually define a calcified lesion in the joint capsule clearly, but if cartilaginous nodules have not calcified, routine radiographs will not reveal them, so computed tomography (CT) scanning and magnetic resonance imaging (MRI) are needed. These studies reveal either the origin of the soft-tissue mass with calcified nodules or the connection between the mass and the joint\(^3\). We could not detect the lesion with routine radiographs, because our patient had extra-articular cartilaginous nodules without calcification.

CT scanning and MRI revealed the lesion, which was not connected to the ankle joint. Therefore, we considered that the synovial osteochondromatosis had arisen from the retrocalcaneal bursa. We could find only two reports of synovial osteochondromatosis originating from the retrocalcaneal bursa\(^4\sim5\). They reported radiographic signs of calcaneal bony erosions with synovial osteochondromatosis. These signs showed the existence of synovial erosion, but were not pathognomonic\(^6\).

Although the mechanism of this condition has yet to be revealed, trauma has been reported as a possible precipitating factor of synovial osteochondromatosis\(^2\sim6\). Our patient reported no trauma to her right ankle, however there may have been repeated low-energy trauma to her hindfoot, because she had played softball since junior high-school age.

Diagnosis can only be confirmed through histopathological examination. Milgram proposed three phases of synovial osteochondromatosis. In phase I, there is active intrasynovial disease with...
no loose bodies. In phase II, pathologic tissue with loose bodies are present. In phase III, there is no longer demonstrable synovial disease (the synovium is frequently thought to be normal or slightly inflamed), but there are multiple loose bodies\(^8,9\). Our patient was Milgram's phase II, because loose bodies were present in the bursa and the synovium had several cartilaginous nodules, still showing some synovial inflammation in the retrocalcaneal bursa. Milgram suggested that in some cases of phase II and in cases of phase III, synovectomy is not needed because there is spontaneous remission of clinical and radiographic conditions. However, we did a total bursectomy, because the retrocalcaneal bursa was so small. Extra-articular synovial osteochondromatosis with symptoms is an indication for surgical intervention.

**CONCLUSION**

We report a rare case of a patient with synovial osteochondromatosis developed in the retrocalcaneal bursa. One should consider synovial osteochondromatosis of the retrocalcaneal bursa in differential diagnosis of hindfoot pain.

**REFERENCES**